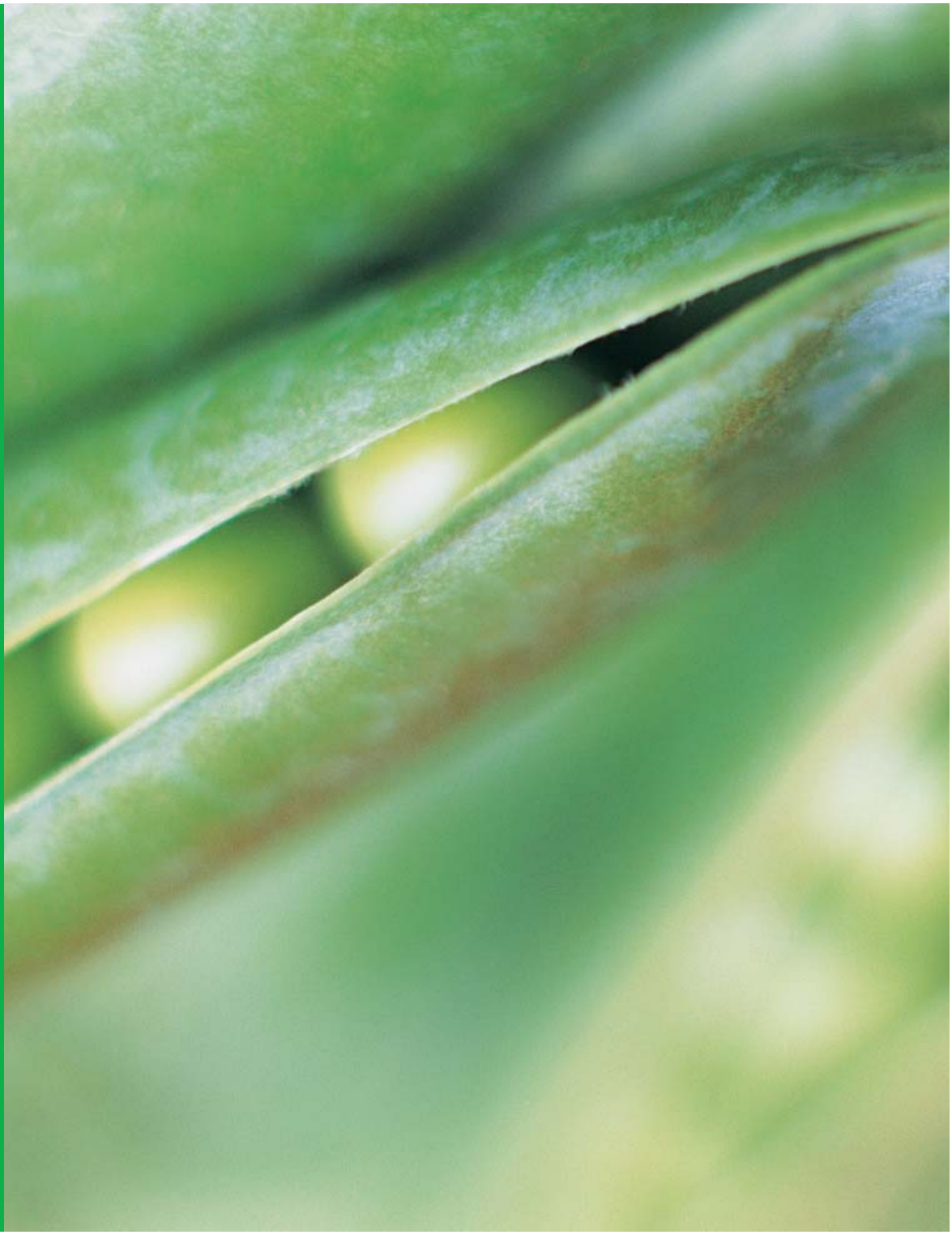
The REDD Direction - The potential for reduced forest carbon emissions, biodiversity protection and enhanced development

A desk study with special focus on Tanzania and Uganda

By Arild Vatn, Pål Vedeld, Jón Geir Pétursson and Ellen Stenslie



Noragric Report No. 51
Department of International Environment and Development Studies
Noragric

THE REDD DIRECTION

- the potential for reduced forest carbon emissions, biodiversity protection and enhanced development

A desk study with special focus on Tanzania and Uganda

By
Arild Vatn, Pål Vedeld, Jón Geir Pétursson and Ellen Stenslie

Noragric Report No. 51
November 2009

Department of International Environment and Development Studies, Noragric
Norwegian University of Life Sciences

Noragric is the Department of International Environment and Development Studies at the Norwegian University of Life Sciences (UMB). Noragric's activities include research, education and assignments, focusing particularly, but not exclusively, on developing countries and countries with economies in transition.

Noragric Reports present findings from various studies and assignments, including programme appraisals and evaluations.

This Noragric Report was commissioned by the Norwegian Agency for Development Cooperation (Norad) under the framework agreement with Noragric. Extracts from this publication may only be reproduced after prior consultation with the employer of the assignment (Norad) and with the consultant team leader (Noragric).

The findings, interpretations and conclusions expressed in this publication are entirely those of the authors and cannot be attributed directly to the Department of International Environment and Development Studies (UMB/Noragric).

Vatn, Arild, Pål Vedeld, Jón Geir Pétursson and Ellen Stenslie. The REDD Direction-the potential for reduced forest carbon emissions, biodiversity protection and enhanced development. A desk study with special focus on Tanzania and Uganda. Noragric Report No. 51 (November 2009)
Department of International Environment and Development Studies, Noragric
Norwegian University of Life Sciences (UMB)
P.O. Box 5003
N-1432 Aas
Norway
Tel.: +47 64 96 52 00
Fax: +47 64 96 52 01
Internet: http://www.umb.no/noragric

ISSN: 1502-8127

Photo credits: Digital Vision (cover)
Cover design: Åslaug Borgan/UMB
Printed at: Elanders Novum

Preface

This report includes a study of the challenges and opportunities related to instituting policies for REDD – reduced emissions from deforestation and forest degradation. It includes two parts. The first concerns an analysis of experiences with similar programs like payments for environmental services, community based natural resource management and the clean development mechanism under the Kyoto protocol. The second part concerns a specific analysis of the situation in Tanzania and Uganda with a discussion of the particular questions these countries face when instituting REDD. This part contains an analysis both of the present state of the forestry sector and an evaluation of future options for REDD.

The issues we face in this field are complex and a thorough assessment demands specificity and sensitivity to differences in context. Certainly, the analysis of future options for REDD in Tanzania and Uganda is specifically demanding. Our method has been to combine experiences from existing policies for natural resource management more at large (part 1) with knowledge about the specific institutional and ecological contexts in Tanzania and Uganda. We hope that the analysis can encourage and nurture a debate both about the way forward – the REDD direction – in these countries, but also support similar debates and analyses in other countries.

The report includes a rather long summary for those who do not have the time to read the full text. The summary also helps the reader to sort out where in the report issues specific interest can be found.

The authors would like to thank Espen Sjaastad and Trond Vedeld for commenting on draft versions of the whole report. We would also like to thank Ivar Jørgensen, George Kajembe, Gorettie Nabanoga and Charlotte Nakakaawa for commenting on selected parts of the report. Charlotte Nakakaawa has been especially helpful concerning clarification of forest carbon data for Uganda. The normal disclaimers apply.

Noragric, UMB, 01.10.09

Arild Vatn

SUMMARY

Forests receive increased interest in international climate negotiations. This is not least the consequence of the fact that about 17 % of climate gas emissions comes from deforestation and degradation of forests. Reducing these emissions is, however, challenging. It is difficult to define and institute effective policy measures, and it is demanding to measure and control these types of policies. It will also have a potentially high impact on the livelihoods not least for poor people in the South. It will also affect biodiversity. If done well, one could obtain reduced emissions, enhanced biodiversity preservation and development for the poor. The danger is, however, that the effect on emissions is meager, that biodiversity does not gain and that the living conditions for the poor will be worsened. Hence, great care is demanded when formulating policies for climate mitigation in forests.

Forests are both sinks and sources of carbon. In the present climate change agreement – the Kyoto protocol – only sink measures are included. Both afforestation and reforestation can be carried out under the so-called Clean Development Mechanism (CDM). The present discussion concerns whether in a post-Kyoto agreement one should also include reduced emissions from forests – from deforestation and forest degradation – the so-called REDD strategy.

REDD would demand an international agreement concerning its role and format, an international governance structure (architecture) to distribute the resources involved and national governance structures in countries where REDD activities are supposed to take place to secure that measures are instituted on the ground. This report is mainly focused on the latter issue – on how REDD could be instituted at the national level. It is divided in two – with one part centered on a set of general issues related to REDD, and one on the more specific challenges for two African countries – Tanzania and Uganda. The aim of this study has, hence, been to:

1. Evaluate a set of general challenges concerning putting REDD projects into practice concerning: a) potential conflicts/synergies between the policy goals of carbon mitigation, poverty reduction and biodiversity preservation; b) local legitimacy and property rights; c) transaction costs; d) additionality and leakage; e) motivation and behavioral changes
2. Assess the challenges for introducing REDD in Tanzania and Uganda and offer recommendations for a REDD architecture in these countries

Governance concerns both the making of social priorities/goals and setting up and running systems to attain these goals. These latter systems are in the REDD literature often called ‘architectures’. They consist of two main elements:

- The *type of actors* involved as characterized by their capacities and competencies. Core issues concern actors as defined by their power and resources, rights and responsibilities
- The *structures facilitating the interaction/coordination* between the actors

Concerning *the actors*, we may at the national level distinguish between private, state and civil society organizations. The governance literature emphasizes that these actors are constructed to serve different types of interests. They are formed around different types of rules and norms and hence act differently. Concerning the *structures to facilitate the coordination* between the actors, these may also take a variety of forms. They may take the form of e.g., trades (markets), negoti-

ations or command. These structures also influence the behavior of actors. They influence both the costs of coordination – transaction costs – and the motivations of those involved. While there is disagreement in the literature about how the various coordination forms affect action and interaction, it is general agreement that choice of governance structures may have substantial effects on the outcomes of the processes they are set up to facilitate.

In the debate about the international REDD architecture, there is a division between those supporting compliance markets and those going for a fund based REDD. There is also a discussion whether REDD should be project or program based. While a project base system is dominantly linked to the compliance market system, the program idea is typically seen as part of a fund based REDD. While this report is not focused on the international level, we have still had to make a brief discussion about the pros and cons of the different main solutions. This is so because we needed to set a stage for the analyses at the national level.

Concerning this part of our analysis, we have concluded that a fund based system with a program orientation is the better solution. It has been argued that compliance markets with projects will be both the most efficient and the system able to raise the most resources. We doubt this conclusion. Using markets to transact over environmental goods is quite costly as it is very demanding to define the good – e.g., carbon sequestered in forests – and secure that what is paid for is delivered. Moreover, to the extent other goals are involved – i.e., biodiversity protection and poverty alleviation – a pure carbon market will not deliver well. This is clearly demonstrated in the experiences with CDM. Efficiency is about finding solutions giving the wanted results along all dimensions involved. This implies that it is necessary to include a series of other instruments than market trades. This is difficult to do with compliance markets. Finally, there is no reason why an international REDD fund could not be part of a compliance system making a fund and a market solution equally effective in attracting money. Certainly, the arguments we find the most persuasive may not be the ones winning in the 'power game' of international negotiations. We have nevertheless used them as a basis for framing our analysis by assuming that there will be an international REDD fund established distributing money to national programs. While some of the analyses in this report are relevant independent of the chosen international architecture, some would not be of special interest if a compliance market solution focused on projects is chosen.

General challenges for REDD at the national level

Moving to the national level, the following governance issues have been identified:

- Is it possible to create a situation where REDD both results in reduced climate gas emissions, increased biodiversity protection and reduced poverty – the win-win-win solution
- What seems to be promising national structures to a) decide about the allocation of REDD resources and b) distribute these to measures on the ground?
- What do various property rights institutions imply for the formulation of REDD strategies and how can the interests of people whose access to natural resources that are weakly protected be secured?
- What are the costs of setting up and running different governance systems for environmental resources – transaction costs?

- What factors are important in order to secure systems that are legitimate and motivate actors at different levels to fulfill the goals set?
- What are the challenges faced when trying to secure that REDD policies are additional and that leakage can be avoided?

On the basis of the general literature about governance of environmental resources – i.e., the literatures on payments for environmental services (PES), community based natural resource management (CBNRM), the clean development mechanism (CDM) and more legally oriented state protection policies, we have made assessments of the above questions.

1. Political goals – a triple win?

We find that there are many potential synergies between REDD and biodiversity conservation. This concerns especially halting deforestation. There are, however, some potential conflicts as it may be that the place where reducing deforestation is cheapest is not the ones where safeguarding biodiversity is most needed. When regenerating forests, there might moreover be a conflict between what is best concerning carbon sequestration and biodiversity. This concerns not least the type of species used. This conflict is greatly enhanced if we move to afforestation projects (REDDplus) where non-native species are often used. Hence, in the latter cases specific policy measures needs to be installed to secure also biodiversity protection.

Concerning poverty alleviation, the situation is more demanding. Despite the fact that REDD will allocate money from the rich North to the poorer South, one should note that if payments equals opportunity costs, compensations would not offer any extra resources for development. Moreover, experience show that there are many obstacles to reaching the poorer groups in these societies with payments. Specifically, project oriented payment systems will favor solutions where larger property owners with secured property rights, often disregarding gender challenges and impacts for women. Many incidences of exclusion of local communities related to forest protection and carbon measures are found. Such exclusion strategies are severely impacting on local peoples' livelihoods and contribute to poverty. One should also notice that REDD – as a new demand for land – will increase land prices, making it more difficult for the poor to acquire access to land.

Hence, a specific pro-poor policy has to be designed as part of the REDD regime. Otherwise it will not reach development goals. Backed by guiding principles, it has to be designed in the REDD implementation strategy at all levels. Such pro-poor policies must be country and context sensitive. In order for the rural poor to benefit from carbon funding, in-kind measures and specific measures to secure investments in human and material capital are a necessary elements of a policy. It should be noted that to reduce deforestation, such investments should not only be made in the forestry sector. Investments in e.g., agricultural productivity may also be important.

2. Decision making and distribution of resources

In developing national REDD architectures, one needs to decide whether REDD funding from outside the country should be integrated in the general budget or kept separate. If kept separate, the next issue concerns how and by whom the money should be allocated. We have concluded that keeping the REDD money separate from the general budget is the better option to secure focus on reaching the specific aims of REDD. This point towards establishing some kind of a

national REDD fund. This will increase transparency and make it easier to control the use of the money. We still find that such a REDD fund should be administered by the existing administration. REDD needs to be coordinated with the more general policies – both forest policies and policies in other sectors – e.g., agriculture and energy sectors – as a successful REDD action will need engagements from these sectors. REDD should take the form of broad cross-sectoral programs with the forestry sector as a focal point.

There are weaknesses in existing governance structures in many countries in the South related both to effectiveness and legitimacy. Nevertheless, active engagement from national authorities is crucial to REDD. Therefore REDD should be used to improve existing structures and processes. While present administrative systems are often inefficient, building new systems in parallel to the present will be more costly. Moreover, a coordinated national program is necessary to reduce the chance of leakage (see below) and secure multiple benefits (see above). Due to the character of environmental goods, public systems using participation, but also command (e.g., taxes/subsidies; legal measures) have in many instances the potential of reaching goals with lower transaction costs than e.g., market solutions (see below). This does not at all imply, however, that action on the ground should be taken by public bodies only. Rather, the involvement of communities and private actors will be paramount.

Due to the above problems, we suggest considering the establishment of a separate control system for REDD in each country with both national and international participation. Finally, a technical monitoring unit should be instituted separated from the REDD fund and REDD management units. Hence, the following generic national REDD architecture is proposed:

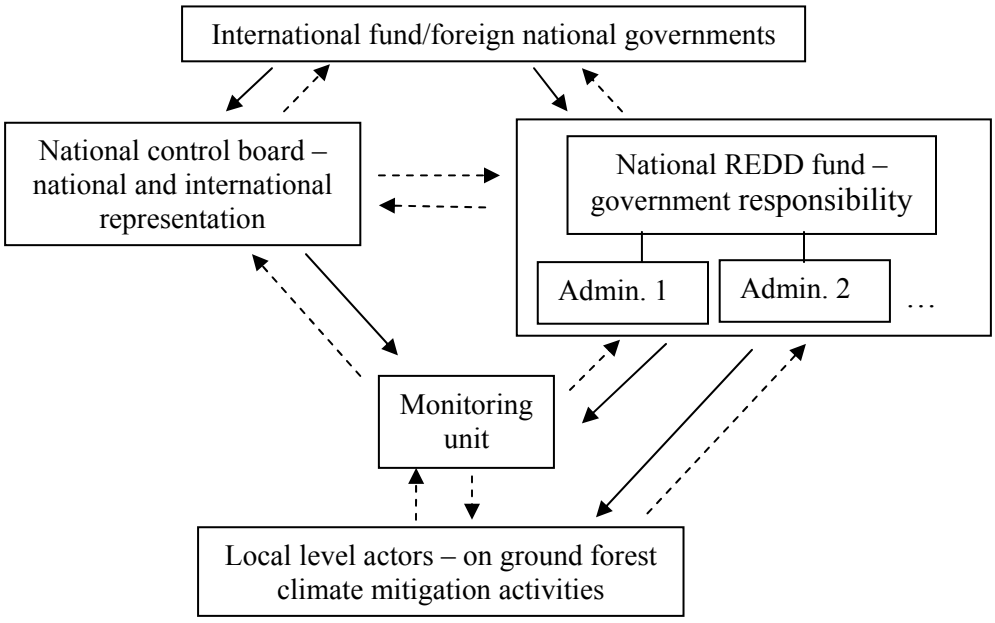


Figure S.1. Elements of a general REDD governance structure

Compact arrows: Resource and information transfer. Dashed arrows: Information transfer only

Information from the monitoring unit to the national control board concerns data on forest statuses. The information from the government to the same board concerns decision systems and administrative routines etc. Combining these types of information, the control board should be able to evaluate the effectiveness and efficiency of the REDD system in the specific country.

3. Adaption to local institutions and securing interests of people with weakly secured rights

Policies must take local institutions – rights and norms – into account. One should be especially aware of the difference between formal rights and locally embedded or customary rights. Lacking sensitivity about these structures tends to result in low performance and often severe conflicts. This goes for the legal establishment of protected areas as well as for monetary payment systems.

Different policy instruments are found to demand different rights structures. The contemporary structures in respective country and region will therefore significantly impact selection of policy instruments for the national REDD regime. Payment systems may demand formalized rights to land. It may be demanding to establish such systems, and they may not fit well to manage the dynamics of involved resources, as this may hamper flexibility.

Payment systems seem to favor formalized private property. We have, however, observed cases where payments go to communities, even when these have only customary rights. Such solutions may be important, while they seem easier to establish if the 'buyer' is a public authority. Establishing REDD could also be used to secure community user rights or property rights.

One should observe the potentially negative effects on local peoples' rights and access to land that may follow from REDD. This concerns especially the poorer segment of a country and typically older and destitute people, women, low castes etc. Land grabbing by the more powerful and exclusion of others are processes of concern that need to be seriously accounted for in any REDD strategy. There is a risk that privatization of resources might facilitate conflict and increased inequity, also by gender. Equitable distribution of benefits from payments for ecosystem services projects can be achieved where resources are held under customary tenure, recognizing the traditional use rights to the forests.

4. Securing low transaction costs

Transaction costs can be seen as the costs of setting up and running – in our case – a REDD governance system. Transaction costs vary between different governance structures. They also vary with the type of good. Hence, ordinary markets are most favorable for ordinary commodities, while more complex goods like environmental services tend to demand other governance structures with stronger elements of public responsibility. Moreover, given the character of environmental goods, the higher the number of 'users' and 'providers' involved, the relatively better do state/public systems tend to fare in transaction costs terms.

The literature documents payments for environmental services in different formats. Few real markets are found. When existing, the role of the intermediary is very important in both taking initiatives to setting up the trade and defining the services and the prices. Many payment systems for such services are actually run by public bodies. That is, payments are subsidies, most developed in e.g., agriculture and water programs.

In transaction costs terms, agricultural programs in the North are the most studied. The analyses tend, however, to cover running costs only as systems for distributing money and making contracts etc. are already in place. Transaction costs related to *running* these systems are found to vary from 0.1 % of payments (fertilizer taxes) to up to 110 % of the payment (a wildlife scheme). These variations are explained by the different costs related to gathering data, contracting and controlling that what is contracted is actually done. These costs are certainly higher the more complex the good is, respectively the more needs there are to set up separate systems for information gathering.

Data on transaction costs for REDD like systems in relevant geographical contexts are scant. Data on payments for environmental services in especially Latin America seems to indicate transaction costs – both for setting up and running the systems – to lie in the order of 30 – 100 % of the payments. Certainly, the percentage will not only be influenced by the demands related to e.g., information gathering, control etc., but also by the size of the payment. They have been observed to be fairly low in these systems. The same is, however, the case for the instituted controls.

The above implies that when choosing channels for contracting and payments, one should look for existing well functioning organizations/public bodies to be involved to reduce especially establishment costs for the system. Creating trust between the involved actors/choose actors with high level of trust is important to reduce costs of making agreements, necessary level of monitoring and avoid conflict/secure an overall good level of cooperation. Participatory monitoring offers interesting opportunities in relation to this.

The balance between detailed information about the delivery of the good and the costs of obtaining these should also be emphasized – i.e., one should look for proxies or indicators that are both information rich and low cost to observe. The higher the trust and the local knowledge and involvement are, the less necessary it is to use very specific or detailed indicators.

5. Motivation and legitimation

Regimes seeking win-win between carbon mitigation and development has to be crafted with local community involvement to be perceived legitimate and effective at the local level. Our analyses of present payment systems show that much power lies with the intermediaries. The danger is that a great deal of the payments will be captured here. Setting up payment systems must include both a) searching for trustworthy intermediaries and b) development of 'REDD norms' and a strong 'REDD culture' emphasizing anti-corruption attitudes. Certainly, transparency and good control mechanisms must be part of the structure to help avoid the capture of various rents by strategically well positioned groups. Establishing REDD is not only about defining goods and creating payment systems. It is also about informing forest owners and communities about the goals involved and creating REDD as a meaningful activity to be involved in.

REDD payments may take the form of a pure economic incentive as opposed to a compensation mechanism based on the logic of reciprocity and responsibility. The latter may be easiest to establish by involving communities. While demanding to create, it will increase the capacity to create self-policing motivations among the producers of REDD.

Through the introduction of payments, one may weaken existing norms of preservation. This might potentially become a curse for REDD if many become motivated to start degrading forests to become eligible for payments.

6. Additionality and leakage

Securing additionality and avoiding leakage is a substantial challenge for REDD. In the case of leakage, the more countries involved in an international agreement on REDD, the better. Moreover, a national system of the kind proposed above increases the chances of success. The same goes for including afforestation/reforestation and sustainable forest management activities in REDD.

Establishing national baselines will be paramount for generating carbon credits that can demonstrate clear additionality of the REDD actions. Although countries have significant proportion of their forests under protected area regime, such areas might be degraded to various levels. Therefore, area calculation will not be sufficient as they do not include the actual carbon volume within those areas. REDD has to scrutinize what is actually forested when the baselines are calculated.

Forest resources and forest degradation in Tanzania and Uganda

Establishing REDD in Africa is a quite demanding task. This is illustrated by the fact that no CDM projects focused at forests exists on this continent. An important cause seems to be weak institutional structures for establishing such types of projects.

Concerning the Tanzanian forestry sector, the following observations have been made:

- Forests and woodland cover about 33.5 mill. ha in Tanzania. This is approximately 40 % of total land area
- There is a significant deforestation in Tanzania with a rate in the range 100.000 – 500.000 ha/year
- Forest degradation is also widespread in Tanzania, both in reserved forests and on general land. The rate is estimated to be in the order of 500.000 ha/year. The figure is very uncertain
- Prime drivers for deforestation/forest degradation are agricultural expansion, logging, fuel wood and charcoal production, fodder and livestock grazing. Land conversions is also influenced by e.g., removing subsidies on agricultural inputs, that lowered pr/ha productivity and forced farmers to expand their agricultural areas
- According the official statistics, around 95 % of the ca. 40 million m^3 of wood consumed annually in Tanzania is for fuel, the rest goes to different industries/construction. In relation to these official figures, it should be noted that there are strong indications that the level of illegal logging is substantial in Tanzania
- Carbon stocks estimates rests heavily on measurements of land use, biomass assessment and conversion factors to carbon stock assessment

- There are substantial net emissions of carbon from Tanzanian forests indicating emissions up to 103-130 $MtC0_2$
- There is significant climate mitigation potential in the Tanzanian forest estate

Similar observations for Uganda concerns:

- Forests and woodland in Uganda cover about 5 mill. ha, which is about 25 % of the total land area
- There is strong deforestation in Uganda; with an estimated 27 % reduction from 1990-2005, or with a rate of about 100 000 ha/year
- According to the official statistics land clearing for agriculture is a key deforestation driver – more than 40 % – and the agricultural and pastoral land has expanded at a rate almost similar to the deforestation (980 000 ha over 15 years). Fuel wood collection/charcoal production also play a significant role
- Regional, spatial variations in deforestation and degradation rates are substantial, spanning from the northern areas where forest cover has been expanding to other areas of extreme deforestation
- Forest degradation is widespread in Uganda and some 25 % of the tropical high forests are degraded (some 280 000 ha). Prime drivers for forest degradation are needs for timber, fuel wood and charcoal production, fodder and livestock grazing etc.
- There are substantial emissions of carbon from Ugandan forests – levels from 11 up to $95MtCO_2$ are indicated

There are large uncertainties concerning forest data in both countries. Nevertheless, we can conclude that a larger area is currently being deforested/degraded in Tanzania than in Uganda. This is mainly explained by Tanzania being a bigger country with a larger forested area. While Tanzania hence ranks higher on losses of CO_2 from forests, both countries are ranked among the top 20 tropical countries on carbon emissions from deforestation. In relation to this, it should be especially noted that the amount of forests – as opposed to woodlands – is of similar size in both countries. The main difference lies in the woodland area, where Tanzania has almost 10 times as much land as Uganda. The area of tropical high forests seems to be highest in Uganda. It should finally be mentioned that while illegal logging is a problem both in Tanzania and Uganda, the scale seems much larger in the former country.

Introducing REDD in Tanzania

Introducing a new policy measure like REDD demands good insights in present forest and to some extent the more general national policies. Forest land and resources constitute a key element in Tanzania and its general development path. Specific to Tanzania is the fact that all land is ultimately owned by the state. Local communities have user rights to land. The Tanzanian village organization should also be noted.

Various reforms have been undertaken in the Tanzanian forest sector over the last 10 years. The National Forest Program (2001-2010) is a core element in this. The forestry sector in Tanzania is administered under two ministries, the Ministry for Natural Resources and Tourism and Ministry

of Regional Administration and Local Government under the prime minister's office. The Forestry and Beekeeping Division of the Ministry for Natural Resources and Tourism has the overall responsibility to coordinate all aspects of forestry development in the country.

The land/forest areas are divided in two main groups – reserved land and general land. The latter is *de facto* under open access. The National Forest Program presents a rather negative picture of the centralized forest management. Hence, a policy reform including participatory forest management (PFM) with managerial responsibility offered to local communities/villages was initiated. This offers promises for more effective and socially legitimate forest management. Joint forest management is instituted to involve local communities in management of reserved forests. This is a promising approach for more sustainable forest management, a concurrently recognizing local community rights to access resources from those areas. Community based forest management, also a measure of PFM, is an arrangement to clarify local community user rights and ownership of forest resources in general lands. Through PFM so-called village forests are established, covering at present about 10 % of all forest land. The implementation of participatory forest management is, however, relatively slow and dependent of various donor support.

There are also substantial areas in Tanzania in national parks and game reserves – administered by Tanzania National Parks (parastatal) and the Wildlife Division under the Ministry for Natural Resources and Tourism. These lands are hosting about 6 % of all forests in Tanzania. There have recently been some quite severe critics of corruption in the Tanzanian forest sector not least related to illegal logging and management of donor funds. One should note that there is increased willingness to engage in solving these problems.

Based on the general analyses undertaken in this report and the more specific studies of forest status, tenure and present administrative systems reported above, we have suggested the following options concerning building a governance structure for a Tanzanian REDD:

- Establish a Tanzanian REDD fund responsible for receiving the financial flows from international/bilateral actors and distribute these resources to national actors implementing REDD
- Consider to mandate the Ministry of Natural Resources and Tourism/the Forest and Beekeeping Division (FDB) to coordinate the implementation of REDD in Tanzania
- Put strong emphasis on combating corruption when forming procedures and control routines
- The FBD seems together with the District authorities to be the most appropriate agents to perform REDD activities
- However, consider to move the present inventory and monitoring initiative to a unit that is separate from FBD to get the necessary autonomy and mandate to monitor, report and verify REDD activities
- Strengthen the capacity of the District authorities to handle regulations on general land. Develop further the cooperation between FBD and the District authorities (District Council to village level)

We have also analyzed and made proposals concerning more specific REDD policies to institute. While not being able to go into any detail in a summary, we will emphasize the following:

- Develop participatory forest management further on reserved and general land. The aim should be to cover all land where villages use resources into such a system. Clarification of rights and responsibilities for village land. Payments – monetary or in kind – to compensate for lost livelihoods following from regulations on general land and reserved land
- High emphasis should be on policies against illegal logging. Halting such logging should be considered a premise for supporting REDD activities in Tanzania
- Reduced deforestation, increased emphasis on sustainable fuel wood production. Develop substitutes in rural, but also urban areas
- Increased emphasis on conservation agriculture, increased fertilizer use – e.g., fertilizer subsidies. Information measures/extension service
- Measures and policy instruments in the livestock sector – specifically towards agro-pastoralist and pastoralist communities
- Expand the capacity to fence/replant in degraded forests. Reduce costs through subsidies. Information measures

Formats of participation, payments and contracts should be tested out in pilot projects. Treating carbon mitigation, poverty alleviation and biodiversity protection simultaneously is very important. We would strongly emphasize the importance of establishing measures against land grabbing/potentially reduced access to land among especially the poorer segment of the Tanzanian people.

Introducing REDD in Uganda

Also concerning Uganda we observe that forest resources are key elements in the general development of rural areas. Forest policies and practices still reflect the unstable period between 1971-1986, where forest resources were used to both reward and punish local constituencies and the period of insurgencies in the northern regions.

There have been continuous shifts in policies from the early 1990s also involving governance levels between local and central control much influenced by external donors. At present, forest policy is the responsibility of the Forest Inspection Division under the Ministry of Water, Land and Environment. Under the Forest Inspection Division lies the National Forest Authority (NFA) and the District Forest Service (DFS) – the latter being part also of the District Local Government system.

The tenure situation is different from Tanzania. 70 % of the forests are on private hands (but less of the biomass and carbon potential) and 30 % are on public hands. This is crucial in relation REDD management and costs. The government land is to a large extent national parks and central forest reserves that, due to their size – have much less potential than the privately owned areas.

Donors have been extremely active in forming Uganda's forest policy processes but conspicuously absent in funding DSF and Forest Inspection Division, seriously hampering the forest sector reform process. The strongest and most well-functioning organization is the parastatal

NFA managing the central forest reserves. The DFS is responsible for managing local forest reserves. Its governance performance capacity and competence towards private sector and local communities is very weak. DFS could – if functioning better – become an important link to managing forest land under private tenure. Finally, national parks are administered by the Uganda Wildlife Authority (UWA).

Based on the above we have proposed the following for consideration concerning building a REDD governance structure in Uganda:

- Establish a Ugandan national REDD fund that will be responsible for receiving the financial flows from international/bilateral actors and then to oversee and deliver performance based payments to national actors implementing REDD
- Consider to mandate the Forest Inspection Division the coordinating role of REDD implementation. In that respect see to that activities are coordinated between NFA and DFS, and moreover UWA depending on final decision on what REDD constitutes
- Consider to give the NFAs National Biomass Project autonomy and mandate to monitor, report and verify REDD activities
- Clarify the additonality of the current NFA and UWA activities that REDD might fund (based upon the final decision on what REDD entails)
- Strengthen/establish the DFS at district local government level, not only to handle local forest reserves, but also to act as an extensions agency to interact with local communities outside the permanent forest estate
- Principles of good governance and anti-corruption have to be explicitly formed in the national REDD regime and followed during the future implementation at all stages

Also in the case of Uganda, we have made proposals concerning more specific REDD policies to institute. The main points emphasized are:

- Increased emphasis on participation. In the case of securing reduced deforestation and forest degradation on forest reserves, there is a need to resolve the tenure conflicts and boundary disputes with local communities. Emphasis should be put on understanding local norms and perceptions of rights. Lost livelihoods compared to an agreed reference state could be compensated through the REDD fund
- Restoration activities in forest reserves are important and could offer job opportunities for local people
- Concerning fuel wood extraction, charcoal production and agricultural expansion, measures outside the forest sector are as important as those within. Concerning policy measures in other sectors, availability and price on energy substitutes and agricultural inputs like fertilizers are very important. Farm planting of small wood ‘plantations’ with native species should be considered an important part of this policy, too
- Forest protection and forest restoration on private land could be facilitated through a policy combining protection measures with information and compensation payments/low cost access to seedlings

Similarly to what was emphasized for Tanzania formats of participation, payments and contracts should be tested out in pilot projects. Again, it is very important that all three elements – carbon, poverty and biodiversity – are taken well care of in formulating policies. Specific measures against land grabbing/potentially reduced access to land among poor and landless people are especially demanded in a situation where land becomes more valuable and scarce.

The interests of the South

There are several controversial issues around REDD. It offers opportunities for a successful climate regime. It may, however, also go wrong. The fundamental challenge is that it is a North initiative to be implemented in the South. North is the stronger and South is the weaker party. This raises the question about which role is offered to the South in crafting out the overall regime for REDD. Who sets the conditions? It also concerns how generous the transfers will be. Certainly, if cost-efficiency is the rule to be implied, few options for development will follow. Finally, while South is in general the weaker party, some groups in the South are especially at risk. Their interests needs to be specifically guarded when instituting both international and national REDD architectures

TABLE OF CONTENTS

Abbreviation list

A/R:	Afforestation/reforestation
CBO:	Community Based Organization
CBNRM:	Community Based Natural Resource Management
CBFM:	Community Based Forest Management
CDM:	Clean Development Mechanism
CERs:	Certified Emission Reductions
CERt:	Temporary Certified Emission Reductions
CO_2:	Carbon dioxide
DA:	District Authority (Tanzania)
DFS:	District Forest Service (Uganda)
DoM:	Department of Meteorology (Uganda)
EU-ETS:	EU Emissions Trading Scheme
EU:	European Union
FAO:	Food and Agriculture Organization (UN)
FBD:	Forestry and Beekeeping Division (Tanzania)
FID:	Forest Inspection Division (Uganda)
GDP:	Gross Domestic Product
GDP (PPP):	Gross Domestic Product (Purchasing Power Parity)
IPCC:	Intergovernmental Panel on Climate Change
IUCN:	International Union for Conservation of Nature
JFM:	Joint Forest Management
LULUCF:	Land Use, Land Use Change and Forestry
MoNRT:	Ministry of Natural Resources and Tourism (Tanzania)
MoWLE:	Ministry of Water, Land and Environment (Uganda)
MtC:	Mega tons of carbon
$MtCO_2$:	Mega tons of carbon dioxide
NCCSC:	National Climate Change Steering Committee (Tanzania)
NGO:	Non-Governmental Organization
NFA:	National Forest Authority (Uganda)
NTFPs:	Non-Timber Forest Products
PES:	Payments for Environmental Services
PFM:	Participatory Forest Management
R-PIN:	Readiness Plan Idea Note
REDD:	Reducing Emissions from Deforestation and Degradation
REDDplus:	REDD plus A/F
TANAPA:	Tanzania National Parks and Wildlife Division
TCs:	Transaction costs
TTSA:	Tanzanian Tree Seed Agency
UNFCCC:	United Nations Framework Convention on Climate Change
UN-REDD:	The United Nations Collaborative Program on REDD
UNDP:	United Nations Development Program
UNEP:	United Nations Environment Program
USD:	US dollar
WWF:	World Wildlife Fund

1. INTRODUCTION

Forests are expected to play an increasing role in policies for combating climate change. In the current climate regime, reforestation and afforestation projects are promoted in addition to forest management activities. In the new climate regime, currently being negotiated, the focus is expanded to include reduction of carbon emissions from forests through reduced deforestation and forest degradation (REDD) in tropical countries.

While REDD is a climate mitigation measure, countries need to establish administrative structures/processes and policy instruments in order to make REDD activities materialize. These structures are often called governance structures or regimes. Different governance structures have different capacities to make REDD come about. This relates to their legitimacy, how costly they are to establish and run (transaction costs) and furthermore, how good they are at motivating land owners and managers to participate. They may also have different effects on other important goals like poverty alleviation and biodiversity protection. It should be noted that these capacities will vary also with the wider economic, political and socio-cultural systems in a country.

While REDD activities most probably will have to include rather large transfers of money from North to South, the countries in the South may use these resources in different ways to obtain REDD. They may need to build or strengthen capacities like national, regional and local public management structures. They may pay forest owners – private or community owners – to undertake REDD activities. Such payments may be made in combination with legal regulations of forest practices. They may also use the money to secure REDD on publicly owned land.

In this project we will draw on previous experiences with different policies of the above kind. This means that we will draw on the literature on payments for environmental services (PES), projects involving community based natural resource management (CBNRM), some experiences from the clean development mechanism (CDM) under the Kyoto protocol, and finally studies of policies involving establishment and running of national parks and forest reserves.

While the project is interdisciplinary, the main basis is found in institutional theory, offering necessary insights about the concept of governance, the role of rights, the aspect of transaction costs and the relationships between governance structures, motivation and behavior.

1.1. REDD AS A CLIMATE MITIGATION ACTIVITY

Climate change is contemporarily the most important global environmental challenge, predicted to have severe impact on poor and already vulnerable rural communities in the South (UNEP 2009). Forests play an essential role in current climate change. The present high deforestation and degradation rate is measured to account for 17 % of the world's total annual anthropogenic CO_2 emissions (IPCC 2007). Being a large source, forests could, however, be turned into great sinks. This demands halting deforestation and regenerating degraded forests.

These issues are high on the agenda in the ongoing UN led climate negotiations under the UN Framework Convention on Climate Change (UNFCCC). REDD could represent an important

and appropriate measure to reduce global CO_2 emissions, and if properly designed become a major climate mitigation activity in the future. Currently, both the World Bank and various UN agencies are engaged in setting up processes to facilitate REDD. The Norwegian government has decided to initiate and fund REDD projects with a total sum of 15 billion NOK (about 2.5 billion USD) over a 5 year period to be paid through bilateral or multilateral channels. As emphasized by the Stern report, forest projects have the potential to be among the cheapest mitigation activities (Stern 2007). This has, certainly, increased the interest for REDD.

Concerns around the faith of the world's forests are not new (Hayes 2006). Deforestation is considered a major global issue due to its divergent impact on the environmental services forests deliver (Sunderlin et al. 2005). Biodiversity loss is one major concern. Another key aspect is how deforestation affects the livelihoods of people dependent on forest products and services. In developing countries, the people that are most dependent on environmental incomes from forests are usually the poorest and most vulnerable where such incomes consist of up to 20% of the total local household incomes (Vedeld et al. 2006).

The REDD initiative creates a new perspective to deforestation issues. Seeing avoided deforestation as a climate mitigation activity under the international climate regime brings in a whole range of new stakeholders, perspectives and interests around forest. However, it remains that biodiversity and local people's livelihoods are still extremely relevant global forest concerns. A central challenge for REDD is therefore to address the potential conflicts and synergies between carbon mitigation, biodiversity preservation and livelihood aspects.

REDD could limit economic growth in the South. This is not only significant for countries in transition, but also in the absolutely poorest countries that lack all industrial development, but have high forest cover. Their passage to economic growth implies reduced forest cover, increased timber sales and expanding the agricultural area. Given the scale of tropical deforestation, it is essential to understand this when scrutinizing the prospects for sustainable REDD mechanism, both in financial terms, but also in terms of rights and legitimacy.

1.2 THE OBJECTIVES OF THE STUDY

In the ongoing climate negotiation process there is emphasis on creating a good international regime or architecture for directing resources into these kinds of measures (Angelsen 2008). Similarly there is great interest in knowing more about how one best should organize these activities at the national level and how to motivate forest owners to participate in projects reducing carbon emissions from forests. The present project is focusing on the latter two topics – including both some general assessments and analyses with special focus on the situation in Tanzania and Uganda.

In relation to the implementation of REDD, we have identified the following key topics for our analyses:

1. The first issue concerns the conflict respectively the potential win-win between carbon mitigation and other important goals like economic development/poverty reduction and biodiv-

ersity preservation. Is it realistic to create win-win solutions, or could as an example REDD even make some people even poorer through e.g., increased competition over land.

2. The second issue concerns how present governance structures in the actual countries may more specifically influence the functioning of REDD. How easy will it be to facilitate action on the ground? What are the consequences of weak or lacking property rights? Is privatization of land necessary to make REDD work well? What are the prospects of involving local people?

3. A third core issue concerns additionality and leakage. It is important to avoid that halting deforestation at one place is offset by increased deforestation elsewhere. If clearing forests is essential for survival, leakages are to be expected. Hence, the net effect would be assumed to be highly influenced by how REDD projects are instituted into the overall governance of land.

4. Transaction costs (TCs) represent a forth important question. It is to be expected that projects of the REDD type face high costs of establishment and control. TCs may result in mainly large land-holders being involved as fewer transactions are needed, or could various community arrangements help reducing such costs for small-holders?

5. Finally, the question of how individuals and local communities react to various incentives is a core issue. This concerns the legitimacy of various incentives and hence how well the policy can be adapted to local institutions – e.g., norms and motivation structures. The potential for 'perverse incentives' should be noted as e.g., REDD payments may erode conservation norms respectively increase the motivation for deforestation to become eligible to payments.

Based on the above, the project aims at fulfilling the following objectives:

1. Evaluate a set of general challenges concerning putting REDD projects into practice. These challenges concern:
   a) Potential conflicts/synergies between carbon mitigation, poverty reduction and biodiversity preservation
   b) Securing local legitimacy, including issues related to clarification of property rights to land
   c) Keeping transaction costs low
   d) Securing additionality, addressing permanence and avoiding leakage
   e) Securing the wanted motivational and behavioral changes/among core agents.

2. Assess the challenges and opportunities for introducing REDD in Tanzania and Uganda and offer recommendations for a REDD architecture in these countries.

To the extent that it is relevant and possible, we will try to evaluate how the challenges involved when establishing REDD vary with a) different ecological conditions, b) national and local governance structures and institutional capacities, and c) various donor-recipient relationships.

As emphasized, afforestation and reforestation are so far the only forest policy options that are included in the climate regime. One important aspect in the debate about the role of forests in the future climate regime is whether these options will be linked with REDD into something often

denoted as REDDplus. There are several arguments for doing so as there are no strict delimitations between the various options. In this report we will hence include the afforestation and reforestation option when relevant for the analysis.

As emphasized above, there are several controversial issues around REDD, and it may go very wrong if care is not taken. It may also offer a lot of opportunities and be an important part of a successful climate regime. The fundamental challenge is that it is a North initiative to be implemented in the South. North is the strong and South is the weak party. 'Poor people sell cheap' is a reality. This raises two core normative issues. First, it concerns which role is offered to the South in crafting out the overall regime for REDD. Who sets the conditions? Second, it concerns how generous the transfers will be. Certainly, if cost-efficiency is the rule to be implied, few options for development will follow.

The report is structured as follows. First we offer some background information about the position of REDD in the general climate policy regime and the wider policy context into which REDD is to be incorporated. Next we give a brief overview of the methods used in this study. The analyses will then follow, divided in two parts organized around each of the two objectives of the study. Concerning the general challenges facing REDD, we undertake two types of analyses – one theoretical and one based on experiences from previous and existing projects – i.e., PES, CDM, CBNRM and national parks/forest reserves. Concerning the assessment of challenges for REDD in Tanzania and Uganda, we divide in three. First, we do an assessment of some general issues concerning introducing REDD in countries like Tanzania and Uganda. Next, we do an analysis of the situation in Uganda including proposals for a country specific REDD policy. Finally, we do a similar analysis for Tanzania.

2. BACKGROUND

This chapter sets the stage for the present report. First, we will give a brief introduction to how REDD/forest related mitigation strategies are handled in the international climate negotiations. Next, we will draw some lines between the present forest climate initiatives and existing forest policies and protection measures, mainly with reference to Sub-Saharan Africa. Finally, we will offer a short introduction to the implementation of REDD in Tanzania and Uganda.

2.1 REDD IN THE INTERNATIONAL CLIMATE NEGOTIATIONS

2009 is a defining year for REDD. There is an ongoing international process to prepare the full integration of REDD into the post-2012 Kyoto framework and stakeholders are laying down the foundation for the final negotiations in the 14th UNFCCC Conference of the Parties in Copenhagen. While it is certain that forests will play a bigger role than they have done in the current regime, the final structure of the international REDD architecture remains unknown. A number of different proposals are on the table and discussions are increasingly heated. A discussion of the potentials for national implementation of REDD must be seen against the potential outcome of the negotiations in Copenhagen. Hence, we will in this section offer a brief overview of the most important issues for an international REDD system.

2.1.1 Forest projects in the present international climate change regime

Forests and their potentially significant role under the climate change regime has remained an intricate issue since the Kyoto Protocol was first negotiated in 1997. Under the current Kyoto Protocol framework Land Use, Land Use Change and Forestry projects (LULUCF) have been treated separately from other emission reduction strategies due to their specific characteristics.

The negotiations around including forests in the climate change regime have been fraught with difficulties, for example disagreement on the inclusion of sinks; potential loopholes in inventory accounting; methodological difficulties; and finally whether such activities can be eligible for the CDM under the Kyoto protocol (Höhne et al. 2007). Significant issues still remain, particularly with respect to ensuring permanence, improving the data for crediting, monitoring and leakage. Negotiations have been repeatedly criticized for lacking sufficient and skilled representation from developing countries and indigenous people.

Currently, only afforestation and reforestation can be carried out under the CDM. However, such projects hold a current share of less than 1 percent of total amount of CDM projects. The lack of forest projects under this mechanism has happened in spite numerous efforts to promote such projects. Robeldo and Ma (2008) ascribe this failure to the complicated rules, the fact that these projects are time consuming and expensive to initiate, the lack of competence and capacity with project developers, difficulties with securing finance, and lack of technological capacities as well as other political economic and technical barriers. Forestry projects are methodologically very challenging, requiring a high degree of competence. In addition, the Certified Emission Reductions (CERs) – i.e. carbon credits generated – have been treated differently from other project types. Not only are they considered temporary (CERt) due to the inherent risk of natural dis-

asters. They are also considered not fully viable under the EU Emission Trading System to which most of the Parties to the Kyoto protocol belong. The effect of this is that carbon credits from forestry projects have been mainly left to the voluntary market. In the voluntary market however, forest carbon credits held a 14% share in 2008 (Hamilton et al. 2009).

2.1.2 Financing REDD

The issue of funding is important as it will have large implications not only on the economic incentive system of REDD, but also on access and distribution. The aforementioned carbon credits may play a significant role here. Laid out under the COP at Bali in December 2007, *The Bali Action Plan* ties mitigation actions by developing countries not only to technological transfer, but also to adequate financial support. This is in line with the tradition of the Kyoto regime. However, discussions about the overall architecture of REDD – not least how financial means should be raised and distributed – are among the most difficult, illustrating also a deep divide between North and South. While many developed countries argue in favor of using the carbon offset or compliance market – i.e., generating funds through selling carbon credits – many developing countries, especially Brazil, have put emphasis on a pure fund approach.

The carbon offset market solution will imply a full integration of REDD into post-2012 climate agreement (Angelsen 2008). Countries/firms with reduction responsibilities can decide whether they will accomplish this 'at home' or by buying reductions elsewhere, including REDD projects. It is argued that it most likely is able to attract more money than a fund would, and especially the project based approach is favorable in terms of attracting private sector investment. However, the project based approach brings with it an increased risk of leakage as it is harder to coordinate decisions. It may also have unwanted consequences where tenure rights are weak. There is finally a risk of uneven distribution between and within countries. This is the case with CDM where most African countries have been unable to attract investments.

A fund-based mechanism is mainly thought to be established on the basis of a separate REDD agreement not linking it to the overall compliance mechanism (Angelsen 2008). It could both have a standardized methodology for all countries and at the same time accommodate national needs when distributing funds. This de-links raising funds from distributing them, which might be a good idea, considering the lack of institutional structures in some of the poorest developing countries. Different 'hybrid' or 'compromise' solutions between a carbon offset market and a pure fund approach have also been proposed to strike a different balance between the more decentralized market option and the more centralized fund approach – e.g., Reed et al. (2009).

REDD as a carbon offset market mechanism has been much debated, not only because of the logic behind, where developed countries are allowed to carry out emission reductions in developing countries in addition to at home, but also due to many negative experiences with the CDM. Another issue concerns the effect of REDD on the price of carbon in the compliance markets. One argument for the fund solution is hence that one will avoid 'flooding' the carbon market with cheap reduction opportunities. Greenpeace (2009) have estimated that this could reduce current prices with as much as 75%, basically crashing the whole market. Other actors are less critical, rightly pointing to the total cap as the actual main regulator of the carbon price.

Other arguments related to the overall architecture concern the ability of REDD to also contribute to solving other urgent issues concerning sustainable development in countries hosting REDD projects. A fund could include more stringent regulations to secure the achievement of goals related to poverty reduction and biodiversity preservation than a compliance market where the search for the cheapest carbon reduction opportunities will drive the process.

The experience obtained by CDM is of high importance here. In a literature review Olsen (2005) puts emphasis on the fact that host countries to CDM projects set sustainable development criteria to be fulfilled by projects themselves. Citing e.g., Brown and Corbera (2003) and Kim (2003) she notes the different interests among stakeholders, while it is the resource-strong ones that define the terms for the carbon trade (Nelson and de Jong 2003). Additionally, Olsen points to how competition to attract CDM investments can actually be an incentive towards low standards and thus can lead to a 'race to the bottom' – see also Sutter (2003) – and that there is even a trade-off between rigid sustainable development criteria and the number and type of investors countries can attract (May et al. 2004).

Financial aspects become particularly important when we speak of Africa, a continent being largely 'excluded' from the CDM (World Bank 2007). Africa has fallen behind for a number of reasons, such as relatively few options for investment and weak institutional structures making investments insecure. This is a general trend. Countries that have low expertise, poor industry and unstable investment climates have been less successful (Boyd et al. 2007). According to Saunders et al. (2008), both project and country specific factors influence the financial value of carbon credits. In Africa, this can be illustrated with how countries have been very late in setting up institutional structures (Designated National Authority for project approval) and have in general lacked both financial and human capital to generate interesting project investment opportunities. Poor national governance also reduces the potential revenues, which is reflected in e.g., Point Carbons' regular ranking of CDM attractiveness of host countries. 'Winners' of the CDM game are fairly developed countries such as Brazil, India and China that score the highest.

The climate regime has a primary target of reducing emissions. Although development has been emphasized in the negotiations as a target of the CDM too, the current carbon market values carbon, not biodiversity or socio-economic benefits around projects. This essentially means that the carbon offset approach needs to be accompanied with institutional mechanisms and rules that ensures such co-benefits in terms of REDD. Thus, because there is a tendency that poverty is positively linked to weak institutional frameworks, a compliance market solution may not be the best solution if poverty alleviation also becomes a goal in REDD. Following the same logic in terms of biodiversity, Schmidt (2008) found, when studying the EU emission trading system (EU-ETS), that there are legitimate concerns that this way of integrating REDD can result in less benefits for biodiversity. It should be mentioned, however, that many buyers do focus on buying quality emission reductions generated from sustainable projects, as has been illustrated by demand for such projects in the voluntary market.

Looking at the international debate, a project based REDD system included in the carbon market may seem the most probable. However, this projection must be seen against a current move in CDM away from the purely project-based mechanism towards program-based or sector based initiatives. This can probably be considered a step forward, when looking at the many flaws the

CDM has been criticized for, such as uneven geographical distribution, lack of *additionality* and poor sustainable development benefits. While it is not the aim of this report to make predictions into the future shape of the financial structure, the above issues illustrate how national implementation is contingent on both the overall architecture of REDD and on reliable and sufficient funding to succeed. Indeed, as the UNDP itself states; "A functioning international REDD finance mechanism needs to be able to provide the appropriate revenue streams to the right people at the right time to make it worthwhile for them to change their forest resource use behavior" (UNDP 2009). It is up to the international climate regime to facilitate this.

2.2 WHERE REDD COMES THERE WILL ALWAYS BE SOMETHING FROM BEFORE

While the way REDD is organized at the level of the overall climate regime is of great importance to its potential success, it is also essential to notice that REDD will not appear in a vacuum at the national and local level either. Rather it will be instituted to counteract existing processes facilitating deforestation. Moreover it will appear in a 'landscape' where many other protection efforts are already undertaken – not least based on the goal to preserve biodiversity. To be able to formulate the right policies, it is requisite to analyze and understand the institutional landscapes that REDD enters into as thoroughly as the ecological one (Barret et al. 2001).

There are multiple, context dependent, case-to-case related drivers behind deforestation in tropical countries. Timber trade is one important driver including also substantial elements of illegal logging. Communities and households depend on forests for fuel wood and cut forests to expand agriculture. These processes depend both on high demand, lack of alternatives and weak institutions. It is into this policy area REDD is to be staged. While payments may open opportunities for economic agents to shift from cutting to preserving forests, the problems observed so far with trying to halt deforestation and forest degradation shows that policies must be wider than just including payments. Certainly, if logging is illegal, there is no way payments in themselves will stop that. As emphasized by Saunders et al. (2008), if these factors are not acted upon, economic incentives will not do the job alone. It will rather increase the danger that payments will just add to the profits of illegal activity. Moreover, if REDD succeeds in halting deforestation, timber prices will increase and attract more interest among potential loggers.

While this is obvious, changing activities that are considered legal is no less demanding. As Scholz and Schmidt (2008:3) state "the root cause of deforestation and forest degradation is human development, through structural changes such as demographic, technological and economic development, cultural variables and political decisions". They emphasize the importance of decoupling such development (in both the North and the South) from intensive land use and consumption and conclude that "policy approaches that fail to sufficiently address the underlying causes of deforestation will neither accomplish lasting emission reductions nor benefit biodiversity conservation or other development goals, such as poverty reduction" (ibid.:4).

Looking then at forest protection initiatives, we observe their rather long history. Up till now, the main goal has been to protect biodiversity. A collection of environmental governance instruments have been applied to address deforestation and biodiversity protection in tropical countries

(Oestreicher et al. 2009). This involves legal measures/protected areas, sustainable forest management initiatives, forest certification, trade policies, agricultural improvements, alternative livelihood programs, collaborative agreements, CBNRM, land use regulations, removal of subsidies and introduction of new technologies (Wunder 2005, Cubbage et al. 2007, Peskett et al. 2008, Börner et al. 2007). In Africa, the experience of applying those different instruments for conservation purposes have been highly varied and context dependent. In many cases the resource regimes established have not been capable of delivering effective or sustainable outcomes and park-people conflicts are more the rule than the exception. A lot more seems to be known "about what to conserve than about how to conserve it" (Bawa et al. 2004:859).

Protected areas have been a key strategy in order to govern biodiversity (Zimmerer et al. 2004). Looking specifically at Sub-Saharan Africa it harbors more than 1.100 national parks, forest reserves and related reserves (UNEP-WCMC 2003). In line with the overall global trend, the total PA coverage in Africa has increased nearly two-fold since 1970 (Zimmerer et al. 2004). PA´s currently cover 15.9 % of total land surface in the East/Southern African region (Newmark 2008). Given this scale, PA governance in the region becomes a demanding undertaking facing the trade-offs between conservation and development. Although those areas harbor a wide range also of non-forest ecosystems, the experience gained provides invaluable knowledge for REDD.

Historically, the PA strategy was very much based on a "fence and fine" approach (Hutton et al. 2005). In order to exert power over the areas, national authorities appropriated local tenure rights, imposed human exclusion, prohibited agriculture and employed law enforcement as the key governance instrument. In Africa, this approach arrived with the colonial authorities, became the norm during the colonial period and was inherited by the national governments during independence (Adams and Hulme 2001). In the forest reserves the state usually holds the timber concessions, but allow communities some set of non-timber extraction and grazing rights.

The ability of biodiversity protection to deliver effective conservation and equal social outcomes has been seriously questioned since the mid 1980´s in most African countries (Humle and Murphree 2001, Adams and Infield 2003). The exclusion approach has been criticized for being costly, not providing adequate conservation, socially unjust, and leaving local people bound to bear the real conservation cost (Vedeld 2002). Further, insufficient investment are in many cases resulting in 'paper parks' with limited management and progressive degradation of the resources that the PA´s were established to protect (Wilkie et al. 2001).

The main alternative to the exclusion approach has been community conservation (Hutton et al. 2005, Abbott et al. 2007). This approach focuses on reforms of institutions, suggesting that the local community level is more appropriate than the central government level to deliver efficient biodiversity conservation. It is also thought to be socially more inclusive and legitimate among those involved locally (Anderson et al. 2006). Since mid 1980´s a range of community initiatives have been established with a substantial donor support in most African countries, involving devolution of control over land and natural resources from central governments to local community-based units (Child 2004, Hulme and Murphree 2001, Bond 2008).

Three categories of community conservation strategies being applied in Africa can be identified (cf. Barrow and Murphree 2001; referred in Bond 2008,):

a. *Protected area outreach*. This seeks to enhance the biological integrity of parks by working to educate and benefit local communities and enhance the role of protected areas in local planning (e.g., integrated conservation and development projects)
b. *Collaborative management*, which seeks to create agreements (between local communities or groups of resource users and conservation authorities) for negotiated access to natural resources that are usually under some form of statutory authority
c. *Community-based natural resource management (CBNRM)*: i.e., the sustainable management of natural resources through returning control over or responsible authority for these resources to the local community

Although targeting different conservation challenges, these conservation programs share many features (Bond 2008). Important for REDD is to recognize that all of the major CBNRM programs of eastern and southern Africa have been implemented by partnerships between governments and non-governmental organizations. In addition, most of these programs have received considerable support from international donor organizations (Bond 2008).

The community conservation paradigm has been highly influential and although later criticized for multiple shortcomings, it is still widely accepted as the essential way to realize effective and socially sound PA governance (Hutton et al. 2005). Neighboring local communities are indispensable stakeholders in forest and biodiversity governance in Africa.

Recently, PES has also reached the African continent. Defining PES as different from the above community based management strategies is not simple though, as especially CBNRM initiatives often involve payments to compensate for costs involved. PES actually spans a wide set of payment systems from what one normally would term standard state subsidies to something like ordinary market trades. Looking at the global experience with PES, states, regional or local public authorities are actually dominant among the 'buyers' (Porras et al. 2008; Vatn 2008). This illustrates not least that it is demanding to establish markets for environmental services.

2.3 GOING SOUTH – IMPLEMENTING REDD IN TANZANIA AND UGANDA

Hitherto, Africa has not benefitted much from the carbon market, neither the regulated nor voluntary market (FAO 2008). As pointed out by the World Bank (2007), more than 95% of CDM projects are developed by private sponsors looking for carbon credit purchasers, and the opportunities for this are limited in Africa. In 2007 only 25 registered CDM projects (2.3 % of global total) where in Africa, thereof most in South Africa. Of these, none was on land use or forestry. Africa's share in voluntary carbon markets is also relatively marginal. In 2007 only 2% of the global carbon volume transacted on the voluntary market was in Africa, and further, the African carbon credits were the highest priced in 2007, due to generally high transaction costs in the weak states. Africa's share in voluntary carbon markets in land related/forestry projects was, however, higher, or approximately 5% of the global total (Hamilton et al. 2009).

During the current UN climate negotiations the interest for Africa is growing. The rationale is twofold. Firstly, there is significant climate mitigation potential in the African forest estate which to date is suffering from the highest continent-wide deforestation rate, or 0.8% annually (FAO

2008). In Africa, it is estimated that nearly half of forest loss is due to removal of wood for fuel. Of the top 10 countries with the largest net forest loss per year (roughly 8.2 million hectares) in the past five years, six are in Africa, i.e., Democratic Republic of Congo, Nigeria, Sudan, Tanzania, Zambia and Zimbabwe (World Bank 2008).
Secondly, quest for potential positive synergies between carbon trading, sustainable development and poverty alleviation is implicit in the REDD initiative. As Sub-Saharan-Africa, has the highest, and still rising, proportion of people living in absolute poverty – nearly half of its population – this becomes extraordinarily relevant.

Out of the first nine countries selected as UN-REDD pilot countries, three are in Sub Saharan Africa: Tanzania, Zambia and Democratic Republic of Congo (DRC). Subsequent to the out-come of the international climate negotiations on REDD mechanism, the aim is to extend the number of partner countries. Although the intention is to negotiate coherent, universal rules for implementation of REDD, it is clear that the rules need to reflect national conditions, vary from country to country and be tailored to specific country needs (UN-REDD 2009).

This study has the specific scope to understand REDD challenges for Tanzania and Uganda neighboring East African countries. These countries are both long standing Norwegian partner countries. Norway has for the last decades closely collaborated with Tanzania and Uganda on sustainable natural resource management and development issues including significant cooperation in the field of forest related issues. It is therefore logical to extend that experience as a foundation for the new REDD initiative. Both countries have formally expressed their interest to engage in REDD (ROU 2008, URT 2009a).

Tanzania signed in 2008 an agreement with Norway on implementation of piloting REDD, where there are allocated 100 million USD for climate adaptation and mitigation activities, including REDD (Angelsen and Hofstad 2008). As a part of that, the Tanzanian government has established special Task-force to initiate a national REDD strategy. Such developments are, however, yet less mature in Uganda.

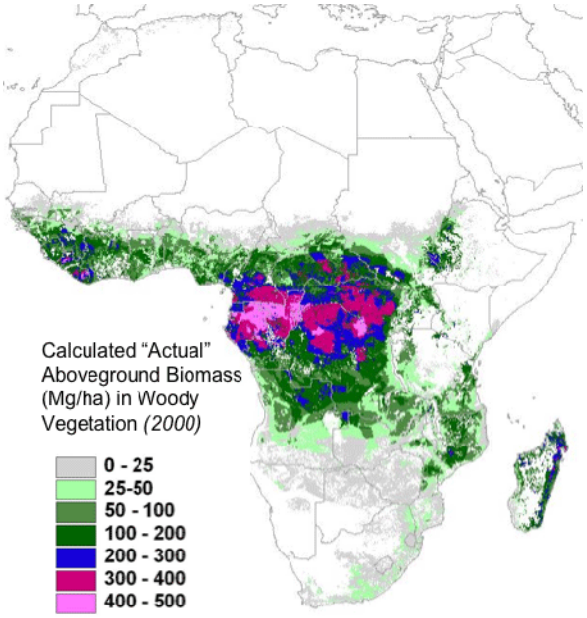


Figure 1. The African forest carbon estate

Source: Gibbs and Brown (2000)

3. METHODS

This report is essentially a desk study, however drawing extensively upon the authors' earlier experience from Tanzania and Uganda.

In Chapter 4 we build a framework that provides the theoretical background for the analyses in Chapter 5. This framework is also of fundamental importance for the analysis made in Part II of the specific situation in Tanzania and Uganda.

In Chapter 5 we engage in analyzing already documented projects that have the potential to offer empirical insights about how various program designs in a variety of governance and ecological contexts influence outcomes concerning the variables described by our objectives. We draw first of all upon relevant literature on payments for ecosystem services that includes a systematic assessment studies from Africa and Latin-America. Here we go beyond forest projects as we believe that insights from other types of projects involving land use changes – e.g., biodiversity protection projects, water quality projects etc. – are of high value. A matrix was formulated to systematically analyze the PES cases, identifying issues of relevance for the study.

While PES projects are important, there is also a wider set of studies to draw from especially on the use of different policy instruments to protect forests. We have hence included experiences from community based natural resource management (CBNRM) and to some extent also insights from CDM projects. Finally, we have brought in knowledge from forest protection projects of a more traditional type – e.g., national parks/reserves – to compare the potential of market like payments with more 'traditional' management solutions to obtain the goals of REDD. Certainly, channeling resources through the forest management system is an alternative to paying private land owners to undertake mitigation activities

While we already in Chapter 5 put some extra emphasis on experiences from Tanzania and Uganda, the analyses in Chapter 6-8 in Part II is fully devoted to studying how REDD could be implemented in these countries. We used literature from various sources on Tanzania and Uganda; governmental documents, reports and scientific publications. There are synergies in the structure of the Ugandan and Tanzanian analyses. However, it is not meant to be a comparative study, but comparing and contrasting the two countries does in some cases enrich the analyses.

In Chapters 5-8, conclusions and recommendations are given at the end of each section. That aims at giving the reader immediate "food for thought" on the subjects raised in each section. The report provides further an comprehensive executive summary where the key findings and recommendations and highlighted

PART I

CHALLENGES CONCERNING PUTTING REDD INTO PRACTICE

4. THEORETICAL CONSIDERATIONS

Introducing policies for REDD concerns changing the regime for the use of forest resources. As REDD will involve payments from countries in the North to countries in the South, the regime change will demand the establishment of transfer mechanisms. In practice there is a variety of potential buyers (e.g., states, individuals, firms) and sellers/receivers (e.g., private forest owners, communities, states). Different intermediaries may be involved, and the format of the payment and the control system set up etc. may take a mixture of forms. This implies that a wide range of systems or regimes are potentially relevant. In this chapter we aim at doing two things. First, we will describe a framework for studying such regimes. Second, we will discuss some core aspects of regimes and their capacity to fulfill the various goals for REDD/forest carbon projects. Together these inputs will form the basis for the empirical analyses first of all in Chapter 5, but also in Part II. They will, however, also have a value in their own right since a good theoretical understanding is important to form satisfactory REDD regimes. This is even more so as relevant empirical knowledge is weak or in some senses non-existent.

4.1 ENVIRONMENTAL GOVERNANCE AND RESOURCE REGIMES

Governance concerns both the making of social priorities/goals and setting up and running systems to attain these goals. These latter systems are often called resource regimes (Vatn 2005). They consist of two main elements:

- The *type of actors* involved as characterized by their capacities and competencies. Core issues concern actors as defined by their power and resources, rights and responsibilities
- The *institutional structures facilitating the interaction/coordination* between the actors

Concerning *the actors*, we may distinguish between private, state and civil society organizations. These organizations are constructed to serve different types of interests and are formed around different types of rules and norms. Hence, they will act differently. Concerning next the *institutional structures to facilitate the interaction/coordination* between the actors, these may take a variety of forms. They may e.g., trade, negotiate or even command.

While environmental policies traditionally were a domain mainly for governmental regulations, we observe presently a tendency towards increased use of markets and civil society as "instruments" for reaching environmental goals. There is a whole range of 'new governance models' evolving, combining governments, civil society and firms in different ways (Lemos and Agrawal 2005). These shifts reflect mixes of motivations ranging from a need to augment participation to an increased belief in market solutions.

The terrain is hence quite complex, and we shall in this chapter focus on clarifying important distinctions between various regimes – i.e., various combinations of actors and coordination structures. This is important as *the choice of such structures is expected to influence strongly the final outcomes of a policy.* This is so both due to the fact that legitimacy will be different, transaction costs may vary, and the capacity of various structures to motivate e.g., land owners to change their land uses will be different. In the literature there is a tendency of lumping situations with very different dynamics together into one category – e.g., treating situations with payments

as if they all follow the logic of a market. By doing this, important insights are lost, results are misinterpreted or wrong predictions follow.

4.1.1 Types of actors involved

Concerning REDD activities at the national level the following *types of actors* could be involved:

- States/public bodies
- Individuals (private)
- Firms (private)
- Communities (civil society)
- NGOs (civil society/private)

There are some important distinctions between these concerning which capacities or powers they command. States are political associations with sovereignty over a geographic area. It represents its population through political processes based on more or less democratic principles. Parallel to this, states are hierarchical structures having the capacity to command.

States play three different roles in policy formulations and implementation. They first of all develop national political goals – i.e., act on behalf of its citizens. They secondly produce concrete results through commanding own resources – e.g., management of state owned land. They finally act as 3rd person in relation to other actors, using various policy instruments like legal regulations, pedagogic and economic instruments to change the interaction between other actors. As 3rd person they also handle conflicts between individuals, firms etc. State administrations are normally complex entities with different agencies characterized often by distinct administrative cultures and distinct relations to the wider society ('clients') (Christensen et al. 2002; Vatn et al. 2002). This implies that substantial conflicts within state bureaucracies may exist, as it may matter for the result of policies which branch of the administration gets responsibility for a certain policy. Moreover, the accountability of state officials towards its citizenry is weak in many countries – e.g., the problem of bad governance and corruption.

Concerning the private sector, it is reasonable to make a distinction between *individuals and firms*. In the literature private actors are normally described as focused on serving own interests only. While this is maybe a too narrow assumption, firms are at least constructed to serve the economic interests of its owners. In relation to REDD, private persons and firms may own forest land. They may hence be at the 'receiving end' of a policy. They may also be buyers of REDD.

Individuals are also part of *communities*. These are less formalized entities than states and firms with a rather flat structure typically emphasizing cooperation and reciprocity as opposed to command. Communities may own resources like land – typically in the form of common property. In the context of REDD they may hence also be at the receiving end. Communities are not necessarily arenas for cooperation. They may be ridden by conflict and be quite heterogeneous in terms of distribution of power, land and other assets etc. Even when communities have common resource control, underlying conflicts between community members may strongly influence policy structures and outcomes.

Finally, *NGOs* lie somewhere between firms and communities as far as the type of actor is concerned. They are formalized entities. They may be based on membership, but they often have

a more specific or narrow goal than what communities usually have. Advocacy or development NGOs may be active in defending interests of member groups – e.g., land users or firms. While they are important agents of modern democracy, they also represent often very specific stakeholder interests. In relation to the focus of this report, it is important to note that NGOs may also act as intermediaries between buyers and sellers of carbon sequestration services.

4.1.2 Forms of interaction

REDD activities may be undertaken by actors alone – e.g., a state deciding to reduce deforestation on own land or private land owners setting aside forests without any external reward. Most typically actors will still have to interact. The above type of actors may interact/coordinate their activities in different ways – i.e., through:

- Voluntary exchange/trade – market payments
- Negotiations (with or without payments)
- Command/legal regulation – external hierarchy
- Redistribution (taxes/subsidies/donations)
- Voluntary cooperation (normally without payments, maybe gifts or donations)

Voluntary exchange/trade is the emphasized characteristics of markets. While markets are thought of as universal/impersonal, *negotiations* concerns direct relationships between two or a few actors. Land is a resource with highly variable qualities implying that its value or capacity to sequester carbon is specific to that piece of land. Each transaction may hence be specific and individual trades may rather take the form of a negotiation often with elements of barter and social reciprocity more than a generalized autonomous market trade. Similarly, a negotiated solution between two states would hardly be understood as a trade even though payments may be involved – e.g., money for development funds. It should also be mentioned that negotiations may take a variety of forms from strategic games to more deliberative engagement (Rommetvedt 2006). The type will be influenced both by the kind of actors involved, their historical relationships and the type of issue at stake.

Command is the archetype of hierarchical interaction. As already emphasized, the state has both internal and external (3rd person) command power. When the government, as part of the state, commands a directorate to do something, it uses its internal power of command. When commanding its citizens or firms through the law, the government and its administrative bodies use their external powers as formulated in the constitution. The government also has the power to *redistribute* income through taxation and paying subsidies etc. to obtain various goals. The state can also compensate actors for losses following legally redefined rights – e.g., compensation for income losses from regulating forest use/commanding forest protection.

Voluntary cooperation is a core form of action within communities. We may, however, also observe this between communities, between firms and between states and firms. The latter is typically the case in some types of environmental regulations. Hence, it borders negotiations in the sense that voluntary cooperation between actors demands an agreement as its basis.

4.1.3 Regimes relevant for REDD

This study is delimited to looking at different potential ways of implementing REDD, at various regimes for making REDD come about. A dominant aspect of REDD is, as already emphasized, that actors in the North will pay actors in the South to make reduced deforestation/forest degradation happen. The resource regime constructed to facilitate this could be of many different kinds. The simple format is that of a buyer of these services trading with a seller. 'Buyers' could be states, individuals or firms dependent not least on the global architecture established. 'Sellers' could be states or local forest owners/communities. Looking more in depth at these potential structures, we observe many options. We will look at two which illustrates the main type solutions as discussed in Chapter 2 – one where a fund plays the role as 'buyer' and one that resembles the structure of a (compliance) market.

Figure 4.1 sketches a situation where the buyer is a fund. It could be an international fund or e.g., a fund established by a state. While not included in the figure, the fund must acquire its resources from somewhere. It could get them through payments from states (taxation based), from firms and/or from individuals.

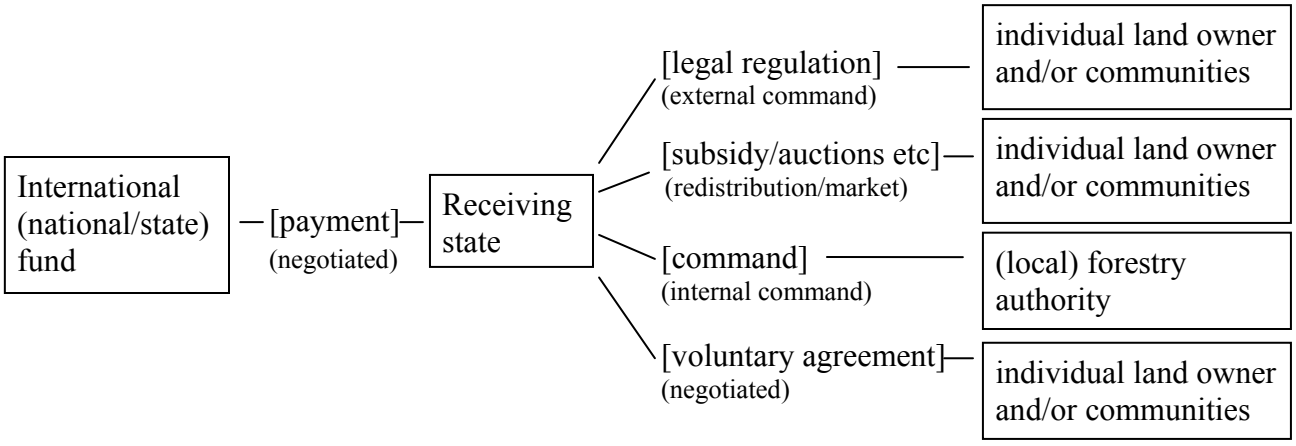


Figure 4.1 The international (national) fund donation regime

Being an international or national fund, the payments would have to be channeled through the state where the REDD activity is to take place. Following the discussions in Section 4.1.2, the payment will best be described as a donation. The conditions for the donation will most typically have to be negotiated.

While there is a payment from the fund to the receiving state, this payment may not necessarily be passed further to those making the action on the ground. The receiving state has many options here. It may keep the money and make REDD come about through legal regulations. Legal regulations may be combined with pedagogic instruments motivating behavioral change through expanding knowledge or through some kind of persuasion evoking norms about what is reasonable or appropriate behavior. Legal regulations do not demand any pay, while compensations for income losses may be included.

Next, the receiving state can set up a scheme where the logic is to pay land owners (individuals or communities) for voluntary participation in REDD. This could take the form of a subsidy for appropriate land use changes. It could also take the form of a trading scheme like an auction where land owners bid for compensations. One would expect these systems to function differently both internally and as compared to using legal regulations.
The receiving state may own forest land itself and it may hence make REDD come about through commanding a subordinate authority. This will not include any payments either, except that the money coming from the fund may be used to make the local authority able to undertake its job.

A more market type solution is illustrated in Figure 4.2. Here different actors buy carbon sequestration from land owners directly, that is, most probably this trade will go through an intermediary to reduce transaction costs. To make it a compliance market, some sort of a registry offering credits to the buyer must exist. This actor is not included in the figure.

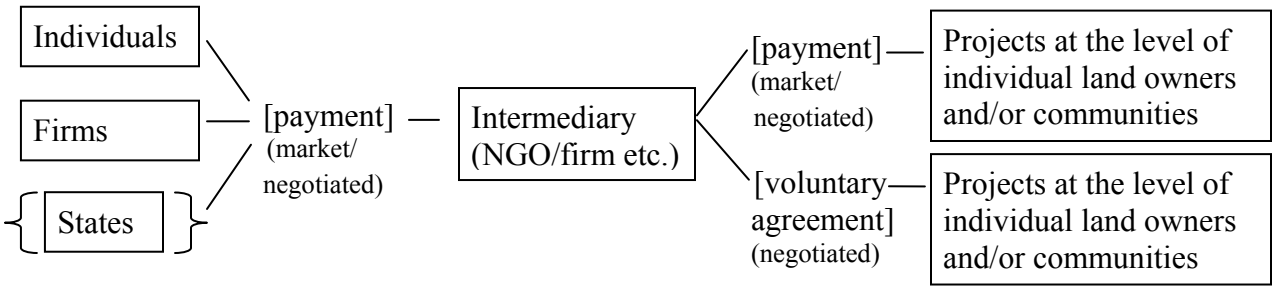


Figure 4.2 A (compliance) market regime with intermediary

As is evident, we now come closer to a market payment format, while the potential involvement of NGOs may imply that a community aspect is also linked to these transfers. Firms specializing in REDD transactions could be an alternative intermediary to NGOs. The main difference to the structure depicted in Figure 4.1 is that the state in which the REDD activity finally takes place does not participate in the trade. This has an important implication for the kind of mechanisms that can be used towards the REDD activity to be initiated. Payments would dominate. The system of voluntary agreements should not be ruled out, but is less probable than in a case where the transaction goes via the receiving state.

As indicated in the figure, states may not be seen as legitimate buyers under this structure. Due to rules and norms of the international community, the state where the REDD activity is to be undertaken may claim that payments from a buying state must be channeled through the state where action is taken.

The choice of governance structures/regimes for REDD will also be influenced by ecological conditions. One would especially notice the different capacity of forest types to sequester/bind carbon. Next, the timber value respective alternative values in turning forests into agricultural land will vary. The politically most interesting forests to protect would be those with high 'carbon capacity' and (fairly) high value either commercially or subsistence wise. Hence, REDD will have to 'play up against' serious competing interests.

4.1.4 Key questions to be addressed

The above examination raises a series of questions for the empirical analyses. We would like to emphasize the following:

a) How do wider economic, political and socio-cultural systems in a country influence the choice of governance structures for REDD?
b) Which changes in administrative capacities of involved actors – especially receiving states – is necessary to make policies for REDD function?
c) What is the potential legitimacy of various governance structures?
d) What are the likely distributional consequences of different governance structures?
e) What are their transaction costs implications?
f) What are their capacities to change behavior towards enduring REDD actions taking also various ecological conditions and opportunity costs into account?

Questions a) and b) will be discussed mainly in the specific context of the present governance structures/resource regimes in Tanzania and Uganda (Part II). Questions c) through f) will be analyzed also on the basis of material from studies across the globe involving relevant policies for securing environmental services (Chapter 5). In the following, we will go a bit deeper into some of the issues emphasized above to support the empirical analyses.

4.2 RIGHTS, REFERENCE LEVELS AND DISTRIBUTIONAL EFFECTS

Policies facilitating REDD would implicitly or explicitly have to define respectively recognize rights. Payments for REDD imply that ownership of the involved land is recognized. The same concerns state regulations using legal instruments. There is, however, also a second issue involved: Do land owners have the right to clear the forest or should they be responsible for the external effects this creates such as e.g., climate gas emissions?

4.2.1 Dual and contested rights issues

REDD implies land use changes. This raises the question about what rights potential providers' of REDD must have to the involved land to make the trade/payment work. If it must be fully formalized, many groups may be excluded from participating. Lack of title increases uncertainty for buyers, and one would expect buyers to demand formal titling to be engaged. This is especially the case if the buyer is a private actor. In many countries a situation of 'plural legalism' exists (Channock 1985). This is especially the case in countries that have previously been under colonial rule where the law of a former colonial authority may exist alongside more traditional legal systems producing overlapping claims. Moreover, traditional legal systems may be quite flexible (Cleaver 2001) and hence neither easy nor sensible to formalize. There are, hence, two challenges in this. First, REDD may demand introduction of property rights of a form that do not fit well to the existing systems of rules in use. Second, dependent on the local power structures, some people may lose access to resources through titling processes.

Moving to the issue of whether land owners at the outset should have the right to do what they like with the land, we observe that PES systems implicitly assume that land owners have this right. Nevertheless, rights could in principle be distributed along a continuum from a) granting

no right to changing nature/natural processes to b) accepting that an owner of e.g., a piece of land should be compensated for any cost s/he is asked to undertake to avoid such changes. The first rule is the 'polluter pays principle'. The other is a 'provider gets principle'. Between these 'extremes' lies a series of opportunities to define mixed responsibilities. One could be to set a specific practice or environmental quality as the reference point – e.g., 'sound forest practices'. Delivering a higher level of services than this would result in being paid while delivering less would imply having to pay oneself.

4.2.2 Distributional consequences of various regimes

Payments for REDD may be seen as new economic opportunity, where decision-makers will assess the relative profitability of land used for carbon sequestration compared to existing agricultural crop use, livestock grazing, village commons or other options. Depending on the scale of funding, the new opportunity may also impact on land prices, land rents and general land availability for different groups of local people.

As already indicated, there are some important direct distributional consequences of how the rights or reference level is defined. The recognized rights holder will receive the income. The net gain may, however, not be very large as compared to the status quo/the reference level, since the income from the present practice will be lost. Payments do not need to be (much) higher than lost income to secure that a contract to sequester carbon is obtained. Certainly, to reduce the costs of REDD, the buyers/donors may want to keep payments as low as possible.

One should also be aware that payments may reinforce existing inequalities internally in a country or community. This does not least work via the dynamics of existing land distribution. Poor people may not have title to land and this may create a great obstacle to (direct) participation. As important is uneven distribution. Holding little land implies that it is hard to set aside any for production of environmental services. Hence, the opportunity created through payment schemes is an opportunity only for those having more land than what is needed for securing basic needs. Finally, payments for REDD would most probably increase land prices. This would enhance costs for those wanting to buy land for their sustenance. Moreover, people not holding title to land may depend on 'surplus land' – i.e., land that is owned by somebody, but not used by the owner as s/he have no use for it. Payments for REDD may result in a process where people lose access to what they previously could use more or less for free. If the job market is weak, it is not impossible that the local community may even lose from REDD as those losing may lose more than those gaining.

4.2.3 Key questions to be addressed

Following from the above, the following questions needs to be addressed:

a) How will land tenure structures influence who will be included in respectively excluded from REDD?
b) How will the definition of reference levels influence who may gain from participating in REDD?
c) How may REDD influence livelihood opportunities especially for the rural poor?
    a. Who may gain from participating?

b. Who may lose access to livelihoods through e.g., increased land prices and exclusion through formalization of rights?

4.3 REGIMES AND TRANSACTION COSTS

Establishing and running policies for REDD may be costly. This goes for legal regulations as well as for establishing payment systems. The costs of interaction/coordination between actors may be called transaction costs (TCs). As Arrow (1969:48) sees it, TCs are 'the costs of running the economic system'. Implicit in this is a division between production and transaction costs. To simplify the exposition, we will here expand the concept of TCs beyond the economic sphere to cover not only market transactions, but all costs of making and running a certain policy[1]. TCs will then include costs of setting up and running necessary administrative systems, gathering information, making laws or contracts and controlling that laws and contracts are followed up. Remark that the costs of setting up the basic systems of rights and responsibilities – the global and national institutional 'architectures' – are also included in the concept of TCs as used here.

To see how important TCs may be, let us look at a system with payments for REDD. In this situation it may be demanding for a potential buyer to find potential sellers, to define what is to be traded, respectively create a mechanism so that they can trade. One must evaluate whether there is a potential gain from trade and what is an acceptable price. It may also be very demanding to control that what is contracted is delivered. This is not least the case with REDD. Trust may be low and trust building may become necessary.

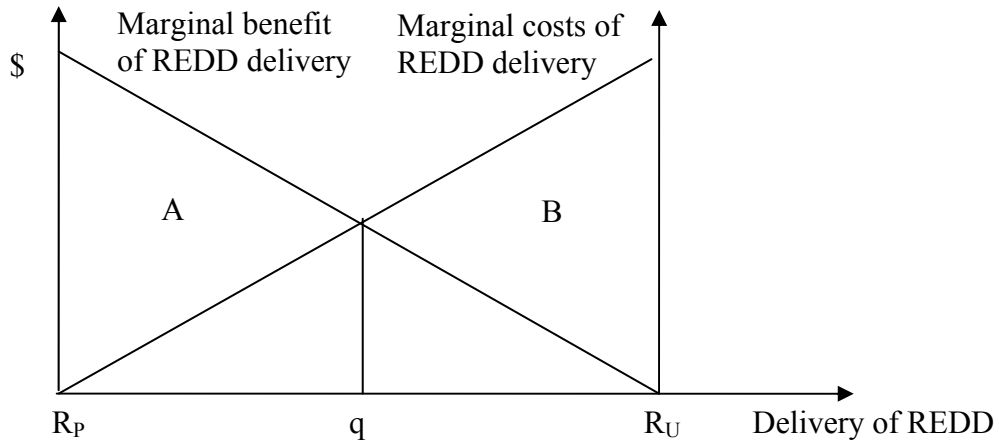


Figure 4.3 Optimal delivery of REDD services

Figure 4.3 illustrates the standard way of portraying benefits and costs of a contract concerning delivery of a service like REDD given that TCs are zero. The optimal amount q is the same whether rights are with the providers – starting out from R_P as the reference level implying no

[1] The alternative would be to make a distinction between administrative costs and transaction costs where the former are costs related to policies other than those involving direct transactions/market relations between two or more actors. Doing so would be difficult though as it would be hard to draw a clear line between the two.

delivery of the environmental service before trade – or from the R_U reference level where the right is with the users and no deterioration of the environmental service is accepted before trade. Gains from trade are areas A or B for the respective reference levels or rights situations. Starting out from R_P – the typical starting point in the case of payment for environmental services (see above) – there will, however, be nothing to gain from trading if TCs are greater than area A. It is certainly very difficult to define the size of A and to evaluate whether TCs consume all the potential gains there are in a specific case. This is in itself an obstacle against establishing policies for REDD be it payments or other systems.

It is important to note that the various regimes will typically be associated with different levels of TCs. Moreover, what is the better to do in one situation is not so in another. Typically, one would expect direct trades to have the lowest TCs if the number of parties is low and the good is simple to monitor. If many agents are involved and/or the good is complex, then using command or state subsidies might be the least costly solution in terms of TCs. It should also be noted that TCs may vary substantially dependent on the relationships between the 'buyer' and 'seller'. Hostility or unfamiliarity may be a great obstacle. In relation to this, one should also observe that it is possible to influence e.g., the level of trust. Hence, if a certain solution has the potential of becoming the cheapest in the longer run, one may want to invest in trust building in an initial phase to make this system work well.

Since the number of agents involved will drive TCs up, paying a few large land owners is expected to be cheaper than involving many small. This may add to the warnings above concerning the potential of some systems to increase distributional problems instead of making REDD a policy for the poor. In relation to this, it should be noted that involving communities of land owners – maybe people owning forests in common – may also be a way to simultaneously involve the poorer segment of a society and reduce TCs.

4.3.1. Key questions

The above leads to the following set of key questions to be addressed:

a) How do transaction costs vary between different ecological conditions/types of goods
b) How do transaction costs vary between types of governance structures/regimes?
    i) Are there any differences between market vs. government based systems?
    ii) Specifically, will smallholders risk to be excluded from participating in REDD due to increased transaction costs?
    iii) What is the capacity of community involvement to reduce transaction costs – especially contracting and control costs – and hence increase the capacity to involve small-holders respectively communal forests?
c) How does the donor-recipient relationships – the legitimacy of 'buyers'/intermediaries – influence the costs of setting up and running various REDD regimes?
d) How demanding is it to transform present regimes to accommodate for REDD policies – specific emphasis on the situation in Tanzania and Uganda?

4.4 REGIMES AND MOTIVATION

The above has taken us to the final topic of this theoretical enquiry. While the standard assumption – at least in economic theory – is to view behavior as similarly motivated under all types of situations, institutional theory emphasizes that motivations may shift between institutional structures (Etzioni 1988; Vatn 2005). When discussing the various aspects of this, we have chosen to start by focusing on the potential responses to payments under various institutional contexts.
The idea behind payments for environmental services (PES) is to facilitate more environmentally friendly actions by appealing to peoples' individual economic interests. While this seems straight forward, there is a series of issues that has to be taken carefully into account when formulating payment systems. Some are even of a kind implying that PES in certain situations could create the opposite of what is intended.

The first question concerns what is a reasonable price – what is enough payment to motivate forest protection instead of use. This is not a simple question. The standard concept used is that of opportunity costs – i.e., which opportunities are lost if accepting land to be contracted for REDD. The level of these costs depends on which alternative uses exist and what is the expected value of these. The institutional changes following REDD – e.g., specifying/formalizing property rights – may themselves change this level.

As PES implicitly leaves rights with the owner of the land, actors must act environmentally unfriendly – in our case cut or degrade forests – to be eligible for payments. This may create incentive problems and be ethically problematic as those already protecting forests will not be relevant as receivers of REDD funds. While many attracted intermediaries may be motivated by the good cause, large amounts of money may appeal also to people or organizations looking for easy ways to earn money knowing that their actions are hard to control by the other actors involved. Certainly, outright corruption is a danger that must be observed.

Recently, another aspect of payments has been increasingly emphasized in the literature. If the people involved are already motivated to protect forests from intrinsic reasons – it is part of their culture to do so – payments may 'crowd out' this kind of motivation (Frey 1997, Bowles 2008, Vatn 2009). Following Bowles (2008) the format of the payment may then play an important role. A compensation for a 'good act' is something different from an incentive payment where the logic of what is individually profitable is lifted to the fore. Hence, it may matter if the payment is formulated as a market trade/an auction, is paid as part of a redistribution scheme, respectively is a compensation where the logic is to cover costs beyond what the agent could be expected to carry on his/her own. The first logic – that of a market – focuses on individual gain. The second and third may follow the rationale of reciprocating and have a larger capacity to build and reflect relationships. It has a community dimension to it. By creating a system focused on individual gain, it should also be noted that control may be more demanding as opposed to building on the logic of reciprocity.

REDD may imply that states choose to expand the area of national parks/forest reserves through legal means, with or without compensation. Certainly, with external funding, money will be available to compensate people for the loss of livelihoods. Foreign donors may want to set compensation as a clause for being willing to pay a state to undertake REDD. Finally, receiving

states may use information/pedagogical measures to foster changes in forest practices. Most probably, the latter will not be enough used alone. It may, however, be important both for making local residents aware of the existence of a subsidy/payment scheme and also influence their perception of it – cf. Licari and Meier (2000). It could also play a very important role in creating the necessary cooperative will to secure that policies are really carried through at the local level.

4.4.1 Key questions to be addressed

The following questions come forward as especially important concerning REDD regimes and motivation:

a) What motivates potential suppliers of environmental services to participate in relevant programs?
    i. Which costs need to be covered to attract participation?
    ii. What does already existing conservation norms imply for participation?
    iii. How do formalizing rights influence the perception of the costs involved?
b) What kind of motivations characterizes different potential intermediaries to be involved in REDD?
c) How do payment formats influence the motivation of actors to provide REDD services?
    i. How do different formats influence relation building and transaction costs?
    ii. To what extent will various payment formats reinforce respectively crowd out existing norms for conservation?

5. EXPERIENCES WITH DIFFERENT POLICIES TO SECURE PROTECTION OF FOREST RESOURCES

In this chapter we evaluate a set of core challenges concerning putting REDD projects into practice at the national/local level based on experiences from PES, CDM, CBNRM, and state protection policies. As already emphasized, these challenges concern the conflicts/synergies between carbon programs, poverty alleviation/development and biodiversity preservation. They also concern rights and legitimacy of the REDD regime at local level; the significance of transaction costs; the important concepts of additionality, leakage and permanence; and lastly the motivation structures of the core agents. These challenges are discussed in the respective sections with a special emphasis on how they are influenced by the three cross-cutting issues, namely ecological conditions, national and local governance's structures and various donor-recipient relationships. It should be noted that these three issues are disproportionally important for the five core challenges in our evaluation and will be treated accordingly.

5.1 CONFLICTS AND SYNERGIES BETWEEN CARBON, BIODIVERSITY AND POVERTY ALLEVIATION

This section looks into the interactions between carbon programs, biodiversity management and social development. After a short introduction, we first discuss interactions between biodiversity conservation and forest carbon programs. Secondly, we look at the relationships between carbon programs and development/poverty alleviation. This latter part is divided into three sections. We explore who will have the easiest access to carbon finance. Next we discuss potential distributional effects of payments for ecosystem services. Lastly we look at how access to livelihoods might be altered by REDD. We conclude by offering some policy recommendations for REDD.

Ideally, REDD as a climate change mitigation measure should also advance biodiversity protection and contribute to poverty alleviation. It can be assumed that many potential carbon investors would like such an "all inclusive package-deal" for their money, being explicitly expressed in Norway's International Climate and Forest Initiative. Such multiple win-win strategies might, however, be difficult to accomplish.

Tropical deforestation has been a topic on the global agenda for decades (Boahene 1998). It can be seen as a gradually evolving debate. Biodiversity concerns actually emerged first. Then the issue of livelihoods of the indigenous and rural poor people gained importance. A wider perspective of ecosystem services has developed lately together with a focus on forests as a sink and source of carbon. A range of different policy measures have been applied to reduce deforestation, although hitherto, most efforts have focused on biodiversity conservation and partly on local community livelihoods. In this lies considerable experience of relevance also for REDD.

The final decision from the international negotiations on what REDD constitutes becomes important in the context of this section. The measures reducing deforestation (RED), restoring degraded forests (the second D) or including forest carbon sequestration in new forests (REDD-plus) all have different implications on carbon, biodiversity and development interactions that need to be understood.

5.1.1 How are the interactions between biodiversity conservation and forest carbon programs?

Biodiversity conservation and REDD have in many ways joint or overlapping objectives (O´Connor 2008). REDD, understood as a measure to reduce native tropical deforestation and degradation can simultaneously be seen as a biodiversity conservation measure, at least what concerns tropical flora. REDD has therefore been highly appreciated by biodiversity conservation actors worldwide, seeing there a long sought-after complement to their endeavor (ibid.).

Several studies in our review reveal such positive forest biodiversity and carbon synergies. In a study on the impact of a Noel Kempff Mercado project in Bolivia, forest carbon projects were found to have great potential in simultaneously protecting biodiversity (Asquith et al. 2002). There, deforestation was avoided in an already gazetted protected area through carbon financing. The project succeeded in reducing the carbon flow from respective forest areas and concurrently improving the biodiversity levels of the respective areas. Similar findings are recorded from the large scale forests conservation measures in Costa Rica, using PES instruments, where carbon finance has been conducive to maintain the forest cover and by that conserving the multiple biodiversity they harbor (e.g. Russo and Candela 2006).

The interconnections between forest carbon and biodiversity become more complicated when the dimensions of the second D in REDD are scrutinized, especially when it comes to restoration of the degraded forests. The kind of 'restoration' that maximizes carbon storage may not be the most valuable from a biodiversity point of view – e.g., introducing new species or concentrating on few species as opposed to restoring the forest as close to what it used to be.

The prospects for restoring the biodiversity of degraded tropical forests simultaneously with the carbon content depend on a range of factors, where degradation intensity and proximity to more pristine areas are important components (Holl et al. 2000). It might not be possible to re-establish the pristine forests of the past. However, restoration of degraded forests as a climate mitigation activity can include very positive synergies with biodiversity conservation, especially considering the native genetic material available. This would require a careful planning.

That is what is observed in the FACE Foundation carbon projects in two formerly degraded protected forest areas in Uganda, Kibale and Mt Elgon. There, the degraded forest areas have been replanted with mostly native tree species. Due to the proximity of the more pristine forest edge, this has gradually led to recovery of secondary forest harboring significant biodiversity levels (SGS 2007).

The relations between forest carbon and biodiversity become quite different in carbon sequestration projects where fast growing forest plantations are promoted, often monocultures of exotic species. Such plantations on open land will usually not contribute directly to biodiversity enhancement. On the contrary, they are often regarded as a threat to local biodiversity (Jindal et al. 2008). There are also possible invasive species involved and perverse impacts on the local environment such as water and soils (WRM 2008a). If the future REDD regime will include afforestation/reforestation programs (like proposed as REDDplus), this becomes highly relevant.

One should observe, however, that there are cases where such fast growing plantations have been identified as a way to relieve the pressure on native forests, become a substitute for wood

demand from native forests and therefore have an indirect positive synergy with biodiversity conservation (Cossalter and Pye-Smith 2003¸ Jindal et al. 2008). Different ecological conditions thus have significant impact on the interactions between carbon and biodiversity and further, to development.

It can be expected that securing forest carbon services will face more difficulties when it is to happen on land with high opportunity costs. This is observed in cases of payments for watershed services (Porras et al. 2008). The situation in East Africa illustrates this. It is common that the forests harboring most biodiversity simultaneously comprise high carbon contents and are at the same time areas important for local communities. Especially the bulk of the tropical high forests comprising the highest carbon/per area unit quantities are often found in areas contiguous to the high mountain massifs in the region such as Mt Kenya, Mt Elgon, Kilimanjaro, Ruwenzori, Virunga and Meru. The forests on these mountains harbor biodiversity of outstanding value, but are at the same time the most densely populated areas in the respective countries and seminal for food security due to fertile soils and abundant rainfall. The carbon rich forests are therefore under significant pressure also for conversion and have immense economic value often way beyond present carbon payment levels. Due to the inherent soil fertility and humidity, deforestation becomes highly attractive economic activity for agricultural expansion. Establishing REDD measures aiming at reducing emission in these areas will therefore be demanding, but at the same time needed as those areas experience significant deforestation.

The interactions between carbon sequestration, biodiversity protection and livelihood security will be different for forests that stand on land of less value and that are less attractive for deforestation. The deforestation drivers are different from the tropical high forests as are the potential conflicts between carbon and development. Such forests might be less attractive to agricultural expansion, but more exposed to sporadic thinning, firewood harvesting, bush encroachment and charcoal burning. Therefore, different sets of measures and instruments are needed for conservation of such forest carbon.

The above reasoning is concentrated on the situation as seen from the local or national level. Looking at more global picture, one should also recognize how the flow to different regions of the South may influence the overall situation for biodiversity protection. Some regions may not be included as avoided deforestation is cheaper to undertake elsewhere. Hence, while avoided deforestation has the capacity to reduce biodiversity loss given local conditions, this fact does not help if no resources will go there.

5.1.2 Who will be involved in forest carbon mitigation projects?

REDD is about changing forest activities. Hence, as the activities cease or change character, the livelihoods will be reduced or at least impacted. Following the same argument as in the biodiversity section, we can differentiate the interaction between forest carbon projects and developments according to the various dimensions of REDD, i.e.., avoided deforestations, forest restoration and new plantations.

Traditional forest conservation approaches that entail exclusion of local people from access have caused significant conflicts in most developing countries. Such conflicts will remain if the REDD regime will be structured in a similar manner. As an example, the exclusion of local com-

munity members in the Kenyan part of Mt Elgon National Park sparked massive forest wildfires, sending hundreds of forest hectares up in smoke. Certainly, the financial transfers to countries in the South make it easier for local governments to choose other strategies including compensation for local losses of livelihoods. It cannot be taken for granted that it will happen, though.

Restoration of degraded forest also often includes measures that exclude local people. In the FACE Foundation climate project on Mt Elgon Uganda, local people were removed from the restoration areas, causing massive conflict partly due to boundary disputes. Dissatisfied community members up-rooted forest tree seedlings in large areas to hinder the forest to be restored (Lang and Byakola 2006). Both examples illustrates not only the need for fair mechanism compensating loss of livelihoods, but also the importance of participation, as local people, if perceiving the policy illegitimate, may easily find ways to obstruct the realization of protection.

Also more market like carbon sequestration programs can entail exclusion of local communities (Cossalter and Pye-Smith 2003). That has both been observed in the case of large scale forest carbon plantations, but also in the case of relatively large farmers that enter such programs and establish forests on marginal areas, otherwise occupied by poor tenants/squatters. In the case of the Trees For Global Benefits carbon project in Busheni, Uganda, it has been shown that larger landowners are the key beneficiary of the project, while the poorer and landless loose important part of their livelihoods when the plots they have rented are converted to forest under the carbon program (Nakakaawa et al. unpubl.). Similarly, in the case of the Tree Farms project in Uganda, establishment of large scale carbon plantation program entail exclusion of high number of landless local people from the forest establishment area (Eraker 2000).

It is commonly the role of women in Sub Saharan Africa to provision fuel wood to the household. The ability to collect forest resources is further crucial to women's income generating capacities, both wood fuel and other non-timber-forest-products. REDD might therefore have particular gender dimension and if not carefully planned, disproportionately impact rural poor women. This relates also to women possibilities and constraints in accessing forest resources as forest conservation measures might imply longer travel distances to cater for the same household livelihood assets.

Several REDD measures imply to set aside land, often already in for fuel wood fodder and fiber collection. The REDD measure may then transfer ownership, usufruct rights and or resource access from weaker groups, including female headed households and women to men and where REDD funds thus in one way crowd out or displace original distributional patterns and rights structures. Gendered roles of actors in forest management need also to be considered; forest related activities such as land clearing, tree planting and protecting, caring and harvesting is often gender contingent and requires special attention.

5.1.3 How will the REDD funds be distributed locally?

Another issue of key importance when addressing synergies between carbon and development is the distribution of the REDD funds. The format of payments implicit in REDD should not leave short the issue of distribution and equity of the funds channeled from the rich North to the poor tropical countries for maintaining forest natural capital. The history of natural capital and its utilization in many developing countries is rather bleak. Often, natural resource abundance is

seen more as a curse than a blessing for the rural poor as rent seeking, corruption, and elite capture have led to perverse outcomes such as increased inequity and poverty (Gylfason 2004). Therefore, a significant flow of money from developing to developed countries for reduced deforestation does nothing to impact rural poverty if this aim is not explicitly taken account of in the governance structures of the REDD regime.

How REDD will impact development at local level also relates to the inherent difference between "protecting forest" and "planting new" as an activity. There is a fundamental difference between a tree-planting program (carbon sequestration) and avoided deforestation program (cutting emissions) that have practical implications in the local community context. Under optimal conditions, a tree planting program can bring to the community new investments and future gains when the trees mature. Depending on scale, it can provide employment for the farmers and on larger areas casual labor. It needs labor intensive tending and silvicultural practices when growing and reaching maturity. When harvested, it can bring resources to the local economy.

The literature is, however, critical towards equity and distribution from large scale plantations where local communities are not the direct owners of the plantations (Jindal et al. 2008). The fact is that the bulk of plantation benefits tempt to go to the commercial processing companies and other commercial stakeholders. Smallholder farmers are often left out of the flow of benefits. In an extensive study on the impact of forest plantations, Cossalter and Pye-Smith (2003) do not find "trickle-down-effects" really taking place. The multinational enterprise MONDI that manages 470.000 ha plantations in South Africa is found to create only 1.1 job pr. 100 ha land and similarly, the Aracruz Cellulose enterprise in Brazil is found to provide less that 2.7 jobs per 100 ha in its 180.000 ha fast growing plantations.

On the other side, small-scale forests plantations have been found to provide a range of benefits to rural communities, including fuel wood, fodder and wood for building and everyday uses (Jindal et al. 2008). In a meta-study analyzing cases from Ethiopia, Indonesia, South Africa and Vietnam, Nawir et al. (2007), illustrate ways of promoting small-scale and community plantation forestry to generate local benefits.

The structure of the payment schemes will be decisive for development outcomes. In many of the PES cases analyzed in this study, it is apparent that the local poor often fail to benefit from the schemes and in some cases become even worse off, although this may not intentionally be so. Russo and Candela (2006) scrutinize the impact of the large scale payments for forest ecosystem services in Costa Rica. They observe that although there might be a good will of the government expecting that the program could help to alleviate poverty in small rural communities, the contrary actually happens. As mentioned, the recent surveys by Zbinden and Lee (2005) observed that the large farmers (not necessarily poor) are the real beneficiaries of the program.

In a wider review of Costa Rican experiences it has been noted that a PES systems work best when services are visible and beneficiaries are well organized, and when land user communities are well structured, have clear and secure property rights, strong legal frameworks, and are relatively wealthy or have access to resources (Russo and Candela 2006). Hence, the program to a large extent fails to reach the poorer segment of the rural populations.

In a comparative meta-study, Grieg-Gran et al. (2005) assessed the impact of forest carbon sequestration and watershed protection projects on local livelihoods in eight Latin American case studies (from Costa Rica, Ecuador, Bolivia, Brazil). The study identifies some positive, but also some more negative impacts on local incomes and institutions, advocating for more pro-poor policy measures as a solution to enhance positive distributional effects.

Another meta-study from Meso-America (Corbera et al. 2007a) used cases from Guatemala, Mexico, Belize and Nicaragua investigating the equity implication of PES programs for watershed protection and carbon sequestration. Their assessment on equity in access, equity in decision-making and equity in outcome concludes that PES programs generally fall short in providing equitable processes and outcomes. On the contrary, the PES programs may exaggerate the already existing power asymmetries between actors and inequities in accessing and benefitting to forest commons. Similar findings are seen in the conclusions of Porras et al. (2008) – a meta study on PES mechanisms that deliver watershed services. They note that "cash payments when used do not seem to be playing the intended role of providing a viable alternative to current land-use practices but instead more a partial support" (p. 102).

Our cases show the complexities for benefits and payments to reach the rural poor. It is therefore important to carefully consider the design of the compensations at local level and explicitly craft pro-poor policies in the REDD regimes if development goals are to be materialized.

5.1.4 How can access to future livelihood outcomes change under REDD?

Most programs to secure ecosystem services can reduce future livelihood opportunities for rural poor people. Forests environmental incomes have been found to comprise up to 22% of the total income of rural people in developing countries (Vedeld et al. 2007). Such incomes have often few substitutes for the rural poor. Therefore, the central question is how REDD payments can at minimum compensate for the foregone future livelihood outcomes and desirably, provide additional benefits. A REDD regime that will pose new threats to the future livelihood outcomes of rural poor people will hardly succeed (Peskett et al. 2008)

Interventions like REDD can further impact both food and land prices. Large scale REDD can take land directly out of food production, as well as hindering agricultural expansion. This can also impact land prices as agricultural land becomes scarcer. This can affect net food producers differently than the net consumers and similarly, higher land prices can have negative poverty implications (Peskett et al. 2008).

As emphasized in Chapter 4, REDD can be implemented in different ways and with different policy instruments involved (Landell and Porras 2002, Engel et al. 2008). It is important to note that not only the size, but also the format of the payment may influence the development potential of REDD. Basing payments on opportunity costs, money transfers should compensate for losses of livelihoods and in this way keep people as well off as before. There are actually two issues involved in this. First, as the lost income often will be income in kind – e.g., fuel wood, food – receivers of payments may not have easy access to substitutes via markets. Hence, in-kind payments may have to be part of the solution. Secondly, development needs investment. Hence, as far as development is part of REDD, there is a need to form payment systems to facilitate this.

The community based approaches provide a range of governance structures that addresses the legitimate right of local people to forest resources, while simultaneously seeking their protection. For REDD crafters seeking positive synergies between carbon, biodiversity and development, learning from such approaches is important. It has been shown that many of the projects have important components that can minimize conflicts between environment and development goals (Hutton et al. 2007).

5.1.5 Conclusions and some key considerations for REDD

Stand-alone carbon regimes will not be effective if not considering biodiversity and social equity issues, due to the multiple services tropical forest ecosystem provide. Achieving multiple REDD win-win synergy between carbon, biodiversity and development might, however, be demanding. Although there are some direct positive synergies between carbon and biodiversity, both issues can be conflicting with poverty alleviation/development goals. Positive synergies will not be automatically generated by REDD measures focused only on the carbon dimension. They need to become an explicit part of the REDD design.

Such pro-poor policy has to consider both guiding principles and implementation strategies. In REDD, the principles will mainly be an outcome from the international negotiations, and partly the role of respective country. Although, the international climate negotiation process has the key mandate to negotiate climate issues, Parties to the UNFCCC have recognized that REDD will have implications beyond mitigation of carbon emission (Brown et al. 2008).

We believe it is seminal that REDD principles include guidance for biodiversity and development issues, as stated in the Bali Action Plan. Our recommendations on REDD implementation are based on that understanding. Based on the above evaluation of possible conflicts/synergies between carbon, biodiversity and development, we will emphasize the following points:

- There are many potential synergies between REDD and biodiversity conservation. REDD will most likely become added value to the current biodiversity measures
- There are, however, some potential conflicts. When regenerating forests, there might be a trade-off between what is best concerning carbon sequestration and biodiversity. This conflict is greatly enhanced if we move to afforestation projects (REDDplus)
- A specific pro-poor policy has to be designed as part of the REDD regime. Otherwise it will fall short to reach development goals. Backed by guiding principles, it has to be designed in the REDD implementation strategy at all levels. Such pro-poor policies are country and context dependent. We will give examples of such policies in following chapters on REDD implementation in Tanzania and Uganda
- There are many incidences of exclusion of local communities related to forest protection and carbon measures. Such exclusion strategies are found to severely impart local peoples' livelihoods and contribute to poverty
- It is commonly the role of women to provision fuel wood and a range of non-timber forest products at household level, and are further often a key source for female income. REDD implementation might therefore directly affect women more than men, and will thus require a gender sensitive approach

- Regimes seeking win-win between carbon and development has to be crafted with local community involvement to be perceived legitimate and effective at the local level
- In order for the rural poor to benefit from the carbon finance, in-kind measures and specific measures to secure investments in human and material capital are necessary. Such investments can both be inside and outside the forestry sector. This will demand payments beyond present day opportunity costs

5.2. RIGHTS AND LEGITIMACY AT LOCAL COMMUNITY LEVEL

In this section we look into issues related to rights and legitimacy of different policy instruments to secure environmental services at local community level. The key focus is on tenure right aspects. The section starts with an analysis of the relationships between rights structures and policy measures. The next part looks into how different rights structures might influence distribution of payments and how policies themselves may influence rights distribution/access to land.

5.2.1 Property rights and policy

Local communities claim rights to natural resources from a variety of capacities and concerns, such as institutional mandate, geographical proximity, historical associations, livelihood dependency as well as more traditional economic interests (Woodcock 2002). Rights are usually embodied into tenure regimes, being the governance structures crucial in shaping peoples´ concerns and capacities to manage natural resources. Whether REDD will benefit – or marginalize – forest communities ultimately depends on local to national arrangements about the allocation of benefits within countries, hence the resource tenure (Cotula and Mayers 2009).

Rights can be both strong and weak and are only important if they are respected and enforced. Associated with the rights an actor has in a given system is also some degree of responsibility related to the combination of rights and duties that exist both formally and through the informal system (Vedeld 2004). Property and usufruct rights of various types regulate the relationship between actors. The wider tenure of a resource includes both questions of ownership rights, usufruct rights, transferability and turnover systems and the execution and control over the various rights to a resource (Vatn 2005; Vedeld 2006).

Forests are governed by a variety of property rights; private, common, state and the open access. Costs of exclusion are often high, and actors face insecure access and uncertain user rights to the forest resources. This constrains and complicates overall and long-term planning, management, monitoring and proper control over resource stocks and flows, at local, regional and national levels (Vedeld 2006). Property rights can be formal and informal, also described as legal and customary rights (Sjaastad and Cousins 2008). Informal properly rights are commonplace in the South. As an example, 70 % of the land area of Uganda is held under customary tenure (Bazaara 2002). In a recent review on land tenure arrangements and carbon projects in Africa, it is stated that land tenure issues may prove to be the strongest hindrance in implementing climate mitigation projects (Unruh 2008, cited from Makundi 1998). There are many examples of the traditional forest protected area exclusion strategy which does not recognize local community rights that have failed to reach its objectives (Spinage 1998, Hutton et al. 2001).

Privatization has been a much used direction for government policy since the mid-1970s. Forest tenures have been influenced by this trend, although full privatization of publicly owned forests has not been much observed (Brown 2000). Some countries have considered privatization to facilitate establishment of fast growing plantations, partly for carbon mitigation purposes such as in Tanzania and Uganda. The most common policy strategy in this regard is that private investors get a long term lease of governmental land for plantation establishment. In Uganda this has raised significant conflict over the rights of the local people to their land (Eraker 2000). Eviction of large groups of people was needed to establish the plantations, jeopardizing their customary rights. In both countries, the legitimacy of the private plantation establishment on governmental land has further been criticized due to the low prices paid for the land (Stave 2000).

The community management approaches aim at securing the local community rights and implicitly becoming legitimate in the eyes of the local community. Such approaches can recognize local community rights to resources, although the rights are not formalized or legal (Adams and Hulme 2001). Since local communities are not a homogenous group – encompass a wide range of economic and political powers and interests – it will be a challenge to craft an all-encompassing REDD regime provisioning rights that is seen as legitimate and accepted by all local stakeholders. A particular danger is that the institutional complexities around REDD easily can lead to a narrow focus on the carbon component, while social, economic and political concerns, not least in relation to poor and rather powerless local communities can be downplayed.

Several examples of community conservation can be identified where local community rights govern the resources at stake. In Mt Elgon National Park Uganda, the park authorities have initiated as scheme of collaborative agreements, where the resource regime ensures rights of the community members to collect a set of forest resources (Sletten 2007). This governance structure, including formalized contracts between the state authority and formal local resource use groups established at parish level (parish is a local government unit), has to some extent been able to meet the local community demands, recognizing their rights to the state owned forests, concurrently with protection of the resources.

Most PES projects demand land use changes. This raises the question which rights providers of environmental services must have to the involved land to make the trade/payment work. In an extensive review of payments for watershed protection Porras et al. (2008) find that land that is communally owned, and likely to be associated with poorer groups, is not well represented in the PES schemes. They also identify significant regional difference in PES application, finding the efforts in Africa few and mostly concentrated in a single country, South Africa.

Our endeavor in this report is towards Africa, where property rights are not formalized on vast tracts of forested land (Unruh 2008). Therefore, where such market constraints are reality, a combination of instruments is most likely needed (Engel et al. 2008). Citing Pagiola and Platais, (2007, p. 670) "it is interesting to note, for example, that more recent World Bank-supported projects that apply the PES approach have moved away from standalone PES projects to projects that implement PES as part of broader policy approaches."

5.2.2 How do rights influence distribution of payments when involved?

Formalizing property rights in developing countries, including land rights, is advocated by many as a potential pathway out of poverty (de Soto 2002). Advocates for REDD further advise that securing land tenure rights is seminal for a PES instrument to function properly (Angelsen and Wertz-Kanounnikoff 2008). PES requires that rights to the land that delivers the environmental service must be clarified such that a distinct receiver of the payment can be identified and delivery controlled. Formalizing land rights of the rural poor in developing countries has, however, proved to be a complicated political process. In Sub-Saharan Africa supporters of land rights formalization have not been able to produce many examples of past successes (Sjaastad and Cousins 2008). In their review on the challenges of formalizing land rights in Africa, they identify many challenges for such an exercise.

In relation to our analysis, it is important to observe the danger that formalizing land rights may reinforce existing inequalities. This does not least work via the dynamics of existing land distribution. Poor people may not have title to land and this may create a great obstacle to (direct) participation in REDD. As important is uneven distribution. Holding little land implies that it is hard to set aside any land for the production of environmental services such as trees or forests. Hence, the options created through schemes like PES to achieve REDD is only an opportunity if there is some land not needed for securing basic needs. This kind of dynamics is broadly documented – see e.g., Grieg-Gran and Bishop (2004); Corbera et al. (2007b); Westermann (2007); Wunder and Alban (2008) and Wunder et al. (2008).

A question of similar significance is if property rights need to be individual. The literature is a bit contradictory on this issue. In a study of PES in Mexico Corbera and Brown (2008) conclude that a common property regime with insecure property rights may be a constraint for forest carbon project development. Nevertheless, according to Corbera et al. (2007b) rights need not to be individual neither fully formalized to secure participation in PES projects. They show that PES arrangements have been established also on land held in common. Similarly, recognition of both legal and customary rights of the local communities has been identified as a key to successful management in some long-term forest carbon programs. In the Noel Kempff PES carbon project in Bolivia on avoided deforestation, the project developers recognized informal, customary rights of local communities which are now regarded as a key factor for the success of the project (Asquit et al. 2002). Their conclusion that equitable distribution of the benefits from the carbon project requires the same type of recognition of the traditional use rights to the forests. Where rights to forests are overlapping, unclear and based on customary usage, project developers need to be particularly alert to the traditional rights of poorer and less vocal actors (Cleaver 2002).

Certainly, lack of title increases uncertainty for buyers, and in some cases private actors have hence demanded formal titling to be engaged. In other cases people holding land in common has involved themselves in PES projects as a way also to strengthen their perceived rights to the land. PES may hence result in strengthened titling (Corbera et al. 2007b). This may increase security for local people, but there is also a danger that especially marginal groups get excluded from access to land through such processes (Benjaminsen et al. 2008). In many countries a situation of 'plural legalism' exists with overlapping and flexible claims. These do not fit well to standard formalization. Dependent on local power structures, some people may hence loose access to resources through titling processes.

According to the literature describing various PES systems, 'providers' of environmental services seem to be implicitly and exclusively granted the right to the status quo uses – i.e., a form of 'provider gets' with rarely no discussion about whether status quo uses are legitimate. The fundamental question of who should pay/what the reference point should be is hardly ever raised. This is a curious situation, and it is the case whether we;

- Talk about carbon projects where developed country agencies buy sequestration from developing countries – e.g., Brown and Corbera (2003); Grieg-Gran et al. (2005); Corbera et al. (2007a and b); Wunder and Alban (2008)
- Look at local water services where downstream users pay upstream dwellers to undertake certain acts/stop certain activities to increase water quality – e.g., Grieg-Gran et al. (2005); Corbera (2007a); Kosoy et al. (2007); Wunder and Alban (2008); Muradian et al. (2008)
- Consider payments for biodiversity preservation – e.g., Wunder (2006); Claassen et al. (2008); Dobbs and Pretty (2008)
- Look at combinations of all the above – e.g., Pagiola (2008)

Certainly, the providers are in many cases the poorer party. This has been one of the motivations behind the fact that many support the PES approach– see e.g., Landell-Mills and Porras (2002); Grieg-Gran and Bishop (2004). One should note that much of the support for the new system seems to be based on implicitly expected distributional consequences. One should also note that if payments cross national borders – i.e., users/buyers are not under the same jurisdiction as the providers/sellers – there is hardly any other way changes in land use practices can be established if the country where the resource lies does not accept that it has an obligation to protect the foreign interest. There are, however, very many cases where the buyers and sellers are from the same country, and despite this, PES always takes the form of payments to make land owners change status quo practices.

In general, the impact of REDD on indigenous people's rights, biodiversity conservation and poor people is a major concern. While the climate negotiations are criticized for the uneven representation from developed vs. developing nations, discussions regarding indigenous peoples rights have brought up issues such as the importance of integrating the principles of the UN declaration on the Right of Indigenous Peoples into the mechanism and fears that carbon markets may end up marginalizing indigenous people. According to Butler (2008) the main concern among local and indigenous people is "the potential for a "land grab" whereby governments, carbon traders and speculators secure rights of the ecosystem services provided by forests without the consent of the people who live within the forests". This is especially a risk in case of poorly defined land rights. If this risk is not taken into consideration when establishing REDD, there is an inherent danger that some of the above concerns may materialize.

5.2.3 Conclusions and key considerations for REDD

The rights to the resources at stake are found to be a central factor when applying payments to secure ecosystem services. For REDD it is demanding that vast forests in developing countries are held under customary tenure where local community rights are not formalized, neither property nor usufruct rights. If those rights are jeopardized by REDD, its implementation will not gain legitimacy at local level and hardly succeed. Access to forest resources is a seminal factor

for rural households and further land conversion a key livelihood strategy. Formalizing land rights is an ongoing process in many countries in Sub Saharan Africa, a complicated, time consuming and often controversial process that will perhaps not be perceived legitimate by the local communities. From the rights perspective, it is hardly recommended that REDD initiates or intervenes into land reform processes, but instead applies more flexible set of policy instruments than direct payments that are less requisite on tenure arrangements, to reach its objectives. At least for Sub Saharan Africa, due to the complicated tenure arrangements, stand-alone PES will not make REDD function well.

Therefore, several rights related issues emerge being important for the future REDD structure.

- Rights to resources are embodied in tenure arrangements. Each national REDD regime must analyze and understand thoroughly the country specific land tenure structure of the forest estate
- Different policy instruments are found to demand different rights structures. The rights structure in respective country and region will therefore significantly impact selection of policy instruments for the national REDD regime
- Recognizing/formalizing land rights is a complicated process that many developing countries have struggled to implement. It will hardly be within reach of the REDD regime to intervene in those processes
- Although local communities do not have formalized property rights to and tenure of resources, policies to protect ecosystem services can be crafted with multiple instruments that secure equal distribution of benefits
- Implementing measures like REDD can include negative effects on local people's rights to land, especially the poorer segment. Land grabbing by the more powerful and exclusion are both processes of concern that need to be accounted for in any REDD strategy
- Equitable distribution of benefits from payments for ecosystem services projects can be achieved where resources are held under customary tenure, recognizing the traditional use rights to the forests
- There is a risk that privatization of resources might facilitate conflict and inequity. That has been noted with carbon plantation projects

5.3 TRANSACTION COSTS

As emphasized in Section 4.3, transaction costs include costs of setting up and running necessary administrative systems, gathering information, making laws or contracts and controlling that laws and contracts are followed up. Present research on transaction costs – e.g., Williamson (1985 and 2005) – focus mainly on the standard firm-market nexus. There is much less data on transaction costs related to policies for maintaining environmental services. In this section we will therefore have to draw on the general literature and insights from agri-environmental programs (state subsidies and taxes). There are, however, also some few observations from the PES and CDM literature that can be utilized.

Concerning the findings in the general literature on market transactions, it is observed that transaction costs (TCs) vary with the frequency of the trade, the specificity of the asset and the uncertainty concerning not least the quality of what is delivered (Williamson 1985). Hence, average TCs – i.e., the TCs per transaction – increases the less frequent the trade is, the more specific the good is and the more uncertain the trade is. The effect of frequency follows not least from the role of fixed TCs – specifically the costs of setting up the system – and the lower level of trust normally involved if transaction between actors are infrequent. If assets are specific – e.g., like in the case of transaction over building construction contracts as opposed to trading standard goods like steel nails or gasoline – average TCs increase. Finally, if there is uncertainty about what will be delivered, TCs will increase as the level of demanded control will be higher.

The three dimensions in Williamson's model tend to be linked. Hence, standard commodities like steel nails are non-specific, traded in large volumes and with low uncertainty concerning both quality and quantity. Many environmental services are found at the opposite end of the continuum from low to high TCs. They may be site specific, hence low in frequency and 'delivery' is moreover often uncertain due to variation in natural dynamics and the fact that these services are part of complex systems. In relation to this, it is important to observe that trade demands that the good or service can be demarcated and non-users excluded. As environmental goods and services are integrated features of natural systems, this is demanding, sometimes impossible. Certainly, this is one of the reasons why there is some skepticism concerning the potential of systems like PES and CDM to foster the realization of environmental goals.

The Stern report (Stern 2007) emphasized that halting deforestation and forest degradation is a cheap carbon mitigation solution. This observation has been a core motivation for the recent increased focus on REDD. One should note, however, that the focus of the report was mainly on opportunity costs. Recalling the findings of Wallis and North (1986) that for the US economy costs of transacting are about the same level as costs of production, one realizes that measuring opportunity costs gives only a limited view of all costs that may be involved.

5.3.1 How do transaction costs vary with ecological conditions/type of good?

As already indicated, TCs may vary a lot according to the characteristics of the good involved. To illustrate the importance of this, we will look at the experience with agri-environmental programs. This is a policy field that is rather close to REDD, and data exist offering information about how TCs vary with the type of good involved. It should be noted that in this literature it is standard to measure TCs as a percentage of the level of payment. Hence, the measured level of TCs depends on the level of payments.

Transaction costs concern both the costs of setting up and running the system or regime. The literature on TCs related to the agri-environmental programs focuses dominantly on the latter. They are mainly run by state/state agencies. The fact that agricultural administrations have been set up long before these types of programs were introduced, may explain why we lack data on setting these systems up.

The schemes we encounter are dominantly subsidies to various environmental amenities in the agricultural landscape. A few also concern environmental taxes. The literature documents a tremendous variation in the costs of running schemes. Rørstad et al. (2007) document an example

where the TCs are only 0.1 % of the payment. This case concerns a fertilizer tax. Also in the case of a pesticide tax the level was low – at about 1 %. In the case of acreage payments – i.e., flat rate payments per ha of agricultural land – the literature indicates TCs at the level of 2-6 % of payments – e.g., Falconer and Whitby (1999) and Rørstad et al. (2007). With more precise payments, like payments for specific landscape elements as stone walls, hedge rows etc., TCs seem to increase substantially and figures in the scale of 10-90 % are normally found. The highest figure we have observed was found in Falconer and Saunders (2002). They document a case with a wildlife enhancement scheme where transaction costs were larger than the payment (110 %).

The above variation can to a large extent be explained by the factors emphasized by Williamson. Administering fertilizer taxes is a low cost operation because it is attached to an already traded commodity where data on volumes already exist. Finally, frequencies are very large. The higher costs in the case of pesticide taxes are explained mainly by the fact that there are lower volumes traded and that the number of products is much larger than in the case of fertilizers.

Turning to acreage payments – often part of income policies or motivated by the goal of cultural landscape protection – the payment is in a way simplified, as the only measure used is number of ha, respectively maybe which crop there is. Hence, the good is treated as homogeneous (non-specific). Despite this simplification, the costs increase as compared to the taxes mentioned because there is a need for separate gathering of data from farmers. The level of control in the acreage systems analyzed seems to have been rather low in the cases referred to. The data obtained from self reporting farmers is often trusted, while the administrations have access to quite reliable census data concerning farm acreage against which checks can be made. This has kept TCs down to the level of a few percent, while it is still an issue of concern how much control should be undertaken to secure an acceptable level of compliance.

As soon as more specified data is needed – not only measuring e.g., size of the land, but also gathering information about production methods etc. – TCs may increase substantially. The frequencies of similar trades go down, and information and control costs will increase as more aspects of the delivery is measured and monitored. While TCs reported at levels equal to the payment seems very high, the increased precision following from paying for a more specified good may nevertheless defend the increased TCs. High TCs is not necessarily a sign of inefficiency. Nevertheless, losses can be substantial if one is not careful when setting up the systems.

Where could payments for REDD be positioned in this broader picture? One could argue that it should come close to that of acreage payments. There are, however, some arguments against this conclusion. First off all, one should emphasize that the above figures are mainly from Western Europe where necessary property rights and administrative systems for running the policies are already in place. In the REDD context one will typically face situations where secure rights to forest land is lacking and where basic structures to handle payments are weak or non-existing. One may also ask if one may treat forest resources as rather homogeneous goods, and if the frequency of payments is as high as that of European acreage payments. Similarly, in the above measures of TCs for acreage payments there were no problems related to permanency and leakage that demanded more complex contracts and extra control systems in place.

Establishing payments for environmental services like carbon will hence most probably be much more demanding than that of acreage payments. The PES literature offers some indications that this is so. Wunder and Alban (2008) document TCs of running a PES scheme in Ecuador at the level of 17 % of operation costs. Wunder et al. (2008) offers data on both TCs and payments across few cases. These analyses indicate that TCs are in the order of 30 – 100 % of payments. Corbera et al. (2009) offer similar observations, documenting that often more than 50 % of the total payments to a program went to finance the costs of intermediaries. That is, transaction costs are often as high as or higher than the actual payments, even when the cost involved in collecting the money and the costs providers of the services devoted to getting them are not included.

Experience with CDM projects also support the above conclusion, at least in an indirect way. The main observation is that there are very few CDM projects involving carbon sequestration in forests – cf. also Chapter 2. Desanker (no year) looks at the situation in Africa. He finds that there are large uncertainties involved in these kinds of trades, the problems related to lack of defined methodologies and national institutional and technical capacity to support the process is very important. He also emphasizes the lack of adequate international institutional capacity for the various steps in a CDM project from mobilization of resources to certification and validation being very important in such a diverse situation as in Africa.

REDD concerns both deforestation and forest degradation. A relevant question is if one would face similar levels of TCs across these two measures. The expected difference may not be large, but one would expect TCs to be lower for projects oriented at halting deforestation compared to those focused on reducing forest degradation. This conclusion is based on the observation that it is easier to monitor deforestation than measures against forest degradation. Moreover, halting forest degradation might depend on specific activities being undertaken. Defining the right strategy and controlling its implementation might be demanding.

5.3.2 How do transaction costs vary with governance structures/resource regimes?

Moving to the issue of how TCs vary across governance structures, the greater part of existing research concerns whether markets or firms – whether trade or command – result in the overall lowest level of TCs. The general conclusion from this literature is that at least for more specific or complex goods, transaction costs can be reduced by going from trade to command – i.e., going from markets to in our case state management (Williamson 1999). The argument is that if it is difficult to define precisely what is to be delivered, the transaction is simplified by moving it under the same authority structure.

There is very little data to empirically test whether command/state subsidies have lower TCs than markets when environmental services are involved. We are, however, able to make some qualitative assessments based again on analyses of agri-environmental programs, PES and CDM projects. We would like to start by comparing market – or user-financed – as opposed to publicly financed payments.

First of all, it should be emphasized that also markets for environmental services demand a lot of structures in place which depend fundamentally on the action of states. This concerns the establishment of necessary property rights. It also concerns specifying the good and mechanisms to exclude users who do not pay. The goods we are now approaching have historically evaded the

market exactly because of their characteristics – especially the high exclusion costs. Hence Landell-Mills and Porras (2002) emphasize that developing markets actually depends much on their 'counterpart' – e.g., on strengthening cooperative and hierarchical arrangements.

Moreover, we typically observe that in both agri-environmental programs and PES projects, the state or other public bodies are is very often involved as 'the buyer' – see e.g., Porras et al. (2008), Wunder et al. (2008). This follows partly from the fact that exclusion on the user side may simply be impossible given the kinds of goods involved – cf. carbon sequestration, biodiversity preservation and water services. This implies that whether you pay or not, you will still get the service, ruining the motivation for individuals to pay. Muradian et al. (2008) studied a series of water projects. They emphasize that in many cases – i.e., in all cases they have analyzed – the money collected for paying forest owners to undertake various actions to increase water quality/ availability was collected through an extra water bill fee. Users dominantly did not know that they had paid for a service. Therefore it cannot be considered a trade in the meaning of a voluntary payment. This case, hence, also illustrates that collecting money may be much easier to do through public means than by organizing a market – especially if the number of 'users' is large.

In their review of various PES systems, Wunder et al. (2008) look into this. They compare markets and public subsidies, calling it user- and government-financed programs though. They find that user-financed programs are typically small. Government programs are orders of magnitudes larger. Moreover user-based PES systems tend to be focusing on single services, while government-based ones are often multiple services oriented.

Compared to government-financed systems, Wunder et al. (2008:851) emphasize that user-based systems are "much more likely to be efficient". Their argument is partly based on the idea that the evaluation of the values involved is more accurate. Budget fights within governments are also avoided, and payments are more targeted. As their cases show, the delineation between user-based and government-based seems, however, to follow that between 'club' and 'public' goods.[2] Hence, the cases are characterized by different exclusion cost structures, and their efficiency claim does not fully acknowledge the role of TCs. Figure 5.1 illustrates the argument. It is based on a qualitative evaluation of the literature reviewed for this study.

If there are few agents involved, market trades may be the least costly in transaction costs terms. As the number of agents grows, it becomes much more costly to use markets as the number of deals necessary increases substantially. States or local public bodies like city councils can much easier raise the necessary funding through taxes or fees and the negotiations with providers are simplified. Certainly, the latter demands that the public body is seen as legitimate. This may not always be the case as also some private buyers or intermediaries may face similar challenges. Likewise, the cost of targeting seems underestimated in the reasoning of Wunder et al. (ibid.). A lower degree of targeting by using e.g., flat rate subsidies may be more than offset by the gain obtained by lower levels of transaction costs. Hence, when states or public bodies are observed to generally pay for bundles of goods, this may be because it is a way to reduce TCs.

[2] Club goods are goods where it is not possible to have individual consumption of the good, but where it is possible to delimit a specific group of users or consumers. A typical case could be a lake acting as a source of water for a defined group of inhabitants surrounding the lake. In the case of a public good this kind of group based exclusion is impossible. If somebody protects a species, its existence is secured for everybody.

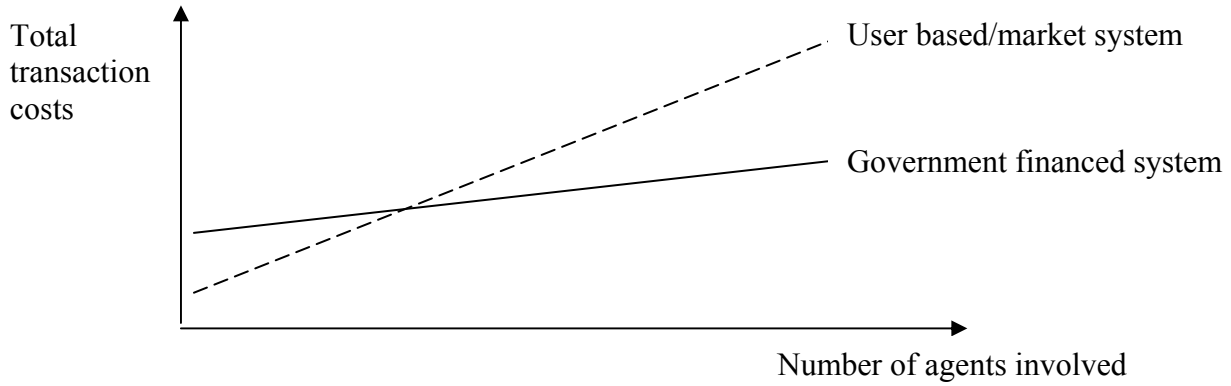


Figure 5.1 Transaction costs and governance structures

The above relates both to setting up and running payment systems. Wunder et al. (2008) show that the costs of setting up PES programs lies in the order of 10-60 times that of the yearly TCs. The creation of a market – especially for goods that are not simple – is very demanding. Hence, systems based on government subsidies may be much easier to set up not least if systems for collecting public finances are already in place and can be used also for the new objective. Similarly, one may be able to utilize already existing systems for distributing the money out to the producers of environmental services – like regional and local public offices.

Extension systems for both forestry and agriculture exist in many countries and could form a very relevant partner in identifying, negotiating, advising, contracting executing and monitoring and controlling REDD related measures. They form in many ways a possibility for society to facilitate the production of public goods in legitimate and effective ways.

NGOs could also take on a as intermediary between 'buyers' and sellers'. As is seen from the literature – e.g., Kosoy et al. (2008), Porras et al. (2008) – they are often used as an alternative to states and extension systems. Also more profit oriented firms could act as intermediaries. This latter solution is, however, not often observed. In the case of water services – as an example – Porras et al. (2008) find that only in a few of their cases it is companies that collect money for buying environmental services. Typically hydro-electrical firms that already gather payments from users of their own services take on the job of collecting money for financing also forest restoration etc. upstream in relevant watersheds. This observation illustrates indirectly the extra costs involved when setting up separate systems for collecting money for an environmental service.

The characteristics of the 'sellers' of environmental services also influence the total TCs. If property or formalized user rights are not defined, investments in clarifying these rights are necessary before a payment system can be set up. While private property solutions seem favored in practice, it was mentioned in Section 5.2 that contracts have also been made with common properties. It may, however, be an obstacle here in the sense that common property rights are often not formalized. Corbera and Brown (2008) emphasize that this could obstruct these being involved at least in standard market type trades.

Given that rights are defined, it would certainly be least costly in transaction cost terms to make contracts with a few large forest owners compared to many small. Hence, smallholders risk to be excluded (Jindal et al. 2008). Contracting with common properties could, however, offer similar scale advantages. Both Jindal et al. (ibid.) and Corbera et al. (2007a) take the issue beyond that of size arguing that transaction costs may be lower if communities are involved due to the fact that they are cooperative organizations. Corbera et al. (ibid.) emphasize, however, that the level of knowledge among e.g., farmers when contracts are made at community level tend to be lower than when they are directly involved.

Environmental services like REDD could be obtained also through legal means. Dependent on the legitimacy of such a policy, TCs could be low. If legal regulations have low local acceptance, such policies may both be ethically very problematic, characterized by high level of conflict and low effectiveness – cf. Section 5.1. To avoid these problems, processes of participation and compensation would be needed with the implied increased TCs following from these processes.

Finally, one may obtain REDD through changing the use of state owned land. As this is a system based on command, it should have the capacity to lower TCs substantially compared to all systems described above. This conclusion demands, however, that the involved state agencies function properly or that it is not too costly to reform these. Building competencies in the agencies may also be necessary. It should finally be noted that also this solution will demand monitoring systems in place to document the effects of the land use changes for the international body controlling the use of REDD money.

5.3.3 How do transaction costs vary with donor-recipient relationships?

Concerning this question, we offer a couple of brief observations. This is an area where the findings are very context dependent. The general literature on TCs (e.g., Williamson 1985, 1999, 2005) emphasizes the importance of trust for reducing TCs. In the case of REDD with payments, there will normally exist a set of donors (buyers), an intermediary and a set of recipients (sellers) – cf. also Chapter 3. There are, hence, at least two sets of relationships to observe. Maybe also the recipients' view of the donors is as important as their perception of the intermediary.

Trust reduces TCs both because it reduces the time necessary to formulate agreements or contracts and because it makes it less necessary to specify all eventualities in fulfilling them. This is also observed in the more specific literature on common pool resource management – e.g., Ostrom (1990, 2005). It emphasizes especially the importance of trust for the level of cooperative will. Trust is based on previous experiences that the parties have with each other. If new issues like REDD are involved, such experiences may be few. Using already established systems with high trust may be a way to reduce transaction costs.

The trust established also influences the cost of running projects. In the literature it is especially emphasized how trust may reduce the need for monitoring. Cardenas et al. (2000) and Ostrom (2005) also show that self-monitoring might be a way to both increase delivery/compliance and reduce overall monitoring costs. This depends, however, also on to what extent the actors involved 'on the ground' accepts the goal of the policy involved. If they are themselves motivated to undertake protective measures or at least find that the contract/agreement established makes them responsible for the end result, the literature supports that they will more inclined to act

cooperatively with the intermediary. If they, however, observe the goals as problematic and/or see the project is forced from above, one would typically observe a situation where actors on the ground try mainly to avoid being controlled and will support each other in 'fooling' the external controllers – e.g., Lowe and Ward (1997). What we learn from this is that there is a relationship between the level of TCs and the motivation of the involved people. We will, hence, return to this issue also in the section on motivation (Section 5.5).

5.3.4 Conclusions and key considerations for REDD

Transaction costs related to policies in the realm of the environment are normally quite high. This relates to their characteristics being complex goods that are difficult to demarcate. Transaction costs also are observed to vary with the type of regime in place. Going beyond cases with only few buyers and sellers involved, intermediaries are necessary to get systems up and running. Public bodies, but also to some extent NGOs seem to have the necessary capacity to act in this role. Hence, we hardly observe many standard markets in this field of governance. Making wrong decisions about the type of system set up to facilitate REDD might in the end be costly.

For REDD a series of considerations become evident from a transaction costs perspective:

- In setting up regimes for REDD, transaction costs should be a core consideration. This follows from the fact that TCs may be quite substantial, both concerning setting up and running payment systems etc. TCs vary both with the character of the service involved and the type of governance system. Data are scant, but in the case of payments for environmental services similar to those of REDD, TCs seem to lie in the range of 30 - 100 % compared to the level of payments
- A set of institutional structures must be in place to make the transactions involved putting REDD into practice. Independent of whether one plans to use markets or more state based systems, REDD will demand some state engagement like in defining rights and clarifying standards for what is to be traded or regulated – e.g., land practices, thickness of the forest, carbon stocks etc.
- The choice of channel for support, the selection of participant actors and the emphasis on type of REDD (degradation, deforestation, afforestation) will all have a crucial impact on the level of TC. When setting up systems, one should look for existing well functioning organizations/public bodies to be involved
- Creating trust between the involved actors/choose actors with high level of trust to reduce costs of making agreements, monitoring and conflicts
- The balance between detailed information about the delivery of the good and the costs of obtaining these should be emphasized – i.e., develop proxies or indicators that are both information rich and low cost to observe. The higher the trust and the local knowledge and involvement are, the less necessary it is to use very specific or detailed indicators

One should observe that there might be conflicts between reducing transaction costs to the lowest level possible and supporting systems that also do well on poverty alleviation.

5.4 LEAKAGE, PERMANENCE AND ADDITIONALITY

Leakage, permanence and additionality are all core aspects of REDD, issues not much acknowledged by previous policy initiatives like PES or CBNRM. This may be so because these projects have mainly been oriented towards local environmental goods. Hence, this section will be mainly focused on what the issues are including offering ideas about how they may be treated.

5.4.1. How to avoid leakage?

Leakage occurs when protection measures in one place leads to logging/degradation activity in another. This may result in zero or even negative overall climate mitigation outcomes (Aukland et al. 2003). As leakage usually occurs outside of the respective project's immediate boundaries, it is also referred to as an 'off-site effect'.

We may differentiate between two categories of leakage; primary and secondary. Primary leakages concern situations where the activity is simply moved to another place (Wunder 2008). Secondary leakage in carbon projects is when the project's outputs create incentives to increase emissions elsewhere (Aukland et al. 2003). That can be related to factors such as respond to price changes or shifts in demand for land (Wunder 2008).

There are estimates on the scale of forest leakage, indicating that a significant portion (ranging 42%–95%) of the reduced forestry production implemented in a country/region can be transferred elsewhere, off-setting environmental gains (Gan and McCarl 2007).

Several measures can be identified to minimize leakage. In the Noel Kempff project in Bolivia, it is recommended to include in the contract with the local farmers that they do not harvest forests outside the protected area (Asquith et al. 2002). Therefore, contrary to common belief, certain projects directed at avoiding deforestation appear to have a low risk of primary leakage as long as alternative livelihood options are implemented and adopted (Aukland et al. 2003). Such leakage contracts might, however, increase the TCs (monitoring costs) of the PES programs significantly (Schwarze et al. 2003).

Leakage is also related to accounting scales. It is most likely difficult to operate carbon project like REDD without considering relatively large spatial scales (Wunder et al. 2008). By operating REDD at a national level, domestic leakage can be monitored and addressed (Angelsen et al. 2008). The risk of leakage is, hence, the key rationale behind the widespread view that REDD must be based on a national approach in the recipient country rather than being project based, providing better basis for monitoring and overseeing the forest estate in the country at stake (Angelsen 2008, Peskett et al. 2008).

Concerning scale, leakage certainly goes beyond the level of nation states. International leakage is a major concern, probably more challenging than domestic leakage as there are limited measures available and highly difficult to estimate. Some authors point at the importance of having significant share of tropical forest countries participating in REDD where international leakage would be addressed (Gan and McCarl 2007).

It is further important to differentiate leakage issues related to deforestation from forest degradation, and further from the afforestation/reforestation activities. As most deforestation is land clearing for agriculture, the drivers behind the process are structurally different from degradation drivers. This has also effect for differential leakage processes. Timber, fuel wood and even fodder can be transported, but land cannot be moved. If afforestation/reforestation will become a part of the REDD structure, new forest areas could be established to compensate for the carbon lost elsewhere within the country. Hypothetically, one could see "controlled" leakage take place within a country where degraded carbon rich forest areas in peripheral areas could be regenerated and restocked while deforestation in other areas would be accepted and even planned.

5.4.2. Addressing permanence

Permanence is related to the duration of the activities. When applying payment schemes (PES), the most common method to secure permanence in carbon projects is to sign long term contracts between buyers and sellers. Such contracts can vary in length and context. In a case in Ecuador contracts in forest carbon project cover both 5 years renewable contracts and perpetual ones (Wunder and Alban 2008). In Uganda, 10 year contracts are found in the Busheny carbon sequestration project (Nakakaawa et al. unpubl.). In these cases the contract clarifies both rights and duties on the involved partners as the flow of payments.

Permanence is also related to the source of funding. A donor related aspect is the problem that many donors operate with short time horizons, often only 3-5 years. These results in substantial uncertainty concerning the medium to long run effect of many present REDD type projects. This has to be a key topic for the designers of REDD regimes.

Further, permanence is related to the multiple political, ecological and climate change risks that forests might be exposed to. Fires, pests and other catastrophes, both natural and humanly induced, may put the carbon service at risk and impose risk of non-permanence. Permanence is also related to political issues. There is a growing interest in explaining environmental governance and associated conservation outcomes through political processes (Barrett et al. 2005). In the natural science literature rational policymaking and institutional change is assumed where government agencies intend to seek the most preferred outcome for the collective good (Beck 2000). This is not always the case in reality. As common with the natural resources sector in weak states, corruption has been rampant in the forestry sector worldwide (Robbins 2000). Moreover, political instability has not been uncommon in tropical forest countries, especially in Africa. From 1960 to 2000, 60 % of the African leaders left office being overthrown in a coup, invasion, war or by assassination (Luiz 2009). Securing political compliance with REDD activities in the long run is therefore as demanding challenge. The REDD policy for every country must therefore have a risk strategy when potential non-permanence issues are addressed.

5.4.3. How can additionality be secured?

A central theme for REDD concerns how one can avoid to pay 'money for nothing', that is to avoid paying for activities that would have been conducted anyway (Engel et al. 2008). An essence of the REDD logic is the distinction between carbon stocks and flows. Standing forest carbon volume composes the stock, that same stock will that be converted to flow during deforestation, i.e. the carbon released as CO_2.

REDD has the objective to stop the flows of emissions from tropical deforestation. The rule of additionality says that emissions reductions programs, including REDD, should only pay for activities that reduce global emissions. If a stock of carbon is not likely to release a flow of carbon dioxide in the coming year, then paying to protect it is not additional as it does not reduce global emissions (Boucher 2009). This has significant implication for highly forested countries with low levels of deforestation. Such countries will have limited emission reduction potential due to the reasons listed above.

Additionality in REDD is highly dependent on the baseline level in the respective country. That baseline will determine a country's achievement in reducing emissions. How such baselines are calculated is to be negotiated in the international climate negotiations and is actually among the most demanding issue to solve in the REDD negotiations.

Many countries have already put substantial proportion of their forest under some sort of a protected area regime. If such protection is active, then maintaining protected areas that already exist is non-additional and not eligible for compensation (Boucher 2009). In sub-Saharan Africa, however, the fact is that many of the already gazetted forest reserves and national parks have not provided sufficient protection against deforestation.

5.4.4. Conclusions and key considerations for REDD

The following key considerations on leakage, permanence and additionality should be noted:

- Leakage
  - To address national leakage, establishing national REDD structures seems to be the most promising solution, overseeing the whole forest estate
  - International leakage will be easier to handle the more countries adopt REDD
  - Landlocked countries need to address the forest products imported and traded, both for domestic use and export and separate from their own harvesting accountancy
  - Inclusion of afforestation/reforestation in REDD will help countries to deal with national leakage and comply with national mitigation goals
- Permanence
  - When payment schemes are applied, permanence should be an important aspect of contracts. That applies both to forests that are established to sequester carbon as to forests protected from deforestation
  - Compliance with REDD and permanence of the forest related activities has therefore to be established differently in areas where customary and traditional rights prevail, most likely institutionalized without any formal contract
  - The national REDD regime has to develop a risk strategy, both accounting for possible natural and political risks
- Additionality
  - The national baselines will be seminal for generating carbon credits that can demonstrate clear additionality of the REDD actions. Formulating rules for the calculation of such baselines are however, beyond the scope of this report
  - Although countries have significant proportion of their forests under protected area regime, such areas might be degraded to various levels. Therefore, area calculation

will have to be supplemented by calculations of the actual carbon volume within those areas. REDD has to scrutinize what is actually forested when the baselines are set

5.5 MOTIVATIONAL ASPECTS

Looking lastly at motivational aspects of policies directed at environmental services, we observe the importance of the type of goods, the present regimes in place and the various donor-recipient relationships involved. Keeping these dimensions in mind, we will organize this section by first looking at what may motivate suppliers to get involved in relevant programs. Next we will look at what may motivate intermediaries to engage. Finally, we will discuss how motivation to protect forests may be changed by changes in regimes – specifically by introducing payments.

5.5.1 What motivates potential suppliers of environmental services to participate in present programs?

The standard assumption concerning the supply of environmental services is that land owners turn to delivering environmental services if payments for these are more profitable than any alternative such as ordinary forestry activities. It has therefore been a bit confusing that payments for environmental services are generally (very) low. Wunder and Alban (2008) argue that payments may still be considered to cover all opportunity costs for the providers. They maintain that receivers may have high discount rates and that they live under the threat of their land being protected instead by command-and-control measures. It is also emphasized that protection may offer benefits also to the providers – e.g., Corbera et al. (2007b), Porras et al. (2008). Kosoy et al. (2007) add to this by pointing out that payments may "play a significant role in reinforcing (socially acknowledging) good environmental stewardship" (p. 452). Muradian et al. (2008) emphasize that social relationships are important when prices are defined. Prices are not just about opportunity costs, but also about maintaining relationships.

Kosoy et al. (2007; 2008) moreover show that those participating in the programs they have studied were already committed to forest conservation while those prone to deforestation did not want to participate. This observation raises a series of issues. What is really the relationship between willingness to take action for preservation and present attitudes among land holders? Why does it seem meaningful to some and not to others? How important is the payment and its level in this larger picture?

The above may hold some important implications for REDD. These relate to the fact that money would come from far away – no social relationships – and the potential demand might be large. Hence, one may need to involve those who are not already engaged in some kind of protection activity. This will result in higher prices than those observed in present PES arrangements. It may also demand some kind of participatory processes and information campaigns to engage those holding the land to engage in delivering also environmental services.

As emphasized in Section 5.2, payments for environmental services demand some kind of secured rights to the environmental resources – mainly to land – which the production of environmental services depends on. While the ownership to the resource/land does neither need to be fully formalized nor privatized, payments systems represent a clear impetus in this direction. In

itself this may create a counter force against the idea of preservation. Kaimowitz (2002) discusses this in the case of tropical forests in Brazil. He argues that land titling has been helpful in securing indigenous peoples' access to land. He shows, however, also how it has been a factor behind increased deforestation as it has made it easier to 'mobilize' the land for agricultural uses. Hence, to the degree that payments demands titling, one should observe that it may increase the alternative value of land and the level of necessary payments to secure environmental services is thereby enhanced. Similarly, as the value of land increases, incentives to 'land-grabbing' increase too. Societies relying on customary rights – often in the form of common property – may be especially vulnerable to such processes.

5.5.2 What kind of motivations characterizes different potential intermediaries to be involved?

Payment systems for environmental services will leave much power with the intermediaries. It is very demanding both for the buyers and providers to get information about the actual use of the money collected, overall costs of provision and what in the end is provided. Ideally, one would want intermediaries that work for efficient transfer of money and be focused on setting up monitoring systems that serves the cause well. While many intermediaries attracted to e.g., PES and CDM seem to be motivated by the good cause, large amounts of money also appeal to people or organizations looking for easy ways to earn money knowing that their actions are hard to control by others involved. Moreover, the level of corruption in many public administrations, but also NGOs and private businesses across the globe is worrying. These issues are potentially very big obstacles for REDD, especially if it grows big.

The issue of corruption has been more emphasized in the CDM than in the PES literature. This may be because it is more money in CDM, but also because CDM is a global program with high visibility. Hence it may be more driven by 'getting the credits' than by engagement for the environment. Lloyd and Subbarao (2009:242) typically emphasize that "The strong developed country interest in CDMs has resulted in creating a big money-making opportunity from CDM business in the developing world. Of late, there has also been a spate of interest in the CDM by the business sector in developing countries, which has resulted in a mushrooming of the CDM projects pipeline, global consultants, traders, brokers and other CDM commercial interests. As a consequence, the very basis of the CDM is being sidelined or lost and it is not surprising that it has also become known in some circles as the ''Corruption'' Development Mechanism. In this case the benefits from carbon revenues may be working more as an incentive to already deep-rooted corruption in most of the developing world."

The PES literature also mentions corruption (e.g., Wunder 2006). It is, however, more focused on the great information problems involved in PES and the power this gives not least to intermediaries. Hence, Corbera et al. (2009) document a range of problems for providers to get access to necessary information. This concerns which options there are for funding, how projects should be undertaken etc. Kosoy et al. (2008) document conflicts between providers and intermediaries not least concerning the quality of the services offered by the latter.

Given the experience with CDM and the general problems with corruption, setting up a good regime for REDD – being accountable, transparent and legitimate – will be demanding. Various more technical solutions like payment structures for those working for the intermediary, transparency and control mechanisms are important. These have been used to combat corruption.

Looking at the tax administrations in Uganda, Fjeldstad (2006:484) emphasizes, however, "that the technocratic remedies supported by donors have underplayed the degree to which progress in tax administration depends upon a thorough 'cultural change' in the public service". REDD cannot take on this greater issue of changing the cultural basis for corruption. It can, however, be set up in ways minimizing the problem through choice of countries, choice of which national administrations to involve, through the formulation of separate control mechanisms, through education and through building transparent relations between the administrative staff and the local providers of REDD services. Certainly, this will be costly, but necessary to obtain the goals. In relation to this, it is important to develop a set of 'good REDD practices' implying developing standards for how various routines should be formed and what the responsibilities of the administrators at various levels are.

5.5.3 How do payment formats influence the motivation of actors to provide environmental services?

In Section 5.6.1 we indicated that participation in PES projects could not be explained only by the fact that it offers the economically better solution for participants. Looking more in depth into the motivational aspects of participating in forest/environmental protection programs, we observe that different types of motivations or logics may be involved. Certainly, the perception of a payment may take the form of an incentive where the main issue is to vary the payment according to the level of delivery. It may, however, also be perceived as a compensation for a 'good' act where the payment is more about what is a fair reward for acting in a responsible or kind way. Hence, we may distinguish between a pure 'seller-buyer' relationship and that of a fair compensation where the logic is to compensate for costs related to environmental services beyond what the agent could be expected to carry on his/her own. The above distinction may be seen as parallel to that between commodity and gift economies – or between markets as opposed to community relationships – as emphasized in many anthropological studies. It is also discussed in the PES literature – e.g., Kosoy and Corbera (forthcoming).

The first logic follows that of individual gain and is purely instrumental. The second follows the rationale of reciprocating and has a larger capacity to build and reflect relationships. It has a community dimension to it.[3] The distinction between incentive and compensation is important for at least two reasons. First, the different logics establish two different relationships between the involved agents. Which relationship one wants to build or strengthen should hence be acknowledged when formulating the contract. The second point follows from the first. By creating a purely instrumental relationship, control will most probably be much more demanding than when building on the logic of reciprocity. The literature on reciprocity – e.g., Gintis et al.

[3] The difference is illustrated by an experiment documented in Fehr and Falk (2002) where people were given the task to act as employers and employees respectively. Each employer and employee was first asked to agree on the wage and a corresponding level of effort. Next employees chose actual effort. One type of contract involved no incentive – that is money wage was paid as contracted independent of real effort. In the specific experiment people on average delivered a substantial part of what was contracted, despite the fact that the individually optimal to do would be to offer minimum effort. To explain this, Fehr and Falk (ibid.) talk about reciprocity-driven voluntary cooperation. Next they document a similar experiment with incentive wages. In the actual experiment this implied that people would be controlled by a chance of 1/3. If they were then found to deliver the level contracted, they would be offered extra pay. Fehr and Falk document that effort actually went down under this structure as compared to the non-incentive setting.

(2003) – emphasizes the self-policing force of creating reciprocal relationships. Hence, it is not at all certain which system is most efficient. The increased transaction costs following from a pure incentive system may more than outweigh gains from potentially more efficient delivery.

A price is moreover not just a price. Muradian et al. (2008, p. 6) emphasize that "social perceptions and values tend to exert a significant influence on the performance of the market". This relates to the perceptions of the users and providers, and the relationships between different land uses and their provision of the environmental service. Most importantly these authors emphasize the role of the relationships between the users and the providers. The characteristics of environmental services imply multi-partner relationships. Coordination then becomes crucial and community engagement increases strongly in importance. This influences next the role prices play as embedded in wider social contexts.

If forests are cut or degraded, it may be a signal that local norms of protection and preservation are weak or have been weakened. One should nevertheless be aware that protection of natural resources is part of community norms in many developing countries. If this is the case, the way payments are formulated may be very important for the end result. To our knowledge this aspect is not studied much in relation to PES and CDM projects. From the more general literature it is observed, however, that if there already exist 'pro-protection' attitude among the land owners, payments may 'crowd out' this attitude. This effect is observed in many situations where people act to support a common good without being paid to do so. Introducing payments may then change the logic from doing what is considered appropriate to start thinking in instrumental terms and hence calculating what is individually best to do. This observation concerns a wide variety of studies – e.g., of blood-donation (Titmuss 1971), the willingness to host a nuclear energy facility (Frey and Oberholzer-Gee 1997), and collection of money for a charity (Gneezy and Rustichini 2000). In all these cases including monetary reward reduced willingness to supply.

A specific aspect of this in relation to REDD concerns the fact that to be eligible for monetary compensations, forests must be cut or degraded. Hence, the opportunity to be compensated may make those not cutting or degrading start to think that they should rather do so – see also WRM (2008b). This is a potential danger given the implicit rights definition in payments for environmental services, and is an example of changes in motivations following from the introduction of a payment. There are indications of such processes happening in countries with previously low rates of deforestation, e.g., Guyana (Kaieteur News 2009).

5.5.4 Conclusions and key considerations for REDD

The motivations behind getting involved in projects that protect environmental services seem to vary with the context. Payments follow the logic of individual gain, while the protection of environmental services may be based also on direct concern for these goods/reflect local norms about nature protection. Sensitivity to these issues is important and demand insights about local communities. Parallel, REDD may imply introduction of large sums of money attracting agents who might utilize their position to gain financially without delivering reduced emissions.

The following specific points should be considered when instituting REDD:

- Establishing markets is not only about defining goods and creating payment systems. It is also about informing forest owners and communities about the goals involved and creating REDD as a meaningful activity to be involved in
- REDD payments will give much power to intermediaries. The danger is that much of the payments will be captured here. Setting up payment systems must include both a) searching for trustworthy intermediaries and b) development of 'REDD norms' and a strong 'REDD culture' emphasizing anti-corruption attitudes. Certainly, transparency and good control mechanisms must be part of the structure to help avoid the capture of various rents
- Institutional changes necessary to facilitate REDD – e.g., formalizing property rights – may open up for converting forests into e.g., agricultural land driving prices for REDD up
- REDD payments may take the form of a pure economic incentive as opposed to a compensation mechanism based on the logic of reciprocity and responsibility. The latter may be easiest to establish by involving communities. While demanding to create, it will increase the capacity to create self-policing motivations among the producers of REDD.
- Through the introduction of payments, one may weaken existing norms of preservation. This might potentially become a curse for REDD if many become motivated to start degrading forests to become eligible for payments.

PART II:

INTRODUCING REDD IN TANZANIA AND UGANDA – CHALLENGES AND OPPORTUNITIES

6. INSTITUTING NATIONAL POLICIES FOR REDD – SOME GENERAL CONSIDERATIONS

In this chapter we look at issues related to implementing REDD that are common to countries like Tanzania and Uganda. First, we briefly make some assumptions about what kind of international REDD architecture that the REDD policies in the respective countries will have to relate to. The main part of the present chapter will, however, concern issues of general concern when introducing REDD in developing countries. These relate to governance structures, types of measures and policy instruments.

6.1 ASSUMPTIONS ABOUT THE INTERNATIONAL REDD ARCHITECTURE

What can be done in countries like Tanzania and Uganda depends not only on the national situation concerning resources and governance structures. It will also depend on the international REDD architecture, as emphasized in Chapter 2. As this is not decided yet, it leaves us in a rather demanding situation. We have chosen to handle this by making a set of assumptions about the international architecture.

The debate about the international REDD structure focuses on two dimensions – cf. Chapter 2:

- Market (compliance) vs. fund
- Project vs. program/sector policies where national states play a core role

Figure 6.1 illustrates possible combinations:

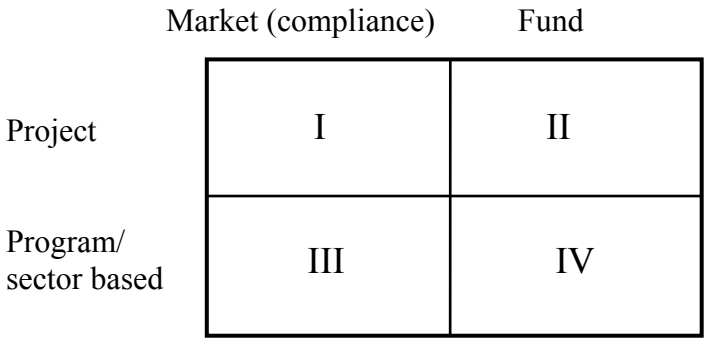


Figure 6.1 Principal formats of international REDD architecture

Typically the market and project organization (I) is seen as one option against fund and program/ sector based (IV). It is, however, possible to combine fund and project on the one hand and compliance market and a program based solution on the other. In the first case (II) the operator of the international fund will choose the projects. In the second case (III) market actors pay countries – the 'owner' of the programs/sector – to undertake certain activities to sequester carbon.

In Chapter 2 we argued that the fund solution is maybe weakest in raising money as it is thought to be outside of the national responsibilities of the post-2012 climate agreement on national res-

ponsibilities. On the other hand, a fund makes it much easier to avoid leakage and it is possible/ easier to add other considerations to the system like securing biodiversity and reducing poverty. One way to handle this could be to include a REDD fund into the climate agreement and let payments to the fund generate CERs for the buyer. Certainly, one could also think of a system where nation states in the North buy credits from countries in the South, being again part of the overall climate agreement and offered CERs.

As emphasized in Chapter 4, states also have a much wider arsenal of policy instruments under its command, increasing the flexibility when formulating policies. Moreover, states have the capacity to formulate policies combining different aims. In the case of pure carbon markets, one must also establish parallel markets for biodiversity and poverty reduction. This is necessary if biodiversity and poverty alleviation is not positively linked to the cheapest carbon options. Given the findings presented in Chapter 5, the latter does not seem to hold except in specific instances.

According to the above, we argue that independent of the details of the overall international architecture, there is rather high probability that payments will, in some way, go to nation states. Hence, we will in the following base our analyses at the national and sub-national levels on the assumption that the resources generated for payments will be canalized via states.

6.2 GENERAL GOVERNANCE ISSUES

The overall question concerning national governance structures concerns how the external funds should be allocated and how the use should be controlled. We will start with the first issue.

6.2.1 The allocation of REDD resources

The core question here concerns whether REDD money paid to the actual state should be integrated in the general budget or kept separate. If kept separate, the next issue concerns how and by whom the money should be allocated.

We will argue that keeping the REDD money separate from the general budget is the better option to secure focus on reaching the specific aims of REDD. This points towards establishing some kind of a REDD fund. This will potentially increase transparency and make it easier to control the use of the money. This may not imply that the money is kept outside the present administrative structures, though. Two options seem of special relevance:

a) A REDD fund with a separate board established outside of the existing state administration
b) A REDD fund placed within the existing administration

In the case of a) different potential REDD programs or projects could apply for money and the board decided which of these to support. Applicants could be both public and private actors. Members of the board could moreover be both from national organizations and the international funding body/bodies.

In the case of b) the resources will be channeled directly through the governmental system – maybe after necessary reforms are undertaken. The main point is that the money, while kept

separate for REDD and separately reported, is commanded by the national authorities. The control from outside must then relate to evaluation of what is obtained by the government in the actual country and not by establishing a separate system outside of this management.

We would argue that b) is the preferable solution. We find it crucial to strengthen the national public/forest administration to make REDD work well. We find it equally important that REDD activities are coordinated with other forest policies. Moreover, to secure the multiple aims of carbon sequestration/reduced emissions, biodiversity preservation and poverty alleviation, it is important that policies are coordinated also beyond sector borders. Certainly, the effectiveness and efficiency of many developing countries is often not as one would have liked. Corruption and bad governance more in general is a major problem. It could, hence be tempting to establish systems outside the national administrations. We find this to be a very problematic strategy and advice that one instead define conditions for allocating money to a national REDD fund implying i) a strengthening of administrative capacity, ii) building transparency into the systems, and iii) setting up a separate control system. Certainly, if present the administration is so weak that REDD cannot be successfully implemented without very high investments in these structures, one should certainly evaluate if it is better to not engage in REDD in these countries. One must, however, remember that helping build good administrations will also 'pay' more generally – i.e., REDD and more general development funds should in this respect be seen together.

The above focus on the state administration does not imply that private actors should not participate. Certainly, funds will in most countries go also to the private sector in large proportions to undertake REDD activities in the field. The issue here concerns again coordination – in this case between public and private activities.

6.2.2 Establishing separate control routines

The next issue concerns whether the control of the resource uses should be part of the allocation structure or be separate. While a separate system will be more costly – transaction costs – than integrating it as part of the allocation system, we would argue that a separate system for verification and control is important. It secures better the necessary distance and will be helpful in combating potential corruption and mismanagement. It seems reasonable that the representatives from the international REDD structure participate in the board being responsible for the internal control system.

6.2.3 Inventories and monitoring systems

Both the allocation of REDD resources and the control system need forest inventories and a monitoring system in place to be operative. We find it reasonable to establish systems that could be shared by both the allocation and control system. That would in principle demand a semi-autonomous arrangement – i.e., the system could be public/part of the forestry administration, but separated from the offices responsible for allocating REDD funds. Monitoring should not only cover forests carbon, but also information that makes it possible to assess developments concerning biodiversity and poverty alleviation/distributional issues.

Monitoring data will be important for payments to the actual state and for distribution of resources internally between e.g., forest owners. The format of payments at both these levels will

influence the details and accuracy needed. We will emphasize two important challenges in relation to this. First, we have the question of avoiding leakage and secure additionality. Second, we have the issue of precision.

Leakage is among the most difficult stumbling stones for REDD. Current biodiversity orientated forest policies in sub-Saharan Africa have in many cases just proven to transfer logging and fuel-wood collection from one area to other areas under different or even similar resource regimes. This has not been a major concern for forest biodiversity conservation, while for REDD this becomes a daunting challenge. In the latter case there is also the risk of international leakage.

If payments are to be made on the basis of performance, high accuracy will be needed. A measurement error of e.g., 1 % may seem innocuous and hard to obtain. Recall, however, that yearly deforestation rates above 1 % are seen as very high. Hence, both more accurate measurement systems and a payment system from the international community to each REDD country that is able to handle uncertainties of the type we here envisage are necessary. The payment system should most probably be based not on yearly data, but some kind of average across years.

For the external buyer of carbon sequestration services, it is enough to know that the actual country delivers the amounts paid for in total. For setting up and running national policies, the demands are very different. Here a quite high level of resolution is needed so that e.g., payments go to those who have sequestered the carbon. Lack of precision here will make it difficult to secure effective solutions.

The needed quality concerning data about carbon stocks implicit in REDD is a substantial challenge. There is a considerable investment needed in most REDD countries – not least Tanzania and Uganda – to establish verifiable forest and carbon accounting, both in terms of research, capacity building and related technologies. This will bring significant up-front costs that should be paid independent of performance. It will also be a recurrent cost in the longer run that should not be underestimated.

As emphasized by Angelsen and Hofstad (2008), participatory monitoring – as part of participatory forest management – has been found effective in reducing deforestation/reversing forest degradation. We support the idea that such participation is important, both to increase local engagement and reduce monitoring costs. There is a challenge, however, related to the fact that we above propose that the monitoring system should be kept separate from the system allocating money to e.g., local forest owners or communities. Participatory monitoring implies that these issues must again be linked at the local level.

6.2.4 Elements of a general REDD structure at the national level

Based on the above, a general governance structure could be envisioned as depicted in Figure 8.1. There are two separate top level units at the national level – the national REDD fund established within the national governmental administration and the control unit. The national REDD fund allocates resources to different governmental management units – e.g., ministries, departments, agencies, who next allocate funds to local actors. The figure also includes a common monitoring unit. Finally, it differentiates between flows of resources (monetary or in-kind) respectively information.

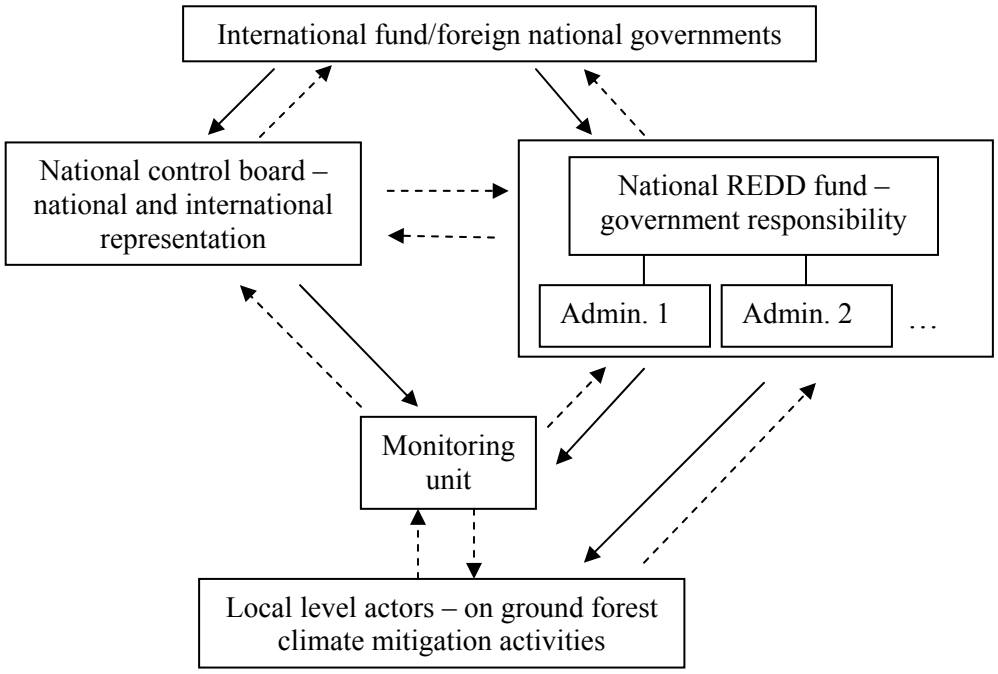


Figure 8.1 Elements of a general REDD governance structure

Compact arrows: Resource and information transfer. Dashed arrows: Information transfer only

Information from the monitoring unit to the national control board concerns data on forest statuses. The information from the government to the same board concerns decision systems and administrative routines etc. Combining these types of information, the control board should be able to evaluate the effectiveness and efficiency of the REDD system in the specific country.

6.3 MEASURES INVOLVED

Moving from the issues related to the general governance structure to the policy content, we observe that there are a series of climate mitigation measures – i.e., physical interventions – that might constitute the future REDD regime. We should distinguish between measures that are directly focused at the status of forests and those that affect them indirectly. In the case of direct measures, we may distinguish between:

a) Reduce emissions with reduced deforestation and degradation
b) Sequester carbon by restoring degraded native forests
c) Sequester carbon through afforestation/reforestation

Including c) would, as emphasized in Chapter 2, imply to expand REDD to REDDplus. Indirect measures would be measures focused at relaxing pressures upon forests. These would not least concern availability of substitutes for the wood and cleared land itself.

As discussed in Chapter 5, there are different interactions between biodiversity, development and the above direct forest carbon measures. It is of major concern that forest climate mitigation

activities will consider biodiversity impacts of its operation at all stages. Further, if the international REDD regime seeks to include a wide representation of global biodiversity within its portfolio of actions, countries like Tanzania and Uganda are important African aspirants.

Reducing deforestation and forest degradation requires political control over land conversion. It is a very controversial issue, depending strongly on tenure. In the reserved forests, the government claims land tenure rights. Although the government also claims legitimacy in halting deforestation/degradation in these forests, it is widely disputed by local communities. On land outside the reserved areas it is even more complicated to halt these processes. Here forests are often being gradually converted to agriculture or grazing. Hence, both the private and social costs of halting such processes may be rather high and have problematic distributional effects. Policies further needs to address the issue of energy substitutes. Will there be readily available substitutes for fuel wood? If not, policies will most probably fail. In order to address deforestation processes it is therefore likely that activities beyond the realm of forestry sector will be needed and we will discuss that for respective countries. Similarly, substitutes for the land itself will be of high importance. Increasing land productivity would, hence, be a priority. Here various measures are available like fertilizers and increased input of organic matter.

Restoration of degraded forests is an important aspect of REDD. It could mainly come about through fencing degraded areas and/or tree planting. Fencing may be both the cheapest and most effective. In the case of planting, it should be noted that native forest restoration demands careful site specific considerations of the tree species used. The appropriate biodiversity/genetic material is not necessarily available for reproduction that might constrain forest restoration aiming at restoring biodiversity values.

Despite the above conflicts, afforestation/reforestation is perhaps the most controversial component of the potential forest measures for the future REDD regime. It is however a potentially very important component of the forest sector in countries like Tanzania and Uganda. Plantation establishment on both private, communal and forest reserve land has raised conflicts with local communities in both countries, especially over competing land right claims. Plantations have also been seen by many as an instrument of the more affluent and powerful elites at the cost of the rural poor to take possession of land and accumulate capital. However, if forest plantations are planned carefully, they may have a great potential on a smaller scale that might be conducive also as part of a broader REDD context, because they may reduce pressure on native woodlands by providing much needed substitutes for fuel wood and charcoal resources. These activities are often identified as one of the major proximate degradation factors.

We argue that countries should have flexibility to include a broad set of forest climate mitigation measures in the national regime. This will have several advantages, including an opportunity for a "controlled leakage" that allows for deforestation in a given area with high land rents and simultaneously compensates forest restoration activities in other, more marginal agricultural areas and especially within the already protected areas and reserves. As part of this logic, it has been suggested that the afforestation/reforestation (A/R) component of the CDM could be incorporated in national forest carbon regimes (Angelsen and Wertz-Kanounnikoff 2008).

6.4 CHOICE OF POLICY INSTRUMENTS

In the general literature, REDD it is typically perceived as a kind of payment for environmental services. This is to mix up the measures to reduce deforestation and forest degradation with the policy instruments that could or should be used to make the measures materialize – e.g., halt or turn forest degradation around. As emphasized in Chapter 4, the country hosting a REDD activity can certainly also engage in information and legal action, not just payments. Moreover, as we argue that REDD money should be administered through a national fund, payments will come from the state and could take the form of subsidies as well as contracted payments.

Following the experiences documented in Chapter 5, payments will need to be combined with information measures, both to transfer necessary competence and knowledge about the specificity of the local actions to be undertaken – e.g., which species to plant. Here the extension service would have to play a core role. It seems also necessary to involve local forest owners/ communities in building an understanding about why forest protection is important and why and how global goals like carbon mitigation can be combined with local needs.

Payments could be made both to individuals and to communities. As shown in chapter 5, payments for environmental services tend to go to individuals with defined property rights. As much of the land in developing countries are operated under non-formalized customary rights – typically also Tanzania and Uganda – developing systems for paying or compensating these land holding groups will be very important. This is easier to do in a situation with national funds as proposed here, but may demand some further formalization of community tenure arrangements. Certainly, REDD money should itself be available to cover the costs of such processes.

One should also acknowledge that payments in kind could be as relevant as monetary transfers. Partly, substitutes for e.g., lost energy sources may not be easily available through present markets. Supporting the development of such markets or paying in kind may hence be very important. Assuming REDD should also foster development, building infrastructure may be as important as paying to individuals. Offering money to communities to generate employment, education, health care, and sustainable agricultural practices etc. may be very important (cf. also Grieg-Gran et al. 2005). Subsidizing inputs like fertilizers may be a core option to reduce the pressure on forest land conversion to crop land. Another way is to offer cheap credit to households etc. where the payment in that case is lowered interest rates.

One should also note that if payments are just equal to opportunity costs, there will be no extra resources for investments. The money will go to compensate the income lost. To secure room for investments and hence development, it seems necessary to pay extra. This should be considered a necessary cost of REDD if development is part of the aim. There are strong normative arguments for such an inclusion. As REDD is interesting for the North mainly because it is a cheap way to reduce problems it has created itself, North should consider creating development opportunities – not just status quo compensation – as a reasonable price to pay to get access to such solutions.

Establishing protected areas – legal regulation – may be a very effective policy measure to obtain REDD. If this is done on publicly owned land, it could be a rather simple policy to set up, as it would already be under the command of the state. In practice, this solution is not that simple, as

much of the publicly owned land in countries like Tanzania and Uganda are used by local people and represent important livelihoods for them. Hence, some form of compensation for lost *de facto* access would seem appropriate. The REDD regimes should be crafted so that local people will not bear the burden of carbon conservation as well. They could, however, also be used to offer compensation to people being already deprived of important livelihood in the case of already established protected areas. This could make the protection much more effective.

We do believe that the potential monetary scale of REDD, in contrast to the financially deprived biodiversity conservation management in Africa, could aim at resolving some on the present dilemmas in biodiversity protection – hopefully generating a win-win situation. The seminal factor is how REDD can become a vehicle for the much needed rural development and improved livelihoods in one of the poorest regions of the world.

Much of to-days encroachment would be termed illegal. Certainly, one would then wonder if compensation would help – cf. the discussion in Chapter 2. We will here make a distinction between illegal forest use by local communities and specialized logging firms. In the former case offering compensation/alternatives would be legitimate as it concerns securing basic livelihoods for people. In the case of firms, it would be morally problematic to compensate for having to stop illegal activity, and most probably it would not help reducing the activity. Here it is rather important to use REDD money to increase the capacity to enforce legal protection and involve local communities in monitoring activities. As illegal logging often is due also to corrupt public administrations, it becomes important to establish zero tolerance for such activities.

This takes us back to the issue of building an effective national REDD architecture or regime. As indicated in Chapter 5, the costs of setting up and running systems for payments, compensations, verification and control may be substantial. Countries like Tanzania and Uganda lack much of the necessary structures to do this. REDD would have to pay the costs of producing and maintaining such systems. In relation to this, it is important to develop a set of 'good REDD practices' implying developing standards for how various routines should be formed and what the responsibilities of the administrators at various levels are. This implies building a 'local' or 'specific' culture around what REDD policies and administrative tasks are or should be. This implies instituting training programs involving learning 'REDD routines' and 'REDD norms'. So while it is a danger that REDD can boost corruption and interests that want to avoid transparency, it can also be used to help turning the tide of corruption around

6.5. CONCLUSIONS AND KEY CONSIDERATIONS

Implicit in the arguments developed in this section lies the view that national REDD strategies should be allowed to apply locally adapted and flexible policy formats. Conditions vary concerning national and local administrations. Property rights systems vary as do resource qualities and dynamics. In-kind measures might be needed as well as direct payments, and further, it is likely that REDD will not be achieved at desired levels without interfering with activities outside the forestry sector. Forests held under different tenure regimes might demand different instruments and incentive structures.

The following specific points should be considered when implementing REDD:

- Governance structure
  - A REDD fund instituted within the national state administration – potentially demanding structural changes in this administration. This is motivated both by the need to keep transaction costs down, increase the capacity to coordinate and secure national legitimacy
  - An autonomous control unit with international representation
  - A semi-autonomous monitoring unit financed by both the national REDD fund and the control unit
  - Costs of administering REDD – transaction costs – could be substantial. When building the governance structure this issue demands special attention. Increased transaction costs should not be an argument in itself against structures with a capacity to produce better goal fulfillment
- Expanding REDD to REDDplus – i.e., including also options for afforestation/reforestation – offers some important opportunities. It will increase flexibility and the capacity to avoid leakage. There are, however, also some potential conflicts with biodiversity protection and poverty alleviation/rights protection that are important to note
- Policy instruments
  - REDD resources should be specifically targeted at building an effective national REDD architecture including the building of a REDD culture internalizing the triple goal of REDD and creating an anti corruption environment
  - The combined aims concerning reduced carbon emissions, enhanced biodiversity protection and poverty alleviation, demands REDD policies that operate cross-sectoral and formulate policy measures taking all dimensions into account
  - Variations between and within countries concerning e.g., tenure, administrative capacity and resource status, implies that nation states should have flexibility to choose among policy instruments
  - REDD should accept incentive payments, compensation payments, legal regulation and informational policy instruments. Combinations between payments and information is especially warranted
  - Payments in kind should be considered especially when markets for substitutes are weak
  - To establish a good basis for development, investing REDD money in infrastructure – e.g., education, health care – and alternative employment is important. If total payments do not go beyond compensation for opportunity costs, the capacity of REDD for supporting development is low
  - Payments to communities may be as important as to individuals/households
  - Payments may demand tenure reforms. If so, the challenge of land grabbing should be specifically observed
  - Compensation also for previous loss of livelihoods in protected areas to make them function better should be considered
  - Specific measures against illegal logging should be considered

7. IMPLEMENTING FOREST CLIMATE MITIGIATION STRATEGIES IN TANZANIA

This chapter analyzes prospects around implementing REDD in Tanzania based on the above perspectives. It is divided in two main parts. The first three subsections cover information about the Tanzanian contexts – general development trends, forest resources, and forest policy and governance. The last part is focused on potential strategies for implementing REDD in Tanzania – including governance structures and specific policies to promote REDD/REDDplus.

7.1 TANZANIA – COUNTRY AND CONTEXT

Tanzania is the largest country in East Africa, almost 1 million km^2. It is a relatively sparsely populated country with a population of about 38 million. The population density is 41 per/km^2 compared to 126 in Uganda and 60 in Kenya. The annual population growth rate is 2.8 %.

Tanzania is classified as a least developed country and has an agricultural based economy where the absolute majority of the citizens derive their livelihoods from self subsistence farming and environmental incomes. Around 80 % of the population is occupied in agriculture. However, only around 5 % of its land is classified as arable, compared to around 21 % of Uganda and 8 % of Kenya. An outcome of that is a relatively large livestock sector, utilizing the rangelands and open woodlands and an agricultural sub-sector that accounts for some 30 % of the agricultural output.

Table 7.1 Some socio-economic indicators for Tanzania.

Total area	**Population**	**Population growth annually**	**Agricultural labor force**	**GDP per capita (PPP) (2008)**	**GDP (PPP) (2008 est.)**	**Population below poverty line**
950.000 km2 (land 886.000 km2)	38 million	2.8 %	80 %	1.300 USD	$54.26 billion USD	38 %

Source: CIA (2009)

7.2 FOREST RESOURCES AND CARBON[4]

7.2.1 Resources

Tanzania is a forest rich country. According to a recent estimate, forests and woodlands are found to cover around 33.5 million ha, representing about 40 % of the total land area (FAO

[4] There are considerable variations in data on Tanzanian forests and further, the forest area figures often consider fully stocked forest areas and by that tend to underestimate degradation levels. This constitutes one of the key challenges for REDD as the methodological techniques to measure forest carbon stocks and flows will be the basis for determination of the overall climate mitigation performance, hence quantify the payments for forest environmental services.

2007). Forests and partly bio residues account for around 90 % of the primary energy supply, mainly for cooking and partly heating. In rural areas fuel wood is the dominant source of energy, while charcoal is more commonly used in the urban areas (Dallu 2002). In addition, the forestry sector contributes about 10 % of Tanzanians registered exports (note: part of that can be imported for export) and the forestry sector is estimated to contribute around 2.8 % to the annual GDP (URT 2001). However, that figure does not include fuel wood.

The annual wood consumption has been in the range of 40 million m^3 annually, out of which around 95 % as fuel wood. This comes in addition to the wood being burnt in land conversions. Forests resources are therefore highly important for the Tanzanian economy.

Table 7.2 Land use types and their distribution in Tanzania mainland

Type of land use	**Area (1000 ha)**	**%**
Grazing land	48.740	51.7
Small holder cultivation	3.880	4.1
Forests and woodlands	33.555	35.6
Urban development	1.600	1.7
Inland water	5.900	6.3
Large-scale cultivation	585	0.6

Source: Milledge et al. (2007)

The forest estate can broadly be divided in four main ecological types, or closed forests, mangroves, woodlands and plantations (see Table 7.3).

Table 7.3 The main types of forests in Tanzania

Land cover type	**Area (ha)**
Plantations (softwood & hardwood)	135.000
Forests (intact & degraded)	1.141.000
Mangroves	115.000
Woodland (open and closed)	32.300.000
Total	33.700.000

Source: URT (2001)

Woodlands are the dominant vegetation type in Tanzania, found throughout the country. It can be differentiated between open and closed woodlands (miombo) where the open savanna type is predominant, found to cover around ¼ of Tanzania's land area. The closed woodlands are better stocked with trees, mainly concentrated in the western and southern parts in altitudes between 300-1300 m. The woodlands are relatively low in biodiversity value, especially the open type, but provide important habitat for wildlife.

The tropical high forests are found in both high altitudes and in the lowlands. These areas have high timber volumes, are biodiversity rich and grow in relatively humid environments (Dallu

2002). Forests in the Tanzanian mountain areas especially the Eastern Arc Mountains are classified as key global biodiversity hotspots.

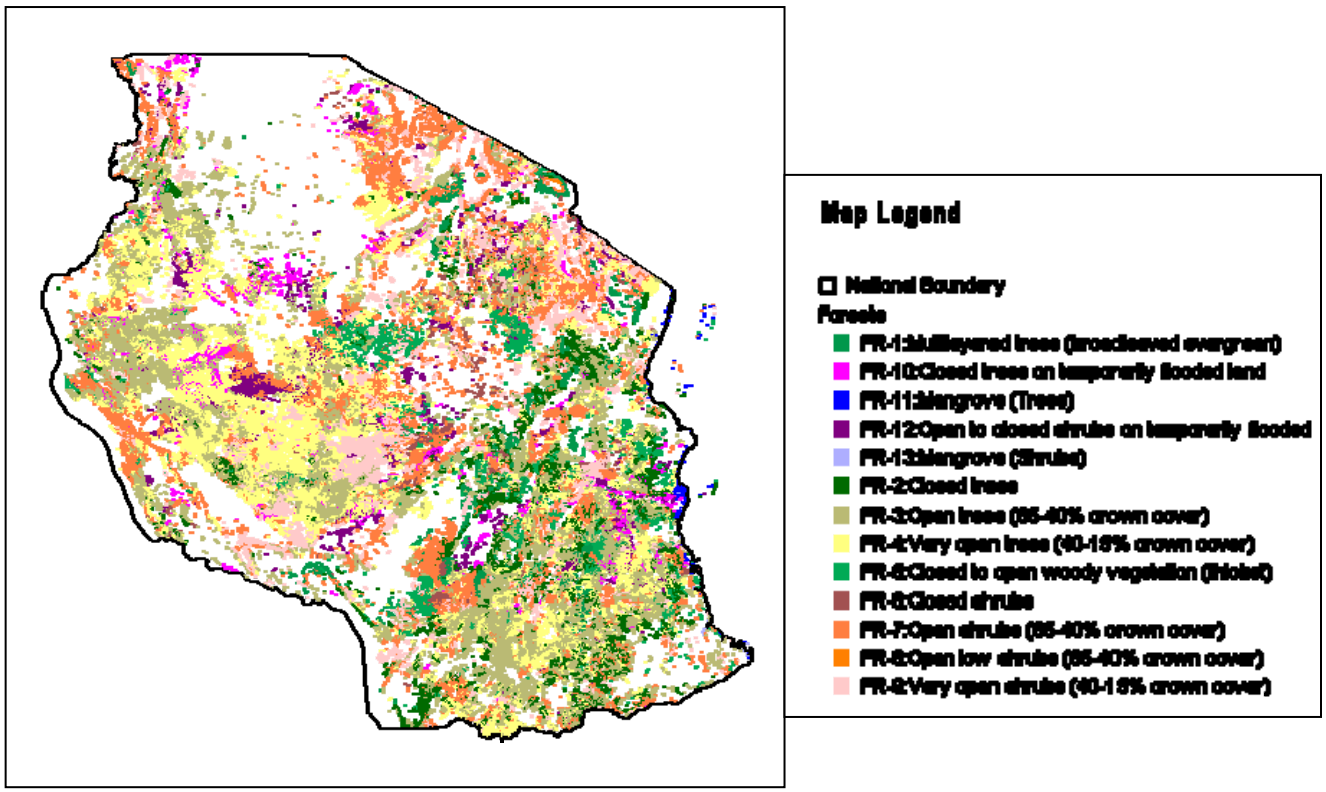


Figure 7.1 Forest map of Tanzania.

Source: FAO (2009)

7.2.2 Deforestation trends

Despite different protection efforts, deforestation has been proceeding at an alarming rate in Tanzania. There are recorded annual variations in the level of deforestation, while the newest estimate in Tanzania PIN note records annual loss of 91.000 ha of forests (URT 2009a). The National Forest Program refers to higher deforestation rate or between 130.000 ha to 500.000 ha per year, indicating the scale of forest conversions (URT 2001). In the Tanzanian National Framework for REDD, annual deforestation is estimated at 412.000 hectares (URT 2009b). This denotes significant methodological challenges, both in measuring the actual forest loss in a large country, but also to clarify the definitions of forest types especially in the open woodlands. The shift from forest cover to non-forest bush land is very gradual, and defining the line for what is forest land is often difficult. However, in light of those variations, the average annual deforestation from 1990-2005 is recorded to be around 1.0 % (FAO 2007) – see also Table 7.4.

In the deforestation literature it is common to differentiate between proximate and underlying causes (Geist and Lambin 2002). Proximate factors concern the concrete activities on the ground.

According to the Tanzanian PIN note (URT 2009a) key proximate causes of deforestation in Tanzania are agricultural expansions, extraction of wood for fuel and grazing. Agricultural productivity has been declining in Tanzania, while the population has grown. Land conversions have therefore been economically attractive resulting in substantial loss of the forest cover. Further, as forests are the key source of energy for the absolute majority of Tanzanians, both as fuel wood and charcoal, considerable deforestation is also related to fuel wood extraction. The third major proximate factor contributing to deforestation in Tanzania is livestock grazing.

Table 7.4 Rates of land-use change in Tanzania.

	Annual rates of change			
Total forest area (2005) Area (1.000ha)	**1990 – 2000**		**2000 – 2005**	
	Area (1.000ha)	**% change**	**Area (1.000 ha)**	**% change**
35.257	- 412	- 1.0	- 412	- 1.1

Source: FAO (2007)

The above processes are formed/influenced by underlying factors, such as weak tenure regimes and political decisions. Part of the decline in the agricultural sector is due to the structural adjustment programs in the 1990´s the led to removals of subsidizes for fertilizers and other agricultural inputs that strained small scale farmers to shift to slash/burn operations, significantly facilitating deforestation and degradation (URT 2001, Sjaastad et al. 2003).

Added to this picture we observe that logging – not least illegal logging – is mentioned in the more general literature as an important source to deforestation too (WRM 1999; Milledge et al. 2007; Jansen 2009). Hence, the Tanzanian picture cannot be understood if we do not include a wider understanding of the political process and the problems with combating corruption. Jansen (2009:9) referring to the sub-divisions for forestry, wildlife and fisheries under the Ministry of Natural Resources and Tourism states that "In all of the three sectors there has been pervasive corruption during the last decades. Management and staff in the Ministry, together with politicians and people from the local population, have plundered the resources and exploited the resources in a way that is not sustainable." The World Rainforest Movement (WRM 1999) asserts that "the official analysis of the causes of deforestation seems to be clearly biased against the poor. While the emphasis is put on shifting agriculture, grazing and the use of firewood by local people and refugees, nothing is said about the intensification of export crop production in semiarid areas – which has led to soil erosion and desertification processes – or about illegal commercial logging – the main cause of deforestation in the country – which is linked to corruption within its own agencies and officials."

The above statement that logging is the main cause of deforestation is maybe an exaggeration. It is hard to evaluate as data are weak/conflicting. For future policy making in the sense of REDD, it is, however, very important to be aware of this issue.

7.2.3 Forest degradation

Forest degradation in Tanzania is dominantly seen as the result of livestock expansion and fuel wood extraction (URT 2009a). The extent of degradation and the subsequent decline in forest carbon levels are even more difficult to quantify than for deforestation. As the annual deforestation levels are found to vary in the range of 3-4 times between studies, getting reliable forest degradation figure is even more demanding. However, according to the REDD PIN note from Tanzania, the annual forest degradation is estimated to be in the scale of 500.000 ha, without giving more details about the level of degradation (URT 2009a).

The available data also offer very limited information on the context of carbon lost or potential flow of greenhouse gas emissions from forest degradation. It can, however, be concluded that if forest degradation is of this scale, it is source of a significant emissions that has to be accounted for in the REDD context in addition to the emissions from deforestation.

7.2.4 Forest carbon potentials in Tanzania

The overall carbon stock in the Tanzanian forests is estimated to be in the range of 1281-3400 MtC (Gibbs et al. 2007). Those values are for above and below ground forest biomass carbon stocks (trunk, branches, and roots) based on a range of studies using both national statistic and remote sensing.

Based on estimates of the annual deforestation rate and the average carbon stored per unit land, various annual flows of carbon from deforestation are calculated. Makundi (2001) estimates losses of carbon in the scale of 28 Mt annually. Murray and Olander (2008) calculate the level to be 37.6 MtC. These estimates imply emissions of CO_2 in the range of 103-130 Mt. However, this does not account for emissions from forests degradation that most likely is a significant additional source. If the higher figure is used, it ranks Tanzania nr 12 on the global list of tropical countries emitting carbon from deforestation (Murray and Olander 2008). From our access to primary data in Uganda (see next chapter), there are reasons to believe these estimates to be in the higher range, as the actual carbon density in the forests degraded and removed is generally found lower than stated in official figures (Nakakaawa et al. unpubl.).

Table 7.5 Forest growing stock, biomass and carbon in Tanzania.

Growing stock			**Biomass**		**Carbon in biomass**	
Per hectare *(m3/ha)*	Total *(million m³)*	Commercial *(% of total)*	Per hectare *(tons/ha)*	Total *(million tons)*	Per hectare *(tons/ha)*	Total *(million tons)*
35.9	1.264	73.3	127.9	4.509	64	2.254

Source: FAO (2007)

This indicates a high potential of climate mitigation in Tanzania by reducing deforestation and forest degradation. In addition is then the climate mitigation potential in the Tanzanian forest estate via afforestation/reforestation and forest management/restoration activities.

7.2.5 Take home messages on forest resources and carbon

- There is a significant deforestation in Tanzania with a rate in the range 100.000 – 500.000 ha/year
- Forest degradation is also widespread in Tanzania, both in reserved forests and on general land. The rate is estimated to be in the order of 500.000 ha/year. The figure is very uncertain
- Prime drivers proximate for deforestation/forest degradation are agricultural expansion logging, fuel wood and charcoal production, fodder and livestock grazing
- According the official statistics, around 95 % of the ca. 40 million m^3 of wood consumed annually in Tanzania is for fuel, the rest goes to different industries/construction. In relation to these figures, it should be noted that there are strong indications that the level of illegal logging is substantial in Tanzania
- There are many underlying and complex factors behind land conversions. An example is the effect of removing subsidies on agricultural inputs, that lowered pr/ha productivity and forced farmers to expand their agricultural areas
- There is a great variation in data on forest cover changes and level of degradation
- Carbon stock estimates rests heavily on measurements of land use, biomass assessment and conversion factors to carbon stock assessment
- There are substantial net emissions of carbon from Tanzanian forests indicating emissions up to 103-130 $MtC0_2$; ranking Tanzania among the top 20 tropical countries on carbon emissions from deforestation
- There is significant climate mitigation potential in the Tanzanian forest estate

7.3 FOREST POLICY AND GOVERNANCE IN TANZANIA

7.3.1 Some historical notes on land and forest policies

Formal forest management and conservation in Tanzania dates back to the German period. The first forest reserve was gazetted as early as 1906 (Abdallah and Monela 2007). The Germans secured the control of the most valuable lands, essentially forests and agricultural land for themselves. This implied restrictions of existing local community rights to access and use land resources. The Germans administration put all land where private ownership could not be documented under the crown land as early as 1897. Under the German period almost all mountain type of forest were reserved, most of which still remain (Ylhäisi 2003).

After World War I, Tanzania came under British mandate. The British followed the path of the German regulation. During WWII the timber harvest for export boomed and later the colonial administration put effort to establish large scale modernized agriculture that demanded clearing of vast forest areas for export crops, like coffee, tea, rubber, cotton, tobacco and sisal. This resulted in vast deforestation and degradation and moreover, a breakdown of the traditional rules around land tenure and natural resource management at local level (Wanitzek and Sippel 1998).

At the end of colonial rule, the forest reserve area had increased to around 100.000 km^2, largely under production regime, but not allowing local community occupation. Areas under conser-

vation reached similar levels. These processes had severe impacts on people, illustrated when the Selous Game Reserves was established in 1922. Being approximately of the size of Switzerland, around 40.000 people were evicted (cf. Kjekshus 1996; referred in Ylhäisi 2003).

Since independence, in 1961 and until date, the Tanzanian government has established in addition around 62.000 km^2 of reserved lands. By that Tanzania has, proportionally, reserved more land that any other sovereign state in the world. After independence the national administration adopted a similar authoritarian forestry management structure as the colonial powers, with, ´top-down` and a commandeering state governance approach (Havnevik 2007).

From the legendary Arusha declaration in 1967 when Tanzania embarked on a socialistic regime and until the 1990s, the state dominated the economy. The government initiated large nationalization programs where land was not considered a tradable commodity. The subsequent transformation of the rural settlements, by forcing almost 9 million people to relocate to the new Ujamaa villages severely impacted on the ecological conditions. The new and uniform village establishment was not adapted to local environmental conditions, but also many traditional agricultural and local natural resources management practices vanished. In 1976 around 80 % of the population lived in such villages (Ylhäisi 2003)

When the weak capacity of the centralized forest administration to halt deforestation and limit forest degradation in the reserved forests became evident, its approach came under considerable scrutiny. The ambitious plans of protecting reserved forests became difficult to enforce. Furthermore, ever since the genesis of establishing forest reserves, forestry has encountered resistance from the local communities that live in and around forests (Sunseri 2005). Until the current forest policy, their rights and responsibilities have been largely neglected in forest governance. This has caused multiple conflicts between governmental authorizes and local communities.

This is reflected in the evolving forest policy. In its 1963 formulation, it had two main objectives; to produce enough forest products to meet Tanzanian demand and to protect the main water catchment areas. In order to achieve these goals the government pursued a policy of setting aside adequate land as forest reserves. Neither the local people nor their management systems were mentioned (Ylhäisi 2003). In the Tanzania Forestry Action Plan from 1989, it was still recommended to gazette additional forest reserves. Communities and participation were mentioned in the plan, but real action for collaboration was not implemented. A substantial paradigm shift arrived with the current National Forest Policy of 1998 where community collaboration is not only widely discussed, but among its priorities to improve and legitimize forest management.

Modern community-based forest management in Tanzania is now becoming a widespread activity. It is claimed to have its origins in 1994, when eight villages organized themselves as managers of a natural forest in Duru Haitemba in the Bhanti district (Wily 2003). Important is also the presence of strong donors in the forestry sector. They have contributed significantly to the forestry sector in Tanzania for decades and their support has been seminal to facilitate the more recent community initiatives (Havnevik 2007). These donor agencies include DANIDA, NORAD, FINNIDA and the World Bank (Hamza and Kimwer 2007)

7.3.2 Present forest policy and institutions

The Tanzanian policy and legal developments have since the mid-1990s, moved in direction of decentralization, participation and empowerment of rural people (Havnevik 2007). The present forest policy and legal framework is revealed in the National Forest Policy from 1998 and the Forest Act of 2002, Land and Village Land Acts of 1999, the Local Government Laws with miscellaneous amendments of 1999. The National Forest Program (2001-2010) is finally the instrument to implement the Forest Policy of 1998 (Abdallah and Mondela 2007).

In the National Forest Program four main strategies or implementation programs were developed:

- "Forest Resources Conservation and Management Program which aims at promoting gender balanced stakeholders participation in the management of natural and plantation forests, giving priority to ecosystems conservation, catchment areas and sustainable utilization of forest resources;
- Institutions and Human Resources Development Program which aims at strengthening institutional set up, coordination of forest management, establishing sustainable forest sector funding and improvement in research, extension services and capacity building through strengthening human resources;
- Legal and Regulatory Framework Program which focuses on the development of regulatory issues including the Forest Act, rules, regulations and guidelines to facilitate operations of the private sector and participatory management, and
- Forestry Based Industries and Sustainable Livelihoods Program which is intended to enhance forest industry development by promoting private sector investment, improving productivity and efficiency and to tap the income generation opportunities provided by non wood forest products" (URT 2001:xii)

The National Forest Program offers guidance for conservation and sustainable use of the forest estate. A rather bleak picture of the centralized forest management performance is drawn. It is stated that "Centralized forest management has contributed to both market and policy failures in the forestry sector resulting in forest degradation due to encroachment, over-utilization, wildfires, unclear boundaries, lack of systematic management and inadequate resources for controlling illegal harvesting as well as inefficient revenue collection system" (cf. URT 2001:23).

It is further noted that in almost all forest reserves, both central and local, encroachment in rampant with subsequent degradation. Degradation is also widespread in forest on general lands, which are also under jurisdiction of the central forest management. The limitations in the centralized forest management were emphasized in the following observations from the World Bank from 2001 (cf. Sjaastad et al. 2003):

- Movement and settlement of people into reserved forests
- Unsustainable and illegal harvesting of wood for commercial purposes
- An ineffective system of decentralized forest administration, which separates the need for enforcement and regulation from the needs of rural communities for forest and woodland products
- Inadequate systems for revenue collection from forests

- Inadequate systems for revenues collected to be used for forest management or shared with local communities
- No targets set for revenue collection
- Inadequate institutional mechanisms for forest biodiversity conservation
- Disparate systems of tenure over forested lands and weak incentive systems to undertake community-based forest conservation
- Limited scope for publicly financed forest biodiversity conservation and heavy dependency on donors

As emphasized before, corruption seems to be an important obstacle to wise natural resource management in Tanzania. Jansen (2009) presents a very negative picture of the situation showing both how corruption results in direct misuse of the natural resources and loss of financial means due to heavy underpriced access to its resources – loss of tax revenue etc. – and mismanagement of external support. He does, however, also emphasize that there is now an increased openness about corruption in the media and that directors in the Ministry of Natural Resources and Tourism have been removed. As they have been moved 'side-ways', the reaction may still be seen to be rather weak.

Addressing especially the ineffectiveness of the forest management, we observe also a paradigm shift from the earlier "fence-fine" strategies to more decentralized approaches. It supports devolution of ownership and management responsibilities over some forest resources to local communities under what is called "participatory forest management" approaches (Hamza and Kimwer 2007). Actually, development of community forestry is one of the back bones of the National Forest Program, the instrument to implement the policy.

Participatory forest management is commenced with the dual objective of addressing deforestation and forest degradation and concurrently improving livelihoods and addressing rights of local communities (Robinson and Maganga 2009). Operationally, it consists of two measures to establish collaboration between the governmental agencies and local communities, community based forest management (CBFM) and joint forest management (JFM) that target different forest tenure arrangements.

Under community based forest management there is a process where villagers can claim and declare and further gazette general land forests under village tenure as Village Land Forest Reserves. This shifts the more open access nature of general land forests to village control. Joint forest management entails on the other hand processes where forests on reserved land, either national or local government forest reserves, are put under joint management by the villagers and the government (local or central government). Village committees are co-managers of the forest and are entitled to shares in forest products. Most forests under this arrangement are catchment forests.

As is shown in Table 7.6, the participatory forest management initiatives are ongoing, and currently 7 % of Tanzanian villages are involved in joint forest management and 11 % of the villages in community based forest management (Robinson and Maganga 2009). There have been efforts for scaling-up JFM and CBFM in Tanzania and considerable interest from the donor community to support these processes (Abdallah and Monela 2007).

Table 7.6 Participatory forest management (PFM) in Tanzania. Summary statistics

	PFM area (ha)	**% of total forest**	**% of villages**	**No. of villages with plans**	**Other**
PFM	**3.7 million**	**11 %**	**18 %**	**478**	57 districts with ongoing PFM activities.
Of which:					
CBFM	2.1 million	6 %	11 %	329	Mainly miombo, coastal and acacia woodlands.
JFM	1.6 million	5 %	7 %	149	Mainly mountain and mangrove forests.

Source: Based on Bond (2008)

7.3.3 Land tenure in Tanzanian forestry

Land in Tanzania is held in trust for the citizens of Tanzania by the President according to the Land Act 1999 (Bruce and Knox 2009). All land is therefore ultimately owned by the state, and may only be leased by private individuals for set periods of time, no longer than 99 year (Carter et al. 2008). The state grants rights of occupancy under several categories namely reserved land, village lands, leasehold and general land.

The main division in land categories in Tanzania goes between reserved land and general land. Due to the process of participatory forest management/the establishment of village co-management systems, a third category can be defined; village land. Private leasehold also exists. Figure 7.2 offers an overview of the main categories. The following specificities about each category should be noted:

- Reserved land

Here lands are governed by the respective governmental authority having jurisdiction over the area at stake. Approximately 40 % of the Tanzanian land area is under some protected area/ reserved land category. Actually, few countries if any have allocated so large proportion of its land area under protection (Ylhäisi 2003). Of the 33.5 million ha forest land (including woodland), 12.5 million are reserved forests. Of these around 600 are owned by the central government – central government forest reserve – and around 200 by the local authorities – local government forest reserve. Added to this are the about 2 million ha that are within the borders of national parks and game reserves (Zahabu et al. 2000).

- General land

In this land category, management is "de facto" under open access. The administration of general lands is centralized, vested in the Commissioner of Lands. While the Commission delegates these administrative responsibilities to elected local councils, the Commissioner must approve all decisions (Bruce and Knox 2009). General land is all land not reserved or village land. This land category occupy's the highest forest cover. The forest on general land, formerly known as public forest land covers about 16-18 million hectare or almost 60 % of all forest land. These forests are quite dynamic concerning forest cover, characterized with insecure land tenure, shifting cultivation, harvesting for wood fuel, poles and timber, and a pressure for conversion to other competing land uses, such as agriculture, livestock grazing and settlements.

- Village land

Rural Tanzania (except reserves and some private estates) comprises largely a mosaic of around 11.000 village areas, each with its constituency called Village Assembly (Wily 2003). Administration of village lands in the more than 9000 villages is more fully devolved to elected Village Land Councils, but the legal ownership of land remains with the government (Bruce and Knox 2009). Parts of village lands are village forest reserves. These operate under participatory forest management, divided into JFM and CBFM as already emphasized. There is an increasing number of village forest reserves, with 2006 data indicating that these management approaches cover 3.6 million ha of forest land distributed across 1788 villages nationally.

- Private leasehold

In addition to these land tenure arrangements, notably, forests are also held under private leasehold from the government. The Tanzanian land act allows private enterprises to lease land for development. An example of that are three private plantation forests covering a total of around 60.000 hectares.

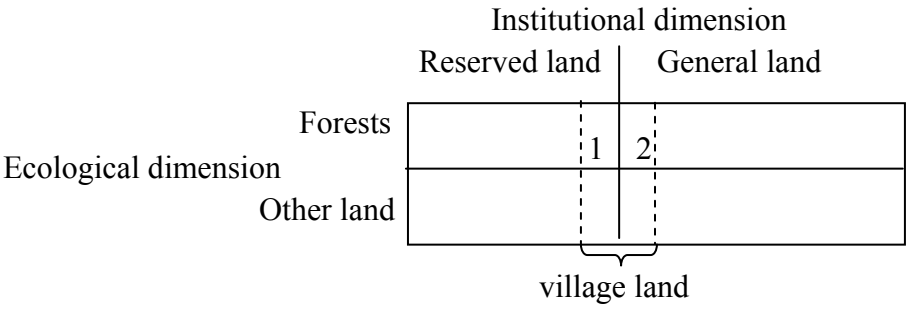


Figure 7.2 Main categories of land in Tanzania

1: Land under joint forest management (JFM)
2: Land under community based forest management (CBFM)

Table 7.7 offers information about the size of the various categories.

Table 7.7 Forest areas by land use and tenure, Tanzania

Use of forest land	**Area in 1000 ha**	**%**
Production forest	23.810	71
Protection (including water catchment)	9.745	29
Total	**33.555**	
Legal status		
Forest reserves (partly under JFM – village land - 5 % of total)	12.517	37
Forest/woodland within national parks and game reserves	2.000	6
General land (partly under CBFM – village land – 6 % of total)	19.038	57
Total	**33.555**	

Source: URT (2001), Bond (2008), URT (2009a)

7.3.4 Actors in forest governance

The forestry sector in Tanzania is administered under two ministries, the Ministry for Natural Resources and Tourism (MoNRT) and Ministry of Regional Administration and Local government under the prime minister's office. Figure 7.3 gives the main structure.

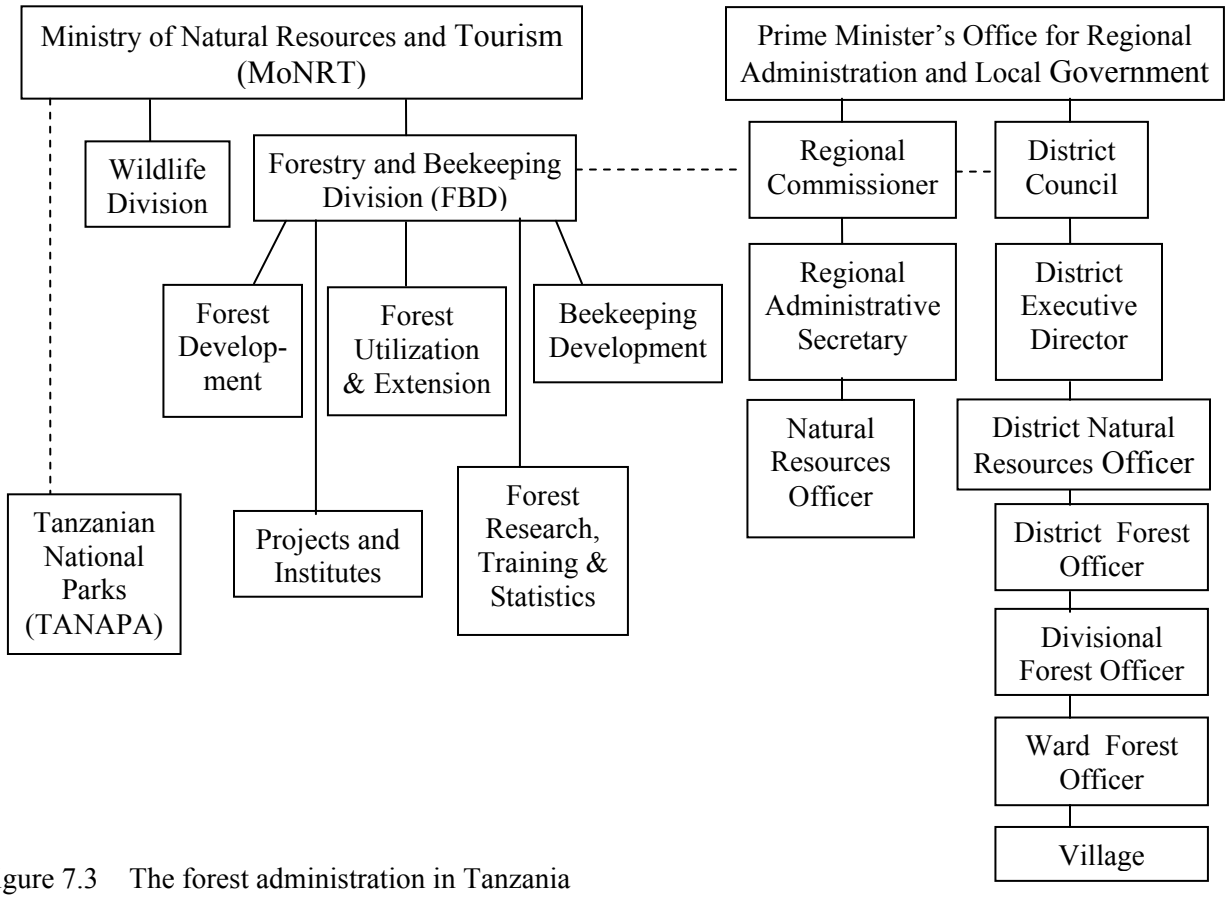


Figure 7.3 The forest administration in Tanzania

Source: Adjusted after URT (2001), MoNRT (2009)

The Forestry and Beekeeping Division (FBD) of the Ministry for Natural Resources and Tourism has the overall responsibility to coordinate all aspects of forestry development in the country. The central government forest reserves and forests on general lands are owned and managed by the Forestry and Beekeeping division. There is an ongoing process to establish a specific forest agency, the Tanzanian Forest Service.

Central government forest reserves have a total area of 12.5 million hectares. These include 223 productive forest reserves (9 million hectares), and 225 protective forest reserves with around 2.5 million hectares of which 83.000 hectares are industrial plantations. The remaining ca. 2 million hectares are mainly catchment forest reserves.

The Tanzanian Wildlife Division oversees the numerous reserves and game controlled areas. Tanzanian National Parks (TANAPA) oversees national parks. All together 6 % of the forests are inside national parks and game reserves – currently around 2 million hectares. Tanzania National Parks is a parastatal organization which means that it is a self-financing unit. It is an agency under the Ministry of Natural Resources and Tourism.

The Local Government Authority under the Ministry of Regional Administration and Local Government owns and manages forests which are under jurisdiction of the local and regional level, namely the local forest reserves. Local government forest reserves are managed at the level of District Councils under local governments. The area amounts to around 5 % of the total forest area in the country. Local government forest reserves are regarded as a major source of revenue from charcoal and timber extraction in the districts; most of them are therefore degraded, even those under protective role. However, the Tanzanian district authorities are seriously under-funded, starved of development resources (Havnevik 2007)

The decentralization process in the forestry sector has devolved administrative power to village councils. Administration of village lands in the more than 9000 villages is more fully devolved to elected Village Land Councils that have the power to regulate the management of community forest resources by community by-laws (Bruce and Knox 2009).

7.3.5 Take home messages on forest policy and governance in Tanzania.

- Forest land and resources constitute a key element in agrarian Tanzania general development path
- All land in Tanzania is in principle owned by the state
- There is a great need for verifiable indicators to establish relations between the policy objectives and existing forest conditions, especially on levels of forest degradation and deforestation
- The current forest policy reforms, initiating participatory forest management (PFM) that devolves managerial responsibility to local communities give promises for more effective and socially legitimate forest management
- A well established PFM program might become the structure for channeling finances for forest ecosystem services down to the local community level
- Joint forest management is a measure of PFM to involve local communities in management of reserved forests. This is a promising approach for more sustainable forest management, a concurrently recognizing local community rights to access resources from those areas
- Community based forest management, also a measure of PFM, is further a notable approach that might provide better forest protection and facilitate development
- The participatory forest management approaches are supposed to be collaborative ventures between communities and governmental authorities. Such changes in management approaches are demanding for the governmental authorities and its staff
- Implementation of participatory forest management is relatively slow and dependent of various donor support

- The governmentally managed reserves include 13 million hectares of forest. Many of those forests are degraded. There is a significant climate mitigation potential in the reserved forests
- Addressing encroachment in the reserved forests is a daunting exercise that will cause significant conflicts if not carefully planned
- When addressing deforestation and degradation on general lands, establishment of village forest and by that, devolving rights to communities seems an interesting approach
- Although a great proportion of Tanzanian forests is under general land tenure without clarified tenure rights, the areas are used under various agricultural systems like livestock grazing. Understanding the informal rights of local communities to use the general lands is critical when forest climate mitigation activities are being considered
- There is long standing experience in the Tanzanian forestry sector with donor collaboration

7.4 TANZANIA AND REDD

Tanzania is a pioneering REDD country in Africa. Tanzania is, along with Brazil, the first pilot countries to sign a bilateral agreement and receive support from the Government of Norway to develop a REDD strategy. It is also among the nine pilot countries to enter the UN-REDD collaboration with FAO, UNEP and UNDP. A Tanzanian "National Framework for REDD" is now available. Here the Government of Tanzania emphasizes that REDD policies are viable options that can provide opportunities to manage forests and woodlands in more sustainable way and concurrently address the prevailing poverty in the country.

In the PIN note for Tanzania (URT 2009a), the government refers to the National Forest Program when asked to clarify the "current thinking of on what would be needed to deduce deforestation and degradation". The Note points out six measures that are considered important for REDD implementation:

- Participatory forest management (joint forest management (JFM) and community based forest management/CBFM)) expanded and working
- Private sector involvement in establishment and management of forest plantations.
- Law enforcement and surveillance improved
- Payment for environmental services (carbon, water, biodiversity etc.)
- Sector wide approach planning for the forestry sector
- National REDD strategy

These measures are not further defined in the PIN note. In the analyses in following sections in this chapter, we will discuss such suggestions concurrently.

It should be noted that the Tanzanian PIN note is written by the Forestry and Beekeeping Division of the Ministry of Natural Resource and Tourism. We would also emphasize that Tanzania has instituted a National Climate Change Steering Committee (NCCSC) to serve as a top policy and decision making body for its climate strategies. It is overseen by the Vice Presidents Office–Division of Environment.

7.5 GOVERNANCE STRUCTURES FOR REDD IN TANZANIA

7.5.1 A national REDD fund in Tanzania

In accordance with the arguments developed in Chapter 6, we recommend the government of Tanzania to consider establishing a Tanzanian REDD fund to be the receiver of the external financial flows and with similar responsibility to allocate funds. Participation of representation from the central government, the district local authorities and civil society in its board should be considered. Concerning governmental representation, we find it important to include forest, agriculture, energy and wildlife sectors in the steering of the fund. One option to consider would be to establish the REDD fund board under the National Climate Change Steering Committee (NCCSC). The administration of the fund would probably work best if delegated to the Ministry of Natural Resource and Tourism with its Forestry and Beekeeping Division.

7.5.2 The actors and structure of REDD implementation

The implementation of REDD activities would be best based on the current forest actor structure in Tanzania, but with necessary adjustments and cooperation with other core sectors. As already emphasized, all land is state property, while about 11 % of forests are under participatory forest management granting user rights/control to villages. The Forestry and Beekeeping Division is responsible for the management of the central forest reserves and general land. These areas cover approximately 90 % of all forests in Tanzania, if we also include Village land established on these areas. Given this, FBD will have to be a core agent in handling REDD actions in Tanzania. Building its capacity to be able to handle REDD initiatives on its land is paramount.

The above emphasis on the corruption problems within the Tanzanian natural resource management system is certainly a great challenge. We see, however, no reasonable alternative to involving the national authorities in facilitating REDD in the country. The potentially large amount of money involved increases the potential problem. It raises, however, the stakes for the Tanzanian government. This should offer an opportunity to strengthen the positive developments observed over the last years concerning anti corruption policies. It seems, however, to demand a specific focus on transparency and hence a willingness within the Tanzanian government to open up for external insight into its practices. Certainly, the system established will have to depend on trust. External control is a double edged strategy – cf. Chapter 5 – to the extent that it may diminish trust. There is, hence, a need to balance external control with trusting the governments own ability to combat corruption. Certainly, the monitoring system for the development of Tanzanian forests – see below – will offer separate data on the effectiveness of programs installed. This information will in itself be helpful in understanding what may not work well.

There are also other obstacles for REDD in Tanzania. As already emphasized, forest data are rather unreliable, illustrating that the present inventory and monitoring activities are fairly weak. Various programs have been initiated with external funding – e.g., the World Bank and the Global Environment Facility. FBD has been the main Tanzanian actor in this and has hence developed competence in the area. Recently, a plan for expanded forest resource inventory is developed. It will be run by experts from FBD and FAO, with financing from the Government of Finland (URT 2009a). While this is a very positive and necessary development, we would make a case that a permanent and semi-autonomous inventory and monitoring unit should be estab-

lished outside of MoNRT/FBD to secure a certain level of independence between policy making and data production.

District authorities (DA) manage local forest reserves. These cover a rather small fraction of all forest land – 5 % – and DA would hence be of a somewhat minor interest for REDD in that respect. Instituting REDD would, however, imply substantial changes in local resource management, not least on general land. This would involve increased engagement from this branch of the administrative system through its forest officers and through village council engagement. Owing to the participatory forest management initiatives, FBD and DA have already developed experience in cooperating over these issues. In the context of REDD this capacity and competence is important, but would have to be much expanded. In relation to this one should recognize the emphasis made in the National Forest Plan (see above) concerning the problems experienced with the centralized forest management. Increased emphasis on decentralization would have to be a core element of the Tanzanian REDD strategy.

About 6 % of forests/woodlands lie within national parks and game reserves. To the extent that these areas should be involved in REDD, engaging Tanzania National Parks and Wildlife Division would be necessary. TANAPA has for long been engaged in programs sharing income from park management with communities surrounding the national parks (TANAPA 2009). This experience would be very valuable for the other actors involved in forest management – especially to the extent payments will be used in REDD.

Summing up, the following REDD governance structure of Tanzania should be considered:

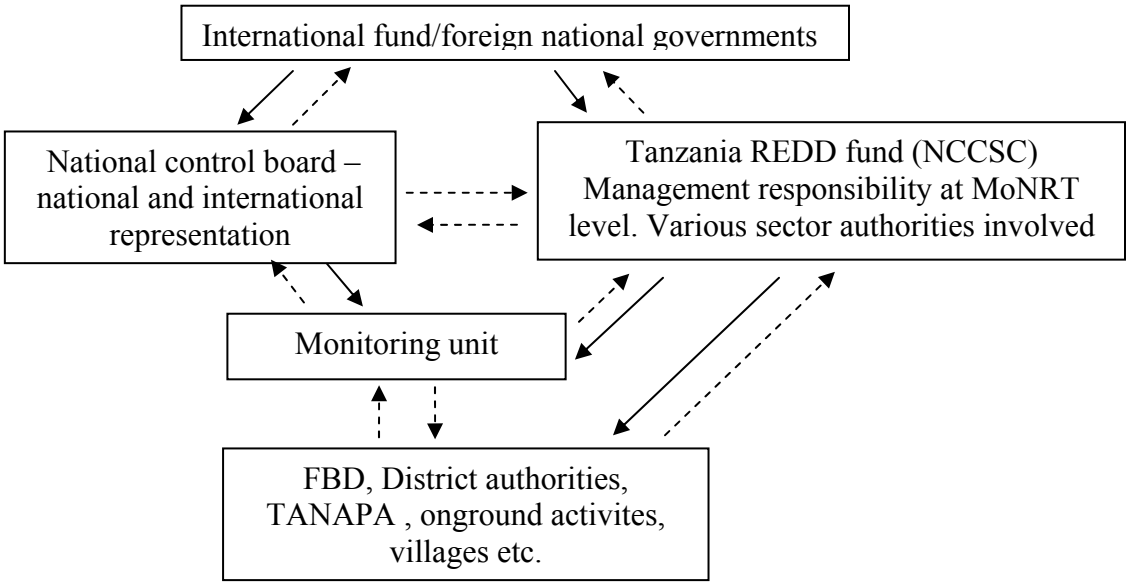


Figure 7.4 Elements of the proposed Tanzanian REDD governance structure

Compact arrows: Resource and information transfer. Dashed arrows: Information transfer only

In the Tanzanian R-PIN it is emphasized that there is inadequate technical capacity to handle REDD (URT 2009a). This is a general problem for most countries relevant to host REDD activities. This is illustrated also in the present report by the problems faced due to lack of (secure) data about forest and carbon statuses. The R-PIN emphasizes outsourcing of technical tasks to e.g., WWF, Care International etc. as a potential solution if resources allow. We would emphasize that if REDD becomes a substantial activity in Tanzania – as it seems to – one should consider building necessary competencies within own public bodies. REDD would then be an important resource to build long run national forest/natural resource management competencies.

Potential roles for the various actors are specified in Table 7.8.

Table 7.8 A potential actor structure to implement Tanzanian REDD.

Coordi-nating body	**Governmental authority**	**Mandate**	**Forest protection instruments**	**Likely interested collaborating partners**
MoNRT level FBD	FBD	Central forest reserves and general land	State control Community collaborative agreements (JFM) Private- state partnership	- Private sector (individuals/firms) - Communities
	District authori-ties (DA)	Local forest reserves	Community conservation	- NGOs - Communities
	TANAPA/Wild-life division	National parks and game reserves	State control Community collaborative agreements	- NGOs - Communities
	Joint FBD and District authorities	General land	PES (monetary or in kind) compensations. Information Community collaborative agreements (CBFM)	- Communities - Private sector

7.5.3 Take home suggestions on REDD actors and structure

- Consider establish a Tanzanian REDD fund responsible for receiving the financial flows from international/bilateral actors. Oversee and deliver performance based payments to national actors implementing REDD. Cross-sectoral engagement should be emphasized
- Consider to mandate the Ministry of Natural Resources and Tourism/the Forest and Bee-keeping Division to coordinate the implementation of REDD in Tanzania
- Put strong emphasis on combating corruption when forming procedures and control routines
- The Forest and Beekeeping Division seems together with the District authorities to be the most appropriate agents to perform REDD activities
- Consider to move the present inventory and monitoring initiative to a unit that is separate from FBD to get the necessary autonomy and mandate to monitor, report and verify REDD activities
- Strengthen the capacity of the District authorities to handle regulations on general land. Develop further the cooperation between FBD and DA

7.6 POLICIES TO REDUCE DEFORESTATION

The data available for deforestation rates are very uncertain in Tanzania. Levels indicated lie in the range from 100 – 500.000 ha with figures in the upper half of this interval being the most probable. This illustrates that the available data on deforestation are very uncertain and it is not clear where the largest losses of forest cover are – in the reserves or on general land. The Tanzanian authorities themselves emphasize problems with controlling the reserved forests and underline the need to strengthen the effectiveness of protecting forest resources in the reserves. At the same time, general land is virtually under open access, implying that conversion rates should be expected to be higher there. The unclear status of this land is a challenge to REDD. The forest carbon density is of equal concern as the actual forest area loss. It can be expected that the closed tropical forest on reserved lands contain higher carbon volumes per unit land than the woodlands, making it priority areas to address deforestation and forest degradation.

Combating illegal logging is mainly an issue to be handled as part of establishing and running the general forest management regime. Concerning legal logging, strengthening the sustainability of the practices used is a core issue that should be manageable trough changing the practices of the state forest authorities and the conditions for logging concessions. Again building the capacity to avoid corruption will be a core challenge.

Added to this, we find further development of participatory forest management initiatives to create agreements over use/clarifying user rights both in reserved areas (JFM) and on general land (CBFM) to be of great importance for REDD. This would bring open access general land to land under village control. With resources from REDD it should be possible to run these processes both quicker and wider than before. Using payments as a means to compensate for harm where regulations against deforestation results in losses of livelihoods, should be equally helpful.

Certainly, it may be a balance to draw between legitimating encroachments via payments to stop such activities and on the other hand continue enforcing the boundaries of reserved land. In relation to this, one should note that encroaching is partly the result of the low local legitimacy of the borders of reserved land. REDD action could be a way to sort these issue out. Making payments to villages as part of an agreement to halt deforestation could reduce both types of legitimacy problems.

Increasing the power of the villages implies a need for increased awareness of possible internal conflicts within villages. Although the 1982 Local Government (District Authorities) Act (URT 1982) stipulates that conflicts must be settled in court, the fact is that resource use conflicts are almost invariably settled at the village level. Villagers in conflicts with leadership might be in a difficult situation as it is complicated to appeal to higher governance levels because access to those levels demand passage through the same leadership. In short, village institution in Tanzania besides being democratic, largely still has characteristics of 'fused powers', that the legislative, executive and judiciary powers are held by one body. Thus, the very strength of the Tanzania village institutions in relation to REDD – that they are well organized and hence potential home for the implementation of REDD at the grass root levels – also comprises a potential weakness in terms of achieving social equity (Kajembe pers. mess. 2009).

Halting deforestation would imply a needed reduction in the consumption of fuel wood and in the clearing of land for agriculture. Concerning fuel wood we have both the rural and urban uses – there is both firewood and charcoal. There is a fundamental difference between these when addressing their impact on the forest cover in REDD context. Firewood is mostly collected locally and used locally, frequently by those that collect. Therefore, strategies that aim at finding substitutes or alternative energy sources can be expected to be well received. Collecting firewood is hard labor, usually done by women and children that can be expected to be interested in changes if the proposed solution will aim at reducing their labor. It can therefore be expected that local people will be motivated to seek realistic alternatives to firewood that REDD can fund. As the rural population amounts to 75 % of the total for Tanzania, putting much emphasis on developing alternative sources for firewood should have the capacity to substantially impact on losses of forest cover.

Possible alternatives to to-days practice would concern on-farm tree planting, energy saving techniques such as improved stoves and alternative energy sources such as solar or biofuel/biogas. Subsidies to reduce costs of producing these alternatives will be an important policy instrument. Certainly, if one is able to make contracts with village councils demanding reduced or halted fuel wood extraction outside on-farm tree plantings, subsidies for alternatives is less warranted. Monetary transfers – as far as found necessary or relevant – could follow the agreement on protection, and the villagers would be given the opportunity to use these resources to the options they find most relevant for them. Information measures may anyway be important in cases where new methods are not well known.

The charcoal sector is inherently different from the firewood sector and requires a different set of policy instruments in a REDD context. Charcoal burners are commercial actors that have direct monetary gains from producing and selling charcoal. This is an aggressive industry fuelled with the increasing demand from the growing urban population. It can further be expected that the actors are not motivated for changes they will see as hampering the industry. Intervening here becomes challenging, especially as there is a great risk for leakage. The charcoal burners may simply move to another location.

In the Tanzanian R-PIN it is emphasized that reducing use of charcoal in urban areas is not possible in the foreseeable future. We argue for more commitment on this important issue. We think that REDD opens up possibilities to support shifts to alternative energy sources outside the forestry sector also in urban areas such as expanding hydropower that might be made available to more urban households, biogas production from landfill sites and solar power. Further, there might be possibilities to intervene into the charcoal industry by introducing climate/sustainability labeling on charcoal that is produced from sustainable forests plantations. REDD could secure the sustainability of the forest that are being harvested, the efficiency of the burning process and perhaps compensate the buyers/consumers that choose this type of energy. That could benefit the poorer urban households relatively much as they spend a proportionally higher part of their income on energy.

Agricultural expansion is another key deforestation driver in Tanzania. Conversions of forests and woodlands to cropland have been an important livelihood strategy in Tanzania for long. What makes interference with agricultural conversions challenging is that there is no obvious

agricultural-forest frontier, but more scattered conversions throughout the country. That is different from many more heavily forested tropical countries where there is a clear advancing frontier. It becomes therefore more demanding to employ direct strategies such as payments against such conversions.

One should consider using REDD resources to increase access/reduce costs for acquiring substitutes for inputs to agriculture. Tanzanian use of fertilizers is estimated to about 6 kg nutrients per ha. This is low even compared to other African countries (New Vision 2007). It should be a priority for REDD to analyze why Tanzanian farmers do not use more fertilizes and concurrently study possible interactions between increased agricultural productivity and reduced deforestation. Depending highly on the future scale of REDD, an outcome might be to recommend subsidizing fertilizers. This should be possible to do with fairly low transaction costs involved – cf. also findings in Chapter 5. Certainly, one should observe that the system of distribution is less well developed in Tanzania compared to the countries from where that data was obtained for the analysis in Chapter 5.

Another opportunity lies in spreading the techniques of conservation agriculture to increase yields and secure future productivity of the land, reducing the need to convert forest to agricultural land. While REDD cannot be responsible for the development of the agricultural sector, it is impossible to think of substantial reductions in deforestation without increases in agricultural productivity. This is a core issue in Tanzania.

7.7 POLICIES FOR REDUCED FOREST DEGRADATION AND RESTORATION OF DEGRADED FORESTS

Reduced forest degradation is mainly the result of fuel wood consumption and grazing livestock. Concerning the former, reduced fuel wood consumption implying shifts to substitutes as discussed above will be the prime measure. The policy measures will also be similar.

Concerning livestock, overstocking results in forest degradation especially in Miombo and Savanna lands – i.e., it dominantly happens on general land. Increasing village control over and hence responsibility for these areas will be a prime objective. This strategy will most probably not be successful alone. Again alternatives, in this case for feed production, will have to be part of the overall strategy.

When establishing extended village control over – in this case mainly general land – one should consider also setting aside land for protection as part of the contract. Moreover programs for fencing respectively tree planting in degraded forests should be instituted. These programs could also be relevant for degraded forests in general, not only for protected areas.

Fencing is probably the best solution of the two both concerning costs and effectiveness. Again, demanding fencing could be part of agreements for reducing deforestation. The compensation or payments through REDD should then be issued such that they cover also these costs. Alternatively one could pay directly for the fencing. From a standard economic perspective one should not expect much difference between the two systems. The more general findings in

Chapter 5 about payments and behavior indicate that this may not be the case in practice. One should, hence, try out both ways to learn how they work.

To the extent tree planting becomes part of a policy to restore degraded forests, one would need both to expand the Tanzanian capacity to produce tree seedlings and the local capacity to plant and secure seedling establishment. Concerning production of seedlings, there are several actors engaged in this in Tanzania. Most important is maybe the Tanzanian Tree Seed Agency (TTSA). It the 1980s the Tanzanian government recognized the need of expanding the capacity of seedling production, establishing the National Tree Seed Program under the Ministry of Natural Resources and Tourism in 1989. The program was later transformed into TTSA which is a parastatal organization – i.e., a financially self–sustaining Agency (TTSA 2009). With the knowledge we possess, it is difficult to evaluate whether expanding TTSA is the right solution to the problem of increased need of tree seedlings. We would, however, expect that to make the process a success, reducing costs of seedlings for villages that start tree planting programs would be an important issue. Hence, making it an economically self-financed business may not be wise or viable. The REDD fund could both be used to make investments in seedling production and pay villagers for planting and protection measures. Small scale, village based forest tree seedling nurseries should also be considered to supply tree seedlings locally, focusing of the most suitable species and site-specific genetic material.

7.8 HOW TO IMPLEMENT AFFORESTATION AND SUBSEQUENT REFORESTATION

According to the Tanzanian PIN note, so-called industrial timber plantations cover approximately 90.000 hectares (URT 2009a). It is the goal of the Tanzanian government to expand this area (URT 2001). This has been motivated by demand for more timber and not carbon sequestration. We have already emphasized the danger that especially marginal groups get excluded from access to land through such processes. Benjaminsen et al. (2009) discuss cases in Tanzania where this has happened, in their report due to externally financed plantations for carbon sequestration.

The potential for afforestation activities is quite large in Tanzania (Chamshama and Nwonwu 2004). The challenges for biodiversity protection and loss of access to livelihoods among local residents are equally large. Whether REDD (as REDDplus) should engage in this at all, is an issue demanding analyses beyond those undertaken for this report. As industrial plantations, they will/should be profitable on own terms. What is to be considered for REDD(plus) is whether it should pay for the establishment of plantations for carbon sequestration, respectively intervene in the industrial plantations to support practices increasing the overall carbon stock on these sites. Certainly, for it to become a carbon mitigating strategy, it must either increase carbon stocks in the afforested area and/or reduce deforestation/forest degradation elsewhere. From the information we have, we believe that in the Tanzanian context climate mitigation action taken against deforestation is more important than afforestation activities, also because it seems to offer positive effects on biodiversity. The exemptions might be afforestation and subsequent reforestation on village land to substitute for the present form of fuel wood extraction as

emphasized above and in case of forest plantations to produce wood for making charcoal. Nevertheless, conclusions here would demand further assessments.

Concerning reforestation the situation is different, at least to the extent that this implies rebuilding 'natural' forests – i.e., forests with a composition similar/equal to what used to be. Policy measures for such a strategy would be equal to those presented above concerning restoration of degraded forests. Actually, the reason why we make a distinction in this report between afforestation/reforestation and restored degraded forests is because of the uncertainty concerning what will be included in REDD and not what policies would be demanded.

A core issue would concern the size of reforestation areas and how the consequences for livestock production are handled. There will be a conflict between livelihoods for pastoralists and afforestation/reforestation. At present about 80 % of the livestock are kept by agro-pastoralists, 14 % by pastoralists and the rest by commercial rangers and dairy herd (MoLD 2006). Again, compensation for lost access to grazing land would be an option. The need for formalizing rights and responsibilities to managing the land is also an important strategy to start with. Certainly, this is a demanding task in the case of pastoralism.

7.9 RECOMMENDATIONS REGARDING REDD POLICIES IN TANZANIA

We have identified a range of strategies that Tanzania might include in a national REDD strategy to mitigate climate change. The most important of these seems to be:

- Reduced deforestation
  - Develop participatory forest management further on reserved and general land. The aim should be to cover all land where villages use resources into such a system. In doing so one should consider the heterogeneous interests, power relations and capacities at local community level need to be considered
  - Clarification of rights and responsibilities for village land. Develop this system for all general land
  - Payments – monetary or in kind – to compensate for lost livelihoods following from regulations on general land and reserved land
  - High emphasis should be on policies against illegal logging. Halting such logging should be considered a premise for supporting REDD activities in Tanzania
  - Increased emphasis on sustainable fuel wood production. Develop substitutes in rural, but also urban areas
  - Increased emphasis on conservation agriculture, increased fertilizer use – e.g., consider institutionalizing fertilizer subsidies. Information measures/extension service measures
- Reduced forest degradation and restoration of degraded forests
  - Also in this case expand participatory forest management
  - Also in this case clarification of rights on general land is a core policy measure. Concerning participatory management and rights clarification, areas under deforestation and forest degradation should be treated together when relevant
  - Compensation for lost livelihoods

  - Measures and policy instruments in the livestock sector – specifically towards agro-pastoralist and pastoralist communities
  - Expand the capacity to fence off/ replant in degraded forests. Reduce costs through subsidies. Information measures

- Afforestation and reforestation
  - Careful development of industrial plantations. REDD(plus) should most probably not engage in large afforestation projects in the form of plantations even when the main goal is carbon sequestration; rather act to control the industrial ones for the consequences for local livelihoods and biodiversity
  - Reforestation activities along the same lines as restoration of degraded forests

When REDD is advanced in Tanzania, it should also be of priority to initiate series of pilot projects where different measures are tested. That is needed to address the viability of different strategies, how they operate, how they are received by the local people and further give information about direct cost/benefits.

As emphasized trough out the whole report, carbon policies must acknowledge the potential conflicts with poverty alleviation and biodiversity protection. Certainly, the three objectives should be treated in a coordinated manner when REDD policies are crafted.

8. IMPLEMENTING FOREST CLIMATE MITIGIATION STRATEGIES IN UGANDA

This chapter analyzes prospects around implementing REDD in Uganda based on a structure similar to the chapter about Tanzania.

8.1 UGANDA – COUNTRY AND CONTEXT

Uganda is among the poorest countries in the world. There are now some 32 million people, with a population growth rate of 3.2 % on average (2007) and an economy growing at 5-6 % per year until the financial crisis. 38 % of the population is living below the national poverty line. The main productive sectors are the service and the agricultural sector. Agriculture employs some 82 % of the labor force. The majority of Ugandans live in rural areas where they depend on land for survival and over 45 % of the national GDP is generated through the exploitation of natural resources.

Table 8.1 Some socio economic indicators for Uganda.

Total area	**Population**	**Agricultural labor force**	**GDP per capita (PPP)**	**GDP (PPP) (2008 est.)**	**Population below poverty line**
250.000 km^2 (thereof land: 200.000 km^2)	32 million	82 %	1.100 USD	35.88 billion USD	35 %

Source: CIA (2009)

8.2 FOREST RESOURCES AND CARBON

8.2.1 Resources

Forests and woodlands – also called the forest estate – cover significant parts of Uganda's land area. The forest estate is about 24 % of the total land area and constitutes some 4.9 million ha of land. The forest area can broadly be classified in three major ecological classes; woodlands (81 %), tropical high forests (19 %) and plantations (less than1 %) – see Table 8.2. The resources are unevenly spread throughout the country, with much of forest land and in particular woodlands in the north and most of the tropical high forest in the west and south of Uganda.

Despite the fact that the tropical high forests only cover 5 % of the total land area, it is estimated that they hold 35 % of the above ground biomass and produces a net growth of 15 tons of wood on each hectare every year. It can further be added that the tropical high forests also harbor the most important biodiversity resources (Howard 1991). The woodland area holds about 27 % of the biomass according to the estimates. It should be noted that subsistence farm land holds almost as much biomass. This land category covers about 40 % of the total land area in Uganda, so while the per ha volumes are much lower, there is almost as much above ground biomass in

trees on farmlands as in the country's natural woodlands. The plantation resource is currently very small. It is, however, the most productive in biomass terms – 16 tons/ha/year[5].

Table 8.2 Area, biomass and growth of forest resources in Uganda

Land cover	Area (ha)	%	Stock ('000 ton)	%	Yield (t/ha/yr)
Plantations (softwood & hardwood)	35,000	0.2	4,000	1	16
Tropical high forest (intact & degraded)	924,000	5	164,000	35	15
Woodland	3,974,000	19	126,000	27	5
Total forest	**4,933,000**				
Bushland (stunted woodland & farm fallow)	1,422,000	7	14,000	3	<1
Subsistence farmland	8,401,000	41	112,000	24	2
Other land*	5,709,000	28	48,000	10	0-1
Total land **	**20,465,000**	**100**	**468,000**	**100**	

** Grasslands, wetlands, commercial mono-crop estates (tea, sugar, tobacco), built up areas, rock*
*** Excludes water bodies of 3.69 million ha*

Source: MoWLE (2003)

One should observe that there has been a negative trend in Uganda concerning forest resources. From the Landsat maps included in Figure 8.1, we observe a significant reduction in forests and woodlands from 1990 till 2005, while bush land and cultivated lands have increased. The amount of grassland is also reduced.

The forests in Uganda are partly owned by the state – the so-called permanent forest estate – and partly they privately owned or under customary tenure – see Table 8.3. State owned land covers about 30 % of the forest estate. Hence, 70 % are private or customary land. At present the state owned land is divided into two main categories – forest reserves and national parks. Finally, the forest reserves are divided between central and local forest reserves.

There is a clear distinction between forest reserves and national parks. The former cover state owned forests where different types of use are permitted. Concerning national parks, the areas are set aside permanently for the purposes of conservation of biodiversity and other environmental services.

[5] There are different sources and figures concerning both stocks and flows trends for Uganda: a) Forest land of different categories, b) Content of biomass in different lands, c) Content of carbon in different land categories. The methodological and practical uncertainties in estimating figures and generating a firm database indicates a key challenge for REDD, as the quantity of forest carbon in respective countries determines the overall climate mitigation potential of the activity. We have chosen to rely on the latest results from National Forest Authority and the 2003 National Biomass study from which figures are still being published. In addition we bring some results from an ongoing research work at Noragric, where C. Nakakaawa is working on a project estimating carbon stocks and carbon sequestration potentials from Uganda's forests using data from the National Forest Authority national biomass study.

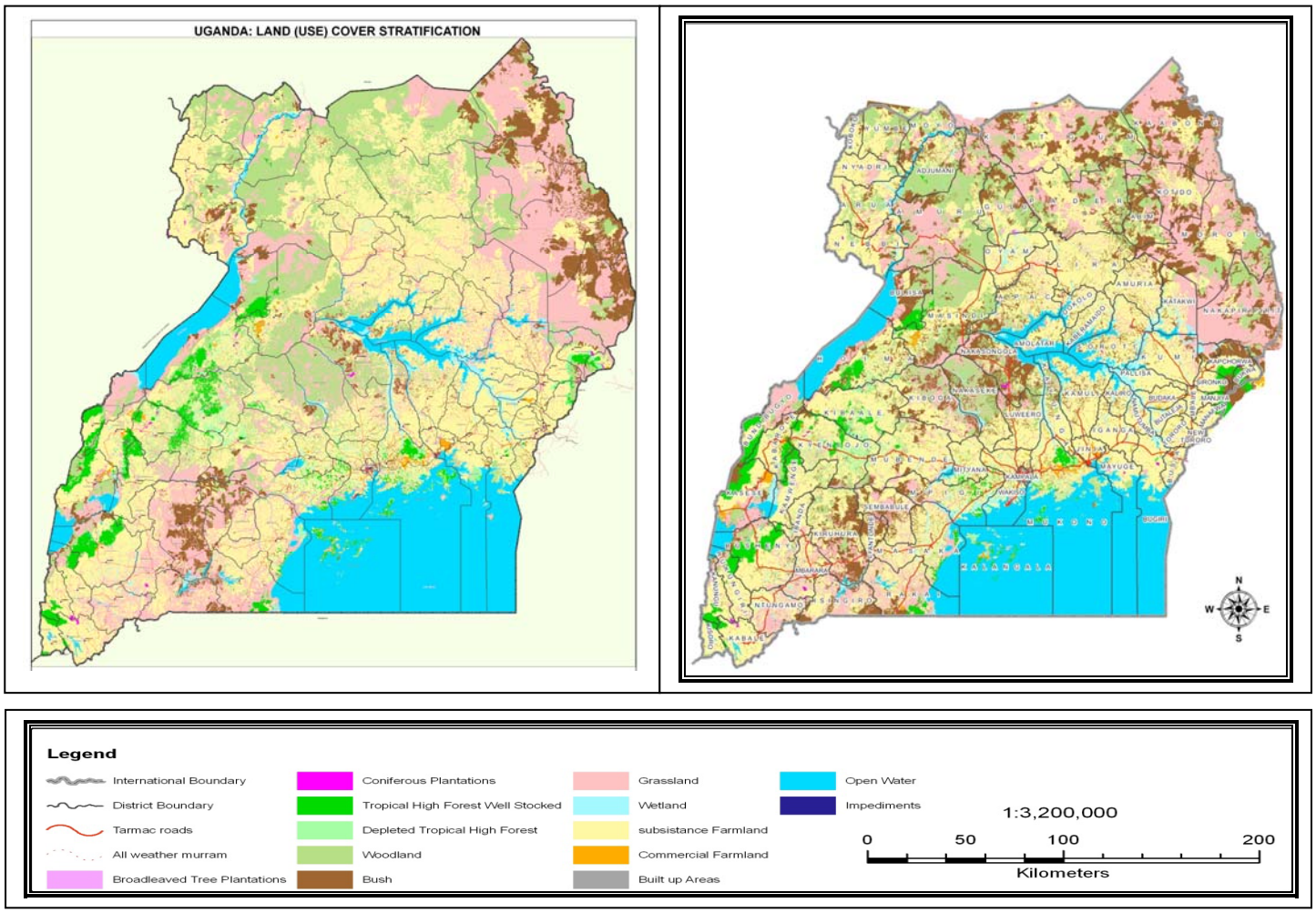


Figure 8.1 Vegetation cover change in Uganda, 1990 (left) – 2005 (right)

Source: Landsat images

Table 8.3 Forest and woodland acreage under different tenure and management schemes

Land cover	Permanent forest estate (governmental land)		Private land	Total
	Forest reserves (National Forest Authority, Local Government)	National parks and Reserves (Uganda Wildlife Authority)	Private & customary land	
Tropical high forest	306,000	267,000	351,000[1)]	924,000
Woodlands	411,000	462,000	3,102,000	3,975,000
Plantations	20,000	2,000	11,000	33,000
Total forest	**737,000**	**731,000**	**3,464,000**	**4,932,000**
Other cover types	414,000	1,167,000	13,901,000	15,482,000
Total land size	**1,151,000**	**1,898,000**	**17,365,000**	**20,414,000**

1) Disputed figure, earlier Forest Department records (1974) indicate a maximum of 150,000 ha

Source: MoWLE (1999)

8.2.2 Deforestation trends

Looking more into the changes in forest cover, one observes that deforestation has become a significant challenge for Uganda, and in addition to the contribution to global environmental change, the processes also poses substantial development challenges.

Table 8.4 offers information about changes in land cover from 1990 – 2005 for specified types of land. Certainly there are substantial uncertainties involved in these assessments. According to the table, the total forest land has been reduced by 27 % over the last 15 years. It is especially woodlands that have been decimated. We see that cropland has expanded by some 6 %. Also bushlands have increased, most likely due to the situation in Northern Uganda.

Table 8.4 Change in land use/land cover in Uganda 1990-2005

Land use/cover area, ha	**1990[a)]**	**2005[b)]**	**Change 1990-2005**
Forests			
Hardwoods plantations	18.68	14.79	-3.90
Softwoods plantations	16.38	18.74	2.36
Tropical high forest – Normal	651.11	600.96	-50.15
Tropical high forest – Degraded	273.06	191.69	-81.37
Woodlands	3,974.51	2,778.00	-1,196.51
Total forest land	**4,933.75**	**3,604.18**	**-1.329.57**
Pastoral land			
Bushlands	1,422.19	2,968.68	1,546.48
Grasslands	5,115.43	4,063.58	-1,051.84
Total pastoral land	**6,537.62**	**7,032.26**	**494.64**
Croplands			
Subsistence farmlands	8,400.79	8,847.59	446.80
Commercial farmlands	68.45	106.63	38.18
Total cropland	**8,469.24**	**8,954.22**	**484.99**
Other land uses			
Wetlands	484.03	753.04	269.01
Built up areas	36.57	97.27	60.70
Total other land uses	**520.60**	**850.31**	**329.71**
Open water	3,689.60	3,706.49	16.89
Impediments	3.74	7.80	4.06
Unmapped area	0.70	0.09	-0.61
Total Country Area	**24,155.25**	**24,155.35**	**-**

Sources: a) MoWLE (2003); b) ROU (2009)

Quantifying the overall level of forest degradation and getting a national overview of its scale has proved to be difficult, partly because of the great uncertainty around the forest conditions in N-Uganda. Since 1986 there has been a conflict in N-Uganda, north of the river Nile. The insurgencies have greatly affected the societies in the regions, where the majority of the people abandoned their farms and had to seek shelter in the refugee camps.

The major driver of change in the forest area has been deforestation of natural tropical high forests and woodlands for subsistence agriculture (Hamilton, et al. 1986; MoWLE 2003; ROU 2008), through unsustainable logging, clearing for firewood and charcoal, industrialization and urbanization (NEMA 2005; Hartter and Boston 2008).

In Table 8.5 we see that assessments of deforestation rates are quite varying; ranging from 10.000 - 100.000 ha per year depending on the source of data used for obtaining the estimates and the period under consideration. For the period 1990 to 2005 estimates range between 86.400 - 100.000 ha per year. The National Biomass Study Project estimates that per capita forest area will decline from 0.3 ha in 1991 to 0.1 ha in 2025 if there is no serious investment in forestry (MoWLE 2003).

Table 8.5 Deforestation estimates for Uganda 1976-2005

Time period	Annual Deforestation rate ha/year
1976 - 1986	10,000
1987	10,000
1990 - 2000	91,000
2000 - 2005	86,400
1990 - 2005	100,000

Sources: FAO, 1981; Aluma, 1987: MoWLE, 2003; FAO, 2005; ROU, 2008

Looking at the causes of deforestation, we should first note that around 80 % of the Ugandan population is rural, deriving their livelihoods from subsistence agriculture. Land clearing for agriculture is hence the major consumer of trees and forests. Fuel-wood is the main source of energy for most of the population, while a minority in urban areas prefers charcoal from fuel wood.

Wood extraction for fuel and associated charcoal burning along with expansion of agriculture areas are thus the key proximate factors behind deforestation in Uganda. The underlying factors relate, as in Tanzania, to politics and institutional conditions. The major driving forces are ill-planned, non-monitored and non-controlled forest land management, encroachment in the central forest reserves – i.e., forests owned by the central government – from the 1970s and 1980s and unclear boundaries, urbanization pressures on urban and semi-urban reserves. There are little or no political instruments in place to control forest land conversion to agriculture.

8.2.3 Forest degradation

It is not sufficient to consider the changes in land use patterns and impacts of deforestation, but also what changes that take place inside the different land uses in terms of forest degradation. Quantifying forest degradation is hence very demanding. According to Andrua, (2005) around ¼ of the current area of tropical high forests in Uganda are degraded, most of which are gazetted areas. The National Forest Policy states that some 273.000 ha of tropical high forests are severely degraded, that most woodlands are heavily degraded, and that most of forest land losses also occur here (ROU 2001).

Only 65 % of the area designated as forest reserves in the country are now covered with forest. This should however, not necessarily be interpreted as forest loss, as parts of these reserves were established in the 1920s on land not covered by forest (Hamilton 1984). These are now a target for plantation forest establishment. As much as 130.000 people are living inside existing central forest reserves boundaries according to a National Forest Authority report to the President in 2005. Some 700.000 ha are degraded, some 50.000 ha are directly cultivated and more than 100.000 livestock graze inside these areas causing serious degradation of the forest. The situation for the plantations is also severe, with less than 30 % of the plantations currently standing.

But there are exceptions to this and it should be noted that such figures are much more variable and also dynamic for the woodlands compared to tropical high forests. A recent study in N-Uganda indicated that during the insurgencies from 1989 to now, woodlands cover both in communal lands and in central/local forest reserves has increased significantly, or up to around 1 % annually (Nampindo et al. 2005). However, that might change dramatically with the eradication of the Lord Resistance Army from the region and concomitant peace. When local communities return from the refugee camps after 20 years absence from their homesteads and start to clear their overgrown fields, significant deforestation and forest degradation can be expected.

8.2.4 Forest carbon potentials

The overall forest biomass carbon stocks in the Ugandan forests have been roughly estimated. Forest and woodlands contain 429-1237 MtC in above ground biomass, value for above- and belowground forest biomass carbon stocks (trunk, branches, and roots) (FAO 2005, Gibbs et al. 2007). These approximate figures indicate a level at about 1/3 of that of Tanzania.

Estimating the carbon flow from deforestations, we have already stated that the annual deforestation in Uganda has been on the scale of 50-100.000 ha/year. Assuming average above ground biomass carbon storage of 30 metric tons/ha (FAO 2007), and that most of the biomass removed from the forest on deforestation is used as fuel wood/burned, this constitutes an immediate release in the scale 1.5-3 MtC per year. This is in line with the preliminary findings from ongoing study that calculate more accurately the current forest emissions from deforestation/forest degradation to be around 3 MtC per year (Nakakaawa et al. unpubl.).
However, other recent studies estimate forest carbon emissions the years 2000-2005 for Uganda of around 95MtCO_2 or around 26 MtC, that rank Uganda among the top 20 on the global list of tropical countries emitting carbon from deforestation (Gibbs et al. 2007, Murray and Olander 2008). From our analyses, we have reasons to argue that this is an overestimate, due to significantly lower carbon density in the Ugandan forest estate (Nakakaawa et al. unpubl.).

As we observe, the figures are very uncertain. There are variations between different sources and further, the area figures often consider fully stocked forest areas and by that tend to underestimate degradation levels. But the overall conclusion is that there is, technically speaking, considerable climate mitigation potential in the Ugandan forest estate.

8.2.5 Take home messages on forest resources and carbon in Uganda

- There is a massive deforestation in Uganda; with a 27 % reduction from 1990-2005 and with a rate of up to 100.000 ha/year

- According to the official statistics land clearing for agriculture is a key deforestation driver – more than 40 % – and the agricultural and pastoral land has expanded at a rate almost similar to the deforestation. Fuel wood collection and charcoal production also play a role
- Regional, spatial variations in deforestation and degradation rates are substantial, spanning from the northern areas with expanding forest cover to other areas of extreme deforestation
- Forest degradation is widespread in Uganda and some 25 % of the tropical high forest is degraded (some 280.000 ha)
- Prime drivers for forest degradation are needs for timber, fuel wood and charcoal production, fodder and livestock grazing etc.
- Carbon stocks estimates rests heavily on measurements of land use, biomass assessment and conversion factors to carbon stock assessment
- There are substantial emissions of carbon from Ugandan forests – levels from 11 up to 95MtCO_2 are indicated
- Regional, spatial variations in carbon stock development are substantial, and they are linked to deforestation and degradation processes

8.3 FOREST POLICY AND GOVERNANCE IN UGANDA

In this section we give an overview of Ugandan forestry policy including key actors and land tenure issues. To understand better the present situation, we start with a brief historical overview.

8.3.1 Ugandan forest policy until 1990

The forestry sector in Uganda became and evolved with established formal forest governance institutions under the British colonial rule. The permanent forest estate in Uganda was considered well managed from the 1930s and up to the early 1970s, by the Forestry Department (established in 1930) through "carefully prepared forest management plans" in a system characterized as one of the " best forest management practices in tropical forestry" (ROU 2001).

Up to 1967, forests were managed by a local forest service, typically under kingdoms that had local strong and coherent government systems (Nsita 2005). In 1967 all forest management was centralized under the republican constitution. The forest management service in Uganda was up to the military coup in 1971 considered one of the best forest management services in Africa.

In the period from 1970-1986, the forests resources and conservation areas became a battlefield over contested resources between different groups of people, involving politicians, army, armed bandits and local people. Idi Amin issued a famous decree where he stated something like that "the British came and took your forests away from you, I, give it back to you." He opened up both forest reserves and national parks for various groups of 'encroachers' in a bid to increase his popularity. These 'encroachers' have now in many cases more than 30 years of residency, and the issue is politically very sensitive (Acode 2005). Massive reduction in forest cover and a major erosion in the effectiveness of the Forestry Department were also experienced (ibid.).

Uganda gradually returned to more peace and quiet after the civil unrest and wars and after 1986, the public management system was gradually reformed and altered. The forest sector was in a bad shape and the performance of the Forestry Department was under attack by several forces. The new Government established a Ministry of Environmental Protection to "coordinate and enhance natural resource management" (Acode 2005:5). But the Forestry Department was still lacking resources and personnel to efficiently manage the diverse forest estate and encroachment and illegal activities were major problems (Acode 2005).

8.3.2 The forest policy after 1990 – some key developments

From about 1990 and onwards we observe a series of important changes in Uganda's forest policy and organization. We may divide in two main phases. First, there was a fundamental reorganization of the forest sector in the 1990s. Next, a new national forest policy was developed and approved from 2001. These processes were significantly influenced by foreign agencies. Table 8.6 gives an overview of this development.[6]

A core development in the 1990s was a reclassification of about 50 % of the forest estate into national parks. The process finished in 1993. It was "spearheaded by USAID", as they themselves state in a report (USAID 2003). The World Bank and some international NGOs (IUCN) also issued considerable pressure. The background was a fear for rapid loss of biodiversity. Uganda was offered 30 mill. USD by USAID to finance the establishment of the national parks. This process can also be interpreted as the first step in dismantling the Forestry Department regime over Ugandan forests and preparing the ground for the forest sector reform to come. The forest reserves were under the jurisdiction of the Forestry Department in the Ministry of Natural Resources. The responsibility for the national parks was, however, given to the Uganda Wildlife Authority in the Ministry for Tourism, Trade and Industry.

In 1993 forest management were decentralized through the Local government Statue, but again centralized (all forest reserves >100 ha) through an Amendment in 1995 upon the perception that the district level was not ready for the responsibility and that they had started on a rapid depletion of forest resources to secure incomes (Nsita 2005). This created substantial conflicts and locally people started to encroach upon the forest reserves, and over time also local Forestry Department staff became involved in unlawful activities themselves like illegal timber trade, charcoal production and also direct encroachment and settlements.

In the early 1990s an agreement hence evolved among national authorities and donors that the present forest policy was causing substantial degradation of the permanent forest estate in Uganda. Solving the problems developed partly into a battle between donors, where USAID supported Uganda Wildlife Authority and the EU and other donors (e.g., Norad) supported the Forestry Department in an attempt to maintain the Forestry Department as a separate and strong government forest entity. The aim was to improve public governance and develop plans for the forest sector to better provide for public goods (USAID 2003; Gosamalang 2003).

[6] See also Vedeld (2006) for a more comprehensive overview

Table 8.6 Milestones in Uganda forestry sector, 1993- 2007.

Year	Formal policy/ process/ document/ project	Content and impact
1993	Conversion of forest reserves to national parks	A substantial part of the permanent forest estate – at the time organized as forest reserves – was turned into national parks. The administration was moved from the Forestry Department (under the Ministry of Natural Resources) to the Uganda Wildlife Authority (under the Ministry for Tourism, Trade and Industry, Department of Tourism, Wildlife and Antiquities)
1995	Amendment of Local Governments Instrument	All forest reserves larger than 100 ha, plus mines, minerals and water resources defined as central government resources (central forest reserves)
1998	Forest Service Declaration Order (Statutory Instrument No.63.1998	Split the forest reserve in two; - Central forest reserves to be retained by the central government (Forestry Department) - Local forest reserves control by Districts (management and control functions, can issue licenses, fees etc. also in open areas, not central forest reserves areas. In buffer zones to central forest reserves, co-management with Forestry Department) - Forestry Department transferred from Ministry of Natural Resources to Ministry of Water, Land and Environment
1997 - 2004	The Forestry Sector Umbrella Program	- Multi-donor support program with major goal to produce a National Forest Policy. The reform process started in 1999 with a forest sector review - Supported formulation of the New Forest Policy (2001), new forest act, development of a new comprehensive forest management plan, - More emphasis on private sector and civil society, local governments and communities - Substantial forest encroachment in the same period due to this transition
2001 - 2002	New National Forest Policy approved	Establishment of the Forest Inspection Division (providing oversight of sector policy, and regulatory functions) under the Ministry of Water, Land and Environment. Agencies under the Forest Inspection Division: - The National Forestry Authority (responsible for the management of central forest reserves), - District Forest Service responsible for the management of local forest reserves and provision of advisory services and regulatory oversight to forests on private and customary land). This implied a dismantling of the Forestry Department.
2002	The National Forest Plan approved	An integrated forestry development plan, based on the National Forest Policy. With seven operational programs (Forest Inspection Division, National Forest Authority, District Forest Service, private sector commercial forest business and plantations, urban forestry, research and education)
2003	National Forestry and Tree Planting Act approved	Enshrines the National Forest Policy from 2001; with emphasis on regulating control and use of Central Forest Reserves, Local Forest Reserves, Community Forests, private forests and wildlife conservation forests.

Sources; Howard (1991); Sengendo and Musali (1999); Hofstad et al. (1999); Gosamalang (2003); Ribot et al. (2005); Muhereza (2003); Acode (2005)

From 1993 initiatives were taken to transform the Forestry Department to an Authority and a long term "battle" started on this issue. In 1998 the Forestry Department was moved from the Ministry of Natural Resources to the Ministry of Water, Land and Environment. At the same time the forest reserve was split in two. One part – the central forest reserves – were made the responsibility of the central government (the Forestry Department), and the other – the local forest reserves – were put under the authority of the Districts.

When the forest sector reform started in 1997, important organizational changes had already been approved. Nevertheless, the forest sector was still under heavy criticism for not delivering sound forest management and for widespread corruption and misuse of funds and resources. The reform – concluded in 2001-2003 – included several changes. The current Forest Policy was published in 2001 followed by a National Forest Plan in 2002. Finally, a National Forestry and Tree planting Act was approved in 2003. Both the Policy and the Act supported pro-poor forestry development strategies, clearer roles of the private sector especially in the plantations sector and generally to allow for cross-sector coordination of forestry programs (ROU 2008).

The forest sector reforms were implemented with significant external involvement. External financing mobilized through international development assistance, mostly from the World Bank, EU, UK and Norway has played a key role in achieving the gains in institutional development, capacity building and progress achieved with field level interventions (MoWLE 2004).

The new Forestry Policy suggests new approaches to developing the forest sector. The vision for the new policy is; "An integrated forest sector that achieves sustainable increases in the economic, social and environmental benefits from forests and trees by all the people of Uganda, especially the poor and vulnerable" (ROU 2001:15). The major guiding principles have an explicit ambition to combine an economic development of the sector with poverty alleviation and a livelihood improvement focus also involving gender, culture and biodiversity management values.

It should be observed that the reform has been guided by an explicit aim to foster privatization of the forest sector. It explicitly states that the "central government should withdraw from activities that can be carried out more effectively by the private sector or other stakeholders, but maintain core functions of policy development and regulation" and that "The role of the private sector is that private sector investment should be maximized in the development of the forest sector" (ROU 2001:13).

The role of local government is to secure that "more forest resources should be managed through devolved responsibility wherever practical and advisable" and that the an active role of local communities and farmers, hence public participation in the management of the country's forests, should be encouraged. NGOs/CBOs should finally "be encouraged to strengthen civil society, to build capacity and grassroots participation, and to help develop the rights and responsibilities of forest users" (ROU 2001:13).

The reform implied several organizational changes, taking further those made in the 1990s. The Forest Inspection Division under the Ministry of Water, Land and Environment was established. Under it, two new agencies were instituted. The National Forestry Authority was made responsible for the management of central forest reserves. The District Forest Service was made responsible for the management of local forest reserves and provision of advisory services and regulatory oversight to forests on private and customary land. These changes represented the final dismantling of the Forestry Department.

8.3.3 Present actors in forest governance

As shown above, the forest reform in 2001-2003 resulted in the establishment of several new state actors. The aim of this section is to offer some more insights into the responsibilities and functioning of each of these.

The Forest Inspection Division (FID) is the main forest administration unit of the Uganda government. It is a division in the Department of Environment Affairs, under the Directorate of Environment in the Ministry of Water, Land and Environment. It has the mandate of policy making, standard setting, legislation, national planning, regulation, sector-coordination, inspection, resource mobilization, and technical back-up support to Districts and monitoring National Forest Authority and District Forest Services.

Implementation of the official forest policy and governance of the forest estate is the responsibility of three actors, National Forest Authority (NFA), District Forest Service (DFS) under District local governments, and Uganda Wildlife Authority (UWA). While NFA and DFS are under the Forest Inspection Division – see Figure 8.2 – UWA is under the Ministry for Tourism, Trade and Industry.

National Forest Authority is a semi-autonomous agency to be in charge of the country's central forest reserves and plantations. The inauguration of National Forestry Authority is further aimed at supporting a vigorous private sector, and a more effective forest administration, in line with the processes of decentralization and privatization and should operate in business-like way – that is, its income comes from the operation of the central forest reserves through e.g., timber production. Under the jurisdiction of the National Forestry Authority there are seven major central forest reserves totaling about 2.300 km^2 and ca. 500 smaller central forest reserves ranging in size from 0.3-500 km^2, many of which are in savanna areas.

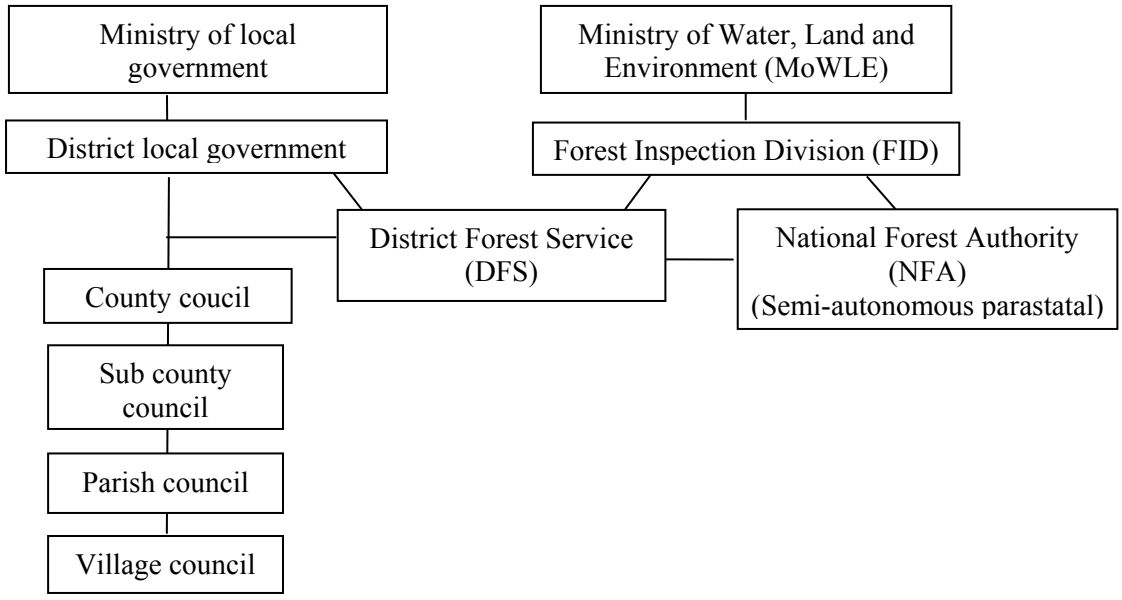


Figure 8.2 The key governmental actors in the forestry sector in Uganda.

District Forest Service has the mandate to manage local forest reserves, private and customary forests, on-farm forestry, community forests, tree planting and advisory services. The district local governments have the responsibility for Local Forest Reserves. The number of districts has been growing. Many of the newly established districts have serious financial problems and limited operational capacity. All the Districts are expected to employ a District Forest Officer, forest rangers, and forest guards as needed. This arrangement is an outcome of the forest reforms, but has not been fully implemented. Among the 80 Ugandan districts, few have established operational district forest services to govern the Local forest reserves (Vedeld et al. 2006).

Uganda Wildlife Authority is a statutory body in the Department of Tourism, Wildlife and Antiquities, Ministry for Tourism, Trade and Industry. It is in charge of management of Uganda's National Parks (forests), Wildlife Reserves and Wildlife Sanctuaries, many of which are forested. In 1993 a great share of the Ugandan forest reserves where moved from the Forestry Department to Uganda Wildlife Authority jurisdiction and formally made national parks.

The general attitude found among donors and on the basis of external evaluations is that the reform has been relatively successful concerning the establishment of National Forestry Authority. There is however a general consensus that support for Forest Inspection Division and for District Forestry Services has been too low. Hence, the objectives of the reform have yet not been fully realized. The National Forest Authority has received the lion's share of available funding for the sector to date, to the detriment of a balanced implementation of the intended reforms (Vedeld et al. 2006). There are serious worries concerning the weak capacity of Forest inspection division and its capacity to fulfill its mandated functions. Moreover, the District Forestry Services are to-date literately non-functional, without appropriate resources to manage the Local forest reserves (Hobley 2004, Namubiru 2006, Vedeld et al. 2006).

8.3.4 Non-state land tenure in Ugandan forestry

As already emphasized, forests in Uganda are classified in two categories; the permanent forest estate on governmental land and under governmental jurisdiction, and other forests and woodlands that grows on private or customary land. About 70 % of the forests are of the latter kind.

Both the constitution (1995) and the Land Act (1998) define land tenure issues (article 237 of the Constitution, article 3 of the Land Act). There is no longer a category of public land, only customary, freehold, mailo and leasehold land, in addition to governmental lands (ROU 2001). The forests outside the permanent forest estate hence can be listed as follows (Mugambwa 2002):

- Customary tenure: This is the dominant land tenure regime in Uganda. It is a land tenure system regulated by customary rules which are limited in their operations to a particular description or class of persons. Over 70 % of all land and approximately the same ratio of forests in Uganda are held on customary tenure system. Under customary tenure, people and communities are seen as de-facto owners of their land, i.e., they have usufruct rights to it, but not land titles. Actually, the 1995 Constitution of the Republic of Uganda was the first document to ever recognize customary tenure as a land tenure system.

- Freehold tenure: These are historical holdings of registered land in perpetuity subject to statutory and common law qualifications. Very little land is held under such freehold tenure in Uganda. It is where land is owned by a private individual or organization at no cost of acquisition

just like is the case with Mailo land. There is limited extent of this in Uganda. A number of organizations such as Protestant and Catholic Churches used this system to set up a foundation for their activities during the colonial period. As a result, such institutions were granted freehold land titles. Under freehold, a certificate is issued securing an ownership that goes on in perpetuity.

- Mailo tenure: A specific type of freehold tenure. The holding of registered land in perpetuity that has roots in the allotment of land pursuant to the 1900 Uganda Agreement and subject to statutory qualifications. Land held under Mailo (sq. mile) tenure is mainly in Buganda (Central region) and some parts of Western Uganda. Under this tenure, the holder of a mailo land title has absolute ownership of that land. After being reinstalled in 1998 under the Land Act, it is now well protected by the law, which gives the land owner a sense of security and confidence of tenure rights. The government has reasonably good records of the Mailo land holders. Other people than Baganda cannot own or occupy mailo land without consent of the owner (Okuku 2006).

- Leasehold of governmental land is based on an agreement between the lesser (Government; central or district) and the lessee (the developer), normally leased out for development purposes. There is limited extent of this in Uganda. This category covers areas presently occupied by civic centers like the district headquarters (Town Council), county headquarters, government schools, forest reserves, and other areas outside Mailo land where individuals have been able to apply for leaseholds from the Uganda Land Commission. Leasehold is common among forest plantations.

In the context of forestry and deforestation issues, it is significant that customary ownership of land in Uganda is considered valid and legal, whether registered and titled or not. There has been an ongoing land reform process, facilitated by the Government of Uganda to formally register customary land. It has proven to be a difficult process that has been met with skepticism in rural areas, especially concerning lack of transparency, expropriation and potential elite capture of lands during the formalizing process (Kakooza 2008).

8.3.5 Take home messages on forest policy and governance in Uganda

- Forest resources is a key element in agrarian Uganda's general development
- Forest policies and practices still reflect the civil war period, where forest resources were used to both reward and punish local constituencies
- The tenure situation of 70 % of the forests on private hands (but less of the biomass and carbon potential) and 30 % only on public hands is crucial in relation REDD
- The government land is to a large extent national parks and central forest reserves that have much less potential
- There has been continuous shifts in policies also involving governance levels between local and central control
- The present reform with a weak central Forest Inspection Division and a practically non-performing District Forest Service leaves future policy options and expectations low in public sector and its governance performance capacity and competence towards private sector and local communities very weak
- Donors have been extremely active in Uganda's policy formulation processes but conspicuously absent in funding District Forest Service and Forest Inspection Division, seriously hampering the forest sector reform process

8.4 UGANDA AND REDD TODAY

Uganda has officially stated her interest to participate in the future REDD regime. Uganda will receive support from the World Bank Forest Carbon Partnership Facility to develop a national REDD strategy (Ibrekk and Studsrød 2009). There is a Readiness Plan Idea Note developed for Uganda (ROU 2008). This note, written by the National Forest Authority describes the institutions and responsibilities for relevant bodies in Uganda, the key challenges and the legal frameworks and policies in place up to now. The Note explicitly gives policy recommendations for REDD implementation in Uganda (ROU 2008):

- Modernization of agricultural practices.
- Institutional support to private and customary land owners to address the challenges of deforestation
- Institutional support to protected area managers to halt and reverse direct actions of prevent any un-authorized entry and to stop non-permissible activities within the protected areas.
- Direct support for establishment and maintenance of compensatory forest plantations
- Developing collaborative partnerships with rural communities for the sustainable management of improvement of rural livelihoods
- Promotion of energy conservation technologies to reduce pressure on wood utilization
- Continuous assessment and monitoring of forest growing stock, biomass and carbon stocks

8.5. GOVERNANCE STRUCTURES FOR REDD IN UGANDA

8.5.1 A national REDD fund in Uganda

Similar to Tanzania, we propose for Uganda to consider the establishment of a Ugandan REDD fund to be the receiver of the external financial flows. The fund will be an entry point for 'REDD buyers' in Uganda. It will have responsibility for payments to legitimate national actors to implement REDD measures based on actual, verifiable performance. Such a fund could be governed by representation from the central government, the district local governments and civil society. The forest, agriculture, energy and wildlife sectors should most probably all be involved at this level. The administration of the fund could, however, be a responsibility of Ministry of Water, Land and Environment (MoWLE).

8.5.2 The actors and structure of REDD implementation.

We think the implementation of REDD activities would be best based on the current forest actor structure in Uganda, but with necessary adjustments and cooperation with other core sectors – e.g., agriculture and energy sectors. From the above, we observe that there are many actors that have a stake in Ugandan forests. Currently, coordination of the forest program at national level in Uganda is weak (ROU 2008). The unit with the formal mandate of policy making and coordination of NFA and DFS is the Forest Inspection Division, which today has limited operational capacity.

The three governmental agencies, NFA, UWA and DFS operate within their fields of interest, without much coordination. Moreover, DFS – the authority that has the mandate to address forest related issues outside the permanent forest estate is only operating in a few districts – is seriously

underfunded and unable to pursue its mandate. Also, according to NFA, a major problem for their own forest estate management is the lack of performance by FID and not least DFS (Bjella, pers. mess. 2006). Strengthening the national performance and coordination of forest activities is needed, and REDD may offer an outstanding opportunity to do so.

As we see this, the most logical agent to facilitate establishment of a national Ugandan REDD strategy would be the Ministry of Water, Land and Environment. In addition of handling forest issues, the ministry hosts the Department of Meteorology (DoM), which is the present focal agency for climate change issues and that that holds the mandate to co-ordinate the implementation of the UNFCCC and the Kyoto protocol. MoWLE could consider to use FID as the REDD coordinator. That would however, require substantial upgrading from its current capacity.

The implementing agencies will primarily be NFA and DFS, and to some extent, UWA depending on the outcomes form the international negotiations. NFA and UWA have reasonable record of at least producing plantations and biodiversity respectively, but have proven much less skills in poverty eradication and community based approaches for management. The national REDD strategy should further include private and civil society actors. It is very important that the private sector, civil society and communities participate, partly in planning, but primary in implementing policies.

NFA has an obvious role in reducing deforestation and forest degradation in the central forest reserves, to carry out sustainable forest management and to facilitate plantation establishment and management. REDD should be seen as an addition to the existing operations of NFA, allowing the agency to expand its activities and improve performance. NFA has engaged private sector partners, especially leasing land to private investors for commercial forest plantation establishment. Further, NFA is the host of the National Biomass Study, a long standing program to monitor the forest estate conditions. The National biomass study could become a vehicle for monitoring, reporting and verifying the REDD activities. There is already available capacity and knowledge of issue highly relevant for REDD. According to the proposal in Chapter 6, this program should, however, be moved to an autonomous monitoring unit.

Like NFA, UWA is a parastatal agency that has considerable forest areas in their portfolio. UWA´s involvement will partly depend on what REDD finally will include. If it entails carbon sequestration and allow forest restoration as a climate mitigation activity, UWA would have to be included as the forests in the national parks need considerable restoration. Both UWA and NFA have experience with forest carbon projects on the voluntary market and should therefore be relatively well positioned to engage in REDD strategy.

To implement REDD measures outside the permanent forest estate, the decentralized local governments should be considered as key implementing agencies. It is here where most deforestation currently takes place. Further, it might ease REDD to engage in potential activities outside the forestry sector, especially in agriculture and energy that are issues already handled at district/local government level. Many existing programs in the portfolio of the agricultural extension services, as those managed by the general natural resource divisions of the local government administration, might comply with the REDD strategies.

This is however not an easy exercise. Firstly, in recent reforms, the number of Uganda's districts has increased to around 80 units. Many of the new were carved out of the older ones without substantial funding or general infrastructure. Such 'paper' districts have currently limited overall operational capacity and forest is of low priority compared to educations, health etc. This has further weakened the older, more established district governments. Secondly, although part of the forest reforms, the district forest service has received limited funding. This concerns the state budget and the donor community. The latter has concentrated its contributions to NFA and UWA instead. The district forest service is notoriously weak and almost all the local forest reserves are more or less completely deforested and or encroached.

Therefore, if the District Forest Services or related divisions of the district local governments are supposed to become the vehicle for REDD outside the permanent forest estate, substantial up-front investment has to be made. It could also be considered that two or more districts could collaborate on REDD related activities.

The last segment of REDD actors are the local communities and individual citizens of Uganda. As deforestation drivers are mainly small scale agricultural expansion and fuel wood extraction, REDD measure will directly have to intervene with their general behavior, norms, routines etc. Ugandan local communities are heterogeneous. They will hence vary in competency and capacity, while being generally resource poor and lack a competence and experience of delivering REDD products and services. Hence, information and capacity building will be crucial.

In accordance with the general governance structure proposed in Chapter 6, an adapted solution for Uganda could be as depicted in Figure 8.3.

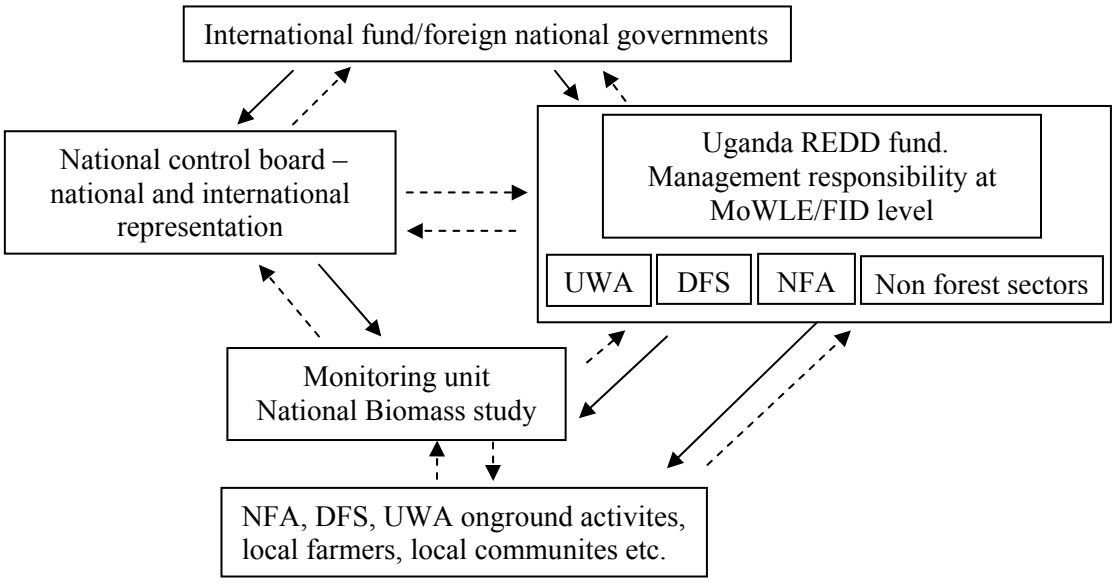


Figure 8.3 Elements of the proposed Ugandan REDD governance structure

Compact arrows: Resource and information transfer. Dashed arrows: Information transfer only

Potential roles for the various core actors are specified in Table 8.7.

Table 8.7 A potential actor structure to implement Ugandan REDD.

Coordinating body	**Govern-mental authority**	**Mandate**	**Forest protection instruments**	**Likely interested collaborating partners**
MoWLE level FID DoM	NFA	Central forest reserves	State control and community collaborative agreements Private- state partnership	- Private sector (individuals/firms) - Communities
	UWA (different ministry)	National Parks	State control and collaborative agreements	- NGOs - Communities
	DFS	Local forest reserves	Community conservation	- NGOs - Communities
	Joint NFA/DFS	Forests outside permanent forest estate	Tenure dependent; PES (monetary or in kind) Compensations. Information	- Communities - Private sector

It should be implicit in the REDD regime to promote good governance. The fact is that Uganda remains ranked among the countries suffering the most from serious corruption problems. However, there are signs of improvements as the Transparency International corruption index (10 is no corruption) has improved from 1.9 in 2001 to 2.7 in 2006 and 2.8 in 2007 (DIFD 2007). It will not be not an easy assignment worldwide for REDD to secure good governance and legitimate financial transactions.

There is however a range of strategies that can be applied to reduce the risk of corruption. In a recent evaluation report on corruption in the natural resource sector in Tanzania are highly important lessons that are equally important for Uganda to learn from when designing REDD (CMI 2009). Firstly, sectors do not exist in a vacuum. Forests are at stake in REDD, but policies might include other sectors that can become exposed to corruption. Secondly, capacity building is actually an important avenue for corruption as it becomes easy to add high expenses on procurements, logistics, participants that might not attend at all and on trainers that fall short to deliver. REDD is a classical example of a measure that will need significant capacity building. Thirdly, as the report states "light footprints carry heavy risks". Although the responsibility should be within the national and local authorities, there is a need to institute thorough, everlasting expenditure tracking. Further, audits based on self-reporting are inadequate. For REDD this would be the task of the autonomous control body recommended in Figure 8.3.

8.5.3 Take home suggestions on REDD actors and structure

- Consider establish a Ugandan national REDD fund that will be responsible for receiving the financial flows from international/bilateral actors and then to oversee and deliver performance based payments to national actors implementing REDD, emphasizing also cross-sectoral engagement
- Principles of good governance and anti-corruption have to be explicitly formed in the national REDD regime and followed during the future implementation at all stages
- Consider to mandate the Forest Inspection Division the coordinating role of REDD implementation

- The key forest actors that need to be coordinated to perform REDD activities are NFA and DFS, and moreover UWA depending on final decision on what REDD constitutes,
- Consider to give the NFAs National Biomass Project autonomy and mandate to monitor, report and verify REDD activities
- Clarify the additonality of the current NFA and UWA activities that REDD might fund (based upon the final decision on what REDD entails)
- Consider strengthen/establish the District Forest Service's at district local government level, not only to handle local forest reserves, but also to act as an extensions agency to interact with local communities outside the permanent forest estate

8.6. POLICIES TO REDUCE DEFORESTATION

As emphasized above, deforestation in Uganda has been in the scale of 50 - 100.000 ha annually and in addition, significant forest area is degraded with associated carbon loss. As we have seen, the key forces behind are related to agriculture expansions, fuel wood extraction, grazing and illegal logging, and further underlying factors like weak or lacking governance.

8.6.1 The permanent forest estate

The areas under the permanent forest estate are protected by governmental agencies where deforestation and degradation should already have been halted. However, that is not the case, according to the data presented in Section 8.2. This is the tenure regime where most of the carbon rich tropical high forests are found.

What is then most urgently needed to stop the current deforestation of these areas is to strengthen the operational capacity of National Forest Authority, Uganda Wildlife Authority and District Forest Services. But the authorities' operational capacity should not only focus on law enforcement as the main policy approach. Community approaches need to be implicit in the state controlled regimes, also for NFA, where instruments such as collaborative agreements have provided promising results. Such agreements clarify local community rights to access a set of resources from the forest area at stake. These rights are provided to be given to community members, usually bordering the forest, that are then supposed to participate in controlling other people's access to the respective areas. To reduce carbon degradation and deforestation in the forest reserves NFA and UWA should consider stronger emphasis on collaborative management strategies. Such strategies can entail access to collect resource and rights to cultivate and graze when appropriate in the forestation cycle. Such approaches will be context dependent, but aim at resolving some of the deeply rooted conflicts around Ugandan state forests.

REDD resources could be helpful to facilitate the above through offering necessary resources to develop collaborative agreements. Next they could be used to pay individuals/communities for reduced access to livelihoods. As in the case of Tanzania, an important question concerns whether compensation can be seen to legalize breaking the law. Certainly, protection has often deprived people their livelihoods, wakening the legitimacy of the law. Hence, arrangements that compensate for lost livelihoods may both help reducing poverty problems and increase the legitimacy of the law. Moreover, in the longer run, collaborative agreements could reduce the

management and transaction costs, as the governmental authority with jurisdiction over the area will not need the same costly law enforcement inputs in the future when surrounding local communities participate.

The second concern around deforestation of the permanent forest estate relates to government decisions that are negative for the goals of REDD – typically concerning land use strategies being nationally more profitable or politically desirable. Examples of such are found from Sesse Islands and Mabira central forest reserve. Significant deforestation has taken place as a result of political decisions on Sesse Island where around 5.000 ha of tropical high forest were cleared for oil palm plantations (Reuters 2007). Further, the attempt of the Government of Uganda to clear around 10.000 ha of the tropical high forest in Mabira central forest reserve aiming at establishing agricultural plantations failed – at least temporarily – after significant protests from donors and civil society. These forest conversion processes have, however, become highly controversial, resulting in the resignation of the NFA director and later the resignation of the whole NFA board. These observations shows that it will be a great challenge for REDD to compete with other contemporary land use alternatives – such as biofuel and food production.

8.6.2 Forests on land held under communal and private tenure

These are is the dominant tenure systems in Uganda, and rights over land are regulated by site-specific, local customs. Under these systems, forest use, crop production and livestock farming is mainly small-scale and often subsistent in nature. Strategies to impact deforestation in these land tenure categories will have to be site specific and context dependent. There are cultural differences, multiple socio-economic difference and different physical landscapes that all impact the selection of instruments needed to reduce deforestation.

As we have seen, deforestation and forest degradation in forests under communal tenure are mainly driven by two factors: extraction of wood for fuel and conversion to agriculture. Concerning fuel wood, there is both firewood used in rural areas and charcoal used in more urban areas. The situation in Uganda is very much similar to that of Tanzania concerning these issues. Developing substitutes for firewood should be both feasible and one should expect these policies to be well received. Again alternatives include on-farm tree planting, energy saving techniques such as improved stoves and alternative energy sources such as solar or biogas. Monetary incentives and information campaigns would seem appropriate policy instruments added to increased availability. The viability of such strategies is highly context dependent, and one should start by setting up pilot projects to earn experience.

The charcoal sector is more demanding to handle. Here the actors seem less motivated for changes. There is also a great risk for leakage. On the supply side, establishing sustainable plantations to produce timber to the charcoal industry seems to be a logical policy intervention. This could be done by NFA or DFS in collaboration with the private sector. REDD funding might aid to the economical sustainability of such plantations. However, strategies on the demand side might be more effective. The fact is that less than 5 % of the Uganda population is connected to the electric grid. However, Uganda has substantial hydropower generation capacity and significant solar energy and geothermal power as well. It is therefore likely that if a greater share of the urban households might be connected to the grid, the demand for charcoal will drop.

There are multiple reasons behind forest conversions, but land scarcity and declining agricultural productivity are key rationales also in Uganda. To reduce deforestation, policies directed at the agricultural sector and its productivity will be important also in Uganda. According to the Uganda Fertilizer Strategy 2006 Draft Report, the use of fertilizers in Uganda is among the lowest in the Africa. In the report it is estimated that between 1996 and 2000 Uganda applied on average around 0.4 kg fertilizer nutrients per hectare land, compared to Kenya 31.6 kg/ha and in USA 105 kg/ha (New Visions 2007). It should be a priority for REDD to analyze why Ugandan farmers do not use more fertilizes and concurrently study possible interactions between increased agricultural productivity and reduced deforestation in the customary land. Again subsidizing fertilizers may be one important option.

Moreover, while REDD cannot alone be responsible for agricultural modernization, one should consider partnership with national programs, especially the Plan for Modernization of Agriculture and its National Agricultural Advisory Services extension service. It is further an argument for a closer connection between REDD and the district local governments that have responsibility for the agricultural extension service.

In the above we have mainly focused on using REDD resources to directly influence upon the availability and price of substitutes to forest resources. Certainly, paying communities or individuals – monetary or in kind – to protect forests on the land they hold is certainly also an important alternative. It may be important as a stand-alone instrument in some situations. It may, however, also be important to speed up the shifting over to substitutes. Payment schemes related to area protection may be costly to establish and run. Contracting over land use will be demanded and control systems must be established at the local level – involving participatory monitoring. As there is very little experience with these kinds of policy instruments, it would again be wise to establish pilots in a few Districts to learn about how different formats of contracting and control influence effectiveness and the level of transactions costs.

The war ridden Northern districts may warrant specific considerations. This will most probably be an area with great challenges for a Ugandan REDD strategy. As mentioned earlier, there has been an increase in woodland and forest cover in N-Uganda as an effect of the war. Where the refugee camps lie there is, however, a substantial belt of complete deforestation. As the Northern districts constitute around 1/4 of the overall area of Uganda, the status here has significant impacts on the overall carbon stocks.

After the peace agreements, people now leave the refugee camps and return to their overgrown (and carbon rich) homesteads. Large scale land conversions can be expected in the woodlands for agriculture and later, the lucrative charcoal burning to get cash for the needed reparation after the war. This is a process that will significantly impact the forest cover in vast areas of Uganda. This is of high relevance for REDD as deforestation in those areas might escalate in few years. It seems especially important to establish protection measures in these areas to avoid quick and uncoordinated deforestation.

8.7. POLICIES FOR REDUCED FOREST DEGRADATION AND RESTORATION OF DEGRADED FORESTS

8.7.1 The permanent forest estate

Considerable amount of the permanent forest estate is degraded. Restoration of many of the forests in Uganda's permanent forest estate is a complicated exercise, due to the tenure conflicts that partly relate to the long period of civil strife, especially in the Amin/ post-Amin period when local communities were allowed to settle inside the formerly gazetted forest areas including some cases where they got land titles to such areas (N-Uganda). Other failures concern the lacking capacity of the former Forestry Department to manage the forest reserves and corruption around land allocations within forest boundaries. In many such areas local communities claim legal rights to be settled inside currently protected areas and do not recognize the state as a legitimate owner of these. As for deforestation, this tenure conflict in the permanent forest estate is a major issue for a potential REDD regime to resolve in restoration of degraded forests.

Further, rights of local communities to access resources to the permanent forest estate have not fully been accepted or formalized by the government. The current legislation, both for the National Parks and the central/district forest reserves recognizes local community rights to non-consumptive use of a negotiated set of resources from those areas. This legitimate right of the local communities is, however, not fully realized (recognized, formalized) by the authorities.

If REDD can resolve these conflicts, there are good prospects that forest restoration activities will succeed. As many of the areas are potentially tropical high forests, there might be considerable climate mitigation gains in tropical forest restoration in Uganda. Mechanism to resolve the conflicts will be context dependent. In some cases there might be foundations for compensations while in other areas there might be space for mixed solutions like compensations and collaborative agreements on rights to access certain resource. Further, there might be a need for a degazettment strategy.

Allowing degraded forest restoration would bring in the extensive forest areas (15 % of all Ugandan forests) found under jurisdiction of Uganda Wildlife Authority, especially in the forested national parks, converted from forest reserves in the 1993. Forest restoration in those areas will essentially be done either by planting and/or natural regeneration using fencing. In case of planting, the restoration activities will include some manual labor that can provide seasonal work in the initial phase of the restoration.

Forest degradation is a gradual process that can, if not interrupted, initially lead to complete deforestation. Therefore, most of the policy instruments that are discussed in the deforestation section above are also applicable here, especially on fuel wood issues.

8.7.2 Communal and private lands

Also on these categories of land tenure, policies to reduce forest degradation will have to take much the same format as policies to reduce deforestation. Degraded forests on communal/private lands are dominantly an outcome of unsustainable fuel wood extraction and livestock grazing. Concerning the former substitution to other energy sources will have to be the main measure. Concerning livestock grazing, changes in fodder practices demanding less land should be

considered. As important would payments for setting aside land for non-grazing be. Certainly, these kinds of contracts should be set up in combination with those focused at halting deforestation, when that is relevant.

As already stated, degradation is usually a gradual process frequently resulting in deforestation in the end. Interfering in degraded forest can therefore be a concurrent measure to avoid deforestation (reduce emissions) as to enhance the carbon stock of the degraded native forests. Forests usually have great resilience. If not too degraded, they can recover given some protection.

In some of the degraded woodlands, local communities might be paid to perform enrichment plantings, using the native tree material. It could be seen as a restocking exercise where the aim is to create more robust forest that could generate fuel wood and other environmental services. Such programs will have to be designed according to the community tenure structures where direct performance based payments might be considered. That would have to include verifiable units of land that will be restored according to some minimum criteria for tree stocking. The same applies for mailo/freehold land where the payment receiver would be the individual legitimate owner. The receivers of the payments would then have to comply with avoided deforestation of the areas restored and preferably become involved in monitoring of the areas.

8.8 HOW TO IMPLEMENT AFFORESTATION AND SUBSEQUENT REFORESTATION

The central forest reserves are now used partly for plantation purposes both directly by the National Forest Authority itself and through programs like the SAWLOG scheme where private actors lease land for plantations under particular conditions. This has been successful in establishing fast growing and profitable forests. Present eviction strategies and processes are causing both social and political turmoil. The National Forest Authority and SAWLOG partners may have to revise and improve their relations to local people through more serious and comprehensive local participation and benefit-sharing programs.

Due to complex and conflict-ridden situations, it may not be likely that plantations will become a large scale REDD phenomenon in Uganda, even if it become a legitimate component of the international REDD regime (like the REDDplus proposal). It is difficult to see how Uganda with its high population density, land scarcity and small land holdings could harbor large scale forest carbon plantations.

Uganda could, however, have great possibility to establish small scale plantations. In the decentralized Ugandan government, this could be done at District or perhaps at Sub-County level, preferably as the responsibility of the local communities or the District Forest Service and aiming at contributing directly to the local economy. This could be established on land under customary/private tenure under local ownership or in the local forest reserves. Most are more or less completely encroached and cultivated and it may be politically and socially difficult issue to handle, but a potential lies there, especially in to meet demand for fuel wood.

The upfront costs of afforestation are relatively well known. The same is with the growth performance and carbon sequestration potential. Therefore payment instrument should be well

adapted to facilitate plantations, where the receiver could be a leaser of governmental land, private landowner, governmental agency or communal actors.

8.9 RECOMMENDATIONS REGARDING REDD POLICIES IN UGANDA

We have identified a range of strategies that Uganda might include in a national REDD strategy to mitigate climate change:

Permanent forest estate

- Avoided deforestation
  - The Ugandan government should lead the way in forest protection
  - For forests belonging to NFA and UWA, REDD funding could consider focus on more socially legitimate strategies to reduce deforestations/degradation in the permanent forest estate. A challenge is to resolve the land tenure conflicts and boundary disputes with local communities
  - There is an investment needed in collaborative mechanism under which local communities might access resources
- Reduced forest degradation and restoration of degraded forests
  - There is a need for forest restoration in many areas of the permanent forest reserves. Again there is a challenge related to resolving the land tenure conflicts and boundary disputes with local communities
  - The local forest reserves are much degraded and or deforested and would require a substantial effort to re-establish
  - Requisite that such conflicts are resolved, REDD could employ payment mechanisms to facilitate degraded forest restoration in the permanent forest estate
- Afforestation and reforestation
  - Payments schemes could facilitate plantation establishment. That could include the local forest reserves and be additional to the central forest reserves programs
  - Addressing local community rights to the lands placed under plantations is of immense importance
  - The District Forest Services could become a vehicle from a large scale effort to promote and invest in a small scale plantations and woodlots – both afforestation and reforestation
  - Private-state partnerships might be an interesting option. The National Forest Authority has experience with private-state partnership on leasing out land in the central forest reserves that has been attractive to the private sector

Forests on private and communal lands

- Avoided deforestation
  - Avoided deforestation programs have to be context dependent, site specific and most likely build on many policy instruments
  - Establishing a national momentum for REDD should be considered. If REDD wants to interact with the multiple actors and processes that drive deforestation, it might be beneficial to have such backing

  - Address fuel wood extraction with multiple measures. That can entail on farm planting but also consider measures within the energy sector
  - Focus explicitly on the charcoal industry that has suffered from unsustainable practices
  - Address agriculture expansions with multiple measures – consider measures in the agricultural sector itself – e.g., fertilizer subsidies
  - Contracts with direct payments to land owners and communities can provide incentives for them to protect forest under their tenure
  - Consider especially the situation in N-Uganda where there has been significant increase in the forest cover during the conflict. When the farmers are returning back home, deforestation and degradation might escalate

- Reduced forest degradation and restoration of degraded forests
  - Similar policies as under avoided deforestation
  - Extra focus on the livestock sector

- Afforestation and reforestation
  - Payments – monetary and in kind (seedlings/fencing material) – and advice to facilitate on-farm afforestation and reforestation

It should also be of priority when REDD advances in Uganda to initiate series of pilot projects where different measures are tested. That is needed to address the viability of different strategies, how they operate, how they are received by the local people and further give information about direct cost/benefits.

As emphasized throughout the whole report, carbon policies must acknowledge the potential conflicts with poverty alleviation and biodiversity protection. Certainly, the three objectives should be treated in a coordinated manner when REDD policies are crafted.

REFERENCES

Written sources

Abbott, J., L. M. Campbell, J. Clinton, H.A. Næsje, A. Ndumba and J. Purvis, 2007. Rivers as resources, rivers as borders: community and transboundary management of fisheries in the Upper Zambezi River floodplains. *Canadian Geographer/Le Géographe canadien* 51(3): 280-302.

Abdallah, J. M. and G. G. Monela, 2007. Overview of Miombo Woodlands in Tanzania. MITMIOMBO – Management of Indigenous Tree Species for Ecosystem Restoration and Wood Production in Semi-Arid Miombo Woodlands in Eastern Africa. Proceedings of the First MITMIOMBO Project Workshop held in Morogoro, Tanzania, 6th-12th February 2007. *Working Papers of the Finnish Forest Research Institute*, no 50, pp. 9–23.

Acode, 2005. *Balancing nature conservation and livelihoods. A legal analysis of forestry evictions by the National Forest Authority*. Acode, Kampala, Uganda.

Adams, W.M. and D. Hulme, 2001. Changing narratives. Policies and practices in African conservation. In Hulme, D. and M. Murphree (eds). *African Wildlife and Livelihoods: the promise and performance of community conservation*. London: James Currey.

Adams, W. M. and M. Infield, 2003. Who is on the Gorilla's Payroll? Claims on Tourist Revenue From a Ugandan National Park. *World Development* 31(1): 177-190.

Aluma, J.R.W., 1987. Uganda Forest Resources and Action Programme. UNEP. Draft Report.

Anderson, K., C. Gibson and F. Lehoucq, 2006. Municipal Politics and Forest Governance: Comparative Analysis of Decentralization in Bolivia and Guatemala. *World Development* 34(3):576–595,

Angelsen, A. (ed.) 2008. *Moving ahead with REDD: Issues, options and implications*. CIFOR, Bogor, Indonesia.

Angelsen, A. and O. Hofstad, 2008. *Inputs to the development of a national REDD strategy in Tanzania*. Norwegian University of Life Sciences (UMB), Ås.

Angelsen, A. and S. Wertz-Kanounnikoff, 2008. What are the key design issues for REDD and the criteria for assessing option? In Angelsen, A. (ed.): *Mowing ahead with REDD: Issues, options and implications*. CIFOR, Bogor, Indonesia.

Angelsen, A., C. Streck, L. Peskett, J. Brown and C. Luttrell, 2008. What is the right scale for REDD? In Angelsen, A. (ed.): *Mowing ahead with REDD: Issues, options and implications*. CIFOR, Bogor, Indonesia.

Arrow, K., 1969. The organization of economic activity. Issues pertinent to the choice of market versus nonmarket allocation. In The Analysis and Evaluation of Public Expenditure: The PPB System. *Vol. 1. U.S. Joint Economic Committee, 91st Congress, 1st Session*. Washington D.C.: U.S. Government Printing Office, pp.59-73.

Asquith, N. M., M. T. Vargas Ríos and J. Smith, 2002. Can Forest-protection carbon projects improve rural livelihoods? Analysis of the Noel Kempff Mercado climate action project, Bolivia. *Mitigation and Adaptation Strategies for Global Change,* 7(4): 323-337.

Aukland, L., P. Costa and S. Brown, 2003. A conceptual framework and its application for addressing leakage: the case of avoided deforestation. *Climate Policy*, 3:123–136.

Barrett, C. B., K. Brandon, C. Gibson and H. Gjertsen, 2001. Conserving Tropical Biodiversity amid Weak Institutions. *BioScience*, 51(6): 497-502.

Bawa, K. S., R. Seidler and P. H. Raven, 2004. Reconciling Conservation Paradigms. *Conservation Biology*, 18(4): 859-860.

Bazaara, N, 2002. *Politics, Legal Land Reform and Resource Rights in Uganda. Africa in the New Millennium, The Changing Political Economy of Land in Africa*. Nile International Conference Centre, 9.-12. December, Kampala Uganda

Beck, P. A., 2000. *Conservation, development and collaboration: Analyzing institutional incentives for participatory conservation in Uganda*. Dissertation. Indiana, Indiana University.

Benjaminsen, T.A., I. Bryceson and F. Maganga, 2008. *Climate change in Tanzania: Trends, policies and initiatives*. Noragric working paper. Norwegian Universitiy of Life Sciences.

Boahene, K., 1998. The challenge of deforestation in tropical Africa: reflections on its principal causes, consequences and solutions. *Land Degradation & Development*, 9(3):247-258.

Bond, I., 2008. *Land-use change and the application of incentive-led approaches in the miombo woodlands of eastern and southern Africa*. CIFOR, Bogor, Indonesia; International Institute for Environment and development (IIED), London, UK and World Resources Institute (WRI), Washington D.C., USA.

Boucher, D., 2009. *Money for Nothing? Principles and Rules for REDD and their Implications for Protected Areas.* Presented at the workshop: "Connecting Protected Areas and Indigenous Lands to REDD Frameworks" School of Earth Sciences, Stanford University, CA.

Börner, J., A. Mendoza and S. A. Vosti, 2007. Ecosystem services, agriculture, and rural poverty in the Eastern Brazilian Amazon: Interrelationships and policy prescriptions. *Ecological Economics*, 64(2): 356-373.

Bowles, S., 2008. Policies Designed for Self-Interested Citizens May Undermine "The Moral Sentiments": Evidence from Economic Experiments. *Science*, 320:1605-1609.

Boyd, E., N.E. Hultman, T. Roberts, E. Corbera, J. Ebeling, D.M. Liverman, K. Brown, R. Tippmann, J. Cole, P. Mann, N. Kaiser, M. Robbins, A. Bumpus, A. Shaw, E. Ferreira, A. Bozmoski, C. Villiers and J. Avis (eds.), 2007. *The Clean Development Mechanism: An assessment of current practice and future approaches for policy*. Tyndall Centre for Climate Change Research, United Kingdom, Working Paper 114.

Brown, C. 2000. *The global outlook for future wood supply from forest plantations. Global Forest Products Outlook Study*. Working Paper Series. Forestry Policy and Planning Division FAO, Rome.

Brown, K. and E. Corbera, 2003. Exploring Equity and sustainable development in the new carbon economy. *Climate Policy*, 3(S1):S41-S56.

Brown, D., F. Seymor and L. Peskett, 2008. How do we achieve REDD co benefits and avoid doing harm? In Angelsen, A. (ed.): *Mowing ahead with REDD: Issues, options and implications*. CIFOR, Bogor, Indonesia.

Bruce, J. W. and A. Knox, 2009. Structures and Stratagems: Making Decentralization of Authority over Land in Africa Cost-Effective. *World Development*, 37(8):1360-1369.

Butler, R., 2008. How to Save the Amazon Rainforest. http://www.forestcarbonportal.com/article.php?item=105 (Accessed online 10.02.09)

Cardenas, J. C., J. Strandlund and C. Willis, 2000. Local Environmental Control and Institutional Crowding-Out. *World Development*, 28(10):1719-1733,

Carter, E., W. M. Adams and J. Hutton. 2008. Private protected areas: management regimes, tenure arrangements and protected area categorization in East Africa. *Oryx*, 42(02):177-186.

Channock, M., 1985. Law, *Custom, and Social Order: The Colonial Experience in Malawi and Zambia*. New York: Cambridge University Press.

Child, B., 2004. *Parks in transition*. Sterling, USA: Earthscan.

Christensen, T., M. Egeberg, H. Larsen, P. Lægreid and P.G. Roness, 2002. *Forvaltning og politikk*. Oslo: Universitetsforlaget.

CIA (Central intelligence agency). 2009. *"CIA factbook"*. (Retrieved 16/07/09).

CMI (Christian Michaelsen Institute), 2009. *Monitoring aid: Lessons from a natural resources programme in Tanzania*. Chr. Michelsen Institute, Bergen

Claassen, R., Cattaneo, A., Johansson, R., 2008. Cost-effective design of agri-environmental payment programs: U.S. experience in theory and practice. Ecological Economics, 65:737-752.

Cleaver, F., 2001: *Institutional Bricolage, Conflicts and Cooperation in Usangu, Tanzania*. IDS Bulletin. Vol.32, Number 4. IDS, Sussex.

Cossalter, C. and C. Pye-Smith, 2003. *Fast-Wood Forestry. Myths and Realities*. Cifor, Bogor, Indonesia.

Corbera, E., and K. Brown, 2008. Building Institutions to Trade Ecosystem Services: Marketing Forest Carbon in Mexico. *World Development*, 36(10):1956–1979

Corbera, E., N. Kosoy and M. Martinez-Tuna, 2007a. Equity implications of marketing ecosystem services in protected areas and rural communities: Case studies from Meso-America. *Global Environmental Change*, 17:365-380.

Corbera, E., N., Kosoy, and M. Martinez-Tuna, 2007b. Equity implications of marketing ecosystem services in protected areas and rural communities: Case studies from Meso-America. *Global Environmental Change*, 17:365-380.

Corbera, E., C.G. Soberianis and K. Brown, 2009. Institutional dimensions of Payments for Ecosystem Services: An analysis of Mexico's carbon forestry programme. *Ecological Economics*, 68:743-761.

Cotula, L. and J. Mayers, 2009. *Tenure in REDD – Start-point or afterthought?* Natural Resource Issues No. 15. International Institute for Environment and Development. London, UK.

Cubbage, F., P. Harou and E. Sills, 2007. Policy instruments to enhance multi-functional forest management. *Forest Policy and Economics*, 9(7):833-851.

Dallu, A., 2002. Tanzania country paper. Workshop on tropical secondary forest management in Africa, Nairobi, Kenya 9.-13. December, FAO.

de Soto, H,. 2002. *Law and Property Outside the West:A Few New Ideas about Fighting Poverty*. Forum for Development Studies 2:02.

DIFI (Department for international development), 2007. *Uganda Anti corruption fact sheet. UK.*

Desanker, P.V. (no year). *The Kyoto Protocol and the CDM in Africa: a good idea but …* http://www.fao.org/docrep/009/a0413e/a0413E05.htm (Accessed online 05.20.09)

Dobbs, T.L. and J. Pretty, 2008. Case study of agri-environmental payments: The United Kingdom. *Ecological Economics*, 65:765-775.

Engel, S., S. Pagiola and S. Wunder, 2008. Designing payments for environmental services in theory and practice: An overview of the issue. *Ecological Economics*, 65:663-674.

Eraker, H., 2000. *Keiserens nye trær - om norske treplantasjer, CO_2-kvoter og nykolonialisme i Uganda*. NorWatch Rapport 5. Framtiden i våre hender.

Etzioni, A., 1988. *The Moral Dimension: Toward a new Economics*. New York: The Free Press.

Falconer, K. and S. Saunders, 2002. Transaction costs for SSSIs and policy design. *Land Use Policy*, 19(2):157-166.

Falconer, K. and M. Whitby, 1999. The invisible costs of scheme implementation and administration, In Van Huylenbroeck, G. and M. Whitby (eds.): *Countryside Stewardship: Farmers, Policies and Markets*. Amsterdam: Elsevier Science Ltd, pp. 67-88.

FAO (Food and Agriculture Organization), 1981. *Tropical forest resources assessment project. Forest resources of tropical Africa*. FAO Rome

FAO (Food and Agriculture Organization), 2005. *State of the world's forests 2005*. FAO, Rome.

FAO (Food and Agriculture Organization), 2007. *State of the world's forests 2007*. FAO, Rome.

FAO (Food and Agricultural Organization, 2008. *Understanding forest tenure in Africa: Opportunities and challenges for forest tenure diversification. Forest Policy and Institutions*. Working Paper 19.

FAO (Food and Agriculture Organization), 2009. *"Multipurpose Africover Databases on Environmental resources (MADE)."* Africover.com (Retrieved 16/0709).

Fehr, E. and A. Falk, 2002. Psychological foundations of incentives. Joseph Schumpeter Lecture. *European Economic Review*, 46:687-724

Fjeldstad, O.H., 2006. Corruption in Tax Administration: Lessons from Institutional Reforms in Uganda. In Rose-Ackerman, R. (ed.): *International Handbook on the Economics of Corruption*. Cheltenham: Edward Elgar, pp.484-511.

Frey, B.S., 1997. *Not Just For the Money. An Economic Theory of Personal Motivation*. Cheltenham: Edward Elgar Publishing Limited.

Frey, B.S. and F. Oberholzer-Gee, 1997. The Cost of Price Incentives: An Empirical Analysis of Motivation Crowding-Out. American Economic Review, 87(4):746-755.

Gan, J. and B.A. McCarl, 2007. Measuring transnational leakage of forest conservation. *Ecological Economics*, 64:423– 432

Geist, H. and E. Lambin, 2002. Proximate causes and underlying driving forces of tropical deforestation. *BioScience*, 52(2), pp. 143-50

Gibbs, H. K. and S. Brown, 2000. *Geographical Distribution of Woody Biomass Carbon in Tropical Africa: An Updated Database for 2000.* Contributed by: Holly K. Gibbs and Sandra Brown. http://cdiac.ornl.gov/epubs/ndp/ndp055/ndp055b.html

Gibbs, H. K., S. Brown, J.O. Niles and J.A. Foley, 2007. *Monitoring and estimating tropical forest carbon stocks: making REDD a reality*. Environmental Research Letters 2.

Gintis, H., S. Bowles, R. Boyd, and E. Fehr, 2003. Explaining altruistic behavior in humans. *Evolution and Human Behavior*, 24:153-172.

Gneezy, U. and A. Rustichini, 2000. Pay enough or don't pay at all. *Journal of Economic Behavior and Organization*, 39:341-369.

Gosamalang, D., 2003**.** *Changing Legal Status of Mt. Elgon Forest Reserve, Uganda. Impacts on Local People's Livelihoods, Uganda*. Msc. Thesis. Noragric Norwegian University of Life Sciences.

Greenpeace, 2009. *REDD and the effort to limit global warming to 2°C: Implications for including REDD credits in the international carbon market*. Greenpeace, New Zealand.

Grieg-Gran, M. and J. Bishop, 2004. How Can Markets for Ecosystem Services Benefit the Poor? In Roe, D. (ed.): *The Millennium Development Goals and Conservation: Managing Nature's Wealth for Society's Health*. IIED, London.

Grieg-Gran, M., I. Porras and S. Wunder. 2005. How can market mechanisms for forest environmental services help the poor? Preliminary lessons from Latin America. *World Development*, 33(9): 1511-1527.

Gylfason, T., 2004. *Natural Resources and Economic Growth: From Dependence to Diversification*. CEPR Discussion Paper no. 4804. Centre for Economic Policy Research. London.

Hamilton, A. C., 1984. *Deforestation in Uganda*. Nairobi: Oxford University Press.

Hamilton, K., M. Sjardin, A. Shapiro and T. Marcello, 2009. *Fortifying the Foundation: State of the Voluntary Carbon Markets 2009*. A Report by Ecosystem Marketplace and New Carbon Finance. USA

Hamza, K.F.S. and E.O. Kimwera, 2007. *Tanzania's Forest Policy and Its Practical Achievements with Respect to Community Based Forest Management in MITMIOMBO*. Working Papers of the Finnish Forest Research Institute 50: 24–33.

Havnevik, K., 2007. *Land management programme (LAMP): The Suledo forest and the Burunge wildlife management area*. ORGUT Consulting AB. Stockholm.

Hartter, J. and K. Boston, 2008. Consuming fuel and fueling consumption: Modeling human caloric demands and fuelwood use. *Small-scale Forestry*, 7(1):1-15.

Hayes, T., 2006. Parks, People, and Forest Protection: An Institutional Assessment of the Effectiveness of Protected Areas. *World Development*, 34(12):2064-2075

Hulme, D. and M. Murphree, 2001. Community conservation as policy, promise and performance. In Hulme, D. and M. Murphree (eds): *African Wildlife and Livelihoods: the promise and performance of community conservation*. London: James Currey.

Hobley, M., 2004: *Uganda Forest Sector Policy and Strategy Project. End of Project Review*. DFID 2004.

Hofstad, O., U.K. Mitzlaff, J. Kaboggoza, R. Musoke and E. Trømborg, 1999. *Review of the Forestry Sector programme, Uganda* (UGA 007 funded by NORAD). Unpublished

Höhne, N., S. Wartman, A. Herold, and A. Freibauer, 2007. The rules for land use, land use change and forestry under the Kyoto Protocol-lessons learned for the future climate negotiations. *Environmental science and policy*, 10:353-369.

Holl, K., M. Loik, E. Lin and I. Samuels, 2000. Tropical Montane Forest Restoration in Costa Rica: Overcoming Barriers to Dispersal and Establishment. *Restoration Ecology*, 8(4):339-349.

Howard, P., 1991. *Nature conservation in Uganda's tropical forest reserves*. Gland, IUCN.

Hutton, J. M., W. M. Adams and J. C. Murombedzi, 2005. Back to the barriers? Changing narratives in biodiversity conservation. *Forum for Development Studies* 2:341–370.

Ibrekk, H. O. and J. E. Studsrød. 2009. *Review of the Embassys development assistatance portfolio: Environment and climate change - "Greening and climate proofing the portfolio"*. The Royal Norwegian Embassy. Kampala, Uganda, NORAD.

IPCC, 2007. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Summary for Policymakers*. IPCC AR4.

Jansen, E., 2009. *Does aid work? Reflections on a natural resources programme in Tanzania*. U4 Issue 2009:2. Christian Michelsen Institute, Bergen.

Jindal, R., B. Swallow and J. Kerr, 2008. Forestry-based carbon sequestration projects in Africa: Potential benefits and challenges. *Natural Resources Forum*, 32:116-130.

Kaieteur News, 2009. *Better dead than REDD*. http://www.caribdaily.com/article/159920/better-dead-than-redd/ (Accessed online o5.15.09).

Kaimowitz, D., 2002. Amazon deforestation revisited. *Latin American Research Review*, 37 (2):221-235.

Kakooza, J., 2008. Uganda: Land Reform Or Theft? *The Weekly Observer,* January 3, 2008., Kampala, Uganda.

Kim, J.A., 2003. *Sustainable development and the CDM: a South African case study*. Tyndall Centre for Climate Change Research, pp 1–18.

Kjekshus, H., 1996. *Ecology Control and Economic Development in East African History, The Case of Tanganyika 1850–1950*. East African Studies, London, UK.

Kosoy, N., M. Martinez-Tuna, R. Muradian, and J. Martinez-Alier, 2007. Payments for environmental services in watersheds: Insights from a comparative study of three cases in Central America. *Ecological Economics*, 61:446-455.

Kosoy, N., E. Corbera and K. Brown, 2008. Participation in payments for ecosystem services: Case studies from the Lacandon rainforest, Mexico. *Geoforum*, 39(6):2073-2083.

Kosoy, N., C., Corbera, (forthcoming). Payments for Ecosystem Services as Commodity Fetishism. *Ecological Economics*.

Lang, C. and T. Byakola, 2006. *"A funny place to store carbon": UWA-FACE Foundation's tree planting project in Mount Elgon National Park, Uganda*. World Rainforest Movement. Montevideo, Uruguay.

Landell-Mills, N. and I.T. Porras, 2002. *Silver Bullet or fools' gold. A global review of markets for forest environmental service and their impact on the poor*. Report. IIED, London.

Lemos, M.C., and A. Agrawal. 2006. Environmental Governance. *Annual Review of Environmental Resources*, 31:297-325.

Licari, M.J. and K.J. Meier, 2000. Regulation and signaling: When a tax is not just a tax. *The Journal of Politics*, 3(62):875-885.

Lloyd, B. and S. Subbarao, 2009. Development challenges under the Clean Development Mechanism (CDM). Can renewable energy initiatives be put in place before peak oil? *Energy Policy*, 37(1):237-245

Lowe, P. and N. Ward, 1997. The Moral Authority of Regulation: the Case of Agricultural Pollution. In Romstad, R., S. Simonsen and A. Vatn, (eds.): *Controlling Mineral Emissions in European Agriculture. Economics, Policies and the Environment*. Wallingford: CAB International, pp. 59-72.

Luiz, J.M., 2009. Institutions and economic performance: Implications for African development *Journal of International Development*, 21: 58–75

Makundi, W., 2001. Potential and cost of carbon sequestration in the Tanzanian forest sector. *Mitigation and adaptations strategies for global change*, 6:335-353.

May P.H., E. Boyd F. Veiga and M. Chang, 2004. *Local sustainable development effects of forest carbon projects in Brazil and Bolivia*. International Institute for Environment and Development (IIED), London.

Milledge, S., I. Gelvas and A. Ahrends, 2007. *Forestry, governance and national development: lessons learned from a logging boom in southern Tanzania*. MoNRT and DPG TRAFFIC. Dar es Saalam.

MoNRT (Ministry of Natural Resources and Tourism), 2009. Homepage. http://www.mnrt.go.tz-/default.aspx#. (Accessed online20.07.09.).

MoLD (Ministry of Livestock Development), 2006. *National Livestock policy*. The United Republic of Tanzania.

MoWLE, (Ministry of Water Lands and Environment), 1999. *The status of the biomass in Uganda*. Biomass Study Report, Forest Department (FD Ministry of Environment, Water, Lands and Natural Resources), Kampala, Uganda.

MoWLE (Ministry of Water Lands and Environment), 2003. *National Biomass Study*. Technical Report, National Forest Authority, Kampala, Uganda

MoWLE (Ministry of Water Lands and Environment), (2004). *The Forest Sector Reform in Uganda*. Learning notes 1-9. The Forest Inspection Division, Kampala, Uganda.

Mugambwa, J., 2002. *Principles of land law in Uganda*. Fountain Pub Ltd . Kampala

Muhereza, F.E., 2003. Commerce, Kings and Local government in Uganda. Decentralizing Natural resources to consolidate the Central State. Working Paper Series; World Resources Instiutute. 10 G Street, NE Washington DC. 20002.

Muradian, R., M. Martinez-Tuna, N. Kosoy, M. Perez, and J. Martinez-Alier, 2008. *Institutions and the performance of payments for water-related environmental services. Lessons from Latin America*. Working paper. Development Research Institute, Tilburg University.

Murray, B. and L. Olander, 2008. A Core Participation Requirement for Creation of a REDD marke. Nicholas institute for environmental policy solutions, Durham, NC

Nampindo, S., G.P. Phillipps, and A. Plumptre, 2005. *The impact of conflict in northern Uganda on the environment and natural resource management*. Joint publication of USAID and WCS.

Nakakaawa, C., P. Vedeld and J. Aune, unpublished. *Issues related to forests and carbon in Uganda*. Phd work. Noragric, Norwegian Universtiy fo Life Sciences.

Namubiru, E.L., 2006. *Coping with a Changing Forest Policy. Livelihoods in Mpigi District, Uganda.* Draft. A paper submitted to the International Association for the Study of Common Property Conference. June 19.23. Bali Indonesia.

Nawir, A. A., H. Kassa, M. Sandewall, D. Dore, B. Campbell, B. Ohlsson and M. Bekele. 2007. *Stimulating smallholder tree planting – lessons from Africa and Asia*. Unasylva, FAO, Rome 58(3).

Nelson K.C., B.H.J de Jong, 2003. Making global initiatives local realities: carbon mitigation projects in Chiapas, Mexico. *Global Environmental Change*, 13:19–30.

NEMA (National Environment Management Agency). 2005. *State of the Environment Report for Uganda 2004/2005*. Government of Uganda, Kampala.

Newmark, W.D., 2008. Isolation of African protected areas. Frontiers in Ecology and the Environment 6(6): 321-328.

New Visionion, 2007. *Uganda's soils need fertilizers*. Article by J. Kasozi, March 6, 2007. http://www.newvision.co.ug/D/9/37/552511

Nsita, S.A., 2005. Decentralization and Forest Management in Uganda. Chapter 10 in The Politics of Decentralization. Forests, power and People. Eartscan: London

O'Connor, D., 2008. Governing the global commons: Linking carbon sequestration and biodiversity conservation in tropical forests. *Global Environmental Change*, 18:368–374

Oestreicher, J.S., K. Benessaiah, M. C. Ruiz-Jaen, S. Sloan, K. Turner, J. Pelletier, B. Guay, K.E. Clark, D.G. Roche, M. Meiners and C. Potvin, 2009. Avoiding deforestation in Panamanian protected areas: An analysis of protection effectiveness and implications for reducing emissions from deforestation and forest degradation. *Global Environmental Change*, 2:279-291.

Okuku, J., 2006. The Land Act (1998) and Land Tenure Reform in Uganda. *Africa Development*, 31(1):1-26

Olsen, K.H., 2005: *The Clean Development Mechanism's Contribution to Sustainable Development. A review of the literature*. UNEP Risø Centre, Denmark.

Ostrom, E., 1990. Governing the Commons: The Evolution of for collective action. Cambridge: Cambridge University Press.

Ostrom, E., 2005. *Understanding Institutional Diversity*. Princeton: Princeton University Press.

Pagiola, S., 2008. Payments for environmental services in Costa Rica. *Ecological Economics*, 65:712-724

Pagiola, S. and G. Platais, 2007. *Payments for environmental services: From theory to practice*. World Bank, Washington.

Peskett, L., D. Huberman, E. Bwen-Jones, G. Edwards and J. Brown, 2008. Making REDD work for the Poor. Poverty Environment Partnership (PEP) report.

Porras, I.T., M. Grieg-Gran and N. Neves, 2008. *All that glitters: A review of payments for watershed services in developing countries*. Natural Resource Issues No. 11. . International Institute for Environment and Development. London, UK.

Reed, D., A. Ballesteros, E. Fendley, M. del Socorro, F. Liera, J. Harnisch, S. Huq, H.O. Ibrekk and A. Kutter, 2009. *The Institutional Architecture for Financing a Global Climate Deal: An Options Paper*. Technical Working Group on the Institutional Architecture for Climate Finance.

Reuters, 2007. *"FEATURE-Uganda forest faces bulldozers, species at risk"*. Reuters news 9. May, 2007 (Accessed online 20. July 2009 on http://www.reuters.com/article/latestCrisis/-idUSL04491539

Ribot,J., A. Agrawal and A.M. Larson, 2005. Recentralizing while Decentralizing: How national Governments Re appropriate Forest resources. *World Development*, 34(11):1864-1886.

Robledo, C. and W.O. Whan, 2008. *Why there are so few forestry projects under the Clean Development Mechanism*. ITTO

Robbins, P., 2000. The rotten institution: corruption in natural resource management. *Political Geography*, 19:423–443.

Robinson, E.J.Z. and F. Maganga, 2009. The implications of improved communications for participatory forest management in Tanzania. *African Journal of Ecology*, 47(1):171-178.

Rommetvedt, H., 2006. The Multiple logics of decision-making. *European Political Science*, 5:193-208

ROU (Republic of Uganda), 2001. *National Forest Policy*. Ministry of Water, Lands and Environment, Uganda.

ROU (Republic of Uganda), 2008. Readiness *Plan Idea Note (R-PIN) Uganda*. The Forest Carbon Partnership Facility (FCPF). National Forestry Authority, Kampala, Uganda.

Russo, R. and G. Candela, 2006. Payment of environmental services in Costa Rica: evaluating impact and possibilities. *Tierra Tropical*, 2(1):1-13.

Rørstad, P.K., A. Vatn, V. Kvakkestad, 2007. Why do transaction costs of agricultural policies vary? *Agricultural Economics*, 36:1-11.

Saunders, J., J. Ebeling and R. Nussbaum, 2008. *Reduced Emissions from Deforestation and Forest Degradation (REDD): Lessons from a governance perspective*. Available online at: www.proforest.net

Schmidt, L., 2008. *Broadening the horizon – Assessing REDD from an integrated perspective – A discussion paper*. German Development Institute, Bonn, Germany

Scholz, I. and L. Schmidt, 2008. REDD: Opportunities for SFM. *ETFRN News*, 49:141-145.

Schwarze, R., J. Niles, and J. Olander, 2003. Understanding and managing leakage in forest-based greenhouse-gas-mitigation projects. Philosophical Transactions of the Royal Society: 360:1685-1703.

Sengendo, H. and P.K. Musali, 1999. Environmental Management in Uganda, A Critique. In Salih, M.A. and S. Telda (eds.): *Environmental Planning, Policies and Politics in Eastern and Southern Africa*. Basingstoke (UK): Macmillan.

SGS (Société Générale de Surveillance), 2007. Forest management certification report. UWA-FACE Mt Elgon National Park. SGS QUALIFOR. Randjespark, Midrand, South Africa.

Sjaastad, E., S.A.O. Chamshama, K. Magnussen, G.C. Monela, Y. Ngaga and P. Vedeld, 2003. *Resource economic analysis of catchment forest reserves in Tanzania*. Ministry of Natural Resources and Tourism. Forestry and Beekeeping Division. Dar es Saalam.

Sjaastad, E. and B. Cousins, 2009. Formalisation of land rights in the South: An overview. *Land Use Policy*, 26(1):1-9.

Sletten, M., 2005. *Collaborative Management in Mount Elgon National Park, Uganda*. Msc thesis. Noragric. As, Norwegian University of Life Sciences.

Smith, J. and S. J. Scherr, 2003. Capturing the Value of Forest Carbon for Local Livelihoods. *World Development*, 31(12):2143-2160.

Spinage, C., 1998. Social change and conservation misrepresentation in Africa. *Oryx*, 32(4):265-276.

Stave, J., 2000. *Trær til besvær – om norske "karbonplantasjer" i Tanzania*. NorWatch Rapport. Framtiden i våre hender

Stern, N., 2007. *Stern Review on The Economics of Climate Change. Executive Summary*. HM Treasury, London.

Sunderlin, W., A. Angelsen, B., Belcher, P., Burgers, R., Nasi, L., Santoso, and S. Wunder, 2005. Livelihoods, forests, and conservation in developing countries: an overview. *World Development*, 33(9):1383–1402.

Sunseri, T., 2005. Something else to burn': forest squatters, conservationists, and the state in modern Tanzania. *The Journal of Modern African Studies*, 43(3):609-640.

Sutter, C. 2003. *Sustainability check-up for CDM projects*. Berlin: Wissenschaftlicher Verlag.

TANAPA (Tanzanian National Parks), 2009. *Homepage*. http://www.tanzaniaparks.com/corporate_information.html#9. (Accessed online 20.07.09.).

Tilman S., C. Arens, U. Eichhorst, D. Kiyar, F. Mersmann, H.E. Ott, F. Rudolph, W. Serk and R. Watanabe, 2009. *Pit Stop Poznan. An Analysis of Negotiations on the Bali Action Plan at the Stopover to Copenhagen*. Wuppertal Institute for Climate, Environment and Energy.

Titmuss, R.M., 1971. *The gift of relationship: from human blood to social policy*. New York: Pantheon Books.

TTSA (Tanzania Tree Seed Agency), 2009. *Tanzania Tree Seed Agency*. http://www.ttsa.co.tz/. (Accessed online 20.07.09.).

UNDP, 2009. *UN REDD Programme Fund – Overview*. http://www.undp.org/mdtf/UN-REDD/-overview.shtml (Accessed on 27.04.09)

UNEP-WCMC, 2003. *World Database on Protected Areas (WDPA)*. Cambridge.

UNEP (United Nations Environment Program), 2009. *The Environmental Food Crisis. The Environment's Role in Averting Future Food Crises*. UNEP. http://www.grida.no/-publications/rr/food-crisis/

UNFCCC, 2007. *Bali Action Plan*, Decision -/CP.13.UNFCCC, Bonn.

UN-REDD, 2009. *UN-REDD Programme Rules of Procedure and Operational Guidance*. UN-REDD Secretariat, Geneva.

Unruh, J. D., 2008. Carbon sequestration in Africa: The land tenure problem. *Global Environmental Change*, 18(4):700-707.

URT (United Republic of Tanzania), 1982. *Local Government (District Authorities) Act No. 7 of 1982.*

URT (United Republic of Tanzania), 2001. *National Forest Program in Tanzania*. Forestry and Beekeeping Division. Ministry of Natural Resources and Tourism. Dar es Saalam.

URT (United Republic of Tanzania), 2009a. *Readiness Plan Idea Note (R-PIN)*. Ministry of Natural Resources and Tourism. Forest and Beekeeping Division. Dar es Saalam.

URT (United Republic of Tanzania), 2009b. *National Framework for reduced emssions from deforestation and forest degradation*. Dar es Saalam.

USAID, 2003. *USAID´s enduring legacy in natural forests: Livelihoods, landscapes and governance*. Volume 3. Chemonics Int., Wasington DC, USAID.

Vatn, A., 2005. *Institutions and the Environment*. Edward Elgar, Cheltenham.

Vatn, A., 2008. *An Institutional Analysis of Payments for Environmental Services*. Paper presented at the 10th ISEE biannual conference, Nairobi, August 7-11, 2008.

Vatn, A., 2009. Cooperative behavior and institutions. *Journal of Socio-Economics*, 38:188-196.

Vatn, A., E. Krogh, F. Gundersen and P. Vedeld, 2002. Environmental Taxes and Politics - The Dispute over Nitrogen taxes in Agriculture. *European Environment*, 12:224-240.

Vedeld, P., 2002. *The process of institution building to facilitate local biodiversity management*. Working paper 26. Noragric. Ås, Norwegian Agricultural University.

Vedeld, P., 2004. *Protected areas, biodiversity management and the stakeholders approach*. Working papers. Noragric. As, Norwegian Agricultural University.

Vedeld, P., 2006. *Take Uganda! A case study of conditionality, privatisation and the Forest sector reform*. Working paper draft, Noragric, UMB, Norway.

Vedeld, P., J. Acworth and I. Jörgensen, 2006. *Possible Norwegian Engagement in Decentralized Forest and Natural Resource Management in Uganda. Fact finding mission*. Noragric Report No. 33. Norwegian University of Life Sciences.

Vedeld, P., A. Angelsen, J. Bojö, E. Sjaastad and G. Kobugabe Berg, 2007. Forest environmental incomes and the rural poor. *Forest Policy and Economics*, 9(7):869-879.

Wallis, J.J., and D.C. North, 1986. Measuring the Transaction Sector in the American Economy, 1870-1970. In Engerman, S.L. and R.E. Gallman (eds.): Long-Term Factors in American Economic Growth. Vol. 51 of The Income and Wealth Series. Chicago: University of Chicago Press, pp. 95-148.

Wanitzek, U. and H. Sippel, 1998. Land rights in conservation areas in Tanzania *GeoJournal*, 46(2):113-128.

Westermann, O., 2007. Poverty*, Access and Payments for Watershed Hydrological Services. A social feasibility study with case in Tiquipaya Watershed Bolivia*. PhD dissertation. Department of Environmental, Social and Spatial Changes, Roskilde University Centre, Denmark.

Wilkie, D.S., J.F. Carpenter and Q. Zhang, 2001. The under-financing of protected areas in the Congo Basin: so many parks and so little willingness-to-pay. *Biodiversity and Conservation*, 10(5):691-709.

Williamson, O.E., 1985. *The Economic Institutions of Capitalism*. New York: Free Press.

Williamson, O.E., 1999. Public and Private Bureaucracies: A Transaction Cost Economic Perspective. *The Journal of Law, Economics & Organization*, 15(1):306-342

Williamson, O.E., 2005. The Economics of Governance. *American Economic Review*, 95(2):1-18.

Wily, L.A., 2003. *Community-based land tenure management. Questions and answers about Tanzania's new Village Land Act, 1999*. Issue paper no. 120. IIED, London.

Woodcock, K., 2002. *Changing roles in natural forest management. Stakeholders roles in the Eastern Arc Mountains, Tanzania*. Burlington: Ashgate.

World Bank, 2007. *Carbon Finance 2007*. World Bank, Washington

World Bank, 2008. High Demand Prompts Forest Carbon Partnership Facility to Expand Beyond Original 20 Developing Countries. (Accessed online 200709 http://go.worldbank.org/-TG4HTMHU90

WRM (World Rainforest Movement), 1999. *WRM Bulletin*. (Issue Number 29 - December 1999. http://www.wrm.org.uy/bulletin/29.html#Tanzania)

WRM (World Rainforest Movement) 2008a. Plantations are not forests. In Fonseca, H. (ed.): *World Rainforest Movement*. Montevideo, Uruguay, pp. 13-27.

WRM (World Rainforest Movement), 2008b. *From REDD to HEDD*. http://www.illegal-logging.info/uploads/REDDtoHEDD.pdf (Accessed online 15.01.09).

Wunder, S., 2005. *Payments for environmental services: Some nuts and bolts*. CIFOR Occasional Paper No. 42. Center for International Forestry Research, Bogor Indonesia.

Wunder, S., 2006. Are direct payments for environmental services spelling doom for sustainable forest management in the tropics? *Ecology and Society*, 11(2):23.

Wunder S., M. Alban, 2008. Decentralized payments for environmental services: The cases of Pimampiro and PROFAFOR in Ecuador. *Ecological Economics*, 65:685-698.

Wunder, S., S. Engel and S. Pagiola. 2008. Taking stock: A comparative analysis of payments for environmental services programs in developed and developing countries. *Ecological Economics*, 65(4): 834-852.

Ylhäisi, J., 2003. Forest privatisation and the role of community in forests and nature protection in Tanzania. *Environmental Science & Policy*, 6(3):279-290.

Zahabu, E., M. Skutsch, H. Sosovele and R. Malimbwi, 2007. Reduced emissions from deforestation and degradation. *African Journal of Ecology*, 45(4):451-453.

Zbinden, S. and D.R. Lee, 2005. Paying for Environmental Services: An Analysis of Participation in Costa Rica's PSA Program. *World Development*, 33(2):255-272.

Zimmerer, K., R. Galt and M. Buck, 2004. Globalization and Multi-spatial Trends in the Coverage of Protected-Area Conservation (1980–2000). *AMBIO*, 33(8):520–529.

Personal messages

Bjella, O., 2006. Bjella is the former director of National Forest Authority. Date of interview is 13.03.06.

Kajembe, G., 2009. Kajembe is professor at Sokoine University of Agriculture. Date of communication is 13.08.09