



**Preparing for REDD in dryland forests:
Investigating the options and potential synergy for
REDD payments in the miombo eco-region**

Namibia country study

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The views represented in this document do not necessarily represent those of the institutions involved, nor do they necessarily represent official UK Government and/or DFID policies

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This report has been commissioned by the World Bank Program on Forests (PROFOR) and the International Institute for Environment and Development (IIED) as part of a regional project to inform and facilitate stakeholders' awareness of the potential application of REDD payments within the miombo eco-region, drawing strongly on lessons from the conservation sector. The aim is to assist decision-makers in developing workable REDD mechanisms that maximise pro-poor returns, and to provide information and options that can be used within the ongoing REDD negotiations within the UNFCCC.

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Acronyms and abbreviations

CBNRM	Community-based natural resource management
CFNEN	Community Forestry in North-Eastern Namibia programme
CLB	Communal land board
DoF	Directorate of Forestry
GRN	Government of Namibia
HPI	Human Poverty Index
HWC	Human wildlife conflict
IIED	International Institute for Environment and Development (UK)
MAWF	Ministry of Agriculture, Water and Forestry
MET	Ministry of Environment and Tourism
NACSO	Namibia Association of Community-Based Natural Resource Management (CBNRM) Support Organisations
NGO	Non-governmental organisation
NRM	Natural resource management
PES	Payments for environmental services
REDD	Reduced emissions from deforestation and forest degradation
TA	Traditional authority
UNFCCC	United Nations Framework Convention on Climate Change

Executive summary

This paper is part of a larger study that examines the potential for making payments for reduced deforestation within the miombo eco-region of southern Africa through the reduced emissions from deforestation and degradation (REDD) mechanism that exists under the United Nations Framework Convention on Climate Change (UNFCCC). The specific aims of this paper are to:

1. Assess the potential and options for pro-poor REDD payments in Namibia on the basis of the existing policy and institutional framework.
2. Assess the economic viability of REDD payments in the Caprivi Region.
3. Provide lessons for the implementation of REDD from the experiences gained from community-based natural resource management (CBNRM).
4. Provide recommendations for the institutional arrangements for making REDD payments to communities in Namibia.

The paper focuses on the Caprivi Region in Namibia which, for the purposes of the larger study, is considered to be part of the miombo eco-region. This report was compiled through carrying out a literature review and key stakeholder consultations. Existing data were used to carry out an economic assessment of different types of land uses in the Caprivi Region and the extent to which payments for avoided deforestation and degradation would provide a net benefit to communities.

The main findings of the report are as follows:

The overall policy framework for natural resource management in Namibia supports a REDD or payments for environmental services (PES) approach in which payments are made to local communities. Overall government natural resource management (NRM) policy supports devolution of authority over natural resources to local communities and the formation of local institutions such as conservancies and community forests with legal rights and a legal persona. Conservancies and community forests are able to enter into contracts with other legal entities and directly receive income from their natural resources management. Channelling payments through conservancies and community forests can be considered to be 'pro-poor' in that they represent the rural poor in general, although there is obviously differentiation between more wealthy and less wealthy members of these institutions.

The Caprivi Region is at the dry end of the miombo eco-region, has relatively small areas of woodland compared to the rest of the miombo eco-region, and provides only a small component of the overall miombo woodlands. The evidence available suggests that rates of deforestation do not match those of other parts of the miombo eco-region, where uses such as charcoal production are prevalent. Household shifting cultivation is limited to specific areas and use of forests for poles and firewood is well within sustainable limits for the whole area although there is over-use close to settlements. The economic analysis demonstrates that the values associated with conversion of woodland are similar, or less,

than the values derived from the unconverted natural woodland itself. The dynamics of household use of woodland are complex because the same household will use the woodland for different purposes and derive important values from maintaining some unconverted woodland.

While irrigated farming could potentially lead to deforestation in Caprivi, the poor economic prognosis for these activities suggests that at least in the medium term they will not proliferate and lead to widespread deforestation. The viability of large-scale biofuel production in Caprivi remains untested but there are several constraints. Government is currently wary of the impacts that biofuels might have on food production so has withdrawn initial support for such projects.

The conclusion is that REDD payments for avoided deforestation are unlikely to be appropriate for Caprivi, particularly in the way REDD is currently formulated. Payments are most likely to go to countries that have woodlands storing large amounts of carbon and high deforestation rates and that therefore possess the ability to achieve deep cuts in emissions by reducing such deforestation. Caprivi does not readily fit this profile. However, more research is required to establish whether such payments might be appropriate for other regions of Namibia, such as Kavango.

The evidence from CBNRM practice in Namibia suggests that the CBNRM implementation framework would be appropriate as a mechanism for channelling REDD or PES payments to local communities who are the users of the forests and other resources. CBNRM is an incentive-based approach that has led to conservation benefits, particularly in the wildlife sector. Conservancies and community forests have secure rights over natural resources that are entrenched in law, and both are legal entities that can enter into contracts with others. Conservancies and community forests provide the institutional base for i) channelling payments; and ii) providing the necessary management of forests that will lead to avoided deforestation, including monitoring of use of the forests. Conservancies in particular have experience of managing large sums of money, in some cases more than N\$1 million annually. Channelling funds through these institutions would ensure that the funds are not captured by urban and political elites at national level. Accountability is increasing within conservancies ensuring that local elites do not capture the income, and that there is less spending on operational costs, leaving more for community benefit. Some conservancies have experience of making cash payments to individual households.

However, it takes time for communities to develop accountable institutions capable of effectively managing their finances, their natural resources and their enterprises. This needs to be taken into account when developing a REDD or PES approach from scratch.

It has taken considerable donor, NGO and government investment to achieve the current levels of CBNRM operation within Namibia. The cost of implementation of the REDD system in Caprivi is estimated at some N\$33 million a year. It would make sense to avoid the transaction costs of setting up a parallel set of structures to implement REDD or PES in Namibia. It would also make sense to use existing administrative mechanisms for holding and dispersing funds. A payments system should be based on disbursements from a trust fund directly to community institutions – such as a conservancy or community forest – with appropriate safeguards. The system should be as simple as possible without unnecessary bureaucracy and aim to reduce administrative costs as far as possible.

1. Introduction

1.1 Background

Growing concerns about the impacts of climate change have led to international interest in developing mechanisms to slow the rate of deforestation and degradation of forests. Following negotiations under the United Nations Framework Convention on Climate Change (UNFCCC), reduced emissions from deforestation and degradation (REDD) have become eligible for carbon trading. REDD is based on the idea that funds are provided to developing countries for reducing emissions from deforestation or forest degradation through various policies and measures (Peskest et al. 2008). By linking these payments to carbon markets, large sums of money could reach developing countries, but clear mechanisms have not yet been developed to ensure such payments reach the poor – i.e., those who directly use and most depend upon the forest.

The miombo eco-region in southern and eastern Africa offers a globally important opportunity for developing pro-poor payments for avoided deforestation and degradation. Poverty is endemic in most of the countries within the eco-region and deforestation rates range between 0.2 per cent and 1.7 per cent annually (Bond and Chambwera 2008). REDD payments could be effective in reducing deforestation and degradation while enabling the poor to benefit. However, there are institutional and policy challenges for involving the poor who, to date, have been largely left out of decision-making concerning REDD.

The strong history of successful community-based natural resource management in the southern African region potentially provides a ready-built institutional basis on which REDD payments could be implemented, saving on the transaction costs associated with setting up new systems and structures. There is, however, limited understanding among decision-makers in government, community-based organisations and the private sector of the opportunities and challenges for pro-poor payments for avoided deforestation and degradation within the regional and national contexts of the miombo eco-region.

This report has been commissioned by the World Bank Program on Forests (PROFOR) and the International Institute for Environment and Development (IIED) as part of a regional project to inform and facilitate stakeholders' awareness of the potential application of REDD payments within the miombo eco-region, drawing strongly on lessons from the conservation sector. The aim is to assist decision-makers in developing workable REDD mechanisms that maximise pro-poor returns, and to provide information and options that can be used within the ongoing REDD negotiations within the UNFCCC.

The specific objectives of this Namibian country study are to:

1. Assess the potential and options for pro-poor REDD payments in the country on the basis of the existing policy and institutional framework.
2. Assess the economic viability of REDD payments in the Caprivi Region.

3. Provide lessons for the implementation of REDD from the experiences gained from community-based natural resource management (CBNRM).
4. Provide recommendations for the institutional arrangements for making REDD payments to communities in Namibia.

This assessment will contribute to the overall regional project as a case study from which general lessons and awareness will be drawn. The full Terms of Reference are provided as Annex 1.

The focus of the report is the Caprivi Region, which for the purposes of this project has been accepted as falling within the miombo eco-region (broadly equivalent to the Zambebian vegetation biome). The Caprivi Region (see Figure 1) covers part of the Bwabwata National Park to the Kwando River on the park's eastern boundary and then the communal area bounded by the Kwando, Linyanti, Chobe and Zambezi rivers and the Zambian border to the north. The region is 14,467 km² in size and had a population of 79,826 in 2001 according to official census figures, although Mendelsohn and Roberts (1997) estimated the population in 1996 to be 110,000 based on aerial counts of households. Annual average per capita income in Caprivi was N\$6,411 in 2003/4 and the Human Poverty Index (HPI)¹ for Caprivi for 2001-2004 was 43 per cent, up from 38 per cent for 1991 to 1994 and compares to the national HPI of 33 per cent (UNDP 2007). The increase in the HPI for Caprivi is mainly explained by decreased life expectancy due to HIV/AIDS, since - like in the rest of the country - income poverty has improved (UNDP 2007).

Average annual rainfall in Caprivi is the highest in Namibia and ranges from around 500 mm in the extreme south to 700mm in the extreme north-east (Mendelsohn and Roberts 1997). The main form of land use is shifting subsistence agriculture with pearl millet, sorghum and maize as the main crops. By far the largest part of Caprivi is covered by soils considered poor for crop farming (14,021 km²), mostly made up of Kalahari sands. New fields are cleared when existing fields are considered to have become less fertile or when households are able to increase the area they are farming. About 1,719 km² of land (or 9 per cent of the total land surface of Caprivi) had been cleared by 1996 (Mendelsohn and Roberts 1997). Much of the land clearing has taken place in ribbon form along the main roads and along the floodplain fringes, while little clearing has taken place in the central and northern woodlands.

1.2 Methodology

This report was compiled through carrying out a literature review and key stakeholder consultations. A list of persons consulted is contained in Annex 2. Existing data were used to carry out an economic assessment of different types of land uses in the Caprivi Region and the extent to which payments for avoided deforestation and degradation would provide a net benefit to communities.

¹ The Human Poverty Index measures life expectancy, literacy and income.

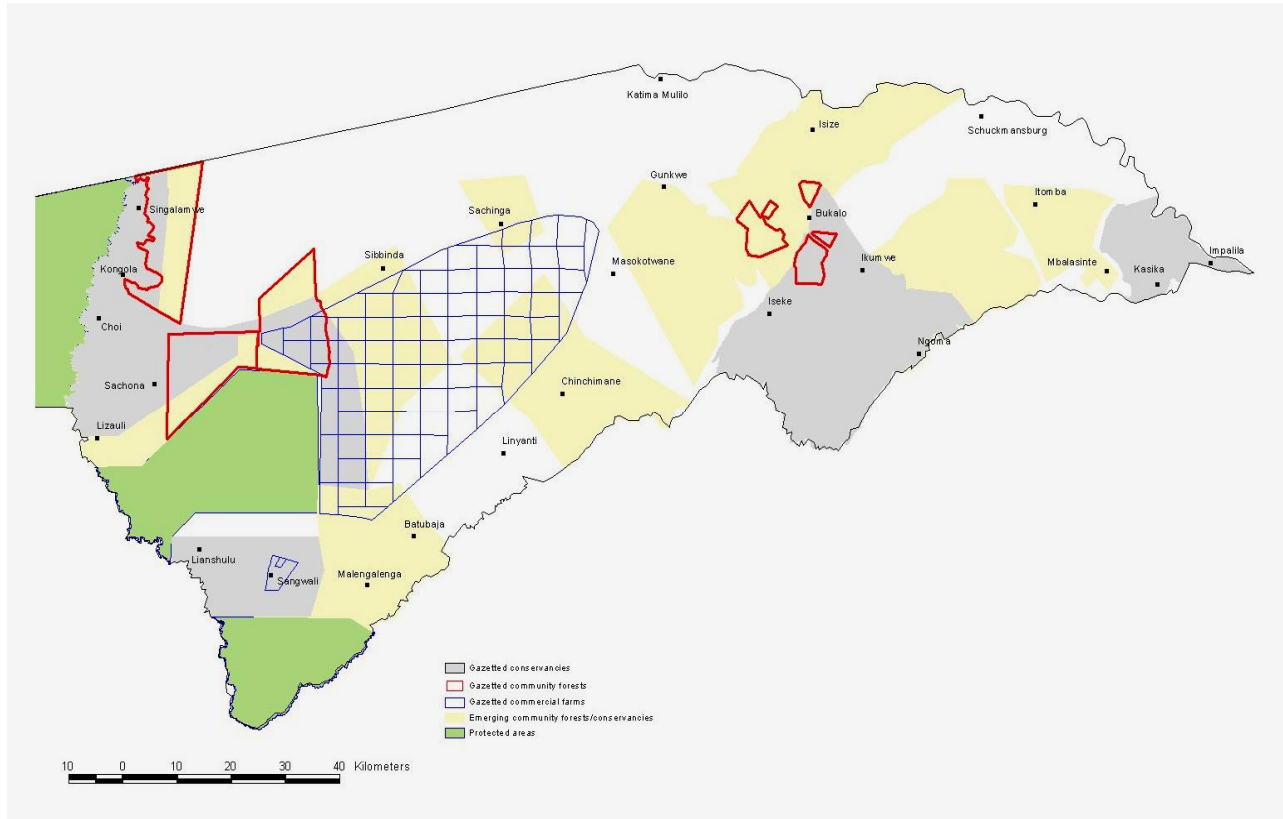


Figure 1: Protected areas, conservancies, community forests and planned small-scale farms in Caprivi (Source: RAISON 2009).

2. Policy and legal review

2.1 Introduction

This chapter considers the policy and legal framework for land and natural resource ownership and management in Namibia and assesses this framework in terms of the extent to which it is supportive of a REDD approach. It looks at the extent to which policy and legislation provide land and/or resource rights to local communities and the extent to which the poor enjoy rights over resources and are able to benefit from their use. It also considers the extent to which the institutional and governance frameworks in Namibia support a REDD approach, giving particular attention to issues of competing or overlapping institutional mandates.

2.2 Land and resource rights and tenure

In terms of Article 100 of the Namibian Constitution all land, water and natural resources below and above the surface of the land belong to the state unless otherwise lawfully owned (GRN undated). With regard to communal land, this position is reinforced by the *Communal Land Reform Act* of 2002, Section 17, which states that all communal land areas vest in the state in trust for the benefit of the traditional communities residing in those areas.

According to the Act, traditional authorities allocate communal land to households for residential and crop growing purposes (GRN 2002). This land is surveyed and then registered by the communal land boards (CLBs) that were established under the *Communal Land Reform Act* to administer communal land. The CLBs may grant leases for the commercial use of communal land for purposes such as tourism. In terms of the Act, specific areas of land must be designated for which the CLBs may allocate leases for agricultural purposes. The relevant traditional authority (TA) must grant consent to any leases allocated by the CLBs.

Although the natural resources on communal land are vested in the state, communities traditionally have had relatively unhindered non-commercial use rights regarding resources such as grazing, forest products, and fish. Some regulations restrict the use of forest products and fish. Wildlife use was relatively tightly restricted. Since the mid-1990s the Namibian government has adopted a strong policy of devolving use rights over renewable natural resources to local communities. This approach was first adopted in the wildlife and tourism sectors. A national policy document, *Wildlife, Management, Utilisation and Tourism in Communal Areas* (MET 1995a) was approved by cabinet in 1995. It provides for communal area communities to acquire use rights over wildlife if they form a management institution called a conservancy. The policy was approved by the Namibian cabinet in March 1995.

The Ministry of Environment and Tourism (MET) policy on the promotion of community-based tourism (MET 1995b) provides a framework for ensuring that local communities have access to opportunities in tourism development and are able to share in the benefits of tourism activities that take place on their land. The policy recognises that where tourism is linked to wildlife and wild landscapes, the benefits to local communities can provide important incentives for conservation of these resources. The policy document states that

MET will give recognised communal area conservancies the concessionary rights to lodge development within the conservancy boundaries.

The *Nature Conservation Amendment Act, 1996* (Act 5 of 1996) puts into effect the policies on wildlife management, utilisation and tourism on communal land and the promotion of community-based tourism. In terms of the Act a conservancy may be registered by MET if the conservancy is legally constituted, has clearly defined boundaries agreed by neighbouring communities, a defined membership, a committee representative of the conservancy members, the ability to manage funds, and an approved method for the equitable distribution of benefits from the use of wildlife (GRN 1996a). Regulations accompanying the Act require a conservancy committee to provide a register containing the names, identification numbers and addresses of the members of the community to be represented by the committee. The regulations also specify certain issues which must be covered by the conservancy constitution (GRN 1996b).

Once registered, the conservancy automatically gains the right to use certain species of game for its own use, may apply to the MET for permits to use other species, may buy and sell game, apply for a trophy-hunting quota, and enter into contracts with the private sector for trophy hunting and tourism. There are nine conservancies in the Caprivi Region covering a total area of 2,563 km².

Although conservancies do not acquire rights over land through the conservancy legislation, there are potential mechanisms by which conservancies could strengthen their land rights. The *National Land Policy* (1998) provides that: 'tenure rights allocated according to this policy and consequent legislation will include all renewable natural resources on the land, subject to sustainable utilisation and the details of sectoral policy and legislation. These natural resources include wildlife, tourist attractions, fish, water, forest resources and vegetation for grazing' (GRN 1998:11). Further, provision is made for various forms of land rights: customary grants; leasehold; freehold; licences, certificates or permits; and state ownership. Tenure rights will be exclusive, enforcement of which will be supported by law. Among the categories of land rights holder provided for are 'legally constituted bodies and institutions to exercise joint ownership rights (and) duly constituted co-operatives' (GRN 1998:3). Read with the provisions regarding leases in the *Communal Land Reform Act*, the policy could be interpreted to support the possibility of conservancies or community forests, as 'legally constituted bodies', obtaining leases over their land.

The *Forest Act* (Act No. 12 of 2001) provides for the establishment of community forests (GRN 2001) of which there are three in the Caprivi Region. According to the Act, the minister may enter into a written agreement for the establishment of a community forest covering a specific area of communal land. The agreement may be with anybody that the minister believes represents the interests of the persons who have rights over that area of communal land. The agreement may only be entered into if the relevant chief or traditional authority authorised to grant rights over the land gives their consent. The Act requires community forests to develop management plans. An important provision in the Act is that the written agreement confers forest rights on the community, subject to the management plan, to manage and use forest produce and other natural resources, and to graze livestock.

Residents of community forests will be able to harvest forest produce and dispose of it as they wish without a licence, but in accordance with the management plan, in which harvest

quotas will be set. Subject to the management plan, wood can be harvested for household fuel or for building purposes. The Director of Forestry, subject to the relevant management plan, determines the quantity of forest produce for which a licence may be issued in any forest reserve or a community forest, and the maximum quantity of produce that may be harvested. The management authority of a community forest may dispose of forest produce from the community forest or permit the grazing of animals, the carrying out of agricultural activity, or the carrying out of any other lawful activity.

In order to obtain forest resource management rights through the establishment of a community forest, a community must (CFNEN website):

- Submit a formal application for a community forest to the minister at the Ministry of Agriculture, Water and Forestry (MAWF).
- Elect a forest management body.
- Develop a constitution for that body.
- Select, map and demarcate a community forest area.
- Submit a forest management plan.
- Specify the rights they wish to carry out in order to manage and control the area in by-laws.
- Ensure the equal use of revenue generated from such area to all community members and that an adequate portion of such revenue is re-invested in community forest management.
- Prove that all these provisions meet the approval and consent of that area's traditional authority.

The extent to which the government is committed to the devolution of resource rights to local communities is illustrated by the cabinet decisions taken on recommendations made by the Permanent Technical Team on Land Reform in April 2006. Cabinet approved that with regard to the overall policy framework on land reform (GRN 2006): 'In the medium term, sectoral policies on natural resources management, water, land, forestry and agriculture must be revised to give decision-making and management authority to resource-users at a local level.'

Furthermore, with regard to the development of communal land, cabinet recommended the following: 'That community-based policies on resource management are expanded beyond wildlife and tourism to incorporate other natural resources like water, land and land-based economic activities.'

There is therefore a clear mandate from cabinet for giving local resource users decision-making and management authority over natural resources. While there is no legislation that specifically provides local communities with rights over carbon, it could be inferred from the above that government policy is supportive of such an approach. Furthermore, the *Forest Act* of 2001 states that the written agreement entered into between the minister and the body that represents the community confers the rights, subject to the management plan, to manage and use 'forest produce and other natural resources'. If carbon is viewed as part of 'forest produce', or as another natural resource of the forest, then the community forest has rights over carbon.

2.3 Benefits, rights and the poor

The conservancy and community forest approaches in Namibia differ considerably from many similar CBNRM programmes in that they are not schemes for sharing revenue from natural resource use between government and communities. In both cases management rights and the right to benefit from management are devolved to community level. This means that i) the rural poor have access to rights over renewable natural resources; and ii) communities are able to keep the income derived from their use of the resources. Furthermore, the conservancies and community forests have constitutions that provide them with the legal status to enter into contracts with other entities.

In the case of conservancies, communities are able to carry out the following activities in order to generate their own income:

- Trophy hunting (through a contract with a professional hunter).
- Other forms of hunting (e.g., meat for own use, or for meat by a hunter).
- Tourism lodge development (through a contract with a tourism company).
- Campsite development (usually self-run, sometimes in partnership with a mobile tour operator).
- Sale of live game.

In the case of community forests, income is generated through the sale of such forest products as firewood, timber, poles for construction, thatching grass and tubers of Devil's Claw (*Harpagophytum procumbens*). Furthermore, the community forest management body has the right to charge non-residents for use of forest resources and may enter into contracts for the commercial exploitation of the forest as long as this is in line with the community forest management plan.

2.4 National legal framework and traditional systems

Although there are some conflicts between the national legal framework and traditional systems, in Caprivi the traditional authorities are generally supportive of conservancies and community forests. In Caprivi the traditional system works through a tribal 'khuta' (court) headed by the chief, ngambela (prime minister), and senior headmen. Below the main khuta are 'silalo' (district) 'indunas' (headmen) and then village indunas. Often issues related to natural resource use are dealt with by the village indunas. As indicated above, the role of the traditional authority in land issues is prescribed by legislation. In addition, the *Forest Act* of 2001 specifically provides that a community forest may only be established if the relevant chief or traditional authority has given consent. There is no similar provision in the conservancy legislation, although in practice the MET does not register conservancies unless there has been a letter of endorsement from the relevant traditional authority.

In Caprivi, community forests and conservancies have been established with the full backing of the traditional authorities. In many cases the traditional authorities were the driving force behind the establishment of conservancies and all conservancies have representatives of the traditional authority on their committees. Conflicts can emerge where conservancy or

community forest committees take decisions which silalo or village indunas believe should be taken by themselves, or where the tribal khuta allocates land for uses that conflict with those of the conservancy or community forest.

2.5 Institutions and governance

2.5.1 Stakeholders, institutions and mandates

There are a wide variety of stakeholders and institutions involved in land and forest use and management. The main forest users are households who use the forest for grazing, clearing land for crops, gathering thatching grass, gathering wild fruits (particularly to see them through the end of the dry season), cutting poles for construction, and gathering firewood. Wealthier individuals may gather some of these resources to sell commercially. Livestock owners have formed local farmers' associations and the regional Likwama Farmers Association to represent their interests. Some areas of forest have been illegally fenced by wealthy individuals for their own use. In some areas of Caprivi, land has been allocated to individuals under leasehold under a scheme administered by the Ministry of Lands and Resettlement to promote small-scale commercial farming on communal land. The traditional authorities, conservancies and community forest management bodies are important in addressing issues of forest management. Various line ministries affect use and management of the forest in different ways, either through regulation of resource use or through the promotion of specific forms of land use such as irrigated agriculture, conservation areas, etc.

The mandates of the various institutions involved in regulation, management or use of the forests are often overlapping. Table 1 indicates the various mandates of the different institutions in Caprivi and potential conflicts between them.

The result of the current policy and institutional framework is that land use is developed in an uncoordinated way and sectoral plans are developed and implemented in isolation. A good example of this is seen in the Caprivi Region where some community forests overlap partially with conservancies or have been formed within conservancies. Furthermore, small-scale commercial livestock farms (which will be fenced) have been allocated by traditional authorities to individual farmers in existing and emerging conservancies and community forests without taking into account the planned land uses within the conservancies and community forests (see Figure 1). At the same time there are private sector plans for the development of a crop growing and biofuels scheme on the same areas of land, with the permission of the traditional authorities.

Table 1: Overlapping authorities over natural resources and land and forest resources in Caprivi.

Resource/activity	Line ministries	Regional government	Traditional authority	Water user associations/water point committees	Community forest	Conservancy
Land	Overall control by MLRR*. Titling, registration and leases allocated through CLBs. TA decides on allocation of customary title for residential and crop-growing land, endorsed by Land Board. Land Board allocates leases, endorsed by TA – potential for allocating leases that conflict with other land uses.	Specific powers regarding development planning include land-use planning; development coordination function impacts land use. Potential for promoting development that conflicts with other land uses.	Allocation of residential and grazing land, endorsement of leases.	Management and maintenance of water points/right to exclude non-members. Control of water = control of land?	<i>Forest Act</i> provides broad management rights over the forest. Community forest boundaries gazetted, potentially strengthening land rights. Forest management plan determines uses and zones.	Conservancy boundaries gazetted potentially strengthening land rights. Land-use planning and zoning of exclusive wildlife and tourism areas.
Wildlife	Overall control by MET. Devolved limited authority to conservancies. Retains control over certain species. Manages three protected areas.	No specific powers. Governor ‘endorses’ conservancies.	Traditional control over certain species in the past. Vague legal duty to ensure sustainable use of natural resources. Often driving force for conservancies. Important stakeholder.	No specific powers. Control of water = control of wildlife management? Important stakeholder: potential conflict between needs of members and wildlife.	<i>Forest Act</i> provides that hunting must be done in accordance with the Community Forest Management Plan and that no permit for hunting in terms of wildlife legislation may be issued which is contrary to the management plan.	Devolved use and management rights.
Tourism	Overall control by MET. Devolved some authority to conservancies. Provides concessions in parks to neighbouring conservancies.	No specific powers. Governor ‘endorses’ conservancy application.	‘Endorses’ tourism leases.	No specific powers. Important stakeholder: Potential conflict between needs of members and wildlife.	No specific powers unless also obtains conservancy rights.	Rights to commercial tourism activities.
Water	Overall control by MAWF. Rights and responsibilities over water points devolved.	Regional water management agency. Responsible for coordination and planning (planned).	No specific powers except duty to ensure sustainable resource management.	Management and maintenance of water points/right to exclude non-members.	No specific powers.	No specific powers. Important stakeholder: wildlife needs water.

Table 1: Overlapping authorities over natural resources and land and forest resources in Caprivi, (continued).

Resource/activity	Line ministries	Regional govt.	Traditional authority	Water user associations/water point committees	Community forest	Conservancy
Grazing	MAWF advises TA on grazing allocation.	No specific powers.	Allocates grazing and ‘emergency’ grazing. Permission to outsiders for access to grazing land.	No specific powers. Important stakeholder: Control of water points = control of grazing?	Authority over grazing in the community forest under <i>Forest Act</i> .	No specific powers. Important stakeholder: Wildlife uses grazing; zoned wildlife areas may contain attractive grazing areas.
Forest	Overall control by MAWF.	No specific powers, land-	Village indunas have	No specific powers (see above).	Devolved authority over forest	Manages forest

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management	DoF** manages Caprivi State Forest Reserve.	use/development planning functions can impact community forests.	traditional management authority over local forests.		management and the natural resources in the forest area.	resources indirectly through zoning areas for wildlife and tourism and maintaining wildlife habitat.
Land-use planning	MLRR has overall control of land and ultimate responsibility for land-use planning.	Responsible for development planning with large land-use planning component.	No specific role or powers. Important stakeholder through land allocation powers.	No role or specific powers. Important stakeholder through control of water points.	Develops forest management plans.	Develops own management/land-use plan including zoning areas for wildlife and tourism.
Development planning	MRLGH*** community development. Line ministries carry out planning for own projects.	Responsible for development planning and establishing constituency and village development committees.	No specific roles or powers. Important stakeholder because of land allocation.	No specific roles or powers. Important stakeholder through control of water points.	No specific roles or powers. Important stakeholder because of own local planning for forest use.	No specific roles or powers. Important stakeholder because of use of benefits for development. projects and own planning for tourism and wildlife.

*Ministry of Lands, Resettlement and Rehabilitation

** Directorate of Forestry

***Ministry of Regional and Local Government and Housing

2.5.2 Governance

The wider Namibian governance approach is broadly democratic, with regular elections and competing parties. The overall approach to policy development is one of openness and transparency, and recent policy changes have been accompanied by extensive stakeholder consultation as part of an overall commitment by government to transparency and democracy. Significantly, Independence in 1990 brought a climate that was favourable to policy reform as part of the transformation from apartheid. This new climate allowed space for new and innovative ideas to be introduced in natural resource management (NRM) that resonated with the politics of transformation (Jones 2000). It was possible, for example, to introduce policies and legislation promoting greater community empowerment in decision-making and greater community control over local resources, as these could be seen as redressing inequalities of the past.

However the overall approach of transparency and democracy is often tempered by a number of factors and is achieved to varying degrees. Within the ruling party and within the higher echelons of the civil service there are competing ideological tendencies representing, on the one hand, democracy and decentralisation, and on the other, command and control through centralisation. Policy outcomes and the extent to which public participation in the policy process is achieved often depend upon the dominant ideological tendencies within a particular ministry at a particular time. Furthermore, there is the general bureaucratic impulse to hold on to control and power (Murphree 1991). Officials are often reluctant to lose their power over communities and resent being facilitators rather than delivering services and therefore wielding patronage (Blackie 1999).

The ideological differences and bureaucratic influences described above limit the extent to which democracy in broader governance or in NRM governance is achieved. However, community forests and conservancies represent working examples of local authority, management and decision-making over natural resources through institutions representing the rural poor. In the community forests and conservancies residents elect (and if necessary remove) their representatives, and learn how to hold them to account and ensure that communally-generated income is used or distributed equitably. Communities have gained in confidence in dealing with outsiders, particularly government and donors, and are beginning to set their own development agendas instead of being dependent upon government experts (NACSO 2008).

Within conservancies there have been improvements in democratic governance, including the use of the income generated. Long and Jones (2004) found that there were a number of governance issues that needed strengthening as the first conservancies to be established started to evolve. These issues included overlapping roles of committee members who were also employees of the conservancy, a lack of participation by members in annual general meetings (AGMs), a lack of communication between committees and members, no detailed discussion of financial matters at AGMs, and members not being asked to approve conservancy budgets.

Over the past few years this situation has been changing (NACSO 2006; 2008). Conservancies have begun to restructure their AGMs so that community members have more say and are able to approve budgets. More conservancies are beginning to reduce operational costs and to budget specifically for benefits to members. In some instances conservancy members started refusing to allow AGMs to be held because committees could not produce proper financial statements. NGOs supporting conservancies have developed a

number of tools to help conservancies improve their governance, including improved financial management systems, guidelines for holding AGMs, improved budgeting and business sustainability planning. In the Caprivi Region, conservancies have been using a specially designed system for monitoring institutional development.

2.6 Forestry policy and deforestation

Existing forestry policies aim to address deforestation in a number of ways. One of the aims of the *National Forest Policy* of 2005 is to (DoF 2005:1): 'Reconcile rural development with biodiversity conservation by empowering farmers and local communities to manage forest resources on a sustainable basis.'

The policy states that the problem of biodiversity conservation is particularly acute in rural areas where poverty is pervasive. 'Fragile ecosystems are being degraded due to absence of woodland protection and management strategies, exacerbated by uncoordinated policies intended to promote rural development, as well as poor appreciation of the economic value of forest resources and biodiversity conservation' (DoF 2005:1). In order to address these issues one of the aims of forestry policy is to provide economic incentives to increase the net local benefits from conservation and sustainable forest resource use.

Another important aim of the policy is to (DoF 2005:2): 'Implement innovative land-use strategies including multiple use conservation areas, protected areas, agro-forestry and a variety of other approaches designed to yield forestry global benefits.'

In this regard the policy recognises that Namibia's woodlands and wooded grasslands provide carbon sinks, and valuable habitats for wildlife and dryland biodiversity. The policy suggests that control and prevention of the degradation and decline of the land area under forests and woodlands can be achieved by means of suitable national economic policies that spur investment in innovative land-use strategies that are able to capture the domestic non-market values of forest benefits. 'Such national initiatives that will lead to the realization of forest global benefits should be supplemented by appropriate mechanisms that will secure global willingness to pay in international transfers' (DoF 2005:2). Payments for avoided deforestation would fit well with this policy approach.

In addition one of the strategic objectives of the policy is to promote afforestation and reforestation programmes.

The policy is silent on fire management but the *Forest Act* of 2001 has several provisions regarding the management of fire. In areas adjoining or close to a classified forest (i.e., state forests, other forest reserves and community forests) the minister may declare a fire management area and appoint a fire management committee which should draw up a fire management plan for the area. In community forests the management authority for the community forest will be the fire management committee. In terms of the Act it is an offence to light a fire in a community forest unless the fire has been authorised by the management authority and is in accordance with the management plan for the community forest.

In Caprivi, the Directorate of Forestry has an active programme of community-based fire management through its Community Forestry in North-Eastern Namibia (CFNEN) programme. CFNEN carries out fire awareness campaigns and training in improved fire

management, including the cutting of firebreaks. In addition, a coalition of conservancies, community forests, NGOs and government agencies is working on a fire management plan for the area known as the Mudumu North Complex – communal land north of the Mudumu National Park and bordering the Bwabwata National Park to the west.

It is difficult to gauge the effectiveness of current policy and legislation in terms of halting deforestation as both are relatively recent and it is only over the past 13 years that government has given attention to forestry as a sector in its own right.

Within Caprivi, a large area of land north of the main road from Kongola to Katima Mulilo up to the Zambian border is managed by the Directorate of Forestry as a state forest, although this area has never been proclaimed as such. The area is subject to frequent fires and encroachment by settlements around which land is cleared for crop fields.

2.7 Macro-economic policies and development plans

The main macro-economic policy approach driving deforestation in Caprivi is the overall drive for food self-sufficiency and the often repeated mantra that Caprivi should be the ‘bread basket’ of Namibia because of the water available for irrigation. In line with this thinking, the Ministry of Agriculture, Water and Forestry (MAWF), in support of Namibia’s Vision 2030 and National Development Plan III, has introduced the *Green Scheme Policy* with the aim to enhance agricultural production under irrigation in Namibia (MAWF undated). The mission of the Green Scheme is to create an enabling, commercially-viable environment through effective public-private partnerships. The aim is to develop large-scale commercial farming enterprises where an experienced individual farmer acts as mentor and service provider to a group of small-scale farmers.

The objectives of the Green Scheme include (MAWF undated):

- To encourage the development of irrigation-based agronomic production in Namibia with the aim of increasing the contribution of agriculture to the country’s gross domestic product.
- To maximize the production of high-value horticulture products for local and export markets.
- To encourage the use of cost-efficient irrigation methods that use low volumes of water to maximum effect, coupled with a water pricing policy based on the scarcity of water and the long- term environmental sustainability.
- To increase food security and to raise the level of self-sufficiency in crop production.
- To achieve the social development and upliftment of communities located within suitable irrigation areas, creating sustainable livelihoods and thereby reducing poverty.

Two irrigated farming enterprises of 800 ha each are planned under the Green Scheme in Caprivi. One is close to Sangwali in the Wuparo conservancy and the other is at Bukalo on the eastern floodplains. In both cases forest would be cleared to crop crops and horticultural produce. This scheme would reduce land available for local farmers and could potentially lead to additional land being cleared for subsistence farms.

The *National Crop-Oil for Energy Roadmap* of 2006 indicates that both from a primary production and processing point of view the plant-oil technology pathway is a suitable option for Namibia. According to the roadmap, experience and research demonstrate that a feasible crop option for plant-oil production is the perennial crop *Jatropha curcas*, and should be pursued under dryland conditions in Namibia. *Jatropha* is best produced in areas with low frost incidence and rainfall exceeding 500 mm (annual median) so the Caprivi Region is seen as an appropriate area for planting *jatropha*.

Currently there is a proposal for a 150,000 ha biofuel enterprise east of the Mudumu National Park and south of the main road from Kongola to Katima Mulilo. The land would be used for growing maize and other crops, and would have an outgrower programme. An environmental scoping process is being undertaken for this project. It is located in one of remaining areas of relatively untouched standing forest in Caprivi. This scheme could potentially lead to people being displaced and then clearing land in other areas. There is however, currently a government-imposed moratorium on biofuel projects. For many years there have been plans to develop sugarcane farming around the margins of Lake Liambezi but so far no development has taken place.

In both the above cases, the traditional authorities with jurisdiction over the land have given their permission for the land to be used for these purposes.

Namibian energy policies should, over the long term, lead to a reduction in tree-cutting for fuelwood as a national rural electrification programme progresses. However, change is likely to be slow. According to the *White Paper on Energy Policy* (MME 1998:14):

‘It is unlikely that the energy consumption patterns of rural people will undergo a simple transition from wood fuel, through commercial fuels like paraffin and liquefied petroleum gas (LPG), to electricity. Due to a range of socio-economic and cultural factors, poor rural households are likely to continue to use fuels such as wood fuel, especially for cooking and heating, even if they have access to electricity. Therefore, embarking on a single strategy, such as electrification or the promotion of fuel-efficient stoves, will not solve the energy problems facing rural people.’

In general, a REDD approach applied at community level would help contribute to Namibia’s Vision 2030, the country’s policy framework for long-term development. The overall objective of the forestry sector under Vision 2030 is (GRN 2004:149): ‘To ensure equitable access to, and appropriate tenure over land, woodland and forest resources, as well as their sustainable utilisation.’

Among the strategies to achieve this are (GRN 2004:150):

- Encouraging the rehabilitation of forest and vegetation cover in the catchment areas of the Chobe, Kwando and Okavango rivers and on the ephemeral river systems which have suffered deforestation.
- Promoting appropriate land-use practices and habitat protection practices to all areas that are at risk of deforestation.
- Providing incentives for sustainable forest management and education services, combined with appropriate and diversified land-use options.

2.8 Summary and analysis

In general, the Namibian policy environment is conducive to implementing a REDD approach. Policies and legislation have not been designed with REDD in mind, but the principles that underlie REDD are embodied in natural resource policy and legislation. Thus in the wildlife and forestry sectors policy and legislation provide rights over resources to local communities and are based on incentives for sustainable resource management. Communities are able to enter into contracts with external agencies and the income accrues directly to the communities, which are able to keep the income. The community-based wildlife and tourism programme operated through conservancies is providing incentives for the setting aside of habitat which also contributes to avoided deforestation (see subsection 3.2 below for more details). These policies target the rural poor in general.

The main potential policy threats to a REDD approach come from the promotion of irrigated farming and biofuels, which could lead to further deforestation and which promise various benefits to local communities. In order for any land use scheme to go ahead, permission is required first from the traditional authority with jurisdiction over the land. The traditional authorities will provide this permission for developments they believe will bring benefits to their communities, particularly jobs.

At the same time land use is also determined by the policies and approaches of sectoral line ministries that have a strong influence on land use (see Table 1 above). There is no policy for land-use planning in Namibia. The Ministry of Lands, Resettlement and Rehabilitation (MLRR) has developed land-use plans for some regions (such as Caprivi) but these plans tend to reflect existing land uses without identifying potential conflicts and without providing processes and mechanisms for avoiding conflicts. It is therefore important to ensure that avoided deforestation through REDD payments is not undermined by conflicting land uses being promoted by sectoral line ministries or the private sector, and being approved by traditional authorities for the same areas of land. Support for a REDD approach would be required from the regional council, which also has an important influence on development.

3. Assessment of competing land uses

3.1 Importance of land uses in natural woodland conversion

3.1.1 Household use of woodlands

Of Namibia's 13 regions, Caprivi is one of the poorest. Three other regions have a higher HPI than Caprivi – 45 per cent for each of the three compared to 43 per cent for Caprivi (UNDP 2007). There are large disparities in the distribution of wealth within Namibia, but in Caprivi although not everyone is poor, poverty is more widespread than for the country as a whole (Long 2004). Rural people living in Caprivi have little access to jobs and cash and depend mostly on cropping, livestock, piecework, wages, pensions and the use of a variety of natural resources. Wealthier people tend to be those with larger cattle holdings and are less reliant on pensions and natural resources (Long 2004).

For most poor people, growing crops is one of the main ways to ensure there is some food in the household. As indicated above, most of the soils in Caprivi are moderate to poor for crop growing. Yields are low and new fields are opened up by clearing the forest when the soil fertility starts to decline. The need to ensure food security for households through crop growing is the main driver of deforestation by households in Caprivi, but the overall impact is confined mainly to areas along main roads and the floodplain fringes. There is no charcoal industry as in neighbouring countries such as Zambia.

Turpie et al. (2000) found that rural households in Caprivi see crop production for domestic consumption as important, but that in actual measured financial and economic terms its contribution to the national income is relatively small. Other activities ranked important by communities include natural resource utilisation (especially thatching grass and reeds) and livestock production through grazing of natural rangeland. For cash income among rural households in Caprivi, pensions, crop sales and sale of natural resources are considered important.

While cattle are not so important in terms of cash income, they are very important in providing meat and milk for consumption and for crop production, providing draught power and enabling larger areas of crops to be cultivated (Mendelsohn et al. 2006). Cattle also offer a degree of security as accumulated wealth, akin to 'cash in the bank', and are a clear indicator of livelihood security. While cattle do contribute significantly to household income, this is attributable mainly to subsidies, as low productivity due to open access grazing means that their contribution to the national income is relatively low (Barnes et al. 2008).

Natural resource harvesting is important for construction, and for cash income through limited sale. Reeds and thatching grass are the main items sold. For some households, wildlife such as duiker, warthog, impala and springhares provides an additional source of food security and are occasionally sold. A broad range of wild plant resources is used for various purposes and some have potential for commercial exploitation. Fish are an important source of protein in the rivers and floodplain areas.

In Caprivi the CBNRM programme has allowed some households to benefit from tourism. Thus households derive wages from community-owned and -run campsites, as well as formal employment in joint venture lodges and hunting camps. A wage from tourism may range from N\$3,500 a year in community-run campsites to N\$9,500 in upmarket lodges (Murphy and Roe 2004). Important household income is also derived from craft production and sales promoted by the CBNRM programme in Caprivi. Total sales figures between 1999 and 2001 amounted to over N\$330,000, which mostly went to poor women. Although the amounts to individuals were small (mostly less than N\$500 a year), such small amounts of cash to poor people were 'of great significance in alleviating poverty' (Murphy and Roe 2004), providing cash for much needed household items or to support children at school.

Non-financial, often 'intangible' benefits from tourism identified by the researchers included training and capacity-building; opportunities for career mobility; cultural pride; and increased environmental awareness leading to improved natural resource management.

While some of the natural resources used by households (e.g., fish and reeds) are located on the floodplains, much of the use of natural resources in Caprivi takes place within the woodlands. Livestock graze in woodland areas and some thatch grass is obtained within the forest, as are various food and medicinal plants, craft materials, fuelwood and construction poles. While tourism facilities are based mainly adjacent to the floodplains, the wildlife that supports tourism activities is also dependent on woodlands inland from the riparian areas.

The carbon emissions resulting from the land and resource uses, described above, are likely to vary. Clearing of woodland for crop production removes most woody growth although some trees are left in the small-scale plots, and the shifting nature of cultivation on the poor Kalahari sand soils means that each hectare of planted cropland is associated with some four hectares of fallow in various stages of re-growth (Mendelsohn and el Obeid 2003). Use of woodlands for livestock grazing traditionally involves some open access, and heavy grazing pressure. Associated browsing and burning have a depressing effect on woody growth so that at least some emissions result. Similarly, with tourism land uses involving wildlife viewing or hunting, some emissions occur as a result of the combined effects of elephant debarking and fire, as well as browsing.

3.1.2 Commercial agriculture and biofuels

At first glance it would seem that a major threat to natural woodlands in Caprivi will come from intensive commercial agriculture, such as the two irrigated farming enterprises (described above) planned under the Green Scheme for Sangwali and Bukalo. Large-scale commercial irrigated agricultural developments have been mooted and planned for Caprivi for some 30 years. These have been politically motivated and poorly planned, and none has ever come about, primarily because of the extreme distance of Caprivi from markets for inputs and produce. Those developed in less remote Kavango, to the west, have required significant financial subsidy, and despite major Green Scheme plans their expansion has been limited so far. Schuh et al. (2006) carried out an economic analysis of one of the Kavango Green Scheme initiatives that confirms the limited prospects for economically-viable commercial irrigation. The experience with rigorous financial and economic analysis of proposed commercial agricultural developments in northern Botswana in the 1970s and 1980s also confirms this.

Another more recent and conceivably very important conversion of natural woodlands in Caprivi could come from the large-scale *Jatropha curva* biofuel initiative (also described above) proposed for the woodland area east of Mudumu National Park. Plans for this biofuel project, as well as another in neighbouring Kavango region, are based on little more than concepts, and no large-scale trials have been underway for any length of time. Very little of substance is known of the yields that can be expected in Caprivi, which is at the dry end of the biophysical range suitable for *jatropha*. Not much is known of the establishment and operating costs involved, including the possible need for supplementary irrigation for young plants in this drier environment. A primary financial motivation for the biofuels project would be access to carbon credit, and this would then limit the project to fallow land and preclude the conversion of pristine woodlands. Furthermore, concern that biofuel may displace food crop production and affect food security has diminished political support for the projects.

For the reasons given above, commercial irrigation and biofuel initiatives are very unlikely to be successful in Caprivi in the medium term. Even if they do succeed, the Green Scheme projects could be expected to affect non-woodland floodplain or fallow more than woodland. They have thus been left out of the competing land-use analysis. Most important to the conversion of woodland are those activities currently expanding into woodland areas, such as small-scale rain-fed crop production, small- and medium-scale livestock production, and tourism development through wildlife viewing and safari hunting.

3.2 Cost-benefit from the livelihood and economic perspectives

The REDD system allows for payments for the avoidance of emissions caused by land conversions that reduce carbon storage. As stated, livelihood activities such as crops, livestock and tourism are important for local residents and any REDD payments will be for the opportunity costs of conversion to these land uses. We need to measure the private and economic values associated with the natural woodlands (sustainable harvest of forest products), and the land uses that will result in carbon emissions from these natural woodlands. This analysis follows the principles described in Pagiola and Bosquet (2009)

The financial and economic characteristics of land and natural resource uses in the Caprivi region and its surroundings have been relatively well studied. Empirical household and community surveys have been carried out in Caprivi and in neighbouring areas with similar biophysical and socio-economic conditions. The results from these surveys have informed the development of private and economic models of natural resource use enterprises at household and larger scales.

Thus models for forest use including firewood, poles and non-timber forest products have been developed by Barnes et al. (2005), MacGregor et al. (2007), and Turpie et al. (2000) for northern Namibia, and by Terry (1999) and Turpie et al. (2006) for northern Botswana. Models for small-scale crop production have been developed, for Caprivi by Turpie et al. (2000) and Jones and Barnes (2006), and for northern Botswana by Turpie et al. (2006). Models for small-scale, cattle post and commercial livestock production in Caprivi have been developed by Turpie et al. (2000), and in Namibia and northern Botswana by Barnes et al. (2001; 2003) and Turpie et al. (2006), respectively. Models for wildlife-based tourism have been developed by Barnes et al. (2001, 2003) and Turpie et al. (2006) in Botswana, and by the Ministry of Environment and Tourism's Environmental Economics Unit in Namibia.

The results of the Namibia-Finland Forest Inventory Project have been used to develop forest resource accounts for Namibia. Specifically for Caprivi, the inventory work of Chakanga et al. (1998; 1999), Kamwi (2003) and Laamanen et al. (2002), among others, was used. Barnes et al. (2005) developed these accounts for 2004 and developed estimates of standing forest stocks and their asset value, as well as the economic value of current production of forest products and likely future production. All of the abovementioned work has been used here to inform on the costs and benefits of forest preservation in Caprivi.

For most of the small- and medium-scale land uses associated with the woodlands of Caprivi, values for annual private net income and contribution to the economic gross national income can be estimated or imputed. Here use was made of standard household crop and livestock production models which have been developed from empirical data for Caprivi and adjacent northern Botswana.

The household production and conservancy models used to measure the values of land uses here are standard tools that have been in use in the Environmental Economics Unit of the Namibian Ministry of Environment and Tourism since 1994. These are budget and cost-benefit enterprise models for natural resource use activities set out in detailed spreadsheets. The models are aimed at measuring the returns for private investors and society as a whole generated by activities in wildlife use, natural plant resources use, fisheries, livestock production and crop production. Similar, more complex models have been developed for community-level investments in conservancies (Barnes et al. 2002). As stated, the models are based on empirical physical and financial information from surveys of households and enterprises, and they include the initial capital costs, variable and fixed recurrent costs, and the gross income or turnover. They measure the annual net profit/loss for the enterprise, as well as (in most cases only) the internal rates of return (IRR) and net present values for the investment after five and ten years. Not all models are exactly the same and not all provide the full range of values.

In addition to the profits and returns to the private or community investor, some of the models also measure the returns that these activities generate for society as a whole, or the direct contribution they make to the national income. They measure the economic benefits, less the economic costs, to society as a whole, associated with the activity. Getting to these economic measures involves some revaluation where the true values of costs and benefits to society differ from the actual financial transaction values encountered by investors. Specifically, changes are made in determining the costs of labour, the value of tradable goods, and the effects of taxes and subsidies. In this way the models measure the annual net contribution, in terms of gross national income, made by the enterprise. Some of these models also measure the economic internal rate of return and net present value for the activity after ten years of operation. The criteria for revaluation are described by Barnes (1994) and technically analysed by Humavindu (2007). Namibia dollar (N\$) values were inflated to 2008 or, in the case of Botswana pula values, first converted to N\$ and then inflated to 2008. In 2008 N\$1.00 was worth some USD\$0.13, GBP£0.06, and Euro€0.08.

The approach to analysis of competing land uses involved the following steps:

1. The volume (m³) of natural woodland stocks in Caprivi was derived from the forest accounts (Barnes et al. 2005).

2. The volume was converted to biomass (tonnes) using a factor of 0.8, derived from Odendaal et al. (1983).
3. The carbon storage (tonnes of carbon - tC) within the natural woodland biomass was calculated using a factor of 0.5, derived from Birdsley (1996).
4. The annual private net income and direct economic contribution of the current and predicted future (in ten years) natural woodland uses were determined from the forest accounts data. This included the values for household and commercial use of fuelwood, poles, non-timber forest products and saw timber. There is uneven use with both depletion and underutilisation taking place locally so that these uses are well within the potential sustainable harvest as measured in the forest accounts. They are thus deemed sustainable overall.
5. The current and anticipated future spatial extents of each of these natural woodland uses or combinations of natural woodland uses were determined from the forest accounts.
6. The main natural resource uses involving conversion of natural woodlands and thus causing or likely to cause carbon emissions were identified. These included small-scale crop production and associated fallow, causing an 80 per cent reduction in carbon storage through shifting clearing and cultivation; small-scale and semi-commercial livestock production causing a 25 per cent reduction in carbon storage due to burning and browsing; non-consumptive tourism lodge development, causing a 30 per cent loss in carbon storage through elephant damage, fire and general browsing; and safari-hunting tourism causing a 15 per cent reduction in carbon storage through elephant damage, fire and general browsing.
7. The annual private net income and direct economic contribution of the current and predicted future (in ten years) natural resource uses involving conversion were determined from the various sources listed above.
8. The current and anticipated future spatial extents of each land use and the combinations of land uses with impact on carbon storage were determined taking into account realistic developments during the next ten years.
9. The data on expenditures made on the national CBNRM programme (NACSO 2008) were used to extract costs that might be realistic for implementation of a REDD programme in Caprivi. This was estimated at some N\$2,000 per rural household per annum.
10. The analysis was split to examine the values for communal land and the values for public land, separately. The values attributable to household uses of fuelwood, poles and non-timber forest products are associated mostly with communal land and are likely to be accompanied by conversion to cropland and livestock grazing. The values, attributable to future saw timber production, are focused mainly on public land, namely, the better quality woodlands in the Caprivi State Forest and the Bwabwata National Park, and they are likely to be at least partially accompanied by conversion to tourism land uses.

11. The values were assessed in terms of aggregates expected for woodlands at a point ten years ahead in the future, the values per hectare, and the relative changes in the values per hectare, to determine whether a REDD supply curve could be derived for the communal and public lands in Caprivi, and whether REDD is feasible for Caprivi.

The results of the analysis are shown in Tables 2 to 6.

Table 2: Values associated with woodland conversion in Caprivi.

Extent of Caprivi	ha	1,446,700
Total volume of standing woodland stocks	m ³	30,915,980
Average volume per hectare of woodland stocks	m ³ /ha	21.37
Total biomass of woodland stocks	tonnes	24,732,780
Total carbon storage in woodland stocks	tonnes (tC)	12,366,390
Average mean annual increment (MAI) of stocks	m ³ /ha/annum	1.92
Average annual storage of carbon in stocks	(tC)/ha/annum	0.77
MAI for fuelwood	m ³ /ha/annum	1.73
MAI for poles	m ³ /ha/annum	0.29
MAI for timber	m ³ /ha/annum	0.08
Total human population of Caprivi	No	79,850
Total population of households in Caprivi	No	16,840
Total rural human population on Caprivi	No	67,870
Total population of rural households (2008)	No	12,460
Expected total rural households (2018)	No	16,630
Expected fuelwood use per annum (2018)	m ³ /annum	92,240
Expected pole use per annum (2018)	m ³ /annum	7,770
Expected saw timber use per annum (2018)	m ³ /annum	33,490
Area required for fuelwood use	ha	53,290
Area required for pole use	ha	26,950
Area required for saw timber use	ha	407,730
Area required for crops and fallow	ha	141,360
Area required for livestock grazing	ha	491,840
Area required for tourism (wildlife-viewing)	ha	72,000
Area required for tourism (safari-hunting)	ha	160,000
Cost of REDD implementation	N\$	33,260,850
Communal land affected area	ha	491,840
Public land affected area	ha	407,730

In Table 2 various characteristics of the Caprivi natural woodlands resource are described. An estimated 12 million tonnes of carbon are stored within these woodlands, within 25 million tonnes of standing stock (within 1.4 million hectares). The 12,000 rural households can be expected to grow to some 17,000 in ten years, and these will make use of some 92,000

m³ of fuelwood and 8,000 m³ of poles. This is a small fraction of the total mean annual increment (MAI) of the woodlands, which is some 2.8 million m³. Forest uses tend to overlap spatially and use pressures tend also to vary spatially (Erkkilä 2001). Some areas close to dense settlement tend to be over-used, other more remote areas are underutilised, and even more remote sites are not used at all. Use of forest products is considered sustainable overall.

In communal land, some 141,000 hectares of woodland are likely to be affected by crop and fallow conversion by 2018. Some 492,000 hectares are likely to be subjected to livestock grazing by then. There will be some spatial overlap between crop fallow and grazing land. In the public land, protected areas saw timber production might be undertaken over 408,000 hectares by 2018. On these public lands it is expected that some 72,000 and 160,000 hectares will be used for wildlife-viewing tourism and safari-hunting tourism, respectively. Tourism uses will be spatially exclusive but they will overlap with forest timber use, so that allocation of resources will become an issue.

The cost of implementation of the REDD system in Caprivi is estimated at some N\$33 million per annum. This, it must be noted, is the estimated cost of implementing the scheme from scratch, and does not take account of the fact that, in Caprivi, REDD could be implemented through the established CBNRM structures. The estimated cost is based on the recorded costs associated with establishing and implementing the CBNRM programme in Caprivi, including donor contributions as well as a 20 percent match contribution from the national government. The estimate is based on data referred to by NACSO (2008). The CBNRM programme costs in Namibia provide a useful indicator of the likely costs that would be needed for implementation of a REDD system from scratch in the miombo eco-region.

Table 3 shows the expected aggregate private and economic values associated with woodlands and woodland conversion in the communal lands in Caprivi in 2018. Table 4 shows the same for the public lands.

Table 3: Aggregate values for communal land woodland and conversion, Caprivi, 2018.

	Private net income in N\$	Gross national income in N\$
Fuelwood	61,236,650	71,789,590
Poles	3,787,170	4,755,300
Non-timber forest products	39,191,450	45,945,330
Total sustainable value of forest	104,215,270	122,490,220
Crops and fallow	42,872,860	14,295,930
Livestock grazing	28,590,030	5,598,680
Total value of conversions	71,462,890	19,894,610
Net value	32,752,380	102,595,610
Annual REDD implementation cost	33,260,850	33,260,850
REDD value	-508,470	69,334,760

Table 4: Aggregate values for public land woodland and conversion, Caprivi, 2018.

	Private net income in N\$	Gross national income in N\$
Saw timber	97,092,080	156,319,710
Total sustainable value of forest	97,092,080	156,319,710
Wildlife-viewing tourism	11,174,230	23,909,260
Safari-hunting tourism	3,142,470	4,317,300
Total value of conversions	14,316,710	28,226,550
Net value	82,775,370	128,093,160
Annual REDD implementation cost	33,260,850	33,260,850
REDD value	49,514,520	94,832,310

The most significant thing about these results is that the values associated with conversion are similar or less than the values derived from the unconverted natural woodland itself. Only in the case of private net values for communal land do the values for conversion land uses marginally exceed the forest-use values, and this is only because of the inclusion of estimated REDD implementation costs in the equation. An opportunity cost of some N\$500,000 for woodland preservation is measured, a small fraction of the likely implementation costs of any REDD scheme.

Tables 5 and 6 show the values in terms of expected annual change in 2018. Here again the forest-use values will exceed the values associated for the conversion land uses on both communal land public land.

Table 5: Annual changes for communal land woodland conversion, Caprivi, 2018 (N\$2008).

	Annual changes for communal land					
	Ha	PNI*/ha	PNI*	GNI**/ha	GNI*	Carbon tC
Fuelwood	2,260	1,152	2,602,560	1,350	3,051,060	0
Poles	1,150	140	160,950	176	202,100	0
N-TF Products	2,260	737	1,665,640	864	1,952,680	0
Woodland value	3,410	1,299	4,429,150	1,527	5,205,840	0
Crops and fallow	6,010	303	1,822,100	101	607,580	3,697
Livestock grazing	20,900	58	1,215,080	11	237,940	4,020
Conversions value	26,910	113	3,037,180	31	845,520	7,718
Net value			1,391,970		4,360,320	-7,718

* Private net income

** Gross national income

Table 6: Annual changes for public land woodland conversion, Caprivi, 2018 (N\$2008).

	Annual changes for public land					
	Ha	PNI*/ha	PNI*	GNI**/ha	GNI**	Carbon tC
Saw timber	4,080	238	970,920	383	1,563,200	0
Woodland value	4,080	238	970,920	383	1,563,200	0
Wildlife viewing	3,060	155	474,900	332	1,016,140	706
Safari hunting	6,800	20	133,560	27	183,490	785
Conversions value	9,860	62	608,460	122	1,199,630	1,491
Net value			362,460		363,570	-1,491

* Private net income

** Gross national income

3.3 Summary and analysis

The results in Tables 5 and 6 confirm those in Tables 3 and 4. They show that changes in forest-use values exceed the changes in values for the woodland conversion land uses, both in terms of private returns and direct economic contribution. Inclusion of economic income multipliers in the economic analysis would be unlikely to change this finding as the multipliers for the various woodland and land uses are similar. What is also interesting is that the expected annual rates of land-use conversion and the corresponding changes in value are low relative to the estimated annual costs of implementing a REDD scheme in Caprivi. This would be the case even if the latter are significantly overestimated.

In the context of the miombo eco-region as a whole, the *Burkea*, *Baikiaea Terminalia* and *Colophospermum* woodlands of Caprivi are categorised as Zambesian *Baikiaea* Woodlands. This sub-component occupies the drier end of the mean annual rainfall range in the broader miombo eco-region, where mean annual rainfall ranges from some 550 to 1,400 mm per annum. Thus, while the predominantly deep Kalahari sand soils (arenosols) provide for well-developed woodland despite the relatively low rainfall, they are generally unsuitable for crop production. The relatively low rainfall of between 550 and 650 mm per annum means that rain-fed crop production is risky in woodland areas, with low yields. A tendency in Caprivi is for croplands to be sited on floodplain soils, which are commonly treeless, better watered and more fertile. Conversion of woodlands to crop production in Caprivi is likely to be of lower importance than elsewhere in the miombo eco-region.

The results indicate that REDD, as formulated, is not appropriate in Caprivi, primarily because the potential for alternative uses of the woodlands in this region is poor, and the land produces woodlands of some value. The drivers behind the various uses of land in Caprivi will continue to push for gradual reductions in carbon storage, but these are not entirely economic. On communal land, the use of unconverted woodland resources (for fuel, poles and non-timber forest products) and the conversion of woodlands for crop and livestock production are activities carried out by the same households as part of their overall coping strategies, and they are not mutually exclusive. Decisions about allocation of woodland and the various uses can still be influenced to minimise carbon loss and indeed payments for woodland preservation may well have a role in this. However, such an approach would not provide the 'additionality' required by the current way that REDD is

formulated, i.e., the need to provide proof that any reduction in emissions from a REDD project would be genuinely additional to reductions that would occur if that project were not in place.

On public land, decisions about allocation of woodlands between timber use and tourism uses can also be made in such a way as to minimise carbon loss. In areas of high quality timber, forest use can be emphasised and in other areas habitat management for wildlife and tourism can be emphasised. To some extent in Caprivi, forest use can overlap with woodland conversion land uses, allowing carbon loss from pristine woodlands to be minimised. The challenge, on both communal and public land, will be to minimise economic loss, and possibly even induce economic gain, through appropriate land and resource allocation within a CBNRM context.

4. Lessons from CBNRM

4.1 Background

Namibia has adopted community-based natural resource management (CBNRM) as a mechanism for promoting conservation of natural resources on communal land outside of protected areas. As indicated above, policy and legislation provide rights over wildlife, tourism and forest resources to local communities that form resource management institutions called conservancies (wildlife and tourism) and community forests. There are now 55 conservancies in Namibia covering more than 14 per cent of Namibia's total surface area. A number of additional communities are still in the process of forming conservancies. There are 13 gazetted community forests, three of which are in Caprivi, with several still waiting to be registered. CBNRM brings both benefits and costs to communities. Examples of both are provided below. In addition, CBNRM in conservancies has been successful in contributing to the recovery of wildlife in several areas of the country and the maintenance of wild habitat. Data on the conservation benefits from conservancies are also provided below.

4.2 Benefits and costs of CBNRM

4.2.1 Increased income and other benefits to communities

According to NACSO (2008), conservancies and other CBNRM activities (e.g., plant products, crafts and thatching grass) generated around N\$39 million (close to US\$5 million) in Namibia in 2007. Conservancies earn income from a variety of activities that include trophy hunting, other forms of hunting, and the sale of wildlife, and from various tourism activities including joint venture lodges (with private tourism companies) and their own camp sites. In 2007, the total cash income to conservancies from wildlife and tourism enterprises and other sources such as interest on savings was N\$20,582,789², of which N\$11,755,391 was income to conservancy committees and N\$8,827,398 was wages and salaries to conservancy members (NACSO 2008).

The income levels of conservancies vary according to the type and abundance of resources in the conservancy. Those with abundant wildlife and good tourism attractions and/or proximity to national parks tend to earn the highest income. The income to conservancy committees is used for operational costs and wildlife management and for various forms of community benefit. In Caprivi these benefits have included dividends (e.g., N\$200 per member in Kasika Conservancy in 2007, see Table 7), improved water supply for schools, employment, game meat distribution, funeral support, development of a local market, construction of a maize storage facility, providing houses for teachers, compensation for livestock losses to predators, and protection of fields from elephants. In addition conservancy committee members and other community members have received training in a wide range of activities including wildlife management, financial management, running committees, enterprise development, craft-making and tourism management, etc.

² About US\$2.5 million at 2007 exchange rates.

In general, conservancies have chosen to use their income for social projects rather than household dividends. However an increasing number of conservancies have begun to provide cash dividends to members. Table 7 provides an overview of conservancy income and spending on salaries and benefits to members. Salaries to one person are likely to assist in supporting a family of between five and 10 people.

The conservancies usually have strong support from the traditional authorities in Caprivi and also often provide financial and other support to these authorities (see Table 7). The conservancies usually have an office and a vehicle and paid management and administrative staff.

Table 7: Conservancy income and spending on salaries and distribution of cash to members in Caprivi in 2007 (Source: R. Diggle, unpublished data, 2008).

Conservancy	Number of members*	Income** N\$***	Salaries N\$	Distribution N\$	Comments
Kasika	400	419,289	189,000	80,000	Cash dividends of N\$200 per member.
Salambala	1,982	570,033	236,750	23,000	Divided between 18 villages**** and khuta.
Kwandu	699	279,882	149,400	33,000	Divided between 6 village areas.
Mayuni	600	448,943	183,000	15,000	Divided between 3 village areas and khuta.
Mashi	700	329,882	216,000	68,000	Divided between 4 village areas.
Sobbe	500	215,650	35,000	50,000	Cash dividend to individual members.
Balyerwa	400	551,232	130,080	54,000	Divided between 4 village areas.
Wuparo	1,700	279 882	144,000	21,000	Divided between 3 villages and the khuta.
Kyaramacan	5,000	1,180,564	612,000	380,000	Cash dividend of N\$136 per resident and N\$80,000 for the group comprising orphans/learners.

*Adults over the age of 18 who have registered as conservancy members.

** From hunting, lodges and campsite fees in 2007.

*** Exchange rate: US\$1 = N\$8.

**** Villages use income for social projects decided on by members.

Community forests currently earn little income compared to most conservancies. Most income is from the sale of permits for harvesting construction poles and other resources. In some community forests the traditional authority receives 10 per cent of the income, the committee retains 40 per cent to cover the costs of committee members, and 50 per cent is available for community benefits (Hailwa, J. pers. comm. 2009). Most community forests have an office that is used for administrative purposes and from where crafts can be sold.

4.2.2 Conservation benefits of conservancies

The conservancy approach is contributing to a recovery of wildlife populations across large parts of northern Namibia, in particular the north-west and north east (NACSO 2006; 2008). Not only are wildlife numbers increasing, but distributions of many rare and/or valuable species are expanding. In particular, the population growth of such endangered species as black rhino and Hartmann's zebra are well documented in the north-west of Namibia, while elephant ranges are expanding in both the north-west and north-east of Namibia.

These increases in wildlife numbers and the expansion of the ranges of some species are taking place partly because of higher rainfall generally since the devastating drought of the early 1980s and also because of increased NGO and government monitoring. However, conservancies also contribute to these increases because poaching is low in conservancies,

utilisation of game animals is sustainable, habitat for wildlife is being maintained, and the tolerance level of people for wildlife (even potential problem-causing species such as elephant and predators) is high.

Elephant numbers are increasing in Caprivi largely because of the expansion of the population in northern Botswana (estimated at around 130,000 animals). They move into Caprivi because they are generally tolerated by local people although there have been increasing incidents of elephants being shot at in some areas due to them causing damage to fields (Diggle, R. pers. comm. 2009). There have been significant increases in buffalo numbers in seven conservancies in East Caprivi (Salambala, Mashi, Mayuni, Wuparo, Kwando, Impalila and Kasika) from around an estimated 500 in 2001 to around 4,300 in 2007; elephant have increased from an estimated few hundred in 2001 to more than 1,000 in the seven conservancies; and zebra have increased from a few animals to nearly 1,000 (NACSO 2008). With regard to predators, hyena numbers have remained stable in Caprivi, wild dogs and leopards are increasing, but there has been a marked decline in lion numbers (NACSO 2008).

The community game guards employed by conservancies have played an important role in achieving the recovery of wildlife in many areas. They act as a deterrent to poaching by local community members and are able to uncover poaching by outsiders. They form an important link between the conservancies and Ministry of Environment officials. In areas close to national parks in Caprivi they carry out joint anti-poaching patrols with park staff. The establishment of zoned core wildlife areas in conservancies has also proven to be an important factor in local wildlife conservation. Where conservancies have left land aside for wildlife, the MET has reintroduced species that had disappeared in the past and these are now increasing in the conservancies. More than 700 animals were reintroduced in 2006 and 2007, re-establishing populations of sable, eland and giraffe that had become locally extinct in East Caprivi (NACSO 2008). The monitoring of wildlife carried out by the game guards and other information gathered is part of a monitoring system based on an 'Event Book' in which data is recorded that can then be used for management decisions.

4.2.3 Costs of living with wildlife

Living with wildlife carries a cost, and the incidence of 'human wildlife conflict' (HWC) is increasing as animal numbers have risen and species have expanded their ranges (Table 8). Jones and Barnes (2006) estimated that HWC in the Caprivi Region resulted in a loss of US\$770,000 to the national economy from crop damage and livestock predation. Jones and Barnes (2006) also reported the following based on the analysis by Barnes and Nhuleipo (2005):

- The average annual value of crop damage for each crop-producing household is US\$37 (this is a blended average, including both dryland and floodplain crop producers).
- The average annual value of livestock losses per livestock-producing household is US\$38.

These values represent the average amounts by which rural household gross incomes are reduced by HWC. The total average annual value of losses due to wildlife (including both

crops and livestock) is US\$75 per household, which represents seven per cent of total household cash income,³ which is around US\$1,080 annually (Jones and Barnes 2006).

This analysis does not account for the differential impacts of HWC according to the status of the individual households. Elephant damage to the crops of poor small-scale producers will have a higher impact than similar damage to the crops of a more wealthy family with larger croplands. In a society of low incomes (with no security mechanisms in place), reductions in net income of 30-40 per cent can be life-threatening. Very probably, it is the social networks that ensure in many cases that families experiencing very high levels of HWC don't starve. Crop damage will also have a higher impact on families affected during drought years. Furthermore, not all crops would necessarily be sold, and many people in Caprivi depend upon crops for consumption. This means that crop losses to elephants therefore have important implications for household food security (Jones and Barnes 2006).

Table 8: The number of incidents of human wildlife conflict caused by all species in Namibian conservancies recorded using the 'Event Book' system 2003-2007 (Source: NACSO 2008).

	2003	2004	2005	2006	2007
Human attacks	17	14	15	11	14
Livestock attacks	1,733	1,684	2,658	3,174	2,839
Crop damage	1,098	1,084	1,470	2,350	1,983
Other damage	171	154	139	178	266

Note: These data reflect incidents in only those conservancies using the 'Event Book' monitoring system and thus do not reflect all such incidents in the country.

4.2.4 CBNRM and other land uses

Conservancies and community forests are multiple use areas within which different land uses take place. Thus wildlife utilisation and tourism are conducted in conservancies along with livestock and crop farming. Some conservancies have set land aside specifically for wildlife and tourism and within these areas there is usually no settlement or cultivation and livestock may only use the area for emergency grazing in times of drought. In these areas there is little cutting of wood or deforestation. Thus in Mayuni Conservancy in Caprivi, areas of land along the Kwando River floodplain have been left for wildlife and corridors for elephant movements are maintained. People who were cultivating fields and grazing livestock on this land have been given alternative land to live on and farm. In addition, conservation farming is being adopted in order to reduce the need to abandon existing fields and clear new ones.

In community forests, different uses of the forest are allowed, including sustainable harvesting of forest products as well as utilisation of wildlife and tourism development. In some cases conservancies and community forests have been established in the same area such that there are community forests within a larger conservancy area or community forests include some, but not all, conservancy land. In Caprivi attempts have been made to

³ The cash income estimate does not include home-consumed income. There are currently no estimates of total household income that take both home-consumed and cash income into account.

address these overlaps. For example, Kwandu Conservancy has also been registered as a community forest.

As indicated in section 2.5.1 above, there are multiple institutions with different levels of authority over land allocation and land use. Conservancies do not have rights over the land and this weakens their ability to exclude land uses imposed by other agencies, or incursions on to grazing lands by outsiders. However, if under the *National Land Policy*, conservancies or community forests could obtain leases over their land; this would strengthen their ability to exclude others from using their grazing areas or forests and prevent outsiders – including government – from imposing developments incompatible with conservancy management plans.

4.2.5 Sustainability of CBNRM

CBNRM in Namibia has, for more than 15 years, received considerable donor funding. A key question is whether CBNRM would be sustainable in the absence of this financial support, which has provided the foundation for the provision of technical support to conservancies and community forests.

There are several aspects to sustainability that need to be considered. These are i) the sustainability of CBNRM income to communities; ii) the institutional sustainability of community institutions; and iii) continued technical support for community institutions.

1. CBNRM income to communities: the rights of conservancies and community forests to gain income from the sustainable use of natural resources are entrenched in legislation. Unless legislation is amended, conservancies with resources that the private sector wishes to use will continue to receive income. There is thus in-built sustainability in the conservancy approach with regard to income. The same is true for community forests, although incomes are generally lower.

2. Institutional sustainability and capacity: in terms of institutional sustainability, much depends upon the internal governance of individual conservancies or community forests. Experience shows that community institutions are likely to go through ups and downs, particularly in the early – essentially experimental – stages of their development. Experience also shows that as income becomes significant, members start to call committees to account regarding how the income is being spent (NACSO 2008). Strong accountability of committees to members is crucial for institutional sustainability, but this takes time to develop and needs support from NGOs and government. There has been evidence of mismanagement of funds by conservancy committees, but mostly this has been due to poor record-keeping rather than theft or fraud (Jones and Mazambani 2007). NGOs are assisting conservancies in strengthening accountability through more efficient and participatory AGMs, promoting the approval of conservancy budgets by members, and revising constitutions so that members are fully involved in the process (NACSO 2008).

Generally, community forests are managing their finances properly although none has the experience of managing the large amounts of income that flow through the highest earning conservancies (Sprung, R. pers. comm. 2009). Community forests tend to be established at a smaller scale to conservancies, mostly at the village level or a cluster of villages. Sprung (pers. comm. 2009.) suggests that capacity at this level to deal with commercial activities is weak and such aspects are better dealt with at a higher level, such as a conservancy

committee. He suggests that it is therefore mutually beneficial for conservancies and community forests to merge so that i) community forests benefit from the greater administrative, organisational and management capacity of conservancies; and ii) conservancies will be encouraged to decentralise management activities such as control of community game guards to sub-units of the conservancy (i.e., community forest areas). Sprung also suggests that the enforcement capacity of community forests needs strengthening.

3. Continued technical support to community institutions: currently most technical support to conservancies and community forests is provided by NGOs with donor funding. Donor projects have aimed to bring conservancies to social, economic and environmental sustainability (e.g., Integrated Rural Development and Nature Conservation's Caprivi and Kunene programmes). However, experience shows that it is very difficult to predict when conservancies are likely to reach sustainability in these three elements for a number of reasons (Jones and Mazambani 2007):

- CBNRM in Namibia is continuing to evolve and new challenges emerge over time. For example, the development of new business opportunities including the commercialisation of high-value indigenous plants; the development of holistic range management and conservation farming in conservancies; and the development of trans-boundary conservation areas (e.g., KAZA⁴), which aim to involve communities.
- New conservancies continue to emerge that will require support to become operational.
- The stage at which individual conservancies achieve social, economic and environmental sustainability will differ for each of these elements within a conservancy and between conservancies.
- It is likely that even the most advanced conservancies will continue to require some form of low-level technical assistance in wildlife management in future (in much the same way as the MET still assists freehold farmers in their wildlife management).

As a result, some form of technical assistance to conservancies will still be required for some time to come, albeit at different levels and forms for different conservancies (with the most advanced requiring only ongoing support in some aspects of wildlife management from MET). If donor funding was removed, it is likely that the conservancy programme would continue because the income to communities is not dependent upon donor projects. However, the progress made by individual conservancies would be slower due to the lack of technical support in key areas and some, but not all, conservancies might collapse as a result.

4.2.6 Role of communities in REDD management

CBNRM rests on the premise that resource users are the best managers of the resource because they take most of the day-to-day decisions about resource use and generally have the most effect on the resource. Distant government officials who lack local knowledge and information are not well placed to take management decisions. The same premise holds for REDD payments. Community members are the ones involved in day-to-day decisions

⁴ Kavango-Zambezi Transfrontier Conservation Area, which includes Caprivi.

regarding land clearing for shifting agriculture. Traditional authorities are responsible for allocating land and are the first stop for external agencies wishing to initiate agricultural developments. REDD payments should therefore be channelled to community level.

There are, however, a number of issues that need to be taken into account with regard to REDD:

1. Any implementation of REDD would require agreements from different levels of government as well as from local institutions (such as traditional authorities) so that forests for which REDD payments are being made should not be compromised by the introduction of other incompatible forms of land use.
2. Consideration will need to be given to identifying the resource users responsible for ensuring that deforestation is avoided. These are the persons who will need to receive REDD payments. In the case of a conservancy, this group might not be all the members or residents, but a village or cluster of villages. The conservancy will need to ensure that payments are channelled to the appropriate persons.
3. In the case of deforestation it will be important to ensure that households receive direct payments rather than share in collective benefits (such as social projects) as it is at household level that decisions will be taken regarding additional clearing of land for cultivation.
4. Consideration should be given to allocating an appropriate share of REDD payments to traditional authorities because of their role in land allocation. These payments should also be channelled through the conservancy or community forest.
5. Consideration should be given to conservancies and community forests retaining an appropriate portion of REDD payments as an administrative 'overhead'.
6. In order to avoid conflicts, care will need to be taken that funds are not channelled to institutions where there is overlap of boundaries and mandates, such as where community forests only partially fall within conservancies or have been established within conservancies but where there are no formal links between them.
7. In order to mitigate the effects on households of limiting land-clearing, REDD payments will also need to be accompanied by a targeted programme promoting conservation farming, which will enable people to increase productivity on the same piece of land.

The next chapter makes recommendations for an overall national framework for channelling REDD payments to the community level.

4.3 Summary and analysis

CBNRM in Namibia provides a strong foundation for a REDD approach. It provides the institutional structures at community level for receiving funds and using them for community benefit. Improved accountability and financial management over time indicate that concerns over these issues can be adequately addressed through appropriate technical support and facilitation. At the same time there have been demonstrable conservation

benefits. Evidence for this comes partly from community-level monitoring systems that could be adapted for measuring rates of deforestation linked to a REDD approach.

The success of the Namibian CBNRM approach has been built on providing rights and benefits over natural resources to communities that provide incentives for local residents to engage in active management of their resources. The approach is sustainable in that legislation enables communities to continue to derive income from the use of natural resources provided they continue to meet the conditions set down in the legislation. It takes time to build the capacity of communities to manage resources and income and for stable and accountable institutions to emerge.

5. Proposed institutional and organisational arrangements for REDD implementation

Although REDD payments are considered inappropriate for Caprivi, this might not be the case for other areas such as Kavango, where more research needs to be done to establish the viability of a REDD approach. Furthermore, there is the possibility of other payments for environmental services (PES) being made in Namibia such as for maintenance of biodiversity. In addition, although all countries in the region have their own policy and legal contexts, other countries might find it useful to consider how their institutional arrangements could be crafted to ensure that payments reach communities.

The following subsections therefore set out a proposed framework for implementing a REDD or PES approach in Namibia. They address the institutional and organisational arrangements at national and local level and how these should be linked. The national level arrangements are based on the existence of a national 'CBNRM Trust Fund', which is currently in an advanced stage of planning (Weaver, C. pers. comm. 2009.). The proposals below aim to keep the system as simple as possible without unnecessary bureaucracy and aim to reduce administrative costs as far as possible.

5.1 National-level institutional arrangements

The national CBNRM Trust Fund would be the mechanism for receiving REDD payments entering Namibia. This fund would have a separate account for REDD payments. The fund would receive applications from conservancies/community forests for REDD payments annually. These applications would be processed by the trust fund's staff. The fund would be paid an appropriate administrative fee from the REDD payments account.

Conservancy/community forest applications would be for payments to cover the previous 12 months. The application must provide details of the designated forest area (size and boundaries and baseline forest cover). It must also indicate the extent to which forest cover was maintained over the past 12 months based on local monitoring through the Event Book system. The application must provide a record of the previous payment to households.

The Directorate of Forestry (DoF) would be responsible for checking the community claim against aerial photographs of the designated forest area. If the forest cover has been maintained sufficiently close⁵ to the baseline level, the DoF would endorse the community claim and the community should be paid out by the fund. If the forest has declined then DoF should notify the fund and the payment would be reduced accordingly.

The following conditions would apply to the payments to communities:

- If the forest cover is reduced then payments will be reduced in proportion.
- Payments should not be retained by conservancy/community forest committees but must be channelled to identified households (see below).

⁵ The assessment should be based on the extent to which deforestation has taken place due to human activity. In Caprivi, felling of trees by elephants would need to be taken into account for example.

- Conservancies/community forests will receive an administration fee for handling and distributing the payments. This fee will be paid directly by the CBNRM Trust Fund from REDD funds received.

The following costs will need to be covered by the payments arriving in-country:

1. Administrative costs of the national CBNRM Trust Fund.
2. Costs of aerial photography by DoF to confirm local-level monitoring.
3. Conservancy/community forest administrative costs including:
 - a) Managing and distribution of the payments.
 - b) Local-level monitoring and enforcement (including partial costs of community game guards/forest guards covering additional activities as a result of REDD).

5.2 Local-level institutional arrangements and implementation

1. Institutional arrangements: conservancies and communities forests will be the target institutions for REDD payments. These institutions will be responsible for receiving REDD payments into a bank account separate from other conservancy or community forest accounts. They will be paid an agreed administrative fee from this account. The conservancies/community forests will keep a record of who is eligible for REDD payments. This may be a register of households or may simply be accepted as all the households in designated villages. The conservancies/community forests will be responsible for the distribution of the payments to these households and the keeping of a record of all such payments. The conservancies/community forests would apply annually to the CBNRM Trust Fund for payments as indicated above. The conservancy/community forest would be responsible for making an agreed payment to the relevant traditional authority. The traditional authority would undertake not to allocate land in the designated forest area for purposes that would lead to deforestation, and to consult with the conservancy/community forest about any proposed allocations. These undertakings could be part of a written agreement if this was felt necessary. Local DoF personnel should assist the conservancy/community forest in enforcement of avoided deforestation in the designated forest, as should the relevant TA. Joint protocols for enforcement should be developed.

2. Initial implementation steps: prior to the initiation of REDD, areas of forest will need to be identified for avoided deforestation. These areas and restrictions on certain uses of the forest will need to be built into existing conservancy/community forest management plans and any regional land-use plans. As part of this process the villages and households that have rights to use the designated forest areas will need to be identified. They will need to agree to refrain from activities that lead to deforestation, including shifting agriculture. At the same time, conservation farming should be planned with the affected households. During this phase, the relevant traditional authorities will also need to agree to the designated forest areas and the restrictions on use. A baseline measurement of forest cover will have to be taken. Monitoring of forest use and basic tools for assessment of forest cover will need to be incorporated in conservancy and community forest Event Book systems. Agreement will also need to be obtained from the regional council and communal land board that no land uses or developments will be undertaken or approved in the designated forest that will lead to deforestation, and that the conservancy/community forest would be consulted about any proposed developments that might affect the designated forest.

6. Conclusions

6.1 Potential and options for pro-poor REDD payments in Namibia on the basis of the existing policy and institutional framework

The overall policy framework for natural resource management in Namibia supports a REDD or PES approach, in which payments are made to local communities. Overall government NRM policy supports devolution of authority over natural resources to local communities and the formation of local institutions – such as conservancies and community forests – with legal rights and a legal persona. Conservancies and community forests are able to enter into contracts with other legal entities and directly receive income from their natural resources management. Channelling payments through conservancies and community forests can be considered to be ‘pro-poor’ in that they represent the rural poor in general, although there is obviously differentiation between more wealthy and less wealthy members of these institutions.

6.2 The economic viability of REDD payments in the Caprivi Region

Caprivi is at the dry end of the miombo eco-region, has relatively small areas of woodland compared to the rest of the miombo eco-region, and provides only a small component of the overall miombo woodlands. The evidence available suggests that rates of deforestation do not match those of other parts of the miombo eco-region, where uses such as charcoal production are prevalent. Household shifting cultivation is limited to specific areas and use of forests for poles and firewood is well within sustainable limits for the whole area although there is over-use close to settlements. The economic analysis demonstrates that the values associated with conversion of woodland are similar or less than the values derived from the unconverted natural woodland itself. The dynamics of household use of woodland are complex because the same household will use the woodland for different purposes and derive important values from maintaining some unconverted woodland.

While irrigated farming could potentially lead to deforestation in Caprivi, the poor economic prognosis for these activities suggests that at least in the medium term they will not proliferate and lead to widespread deforestation. The viability of large-scale biofuel production in Caprivi remains untested but there are several constraints. Government is currently wary of the impacts that biofuels might have on food production so has withdrawn initial support for such projects.

The conclusion is that REDD payments for avoided deforestation are unlikely to be appropriate for Caprivi, particularly given the way REDD is currently formulated. Payments are most likely to go to countries that have woodlands storing large amounts of carbon and high deforestation rates, and which therefore have the ability to achieve deep cuts in emissions by reducing such deforestation. Caprivi does not readily fit this profile.

6.3 Lessons for the implementation of REDD from the experiences gained from community-based natural resource management (CBNRM)

The evidence from CBNRM practice in Namibia suggests that the CBNRM implementation framework would be appropriate as a mechanism for channelling REDD or PES payments to local communities that are the users of the forests and other resources. CBNRM is an incentive-based approach that has led to conservation benefits, particularly in the wildlife sector. Conservancies and community forests have secure rights over natural resources that are entrenched in law, and both are legal entities that can enter into contracts with others. Conservancies and community forests provide the institutional base for i) channelling payments; and ii) providing the necessary management of forests that will lead to avoided deforestation, including monitoring of use of the forests. Conservancies in particular have experience of managing large sums of money, in some cases more than N\$1 million annually. Channelling funds through these institutions would ensure that the funds are not captured by urban and political elites at national level. Accountability is increasing within conservancies, ensuring that local elites do not capture the income, and that there is less spending on operational costs leaving more for community benefit. Some conservancies have experience of making cash payments to individual households

However, it takes time for communities to develop accountable institutions capable of effectively managing their finances, their natural resources, and their enterprises. This needs to be taken into account when developing a REDD or PES approach from scratch.

6.4 Recommendations for the institutional arrangements for making REDD or PES payments to communities in Namibia

It has taken considerable donor, NGO and government investment to achieve the current levels of CBNRM operation within Namibia. As indicated in subsection 3.2, the cost of implementation of the REDD system in Caprivi is estimated at some N\$33 million a year. It would make sense to avoid the transaction costs of setting up a parallel set of structures to implement REDD or PES in Namibia. It would also make sense to use existing administrative mechanisms for holding and dispersing funds. A payments system should be based on disbursements from a trust fund directly to community institutions such as a conservancy or community forest, with appropriate safeguards. The system should be as simple as possible without unnecessary bureaucracy and aim to reduce administrative costs as far as possible.

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Annex 1: Terms of Reference

Preparing for REDD in dry-land forests: Investigating the options and potential synergy for REDD payments in the Miombo Ecoregion

Terms of Reference for country studies

Background

The Miombo ecoregion offers a globally important opportunity for developing pro-poor payments for avoided deforestation and degradation. Scientific evidence shows that forest loss and degradation in Miombo is associated with deprivation in livelihoods, with about 1.4 million hectares of Miombo woodland having been converted either for agriculture or through harvesting for charcoal between 2000 and 2005. Payments for avoided deforestation and degradation offer a realistic opportunity for incentive-based management of the forests. While forest carbon trading through the clean development mechanism has been limited to afforestation and re-forestation, the contribution of carbon emissions from tropical forests has prompted a re-negotiation in the UNFCCC to make reduced emissions from deforestation and degradation (REDD) eligible for carbon trading. In the Miombo ecoregion, such payments would be effective in reducing deforestation and degradation when they enable the poor to benefit. This presents both the institutional and policy challenges for involving the poor in developing countries, who have been to date largely marginalized, to participate in carbon trading.

The strong history of successful community-based natural resources management in the region provides a ready-built institutional basis on which REDD payments can be implemented, saving on the transaction costs associated with setting up new systems and structures. There is however limited understanding among decision-makers in government, community-based organizations and the private sectors of the opportunities and challenges for pro-poor payments for avoided deforestation and degradation within the regional and national contexts of the Miombo Ecoregion. With support from PROFOR, IIED, working with partners in the region, aims to inform and facilitate stakeholders' awareness of the application of REDD payments in the national and regional context and the options for maximizing pro-poor returns in these payments, drawing strongly from the conservation sector. This awareness will build decision-makers' capacity to build workable REDD mechanisms that maximise pro-poor returns, and to more effectively articulate their countries' position on REDD at continental and international scales. The past experiences of countries with community-based natural resources management and their existing policy and institutional frameworks provide a basis for drawing lessons that would inform the region. These terms of reference enables IIED partners in 3 countries to examine these issues in each country in detail.

Objective

The objective of the country study is to assess the potential and options for pro-poor REDD payments in the country on the basis of the existing policy and institutional framework and the experiences gained from community-based natural resources management. This assessment will contribute to the overall regional project as a case study from which general lessons and awareness will be drawn.

Activities

1. Review how the existing legal and policy framework supports REDD funding
2. Assess the costs and benefits of competing forms of land use and the economic drivers of deforestation in the country
3. Outline the options that ensure REDD payments are pro-poor
4. Propose the potential framework for REDD funding
5. Prepare and make presentations at national and regional meetings
6. Comment on the regional synthesis report to be compiled by IIED/CIFOR

Specific tasks

1. Review how the existing legal and policy framework supports REDD funding and the extent to which it is pro-poor

1.1 Review relevant policy and legislation in the environment, natural resource management, energy, agriculture, and land sectors as well relevant National Development Plans, Poverty Reduction Strategies, and National Development Vision documents to assess the extent to which they support REDD implementation.

1.2 Identify any gaps or constraints in the policy and legislation and make recommendations on how these gaps can be addressed.

1.3 Make recommendations for making REDD implementation pro-poor

1.4 Specific questions to be answered are as follows:

Making REDD pro-poor

- a) Who and where are the poor and what is their relationship to deforestation?
- b) How are the poor represented in the policy approach?
- c) Does the policy/legislation provide the rights to the poor in terms of the use of resources (equity)?
- d) Are the poor involved in decision making regarding natural resource management?
- e) To what extent are existing policies pro-poor?
- f) Who are the main stakeholders and institutions regarding land and forest use (including commercial users)
- g) What policy and legal mechanisms would need to be introduced to make REDD implementation pro-poor?

Resource ownership:

- a) Who owns the land
- b) Who owns the resources
- c) Who owns the carbon?
- d) Who benefits from resource use – do policies enable communities to derive income directly or is income shared by government with communities?
- e) Are there conflicts between national legal systems and traditional systems regarding resource ownership and management? Should there be a role for traditional authorities in REDD implementation?

General:

- a) Do the institutions that might receive REDD payments have the legal status to enter into contracts?
- b) Are there overlapping or conflicting sectoral mandates?
- c) Do macro economic policies promote land use change and deforestation (e.g. energy, agricultural or resettlement policies)?
- d) What are existing policies to combat deforestation, do they work and if not why not?
- e) What are the implications for REDD implementation of national fire management policies?
- f) Can REDD be built on to existing CBNRM frameworks?

- g) Does the national policy environment promote good governance (accountable, transparent, democratic decision making, which involves citizens)?
- h) Is policy change required to implement REDD (are there policy gaps) – if so, what are the processes to bring about change and how long would it take?

2. Assess the costs and benefits of competing forms of land use and the economic drivers of deforestation in the country

2.1 Identify the specific uses of the Miombo forest e.g.

- Charcoal/ logging
- Poles
- Grazing
- Agriculture/irrigated farming
- Mining
- Timber
- Non timber:
 - Worms
 - Mushrooms
 - Honey
 - Hunting
 - Medicinal plants
 - Thatching grass, etc.
- Tourism
- Conservation
- Emerging land uses: biofuels & others

2.2 Specific questions to be answered are as follows:

- a) How do these uses contribute to household livelihoods and what is their relative importance?
- b) What are the values of these land uses?
- c) What are the costs and benefits of these land uses for the poor?
- d) Which of these land uses are compatible with REDD?
 - i. Is there balancing of subtractability and regeneration e.g. the use of construction material
 - ii. Would carbon payments add value to the current land uses?
- e) What are the lessons from CBNRM
 - i. Has it effectively improved management and benefits to the poor?
 - ii. How CBNRM balances the costs and benefits?
 - iii. What are the Transaction Costs of CBNRM over the long term?
 - iv. Does CBNRM add value?
 - v. What is the sustainability of CBNRM in the absence of donor support (Financial and Technical)
 - vi. Has CBNRM improved the value attached to land?
 - vii. Has it excluded other land users and uses?
 - viii. How are benefits distributed under CBNRM?
- f) Should REDD be managed directly by communities providing carbon or the government?
 - i. What have we learnt from CBNRM?
- g) What implementation mechanisms would need to be introduced to make a REDD initiative pro-poor?

Methods

1. Literature reviews
2. Stakeholder consultations focusing on government, the private sector and civil society groups
3. Country workshop
4. Participation at regional workshops as country resource person

Output

1. Country study report clearly articulating:
 - The legal and policy implications for REDD funding and mechanisms for ensuring that REDD activities are pro-poor
 - The costs and benefits of different forms of land use including the key drivers of deforestation
 - The potential organizational framework for REDD with an emphasis on the links with community conservation programmes.

The report will be concise, clear and accessible to non-technical audiences and will be compiled according to a template format provided by IIED. The report should consist of the following:

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List of acronyms
Executive summary
Introduction
 Background to the report
 Methodology
Chapter 1: Policy and legal review (15-20 pages) - including analysis and recommendations
Chapter 2: Assessment of competing land uses and drivers of deforestation (15-20 pages) - including analysis and recommendations
Chapter 3: Proposed institutional and organisational arrangements for REDD implementation (5 pages)
Chapter 4: Conclusions (1-2 pages)
References
Annexes (TOR, List of persons consulted, any additional data and information)

2. Short Policy brief summarising the main findings and recommendations of the report (no more than 2 A4 pages)

Milestones

1. Inception workshop, 17-21 November, 2008
2. First draft ready for national workshop, 03 March, 2009
3. National workshop held by 10 March, 2009
4. Draft report with revisions based on comments from national workshop submitted to IIED/CIFOR by 15 March, 2009
5. IIED provides comments to consultants by 26 March, 2009
6. Consultants revise draft based on comments from IIED/CIFOR and submit final report by March 31, 2009
7. Regional Synthesis workshop, early April 2009.

Annex 2: List of persons consulted

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