



Potential Payment for Ecosystem Service (PES) in Malawi. Report Prepared With Support from Eastern and Southern Africa Katoomba Network

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Acronyms and Abbreviations

BWB	Blantyre Water Board
CDE	Centre for Development and Environment
CHDI	Clinton Hunter Development International
COMPASS	Community Partnership for Sustainable Resource Management in Malawi
DNPW	Department of National Parks and Wildlife
EAD	Environmental Affairs Department
FD	Forestry Department
FRIM	Forestry Research Institute of Malawi
GTZ	Germany Technical Cooperation
Ha	Hectare
ICRAF	International Centre for Research in Agroforestry
LEAD	Leadership in Environment and Development
MEET	Malawi Environmental Endowment Trust
MMCT	Mulanje Mountain Conservation Trust
NORAD	Norwegian Aid for Development
NP	National Park
REDD	Reduced Emissions from Deforestation and Degradation
SRWB	Southern Region Water Board
TAMA	Tobacco Association of Malawi
TLC	Total Land Care
USAID	United States Agency for International Development
WWF	World Wildlife Fund

TABLE 1: POTENTIAL PES PROJECTS IN MALAWI (CARBON)

*promising opportunities to mature in the next few years; √ best bets

Project Number	Buyer	Seller	Location Area (ha.)	Deal Structure / Management Practice	Value of Deal / Payment Flow	Relevant Institutions and Roles	Date-Agreement/ Signing	Status in 2007/2008
1*√	Government through Department of Forestry	Local farmers, 2 per district, in total 139 farmers	At least 1 hectare per farmer, giving a total of 350 ha under the projects	Government pays an initial K100, 000 to a farmer for establishment (for seedling production/purchase, tree plating, and managing for survival).	K20,000/ha paid annually based on tree survival & successful management.	LEAD & FRIM, University of Malawi, comprising the Technical Team for baseline surveys, monitoring and evaluation & verification for payment to be effected	From 2007, every year between Government and farmers	Programme formulation involved consultations between Government, LEAD and the Katoomba Network in 2006. Government payments are essentially for increased tree cover for a range of ecosystem services, with the view to encourage the private sector to take over the programme in the long term.
2*	Open trading	Local farmers	At least 1000 hectares for the project involving 4 districts in Central region, i.e., Lilongwe, Kasungu, Dowa and Salima.	Based on agroforestry systems, especially nitrogen fixing trees	Under discussion	ICRAF DEA & FD CARE IRISH AID in monitoring & design	2009	Project expected to commence 2009 for an initial 4 years hence no payments made yet.
3	Private trading	Mulanje Mountain Conservation Trust (MMCT)	10,000 hectares on Mulanje mountain, Southern Malawi	Private deal via UK Forest Carbon broker	Under discussion	Under discussion	Possibly in 2009	No payments made yet.
4	Private	Limbe Leaf Tobacco Company	30,000 hectares of Jatropha	Bio-fuel based Jatropha plantation.	Under discussion	Under discussion	Possibly in 2009	No payments made yet.
5*	Private	TNT and carbon positive	Under discussion	Bio-fuels based in Jatropha plantation	Under discussion	EAD & FD	Possibly in 2009	No payments made yet.
6*	Private	Local farmers	Neno & Dowa districts	Private Irish company	Under discussion	CHDI EAD ESD	2008 June	No payments made yet.

7	USA-philanthropic finance	Farmers & Raiply	Viphya, North Malawi	Private, use waste timber for charcoal. Replanting with fuel wood species.	To be discussed	FD & Energy Departments TLC	To be discussed	Not applicable
8*	Peace Parks Foundation (Climate Change Fund)	National Parks Department	Kasungu National Park (Central Malawi), neighbouring Zambia / Mozambique	Private, with creation of a special fund. Based on Avoided deforestation, fire management carbon sequestration compliance market after 2012.	Climate change fund to be created, other modalities still under discussion.	Peace Parks Foundation, Wentzel Bowers (WWB) Law firm, NP, Communities, concession lease holder	Conducting Stakeholder consultation	Not applicable
9	Tobacco industry	Local farmers	To be decided	Project expected to reduce deforestation through improved tobacco wood kilns	TAMA FD GTZ	To be decided	To be decided	To be decided
10	Private	Local farmers	To be decided	Project to focus on critical Lake Malawi catchment areas such as Nyika National Park, Lake Malawi and Songwe river.	Departments of DNPW, FD, Water and Fisheries. EU, NORAD USAID	To be decided	To be decided	To be decided
11*√	Private	Forestry Department, Local Communities	Mkuwazi Forest Reserve, 1,767 ha	Private deal through Plan Vivo Foundation and Malawi Environment Endowment Trust (MEET)	\$181,668/yr through MEET to community through equitable and transparent benefit sharing mechanisms	Facilitated and managed by FD, COMPASS of USAID, LEAD, MEET, DNPW	2009	REDD project drafted, institutional arrangements in place, baseline surveys done by local technical team and UK firm ECOMETRICA, with financial support from COMPASS/USAID
12*√	Private	DNPW, Local Communities	Thazima, Nyika National Park, 35,910 ha	Private deal through Plan Vivo Foundation and Malawi Environment Endowment Trust (MEET)	\$662,192/yr through MEET to community through equitable and transparent benefit sharing mechanisms	Facilitated and managed by Forestry Department, COMPASS of USAID, LEAD, MEET, DNPW	2009	REDD project drafted, institutional arrangements in place, baseline surveys done by local technical team and UK firm ECOMETRICA, with financial support from COMPASS/USAID

TABLE 2: POTENTIAL PES PROJECTS IN MALAWI (BIODIVERSITY)

Project Number	Buyer	Seller	Location Area (ha.)	Deal Structure / Management Practice	Value of Deal / Payment Flow	Relevant Institutions and Roles	Date-Agreement/ Signing	Status in 2007/2008
1	Private	DNPW Local farmers	1,000Km ²	Nyika National Park, North Malawi Potential world heritage site, unique biodiversity	Departments of DNPW & EAD. UNDP World Bank/GEF	To be decided	To be decided	
2	Private	DNPW Local farmers	1,785Km ²	Nkhotakota Game Reserve potential for biodiversity	Birdlife International. GEF/World Bank, WESM	To be decided	To be decided	To be decided

TABLE 3: POTENTIAL PES PROJECTS IN MALAWI (WATER)

Project Number	Buyer	Seller	Location Area (ha.)	Deal Structure / Management Practice	Value of Deal / Payment Flow	Relevant Institutions and Roles	Date-Agreement/ Signing	Status in 2007/2008
1	SRWB BWB	MMCT, Water Department, Catchment Authority (proposed)	Mulanje district, South of Malawi	Private / Government To cover Mount Mulanje which is 65,000 ha.	To be discussed	SRWB, BWB, Tea Estates MMCT Water & FD	To be discussed	Not applicable
2*√	SRWB	Water Department	Mpira – Balaka/Ntcheu districts, Southern Malawi	Private	To be discussed	SRWB, Local Catchment Management Trust (to be established)	To be decided	To be decided
3	Swiss Development Cooperation	Local farmers	Songwe River Transboundary Catchment area, 4,214.9 ha	Private	To be discussed	Tanzania and Malawi Departments of Water, Environment, Lands, Housing, Local govt., WWF, CDE.	To be decided	To be decided
4	Private Local farmers	Chamwavi Estate	To be decided	Catchment and dam management by Chamwavi estate. Rice farmers used to pay in kind for water use (250kg rice) now cash payment	TLC	To be decided	To be decided	To be decided

2. CURRENTLY EXISTING PES DEALS THAT ARE MOST PROMISING FOR SCALING UP AND PROVING THE CONCEPT

2.1 Tree Planting for Carbon Sequestration and Other Ecosystem Services Programme^{1*√}

2.1.1 Location

The programme, implemented in all the 28 districts of Malawi, with 2 farmers per district growing at least 1 hectare of trees, is supported directly by Government of Malawi. Since its inception in 2007, 2 additional farmers per district have been added to the programme each year.

2.1.2 Context of the area

The population of Malawi is around 14 million people, and is expanding at a rate of 2.5% per year (The World Bank Group. 2008) making Malawi one of the most densely populated countries in sub-Saharan Africa. Forests supply about 93 % of Malawi's energy needs, they provide timber and poles for construction and industrial use, supply non-timber forest products for food security and income, support wildlife and biodiversity, and provide recreational and environmental services (Nkwanda *et al.* 2008).

It is estimated that 95 % of rural households in Malawi have less than a hectare of farmland. Smallholder farmers are therefore forced to grow crops on steep slopes and riverbanks or encroach upon forest reserves (Nkwanda *et al.* 2008). In a survey of 90 households in 3 areas of Malawi over 70% of the households that had acquired land between 1992 and 1996 had encroached on adjacent forest reserves (Minde *et al.* 2001). Around 48% of charcoal produced in Malawi, the most significant urban energy source (Owen *et al.* 2008), originates from forest reserves (Kambewa *et al.* 2007).

Forest resources in Malawi cover an estimated 28% of the total land area of 9.4 million hectares. About 11% of this area is in national parks and game reserves, 10% is in forest reserves and 7% is on customary land (Department of Forestry. 2004). Most of the forests are in upland and hilly areas and along rift valley scarps. Forests, woodlands and trees play a significant role in the livelihoods of many Malawians by providing fuel wood, poles, shelter, fruits, other non-wood forest products as well as providing refuge and habitat for wildlife. Forests and woodlands protect and safeguard vital water catchments, which are central to the survival of human populations in the country. Plantation forests constitute about 1% of the total land area under forest cover.

One of the central issues in the forest sector today is deforestation, which in Malawi is estimated at 2.8% annually. Deforestation has largely been through the removal of the trees and forests in order to create room for other agricultural or economic activities such as farming and infrastructural development (roads, human settlements). Dependence on fuelwood and charcoal is another major factor causing forest degradation which also results in deforestation. Most of these are spurred by population growth and urbanisation and the drive to improve livelihood. As at 2006 the estimate of annual consumption of wood is 15 million cubic metres, which far exceeds the sustainable supply of 7-8 million cubic metres.

In spite of continued efforts by Government to conserve, manage, and create new forest resources, some serious problems remain and several of these are getting more severe with the passage of time. The main problems facing Malawi's forests include the following:

- (a) Rapid disappearance of accessible fuel wood resources for domestic and agro-industrial use, leading to severe deficits in energy supply;
- (b) Serious deforestation of indigenous forest and woodland cover, especially on non-reserved Customary Lands. This has serious implications for environmental stability and consequently for sustainability of the land base for agricultural development;
- (c) Loss of biodiversity with negative impacts on indigenous knowledge, scientific exploration and other socio-economic benefits;
- (d) Degradation of water catchment areas resulting in water shortages and pollution.

With regard to deforestation on Customary Lands, major causes are fast expansion of cultivated area (for subsistence farming by a rapidly growing population, and for cash crops); and cutting of wood primarily for fuel used in households as well as to process essential agricultural and industrial products. High population pressure makes it difficult for rural people to allocate more land for establishment of forest reserves. The problem is made worse by land tenure systems that do not promote tree growing and ownership by farmers.

Consequently, uncontrolled forest loss is continuing, often on steep and marginal areas leading to severe erosion, siltation of water reservoirs, and drying up of watercourses. Deforestation also results in the removal of other essential vegetation cover such as windbreak thus threatening the sustainability of the country's agricultural base.

The response to efforts to get local farmers to plant trees for domestic and other uses has been disappointing for many years now. The Village Forest Area scheme, started in 1926, saw its effort lost especially soon after independence in 1964 when expansion of agricultural production led not only to very extensive deforestation but also loss of indigenous forest in the areas.

An attempt to reverse deforestation and at the same time encourage farmers to plant trees was initiated in 1979 with the formation of the then Wood Energy Division in the Department of Forestry. Earlier on in 1976 Government launched the National Tree Planting Day, which later became the National Tree Planting Week and the National Forestry Month. In December, 2005 the programme was designated the National Forestry Season lasting a period of four months from 15th December of one year to 15th April of the other year with the aim of encouraging Malawians not only to plant trees but also to manage and them as well as existing trees and forests.

Notable successes have been achieved in establishment of state owned industrial forest plantations estimated to be over 90,000ha. Forestry's economic contribution is not quantified separately from Government agricultural statistics. Experience from other countries suggests that conventional accounting would probably show direct forestry contribution estimated to be 3 to 5% of gross domestic product (GDP). This GDP contribution would give an incomplete impression of the role of forestry in Malawi where its contribution is quite considerable when services like catchment protection and other non marketable services are taken into account.

Most of the initiatives cited above were based on community forestry programmes. The spirit of communal ownership has not yielded positive results but overexploitation of the assets so created. The proposed programme, spearheaded and driven by the Government of Malawi, therefore aims to empower individuals and farm families to invest time and money in tree planting and management in order to enjoy benefits associated with tree growing. The overall objective of the Programme is to increase the area under forest cover in Malawi in order to enhance carbon sequestration and other ecosystem services, that shall contribute to the reduction of greenhouse gases (GHG) and in particular, carbon dioxide in the atmosphere.

2.1.3 Attributes for Scaling Up and/or Learning

There is great community appeal for gaining knowledge on the benefits of tree planting and management. The provision of inputs and training has enabled farmers to create their own tree nurseries and plantations.

The programme has acted to promote and encourage farmers to demonstrate to others that tree growing can also be taken as a commercial activity for one's livelihood while at the same time maintaining environmental stability: preventing land degradation, conserving biodiversity and protecting watersheds. In addition, this programme has potential to enable Malawi contribute to the attainment of the objective of the United Nations Framework Convention on Climate Change, which aims at promoting the reduction of the emissions of man-made green house gases (GHG) into the atmosphere. The programme also enhances the interactions of forests, land and rural livelihoods and in the process have a positive socio-economic impact on the rural poor.

There is high potential for scaling up by taking advantage of the land redistribution programme which assists farmers with land use planning in which tree planting is imbedded. This arrangement shall resolve to some extent the problems of shortage of land in some areas of Malawi. This aspect of land use planning is pursued in all areas as is required by the provisions of the new Land Policy.

2.1.4 Potential buyers

Currently, Government is supporting and paying all the farmers but it is expected that through Government's facilitation and efforts to establish the Malawi carbon market and in the process develop partners, the civil society and the private sector will be encouraged to contribute to the resource pool for supporting farmers in planting trees and management of the programme. For example, private companies are expected to contribute towards the programme, as carbon buyers, as part of their corporate social responsibility and in offsetting their own carbon emissions. It is also planned to engage established international bodies who would link the local farmers to international carbon buyers.

2.1.5 Limiting Factors (that is, why they have not reached scale to date)

The programme is driven by limited Government resources, which limits entry into the programme to 2 tree growers per year per district. Programme not developed enough to enable entry of tree growers into the Global Carbon Market to ensure the continuation of the programme after Government has facilitated the establishment of the carbon market.

There is limited scope for commitment of long-term and large-scale planting and hence limited adoption of the programme by households due to its long period for realization of benefits, non-availability of good and sizeable land and non-availability of carbon buyers.

2.1.6 What Is Needed To Scale Up

There is need for private entities to raise their own investment capital to engage farmers in tree planting with the aim of joining the carbon trade. Non governmental organizations are particularly encouraged to mobilise and support communities in rehabilitating degraded unallocated parcels of land under the framework of “payment for ecosystem services”.

2.1.7 The Key Resource People and Their Level of Knowledge/Capacity Related to PES

2.1.8 Assistance Needed in Scaling The Initiative To Prove The PES Concept In-Country

Establish linkages with institutions that deal with carbon trade and buyers to ensure that the Malawi initiative does not lose out on the international carbon trade protocols. Assistance to promote interaction between local and established international bodies is needed in order to capacitate local institutions.

A Trust needs to be established to act as a broker between the sellers and the buyer, and be able to implement a typical carbon project. The Government of Malawi to facilitate the establishment or identification of a Trust that will link sellers with voluntary and international buyers.

Carbon trade in particular and PES in general are new concepts for Malawi thus capacity building for effective management and administration of the programmes is needed as a priority. The Department of Forestry, LEAD and MEET are in the fore front of creating general awareness but much more needs to be done, resources permitting. The main focus shall be on reviewing existing legislation to ensure that carbon trade regulations are streamlined into Malawi’s Environmental Legislation while developing a viable marketing environment in parallel.

2.2 Mkuwazi Forest Reserve REDD Project^{11*}√

2.2.1 Location

Mkuwazi Forest Reserve (11°72'S, 34°05'E) is in the Nkhata Bay district of Malawi. The Reserve was gazetted in 1927 and covers a total area of 17.7 km². Land cover within the Reserve consists of Miombo woodland dominated by *Brachystegia speciformis* and *B. longifolia* on the lower dryer slopes and evergreen forest comprised of *Afrosersalisia cerasifera*, *Erythrophloem saueolens*, *Pterocareous stolzii* and *Chlorophora excelsa* along rivers and in damper areas (Chapman and White. 1970). Mkuwazi Forest Reserve is characterised by high annual rainfall of around 2,200 mm and high temperatures, which create an environment suitable for the development of large broad leaved trees.

2.2.2 Context of the area

Customary land surrounding Mkuwazi Forest Reserve is used by smallholder farmers. The main crops grown are maize, beans and ground nuts, with some commercial farmers on estate land

producing tobacco. Mkuwazi Forest Reserve is bordered to the north by the Vizara rubber plantation.

The Forest Reserve is owned and managed by the Government of Malawi under the control of the Department of Forestry (DF). However, the DF is increasingly entering into co-management and resource-user agreements with local communities that make use of these areas. Communities surrounding Mkuwazi Forest Reserve have, through a Village Natural Resource Management Committee (VNRMC), entered into a co-management agreement with the Department of Forestry to promote participatory management of the Forest Reserve through protection, control, sustainable utilisation and management of forest resources. The VNRMC takes responsibility for the maintenance and management of forest resources within a defined area and in return are entitled to a share of the benefits that arise from co-management.

In 1975, 57% of Malawi was classified as forest, but by 2000 this had been reduced to 28% (Nkwanda *et al.* 2008). Data from the FAO (2007) suggest that between 1990 and 2005 around 38,000 hectares of forest land was lost per year, which is equivalent to an annual loss of 0.9% of forest, and recent estimates suggest a rate of deforestation of 1.6% per year between 1991 and 2008 (Owen *et al.* 2008). Other sources suggest higher rates of 2.8% forest loss per year, with rates of up to 3.4 % per year in the northern regions of Malawi where rates of deforestation are highest (EAD 2001). The losses of forest have been particularly severe in primary forest land, which includes areas within Forest Reserves.

Evidence that current threats to carbon stocks within Mkuwazi Forest Reserve are likely to increase in the future include:

- Growing demand for woodfuel – the deficit between demand and sustainable demand for woodfuel is estimated to increase from 5.8 million m³ in 1999 to 10 million m³ in 2010 (NEC. 2000)
- Growing demand for charcoal production as sources of wood surrounding major cities decline (Kambewa *et al.* 2007)
- Increasing threats from businesses and infrastructure development – including attempts to extend rubber plantations, and establish a sugar factory within Mkuwazi forest reserve
- Growing populations in communities surrounding Forest Reserves
- Development of timber and tobacco markets

2.2.3 Attributes for Scaling Up and/or Learning

Communities surrounding Mkuwazi Forest Reserve have entered into a co-management agreement with the Department of Forestry to promote participatory management of the Forest Reserve through protection, control and sustainable utilisation of forest resources.

Although co-management agreements with communities surrounding Forest Reserves in Malawi have previously been established without the inclusion of carbon finance from forest conservation, their success has been limited. The financial benefits from carbon finance are likely to provide a far stronger incentive for forest protection than has previously been present, through direct payments, and indirectly by providing the initial finance required for establishing a diverse range of livelihood development initiatives. Carbon finance is therefore likely to encourage the

establishment of co-management agreements in areas where they would not previously have been considered, and help to ensure the success of existing agreements.

The management objectives identified by communities around Mkuwazi Forest Reserve highlight the importance of developing livelihood benefits from a diversity of sources, which give great impetus for scaling up and learning. In addition to payments for carbon benefits from forest conservation, co-management agreements between communities and FD give enterprises legal mandate to access non-timber forest products in designated areas of Mkuwazi Forest Reserve. Community enterprises have already been established for beekeeping, for which recent management reports indicate that participating communities are able to supplement their income through the sale of honey. Potential livelihood benefits from activities proposed under the identified management objectives include:

- Income from carbon payments for forest conservation
- Use and sale of timber from agro-forestry plantations
- Sale of seedlings from tree nurseries
- Use and sale of non-timber forest products collected from within the project areas
- Reconnection with traditional lands and development of ecotourism

In addition to carbon and livelihood benefits, the REDD project has the potential to demonstrate that it can contribute to the maintenance of biodiversity and protection of watersheds within project areas. The Forest Reserves of Malawi have typically been established in areas of high conservation and watershed value, for example Mkuwazi Forest Reserve was designated specifically for these reasons. Project activities that aim to conserve these areas of forest are therefore highly likely to bring important benefits to both biodiversity and watersheds and find greater appeal for scaling up to other areas. Co-management agreements for Mkuwazi Forest Reserve encourage positive resource use, which has the potential to benefit biodiversity through, for example, fire management, protection of wildlife; including prevention of removal, damage, or poaching, reporting of illegal activities, and environmental education programmes with surrounding communities.

One of the biggest challenges facing REDD projects is how to control leakage. Leakage is the unintended loss of carbon stocks outside the boundaries of a project which are attributable to project activity. For Mkuwazi Forest Reserve many of the identified drivers of deforestation are unlikely to be transferred to outside the project areas because of a lack of suitable areas of forest that are accessible to the agents of deforestation, and from which the desired products or services could be derived. Project activities that reduce the risk of leakage, such as establishment of woodlots for sustainable production of fuelwood and charcoal should be included wherever possible. Potential areas where leakage could occur, for example nearby areas with species desirable for canoe building or curio making, should be identified and included in monitoring activities so that reductions in carbon stocks in those areas are detected and appropriate mitigation measures can be implemented.

2.2.4 Potential buyers

Currently, the REDD project is being implemented under the Plan Vivo System, which is working on the type of crediting system that should be used by looking at a number of available alternatives and potential buyers. The crediting system being looked at can be broadly divided into two

categories – payments for avoided deforestation that are made after the deforestation would have been expected to occur in the absence of project activities (ex-post payments); and up front (ex-ante) payments for forest conservation that are phased over a time period necessary to establish systems that ensure the long term sustainable management of forest within the project area. Purchasers of carbon credits may have a preference for one or other system of crediting.

2.2.5 Limiting Factors (that is, why they have not reached scale to date)

Potential risks to the carbon benefits that forest conservation activities produce include the risk that project activities lead to the leakage of forest degradation to areas outside the boundary of the project area, and that carbon benefits are not maintained indefinitely. Project activities must therefore be designed to minimise the chance of leakage of forest degradation activities, and to ensure against future events that may threaten the permanence of carbon benefits.

The risk elements that would limit the permanence of carbon benefits from forest conservation activities in the Forest Reserves include fire, extreme weather events, pests and diseases, and dissatisfaction among local communities.

In this regard, measures to help ensure the permanence of project activities should therefore be put in place and should include activities that:

- Bring additional livelihood benefits to local communities
- Strengthen forest protection and enforcement measures
- Reduce the risk of fire

A percentage of the carbon benefits that project activities produce should also be set aside as a risk buffer to help insure against unpreventable future losses to carbon stocks.

2.2.6 What Is Needed To Scale Up

What is needed for scaling up for effective implementation of the project would be to overcome some barriers to demonstrate additionality of forest conservation activities in Mkuwazi Forest Reserve. These have been summarised in the Table 4.

Table 4: Summary of barriers in Mkuwazi Forest Reserve and actions needed to scale up.

Type of barrier	Description	What is needed to scale up
Economic	Insufficient funds to purchase seedlings for tree planting activities, or purchase necessary equipment for harvesting non-timber forest products	Provision of funds from carbon finance for establishment of nurseries, and provision of equipment for collection of non-timber forest products and beekeeping
Technical	Under developed markets for non-timber forest products	Provision of access to markets for non-timber forest products
Institutional	Lack of expertise in species selection and tree propagation and care necessary for tree planting activities	Provision of advice on appropriate species selection for agroforestry and woodlot establishment, and training on propagation and care of trees
	Lack of expertise necessary to provide tourist guide services	Training for tourist guides
	Lack of expertise necessary for successful propagation and/or harvesting of non-timber forest products	Training in techniques necessary for the propagation and harvest of non-timber forest products e.g. beekeeping
	Weak enforcement of forest use regulations	Engage communities in monitoring and protection of forest resources

	Lack of power for communities to enforce forest use regulations	Empower communities to act against improper forest use by providing monitoring mechanisms and channels of communication with FD
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2.2.7 The Key Resource People and Their Level of Knowledge/Capacity Related to PES

The successful establishment of beekeeping associations with communities around Mkuwazi Forest Reserve and Nyika National Park by the COMPASS II project highlight the potential for building capacity to fulfill the management objectives identified by these communities. Recent training courses with participants from communities around Mkuwazi have also helped build the capacity to quantify and monitor forest carbon stocks necessary for generating readable carbon benefits from forest conservation.

2.2.8 Assistance Needed in Scaling The REDD Initiative To Prove The PES Concept In-Country.

Assistance is required for continued development of management plans and for capacity-building of communities to enable them fulfill the agreed management objectives and to ensure that tangible and quantifiable benefits are achieved.

There is also need for technical and advisory expertise to assist and ensure that Management plans so developed by communities must contain:

- Maps of project areas – depicting ownership boundaries, land use and land cover, and locations for project activities
- Governance plans – including a management agreement and responsible parties
- Activity plans – including a list of all activities to be carried out and estimates of costs and expected income from project activities
- Monitoring plans – including indicators to be used to monitor the success of project activities, and how these affect the key drivers and agents of deforestation

2.3 Tazima, Nyika National Park REDD Project^{12*√}

2.3.1 Location

Nyika National Park (10°33'S, 33°50'E) is located within the Chitipa, Karonga and Rumphi districts of Malawi and has a cool moist climate that is influenced by elevation and orientation to Lake Malawi, creating conditions for lush evergreen forest to the east of the park and dry miombo forest to the west of the plateau. The park is characterized by a distinct mountain plateau at an elevation of around 2,600 m.a.s.l., and associated hills and escarpments that descend to 580 m.a.s.l. The Park was gazetted in 1965 and expanded to a total area of 3,134 km² in 1978, at which time communities within park boundaries were resettled outside the park. Land cover within the park consists of Miombo woodland dominated by *Julbernardia globiflora*, *Brachystegia boehmeii*, *B. bussei*, *B. spiciformis*, *Isoberlinia angolensis*, and *Monotes africanus*; grassland dominated by *Loudetia simplex*, *Andropogon schirensis*, and *Pleridium acquilium*; savannah; and evergreen forest (DNPW 2004).

2.3.2 Context of the area

The climate of Nyika National Park is distinct from that of the surrounding areas because of its high elevation and associated cloud cover. Rainfall is between 900 and 1500 mm per year in Thazima, but the lower temperatures at high elevations result in low rates of evaporation. Over 90% of the total annual rainfall occurs from November to April and frosts occasionally occur throughout the park during the winter months (DNPW. 2004).

National Parks are owned and managed by the Government of Malawi through the Department of National Parks and Wildlife (DNPW). However, the DNPW is, like FD, increasingly entering into co-management and resource-user agreements with local communities that make use of these areas. In Nyika National Park the DNPW has established co-management agreements with communities on the periphery of the park, which allow the collection of forest products including honey, fruits, thatch grass, mushrooms, medicinal plants, termites, caterpillars, and dead wood for fuel, within 5 km of the park boundaries.

Customary land surrounding Nyika National Park is used by smallholder farmers. The main crops grown are maize, beans, and ground nuts, with some commercial farmers on estate land producing tobacco. On the wetter slopes to the east of Nyika National Park coffee is also grown.

In the areas surrounding Nyika National Park only about 40% of the land is suitable for agriculture. And around half of this is occupied by commercial estates (DNPW. 2004). Many small-scale farmers struggle to produce sufficient food to maintain their families, and many of the people who were resettled to allow expansion of Nyika National Park in 1978 feel that their original land should be returned to them (DNPW. 2004).

The facts about deforestation outlined for Mkuwazi Forest Reserve (above) also apply to Nyika National Park, where the losses of forest have also been particularly severe in primary forest land. The underlying causes of deforestation are similarly linked to population increases, poverty, agricultural expansion, woodfuel demands, market and policy failures, structural adjustment programmes, and forest fires (Minde *et al.* 2001; Nkwanda *et al.* 2008). The main agents and drivers of deforestation within Nyika National Park are summarised in Table 5.

Table 5. Summary of agents and drivers of deforestation in Nyika National Park

Agents	Quantity Drivers	Location Drivers
Local communities - Fuel wood collection - Pole collection - Illegal logging for timber - Agricultural expansion - Charcoal production	- Weak enforcement of park rules - Population pressures - Markets for tobacco, coffee, and timber - Low rural wages	- Proximity to park boundaries - Proximity to settlements - Proximity to timber, coffee and tobacco markets - Proximity to roads

2.3.3 Attributes for Scaling Up and/or Learning

The management objectives identified by communities around Nyika National Park highlight the importance of developing livelihood benefits from a diversity of sources. In addition to payments for carbon benefits from forest conservation, co-management agreements that have been signed between communities and DNPW have given enterprises legal mandate to access non-timber forest products in designated areas of Nyika National Park. Community enterprises have already been established for beekeeping, for which recent management reports indicate that participating

communities are able to supplement their income through the sale of honey. This holds a lot of promise for scaling up the REDD project through protection, control and sustainable utilisation of forest resources.

As stated in 2.2.3, the inclusion of financial benefits from carbon finance under co-management agreements with communities is likely to provide a far stronger incentive for forest protection and therefore likely to encourage the scaling up and/or establishment of co-management agreements in areas where they would not previously have been considered, and help to ensure the success of existing agreements.

Similarly, just as it was observed for Mkuwazi Forest Reserve, the management objectives identified by communities around Nyika National Park highlight the importance of developing livelihood benefits from a diversity of sources, which give great impetus for scaling up and learning as well as give enterprises a legal mandate to access non-timber forest products.

In addition to carbon and livelihood benefits, the REDD project has the potential to demonstrate that it can contribute to the maintenance of biodiversity and protection of watersheds within project areas. The Forest Reserves of Malawi have typically been established in areas of high conservation and watershed value, for example Mkuwazi Forest Reserve was designated specifically for these reasons. Project activities that aim to conserve these areas of forest are therefore highly likely to bring important benefits to both biodiversity and watersheds and find greater appeal for scaling up to other areas. Co-management agreements for Mkuwazi Forest Reserve encourage positive resource use, which has the potential to benefit biodiversity through, for example, fire management, protection of wildlife; including prevention of removal, damage, or poaching, reporting of illegal activities, and environmental education programmes with surrounding communities.

Leakage, observed in 2.2.3, as one of the biggest challenges that would limit the development and scaling up of the REDD project, is felt unlikely to occur in Nyika National Park due to lack of suitable areas of forest that are accessible to the agents of deforestation, and from which the desired products or services could be derived. This provides another example for learning in how to effectively implement and scale up activities of a REDD project.

2.3.4 Potential buyers

Currently, the REDD project is being implemented under the Plan Vivo System, which is working on the type of crediting system that should be used by looking at a number of available alternatives and potential buyers. The crediting system being looked at can be broadly divided into two categories – payments for avoided deforestation that are made after the deforestation would have been expected to occur in the absence of project activities (ex-post payments); and up front (ex-ante) payments for forest conservation that are phased over a time period necessary to establish systems that ensure the long term sustainable management of forest within the project area. Purchasers of carbon credits may have a preference for one or other system of crediting.

2.3.5 Limiting Factors (that is, why they have not reached scale to date)

Potential risks to the carbon benefits that forest conservation activities produce include the risk that project activities lead to the leakage of forest degradation to areas outside the boundary of the

project area, and that carbon benefits are not maintained indefinitely. Project activities must therefore be designed to minimise the chance of leakage of forest degradation activities, and to ensure against future events that may threaten the permanence of carbon benefits.

The risk elements that would limit the permanence of carbon benefits from forest conservation activities in the Forest Reserves include fire, extreme weather events, pests and diseases, and dissatisfaction among local communities.

In this regard, measures to help ensure the permanence of project activities should therefore be put in place and should include activities that:

- Bring additional livelihood benefits to local communities
- Strengthen forest protection and enforcement measures
- Reduce the risk of fire

A percentage of the carbon benefits that project activities produce should also be set aside as a risk buffer to help insure against unpreventable future losses to carbon stocks.

2.3.6 What Is Needed To Scale Up

It is equally recognised for Nyika National Park that although co-management agreements with communities surrounding National Parks in Malawi have previously been established without the inclusion of carbon finance from forest conservation, their success has been limited. Co-management agreements with communities around Nyika National Park did not result in any reductions in illegal use of the forests within the park (DNPW. 2004). The financial benefits from carbon finance are likely to provide a far stronger incentive for forest protection than has previously been present, through direct payments, and indirectly by providing the initial finance required for establishing a diverse range of livelihood development initiatives. Carbon finance is therefore likely to encourage the establishment of co-management agreements in areas where they would not previously have been considered, and help to ensure the success of existing agreements.

Based on the similarities of barriers to effective forest conservation activities, scaling up can be achieved if the REDD project will overcome them through the actions outlined in Table 4.

2.3.7 The Key Resource People and Their Level of Knowledge/Capacity Related to PES

The successful establishment of beekeeping associations within communities around Nyika National Park by COMPASS II project highlights the potential for building capacity to fulfill the management objectives identified by these communities. Recent training courses with participants from these communities have also helped build the capacity to quantify and monitor forest carbon stocks necessary for generating readable carbon benefits from forest conservation.

2.3.8 Assistance Needed in Scaling Up The Initiative To Prove PES Concept In-Country.

Assistance is required for continued development of management plans and for capacity-building of communities to enable them fulfill the agreed management objectives and to ensure that tangible and quantifiable benefits are achieved.

There is also need for technical and advisory expertise to assist and ensure that Management plans so developed by communities must contain:

- Maps of project areas – depicting ownership boundaries, land use and land cover, and locations for project activities
- Governance plans – including a management agreement and responsible parties
- Activity plans – including a list of all activities to be carried out and estimates of costs and expected income from project activities
- Monitoring plans – including indicators to be used to monitor the success of project activities, and how these affect the key drivers and agents of deforestation

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