DRAFT

United Republic of Tanzania

National Strategy for
Reduced Emissions from Deforestation and Forest Degradation
(REDD+)

December 2010

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF BOXES

LIST OF PORTRAITS

LIST OF ACRONYMS AND ABBREVIATIONS

BAP	The Bali Action Plan
CBFM	Community Based Forest Management
CDM	Clean Development Mechanism
CERs	Certified Emission Reductions
CoP	Conference of Parties
COFM	Community Forest Management
CSOs	Civil Society Organisations
DFoB	Director of Forestry and Beekeeping
DoE	Division of Environment
FAO	Food and Agricultural Organization
FBD	Forestry and Bee-keeping Division
GIS	Geographical Information Systems
GNI	Gross National Income
GoT	Government of Tanzania
IPCC	Intergovernmental Panel on Climate Change
IRA	Institute of Resource Assessment
JFM	Joint Forest Management
KK	Kilimo Kwanza
LDCs	Least Developed Countries
LGA	Local Government Authorities
MDAs	Ministries, Departments and Agencies
MFIC	Ministry of Foreign Affairs and International Cooperation
MITC	Ministry of Industry, Trade and Cooperatives
MJUMITA	Community Forest Conservation Network
MLHS	Ministry of Land and Human Settlements
MNRT	Ministry of Natural Resources and Tourism
MRV	Monitoring, Reporting and Verification
NAFOBEDA	National Forest and Bee-Keeping Data
NAFORMA	National Forest Resources Monitoring and Assessment
NAMAs	Nationally Appropriate Mitigation Actions
NAPA	Tanzania National Adaptation Programme of Action
NCCSC	National Climate Change Steering Committee
NCCTC	National Climate Change Technical Committee
NCMC	National Carbon Monitoring Centre
NGOs	Non Governmental Organisations
NEMC	National Environmental Management Council
PFM	Participatory Forest Management
PMO- RALG	Prime Minister's Office- Regional Administration and Local Governments
PS	Permanent Secretary
REDD	Reduced Emissions from Deforestation and Forest Degradation
RS	Remote Sensing
SEDCA	South Environmental and Development Conservation Association
SUA	Sokoine University of Agriculture
TAFORI	Tanzania Forestry Research Institute
TANAPA	Tanzania National Parks
TIC	Tanzania Investment Centre
ToR	Terms of Reference
UDSM	University of Dar Es Salaam

UNFCCC	United Nations Framework Convention on Climate Change
VCC	Village Conservation Committees
VCT	Voluntary Carbon Trading
VLFR	Village Land Forest Reserve
VPO	Vice President's Office
WB	World Bank

CHAPTER ONE

INTRODUCTION

1.1 Background

1.1.1 The global scene

Although the role of forests in sequestering carbon and helping to mitigate climate change was recognized in the Kyoto Protocol, only afforestation and reforestation activities were accepted for inclusion in the Protocol's Clean Development Mechanism (CDM). Reducing emissions from deforestation, also known as avoided deforestation, was thus excluded as an emissions reduction strategy - until its reintroduction into United Nations Convention on Climate Change (UNFCCC) negotiations at CoP 11 in Montreal in 2005 as a result of the Stern Report and a formal proposal by the Coalition of Rainforest Nations, led by Costa Rica and Papua New Guinea.

It was at the CoP 13 of the UNFCCC that took place in December 2007 in Bali, that the Coalition of Rainforest Nations formally proposed that REDD and forests be included in the official negotiation agenda for a post-2012 regime, whose key elements would be negotiated under the so-called Bali Road Map. By December 2009 the 191 Parties to the UNFCCC were expected to have drawn up the next global climate agreement. The Bali Action Plan (BAP), on which the UNFCCC Parties agreed in December 2007, provides the road map for this new agreement.

Under the BAP, both developed and developing countries needed to take nationally appropriate mitigation actions, known as NAMAs, to reduce their greenhouse gas emissions. The Parties also agreed that these actions should be measurable, reportable, and verifiable (MRV) and that the developed countries would help the developing countries' NAMAs by providing support in the form of financing, technology transfer, and capacity building. Unlike the Kyoto Protocol, the BAP were to affirm the importance of reducing deforestation, which accounts for 17 to 20 percent of the world's annual GHG emissions, as a strategy for mitigating climate change. They were also to specify policy reforms and positive performance-based incentives on issues relating to reducing emissions from deforestation and forest degradation in developing countries (REDD)[1] to be included in the NAMAs that countries can undertake.

[1] According to the UNFCCC Decision 11/CP.7, the definition of "deforestation" is the direct, human-induced conversion of forested land to non-forested land. It means a reduction in crown cover from above the threshold for forest definition to below this threshold. "Degradation" is defined as a direct, human-induced, long-term loss (persisting for X years or more) or at least Y% of forest carbon stocks [and forest values] since time T and not qualifying as deforestation. "Degradation" would represent a measurable, sustained, human-induced decrease in carbon stocks, with measured tree cover remaining above the minimum required to be considered as forest. "Gross emissions" assume removal of trees and most of the biomass and that all carbon is emitted. It does not include any reductions for the carbon sequestered in the vegetation of the replacing land use. However, "net emissions" assume removal of trees and most of the biomass and that all stored carbon is emitted, but allows for counting the carbon stocks on the area deforested as they are replaced. Where an area of natural forest is removed for the purposes of creating a plantation it may seem attractive to consider applying the concept of "net deforestation" because it is assumed that the level of emissions will be lower because of subsequent carbon sequestration as the plantation grows.

At the CoP 15 held in Copenhagen, Denmark, in December 2009, the CoP noted consensus among some of the Parties with the Copenhagen Accord, which agreed "on the need to provide positive incentives to such actions through the immediate establishment of a mechanism, including REDD+, to enable the mobilization of financial resources from developed countries" (UNFCCC, 2009a). The adoption of REDD+ extended the allowed activities to include:

- reduction of emissions from deforestation;
- reduction of emissions from forest degradation; conservation of forest carbon stocks;
- pursuance of sustainable management of forests, and
- enhancement of forest carbon stocks (UNFCCC, 2009b).

It did not, however, extend the allowed activities to include reduced emissions from the agricultural sector (elsewhere referred to as REDD++), as some stakeholders had advocated. It is anticipated that the UNFCCC Parties will formalize their adoption of REDD+ at the CoP 16 in Cancun, Mexico, in November 2010.

Meanwhile, developed nations have pledged US$ 30 billion dollars by 2012 and US$ 100 billion dollars a year by 2020 for climate change mitigation and adaptation activities, including for REDD+ activities. A coalition of developed nations has further pledged US$ 4.5 billion dollars specifically for REDD+ activities by 2012 (Ganley, 2010). This funding is in addition to substantial REDD "readiness" funding provided to select pilot countries through programmes such as the World Banks' Forest Carbon Partnership Facility (FCPF), the UN-REDD Programme, Norway's International Forest Climate Initiative and the Interim REDD+ Partnership. The Copenhagen Accord and the large scale of recent international funding pledges have effectively served as the political and financial spring board for REDD+ plans, policies and projects to proceed in selected developing countries.

For many experts, the term REDD has become synonymous with a carbon-financing approach, in which the developing countries' reduction of emissions from forests is supported by the developed countries' purchase of carbon credits, which they can use to meet their own emissions reduction or other obligations. In the BAP's REDD+, however, the term is defined more broadly to include a range of actions by both developing and developed countries to address the drivers of deforestation. In this Strategy the term *a low carbon development pathway* is used to refer to this broader set of options for REDD+ actions that can be NAMAs.

1.1.2 Climate change: The Tanzanian scene

Climate change is one of the biggest global problem posing challenges to sustainable livelihoods and economic development, particularly for Least Developed Countries (LDCs) like Tanzania. The adverse impacts of climate change on environment, human health, food security, human settlements, economic activities, natural resources and physical infrastructure are already noticeable in many countries including Tanzania. There are a number of global and national efforts to address the problem of climate change through adaptation and mitigation activities. The UNFCCC, of which Tanzania is a party, recognises various mitigation and adaptation options, including pro-REDD+ forestry related activities.

Forests play an important role in climate change mitigation as sources and sinks of CO_2. Forest biomass acts as a source of carbon when burned or when it decays. Also, when the soil is

disturbed it releases CO_2 and other greenhouse gases into the atmosphere. The IPCC estimates that 18-20% of current global annual carbon emissions are the result of loss of tropical forests. On the other hand, forests also act as carbon sinks when their area or productivity increases, resulting in an increased uptake of CO_2 from the atmosphere. They absorb CO_2 and release oxygen into the atmosphere through the natural process of photosynthesis in which CO_2 is converted to carbon and stored in the woody tissue of the plant. It is because of this that some forms of forestry activities are used as valid means for atmospheric CO_2 reduction as they contribute significantly to climate change mitigation.

On the other hand, the importance of forests and woodlands to human life cannot be over-emphasized. They are crucial as a source of livelihoods and provide direct benefits like firewood, charcoal, fruits, poles, timber, traditional medicines and many others. A recent World Bank study[2], drawing on a range of more specific sectoral studies in Tanzania, highlights the importance of forestry, wildlife, fisheries, and mining to the economy and the role of governance factors in structuring resource benefit flows. Specific to forestry, the study makes two key points:

- The per capita value of informal forest uses amounts to between US$25 and US$50 in rural areas, providing in particular over 90% of energy supplies, 75% of building supplies, and 100% of traditional medicines;
- Informal local resource uses, if properly captured in economic statistics, would amount to an additional US$100 per capita per annum in Gross National Income, in a country where GNI per capita is US$350.

The forests and woodlands also have very important and critical ecological values and are a source of vital services such as conserving soils and water sources, harbouring rich biodiversity and important genetic resources (Picture 1), providing bee nectar, ameliorating climate, serving as habitats for wildlife, providing a wide range of cultural, spiritual and recreational benefits and are important sinks for CO_2 from the atmosphere.

Tanzania has a total area of about 94.5 million ha out of which 88.6 million ha are covered by landmass and the rest is water bodies. The country has a total of 35.3 million ha of forestland[3] out of which 16 million ha comprise of reserved forests[4], 2 million ha are forests in national parks and the rest, 17.3 million ha (49% of all forestland), are unprotected forests in General Land[5]. Forests in General Land are 'open access', characterized by unsecured land tenure, shifting cultivation, annual wild fires, harvesting of wood fuel, poles and timber, and heavy pressure for conversion to other competing land uses, such as agriculture, livestock grazing, settlements and industrial development.

[2] World Bank (2008).

[3] "Forestland" means an area of land covered with trees, grass and other vegetation but dominated by trees.

[4] According to the Forest Act "forest" means an area of land with at least 10% tree crown cover, naturally grown or planted, and or 50% or more shrub and tree regeneration cover; and, includes all forest reserves of whatever kind declared or gazetted under this Act and all plantations. "Forest reserve" means a forest area, either for production of timber and other forest produce or protective for the protection of forests and important water catchments, controlled under the Forests Ordinance and declared by the Minister. In addition, declared forests under village managements are also recognized as forest reserves.

[5] General Land as used here means all public land which is not reserved or village land including unoccupied or unused village land.

Picture 1: Healthy, well managed forests are essential to the survival of our planet: they are home to millions of species of plants, animals and insects, and protect soils and watersheds from erosion. They act as carbon stores, absorbing greenhouse gases and preventing their release into the atmosphere. Maintaining forest ecosystems can help to increase our resilience to climate change. (Source: UN-REDD Programme).

The rate of deforestation in Tanzania, which is estimated at 412,000 ha per annum, is taking place mostly in the General Land forests. Efforts towards forest reservation aim at reversing this trend. However, assessments of different forests conditions have revealed a lot of human disturbances even inside forest reserves. Disturbances include encroachment, illegal mining, pit-sawing, illegal harvesting for building materials, and collection of firewood and herbal medicines.

Although it is generally considered that government efforts to improve law enforcement have reduced the illegal timber trade, which by 2003 was estimated to account for over 95% of all timber trade in Tanzania and to be costing the government lost revenue of up to US$58 million annually[6], forests in General Land are increasingly diminishing as the condition of reserved forests is also deteriorating due to limited human and financial resources for their management.

In Tanzania, the main sources of finance for forest management are currently:

- charges levied on the major forest products and services,
- state budget allocation to the forestry administration, and
- development partners' grants for forestry projects.

The limited financial resources are at present compelling the country to identify innovative financing mechanisms to attract new sources of investment in forest management outside these

[6] Milledge *et al.*, (2007).

traditional channels.

Sound forest management practices can improve generation of a number of environmental services such as permanent water flows, scenic beauty, biodiversity, and carbon sequestration, which in principle could be valued and paid for by various consumers of the services. Financial resources from payment for environmental services are one option for provision of the required tangible economic benefits and hence incentives to stakeholders in the forest sector to manage the resources sustainably.

Management of water catchments and landscapes can benefit from compensation schemes arranged through governments and NGOs at a local or national level. On the other hand, REDD+ activities, which include biodiversity conservation and carbon sequestration activities, can also benefit from international mechanisms since these provide benefits at a global scale.

Biodiversity conservation compensation mechanisms are based on payment for foregone activities, such as timber extraction in forests with high species diversity. The determination of the biodiversity compensations based on foregone timber sales is relatively easy. However, there are not many such biodiversity compensation schemes yet operating. The adoption and implementation of REDD+, therefore, provides an exceptional opportunity for Tanzania to benefit from fund based compensation arrangements that take cognizance of the increasing importance of sustainable forest management in reducing emissions and storage of CO_2 to mitigate climate change and its impacts.

1.1.3 Vision, mission and objectives of this Strategy

1.1.3.1 Vision

The Vision for this Strategy derives directly from the national development vision of Tanzania, popularly known as Vision 2025 (URT 2005), which articulates the economic and social aspiration of the Union Government. Specifically, Vision 2025 aims at attaining (i) high quality livelihood (ii) peace, stability and unity (iii) good governance (iv) a well educated learning society and (v) a competitive economy capable of producing sustainable growth and shared benefits. In line with this policy statement, the Vision of this Strategy is that:

> *Tanzania implements a National REDD+ Strategy that ensures conservation and/or enhancements of its unique biodiversity values and forest ecosystems and the corresponding benefits, goods and services are equitably shared by all stakeholders for adaptation, mitigation and adoption of a low carbon development pathway under all processes as required by the UNFCCC.*

1.1.3.2 Mission

The Mission of this Strategy is that: *Tanzania actively and beneficially participates in REDD+ initiatives during the readiness phase, negotiation processes under the UNFCCC and the Post Kyoto agreements.*

1.1.1.3 Goal

The main goal of the National REDD+ Strategy is: *to facilitate effective and coordinated implementation of REDD+ related policies, processes and activities so as to contribute to climate change agenda and overall sustainable development.*

1.1.1.4 Objectives of this Strategy

Generally, this National REDD+ Strategy is expected to guide the implementation and coordination of mechanisms required for Tanzania to benefit from a post-2012 internationally-approved system for forest carbon trading, based on demonstrated emission reductions from deforestation and forest degradation.

Specifically, the payments for REDD+ will be made to countries on the basis of their average or net achievements in reducing emissions from forests. A national reference scenario, i.e. baseline condition, needs to be established against which the carbon changes will be assessed and monitored to determine carbon benefits. This Strategy provides guidelines on how to assess, monitor and determine carbon benefits from such carbon changes.

Moreover, incentives need to be provided for the effective participation of the stakeholders in the REDD+ policy and implementation of the National REDD+ Strategy options. A fair and transparent payment mechanism needs to be established in order to provide incentives to stakeholders within the country. In other words, to enable the state to account in a fair way for gains and losses and to reward stakeholders who are responsible for reductions in carbon losses requires a clear coordination system. This Strategy provides guidelines on how to effectively engage all relevant stakeholders and establish a fair and transparent benefit sharing mechanism that will enable appropriate incentives to be paid to deserving stakeholders within the country.

Furthermore, before getting the REDD+ funds the country need to verify its carbon benefits to ensure that it does not claim international carbon credits which it has not in fact realized. After verification the carbon credits will then be sold or negotiated to the international market. This Strategy provides guidance on how best to conduct such verifications, including the demands that go with them.

More important, the REDD+ policy is still very new, and its introduction in Tanzania will require changes and reforms in forestry management and governance systems in terms of institutional arrangements, policy, legal and legislative frameworks and land tenure. The building of capacity in terms of research, training, infrastructure and equipment are also needed to support the REDD+ policy. Equally important is putting in place effective communication and information sharing mechanisms which will allow the stakeholders to exchange lessons learnt and experiences gained. This Strategy provides guidance on how best to go about reforming the forestry management and governance systems, capacity building in terms of research, training, infrastructure and equipment, and putting in place an effective communication and information sharing mechanism.

And finally, for Tanzania to effectively participate in the REDD+ initiative efforts should be made to reduce deforestation and forest degradation happening in general land forests and

reserved forests. This should be done mainly by addressing the direct and indirect causes of deforestation and forest degradation. This Strategy provides guidance on how best to address the identified drivers, underlining causes and impacts of uncontrolled deforestation and forest degradation in the various agro-ecological zones.

1.2 Structure of the Strategy Document

In the following chapters the National Strategy analyzes the key issues that need to be addressed in support of the REDD+ policy implementation in Tanzania. The Introductory Chapter is followed by Chapter Two which describes in a nutshell the Strategy development process. After that, Chapter Three provides an overview of the forest estate in Tanzania and highlights some of the major efforts made to conserve it in an increasingly participatory manner. Chapter Four then gives an overview of forest governance for REDD+, while Chapter Five outlines the modalities for baseline establishment, monitoring, verification and reporting. Chapter Six then illustrates the key strategic elements for REDD+ implementation in Tanzania. Finally, Chapter Seven provides a framework for Strategic Environmental and Social Impact Assessment of the Strategy and highlights some of the potential risks that may face the country as it implements the National REDD+ Strategy.

CHAPTER TWO

THE STRATEGY DEVELOPMENT PROCESS

2.1 Overview

The National REDD+ Strategy in Tanzania has been developed based on the National Framework for REDD developed in 2009. The framework is based on the objectives of reducing emissions related to deforestation and forest degradation as well as reducing poverty of forest dependent communities. The REDD+ Strategy is closely linked to the current national growth and development strategies such as the National Growth and Poverty Reduction Strategy Programme (MKUKUTA), the National Forest Programme and other strategies which contribute to effective conservation and utilization of Tanzania's natural and renewable resources and improving the livelihoods of its people.

Tanzania developed a roadmap to the development of the National REDD+ Strategy and initiated several activities toward building a strong national Strategy that should be finalized by December 31, 2012. This 2nd draft REDD+ Strategy has been produced for Stakeholders' Consultations and engagement for its consolidation. A test implementation phase is ongoing, which will make it possible to verify the hypotheses and assumptions under the proposed REDD+ interventions.

2.2 The Strategy Development Process

The strategy development process has undergone three phases: i.e. a preliminary analytical phase, a strategic analysis and piloting phase and a consolidation phase of the Strategy as illustrated below.

2.2.1 Understanding and building knowledge on REDD+

This involved the scoping studies to identify potentials for REDD+ in Tanzania, access capacities for REDD+ implementation, and to identify gaps and issues to be addressed. In this stage institutional structures were established, including the REDD+ Task Force and its Secretariat. A National REDD+ Framework was also developed. Study tours were conducted in Brazil, Australia and Norway to study experiences from programmes and initiatives to reduce deforestation planned and implemented.[7] Lessons learned from these tours have been reflected in this Strategy.

2.2.2 Stakeholders engagement

2.2.2.1 Stakeholder analysis

The REDD+ approach will involve a large number of stakeholder groups performing different roles and responsibilities at different levels. It is important, for example, that non-state umbrella

[7] National REDD Task Force (2009)

organizations will be needed to bundle stakeholders' interests, e.g. in providing support and training in forest inventories and in registering carbon stock changes in the national database. Hence, support will be needed to get such organizations up and running. It has, therefore, been important to take stock of who is doing what and where. The analysis of their interest and commitment to participate in the REDD+ policy implementation was deemed important so as to make sure that every relevant stakeholder was pulled on board.

In this context, a stakeholder was taken to mean an actor (a person or organization) with a vested interest in the policy being promoted.[8] In most cases, stakeholders fall into one or more of the following categories. They can be international actors (e.g. donors, carbon buyers), national or political actors (e.g. legislators, administrators), and public sector agencies (e.g. ministries, sector units, forest managers), or they can be interest groups such as conservation NGOs and associations, commercial/private sector units, civil society members, or ordinary users/consumers of wildlife resources.

In this case, these stakeholders, or "interested parties," were further grouped into three categories: i.e. primary, secondary and tertiary stakeholders, as listed in Table 2.1 below. Primary stakeholders were those that would affect or ultimately be affected as benefactors, beneficiaries or as losers. The secondary stakeholders were the intermediaries in the delivery process, while the tertiary stakeholders were those that had a vested interest in the policy but were too far located to have a direct impact upon the operationalization of the REDD+ policy or REDD+ programme implementation.

Table 2.1: List of stakeholder groups performing roles and responsibilities at different levels

Primary Stakeholders	**Secondary Stakeholders**	**Tertiary Stakeholders**
Forest dependent communities	RNE	Tanzania National Parks
Local communities with forest resources	UNFCCC	Ministry of Foreign Affairs and International Cooperation
District Councils (DFO)	CARE-Tanzania	Ministry of Industry, Trade and Cooperatives
MJUMITA (Community Forest Conservation Network)	World Bank	
Forestry and Beekeeping Division	WWF	
Wildlife Division (WD)	Africare	
Tourism Division	AWF	
Division of Environment	Clinton Foundation Climate Change Initiative	
National Environmental Management Council	Ministry of Land and Human Settlements	
Finance and Planning	Tanzania Forest Conservation Group (TFCG)	
Ministry of Agriculture and Food Security	Wildlife Conservation Society of Tanzania (WCST)	
Ministry of Agriculture and Natural Resources, Zanzibar	Sokoine University of Agriculture (SUA)	
Department of Environment,	IRA	

[8] WHO (n.d.)

Zanzibar	
Carbon Trading Companies	University of Dar es Salaam
	Tanzania Forestry Research Institute
	Tanzania Natural Resources Forum
	Tanzania Investment Centre
	Food and Agricultural Organization
	Jozani Environmental Conservation Association South Environmental and Development Conservation Association, Unguja
	Ngezi-Vumawimbi Natural Resources Conservation Organization, Pemba

The analysis included such stakeholder characteristics as knowledge of the REDD+ policy, interests related to the policy, position for or against the policy, potential alliances with other stakeholders, and the ability to affect the policy process (through power and/or leadership).

This analysis is expected to be used by policy makers and managers to identify the key actors and to assess their knowledge, interests, positions, alliances, and importance related to the REDD+ policy. This will allow them to interact more effectively with key stakeholders and to increase support for the forthcoming REDD+ Policy and the National REDD+ programme implementation. The main objective here is to enable policymakers and managers to detect and act to prevent potential misunderstandings about and/or opposition to the REDD+ Policy and the implementation of this National REDD+ Strategy.

2.2.2.2 Forest -based communities

Concerns have been expressed in the debate on REDD+ as regards the rights of indigenous people and communities dependent on forests and the impact of REDD+ programmes on such groups. The overwhelming need as regards communities and people in the forest is to ensure that they are involved in a positive and mutually beneficial way in management, since this is one of the very few effective means of controlling degradation over very large areas. Already there are some very positive models and success stories in Tanzania with regard to PFM implementation. However, adding carbon (and potentially rewards for carbon reductions) into the PFM raises a lot of issues that need to be resolved.

Decision 2/CP.13 recognises that reducing emissions from deforestation and forest degradation in developing countries can promote co-benefits and may complement the aims and objectives of other relevant international conventions and agreements. It further affirms that the following safeguards should be promoted and supported:

a) Actions complement or consistent with the objectives of National Forest Programmes and relevant international conventions and agreements.

b) Transparent and effective national forest governance structures, taking into account national legislation and sovereignty.
c) Respect for the knowledge and rights of **indigenous peoples and members of the local communities,** by taking into account relevant international obligations, national circumstances and laws, and noting that the General Assembly has adopted the United Nations Declaration on the Right of Indigenous Peoples.
d) Full and effective participation of relevant stakeholders, including, in particular indigenous peoples and local communities in actions.
e) Actions that are consistent with the conservation of natural forests, and biological diversity.
f) Actions to address the risks of reversals.
g) Actions to reduce displacement of emissions.

While taking into account relevant international obligations (i.e. as explicitly put forward in the National Forest Programme through PFM regimes), and noting that Tanzania is a signatory to the General Assembly adopted Declaration on the Right of Indigenous Peoples, the issue of engagement of "indigenous peoples" in Tanzania is being handled via the concept "forest-based communities" rather than "indigenous peoples" – a concept which some stakeholders found derogatory and discriminatory.

In Tanzania there are very few communities that can rightly be characterized as "indigenous" in the manner of the alienated Red Indians of the USA, or the Aborigines of Australia. The only people who could be described as "indigenous" are the Hadzabe people of Lake Eyasi who are heavily dependent on forest resources for their livelihoods. However, as citizens of Tanzania these communities have as equal rights to the polity as any other ethnic group in the country. Hence, it is appropriate to describe these communities as **forest dependent communities** rather than "indigenous". Such people would also include groups like pastoralists and other communities living adjacent to forest reserves.

In the design of this Strategy it has been found important that the interests of these people are considered in the development of the REDD+ implementation strategy. These groups have been involved in the consultative process of preparing this Strategy. Experience has also been drawn from the past where they had chances of participating or getting involved in decision making on issues that concerned them, e.g. on the location of schools, dispensaries or livestock watering points. Their knowledge, practices and experience are expected to help or lead to the success of the REDD+ implementation strategy.

2.2.2.3 The consultative process

Along the road towards the development of this Strategy two major consultations have taken place as shown hereunder:

(a) Consultations for the development of the National Framework for REDD+

The first important step towards developing this Strategy was the development of the National Framework for REDD+ which has provided inputs and guided the development of the National Strategy. Towards this end, the GoT, through the Ministry of Natural Resources and Tourism, specifically the Forestry and Beekeeping Division, organized a four-day National Workshop

which was held at Kibaha Conference Centre from 26th to 29th January, 2009. The workshop brought together a group of key stakeholders and experts from government departments, private sector, NGOs, academic and research institutions. The overall objective of the workshop was to develop a National Framework for REDD+. The framework was expected to enable rational, equitable and functional national structures and effective coordination of forest management using financial resources and other support from Development Partners such as the Government of the Kingdom of Norway, UN-REDD, the World Bank, Clinton Foundation Climate Change Initiative, among others.

The workshop agreed on four key issues that required immediate action to enable Tanzania to prepare a National Strategy for implementing REDD+, thus also be able to share and influence international REDD+ negotiations at the CoP 15 that was to be held in Copenhagen, Denmark, in December 2009. The four issues were to:

(i) Propose REDD+ institutional arrangements and coordination mechanism, including establishment of a National REDD+ Technical Committee, the National REDD+ Coordinating Office, National Carbon Monitoring Centre and REDD+ Trust Fund;
(ii) Establish carbon projects at the national and local levels;
(iii) Establish criteria for selecting both sites for piloting REDD+ activities and implementing institutions in Tanzania; and
(iv) Commission an in-depth study on the establishment of fair and equitable mechanisms for sharing REDD+ related benefits. A broader range of stakeholders needed to be engaged, including the Ministry of Finance, and the lessons from Tanzania's existing trust funds had to be elaborated.

(b) Consultations for the development of the National REDD+ Strategy[9]

A series of awareness raising and consultative meetings were conducted nationwide involving national, regional, district and local level representatives. The REDD+ consultation plan divided the country into 8 zones, including Zanzibar, and held meetings with people working in forestry and agriculture. The Task Force and IRA visited communities practicing participatory forest management (PFM), a key REDD+ entry point.

Apart from the stakeholders meetings being aimed at raising awareness about REDD+ and developing a consultation and outreach plan with the specific aim of enabling key players in the development and implementation of this Strategy to have an adequate knowledge base of REDD+, the workshops also aimed at identifying issues to be addressed in the process of developing an implementable REDD+ strategy in Tanzania. The following were the major issues raised during the consultative meetings:

(i) Heavy community dependence on the natural forest resource base for livelihood sustenance and economic development. They use forests as sources of fuelwood and charcoal for sale and/or for home consumption. They also get building materials, e.g. poles, medicine, honey, wax, fruits, mushrooms, etc. Some communities make use of forests for cultural and traditional activities, e.g. worshipping, rituals, etc. If these

[9] IRA (2009)

forests are put under REDD+ programme, alternative sources of these items must be found.

(ii) REDD+ based land use system changes must aim at ensuring basic food security for the nation and to improve national standards of nutrition by increasing output, quality and availability of food commodities. The overall aim is to promote and ensure a secure land tenure system, to encourage the optimal use of land resources, and to facilitate broad-based social and economic development without upsetting or endangering the ecological balance of the environment.

(iii) There are sectoral policy overlaps and conflicts between and within sectors and/or sectoral ministries. The situation is made more serious by poor law-enforcement, poor allocation of resources and manpower. Many stakeholders expressed a great need for harmonization or for reforms of policies in order to accommodate changes in natural forest resources use systems and, in particular, the new demands that would be posed by the REDD+ initiative.

(iv) The REDD+ programme will require regular, up-to-date, reliable and accurate data on forests for computing baselines and future emissions and absorption of CO_2. But nobody knows for sure the current status (quantity and quality) of our natural forest resources. Outdated figures were still being quoted today en mass. Need was expressed for up-to-dating the present database. Need was also expressed for allocating more resources in terms of manpower, finance and equipment, as well as motivation for the workers in terms of salaries and working conditions in the forestry sector. In addition to isolated institutions or ministries keeping the data, there should also be a central place that would serve as a custodian of all natural forest resource data from research institutions and ministries.

(v) The REDD+ programme will require a clear and coordinated institutional framework at all levels for its efficient and effective performance. The present organizational structure was found to have some shortcomings. There was no clear mechanism for ensuring equal cost/benefit sharing in participatory conservation programmes, such as PFM and WMAs, between the centre, the local and other stakeholders. There were also no mechanisms to improve transparency and address issues of corruption.

(vi) Some stakeholders were apprehensive that increase in the value of land due to the initiation of REDD+ programme could lead to land grabbing as has been the case with the introduction of other initiatives like the production of biofuels and/or afforestation for carbon trading.

(vii) Other stakeholders raised concerns that gender relations could likely to be affected or disrupted as has been the case with introduction of other cash crops.

(viii) Addressing drivers of deforestation and forest degradation was seen by many stakeholders as the entry point for the implementation of REDD+ in the country.

These challenges have been the subject matter of several activities proposed by the in-depth studies, pilot demonstrations, individual NGOs and private sector projects and a UN-REDD project. They have also formed the basis for the Strategic Options in Chapter Six of this Strategy.

During the Consultative Workshops an analysis of strengths and weaknesses concerning the establishment and implementation of the REDD+ Initiative in Tanzania was done by the participants. A summary of the results of the analysis are as presented in Table 2.2.

Table 2.2: Analysis of strengths and weaknesses for establishing and implementing REDD+ in Tanzania

Strengths	Weaknesses
Existence of some expertise at the district level in issues of forestry conservation	Unsatisfactory enforcement of existing laws and by-laws against deforestation and forest degradation
Existing policy and legal environment conducive to establishment and implementation of REDD+	Inadequate capacity of district councils to manage existing CFRs
Willingness of some developed countries to participate in carbon trade	National Forest Policy and related legal framework not well known to local communities
Existence of considerable awareness of environmental issues among the people	Lack of reliable data base on climate and extent of forest resources, their tenure and use
Existence of NGOs such as AWF, Farm Africa, Friends in Development, TAF, etc, promoting environmental management in the zones	Few officials in the forest sector knowledgeable about REDD+
Existence of extensive forest resources as reserves or in public land	Many villages do not have land use plans in support of CBFM
Considerable experience of communities in participating in PFM and WMA activities	Entrenched corrupt practices and lack of good governance in the forest sector and elsewhere
Some villages already have land use plans incorporating areas for forest conservation	Lack of political will due to conflicting sector interests in forest and other natural resources use
-	Conflicting interests between conservationists and politicians
-	Very few people in the communities are aware of REDD+ and the available opportunities
-	Contribution of the forest sector to poverty reduction not clearly visible

The challenges will be addressed in several activities proposed by the in-depth studies, pilot projects, individual NGO and private sector projects and the UN-REDD project.

2.2.3 National strategic in-depth studies and demonstration projects for REDD+ piloting

A number of in-depth studies and pilot projects were commissioned as discussed below.

2.2.3.1 In-depth studies

A total of five strategic studies were commissioned to review several grey areas and generate knowledge to help the development process of this Strategy. The studies encompassed:

(a) Modalities of establishing and operationalizing National REDD+ Trust Fund[10]

[10] FORCONSULT (2010)

This in-depth study was undertaken with a focus on modalities for establishment of Trust Funds, their objectives, legal requirements, institutional arrangement, oversight/supervision, source of funds and uses. The review also looked at management of Trust Funds in terms of modalities of receiving funds from stakeholders/funding sources, distributing funds to communities, implementers, and beneficiaries and ensuring performance based payments. Stakeholder analysis involved key informant interviews and focus group discussions.

Literature review showed that many countries have national forest funds or conservation trust funds (CTFs) designed to provide a secure, sufficient and long-term source of finance for forest conservation. In many countries the funds are established using relevant legislation. In the case of Tanzania, for example, EAMCEF was established using the Trustees Incorporation Act CAP 318 [R.E. 2002], while TFF has been established using the Forest Act Cap 323 [R.E. 2002]. These funds vary with respect to their structure and governance, the range of actors they support, activities they support and sources of their funding. The literature further shows that so far, no country has established a national REDD+ Trust Fund.

The literature also shows that projects, independent funds (CTFs), funds within the state administration, and budget support are the options available for channelling REDD+ funds. Considering that in Tanzania environment issues are coordinated by the VPO and advantages of the option of channelling REDD+ funds through funds within the state administration, establishment of NRTF within the state administration under VPO is proposed.

From the consultative meetings, concern was raised on the need for proper registration, possession of a constitution, authority from Ministry of Finance and Economic Affairs (MoFEA) opening of an account, establishment of Board of Trustees, and memoranda of understanding/contracts/agreements as a legal prerequisite for the establishment of NRTF.

Other requirements for establishing and operationalising NRTF identified were awareness creation on REDD among all stakeholders, infrastructures (i.e. buildings for offices), human resources for day to day running of the fund, designation of funding mechanisms and development of administrative guidelines *(*operational manuals and code of conduct).

The need for having a Board of Trustees for NRTF comprising not more than 10 members was also mentioned. Furthermore, the board should incorporate members from MNRT, VPO, PMO-RALG, Ministries of Finance, Justice and Constitutional Affairs, Agriculture, Livestock, Lands, Water and Energy, Ministry of Agriculture, Livestock and Environment in Zanzibar, Civil Society Organizations (CSOs), Communities and Private sector from industrial and transport sectors. It was proposed that the NRTF Board be appointed by the VPO or MNRT

It was further proposed that the NRTF be established as a semi-autonomous institution answerable to VPO/government affiliated institution under VPO or as an NGO. It was also proposed that the trust employs between 10 and 15 members of staffs to minimize running cost.

Regarding modality of employment, majority of respondents proposed that NRTF staff be employed competitively based on qualification and experience. The key qualifications for the staff suggested were PhD, MSc/MBA/MA or BSc in relevant field, i.e. natural resources, finance

and accounting, human resource management, law, business administration and REDD+ experiences. Furthermore, it was proposed by most respondents that the staff be employed on contract terms to ensure efficiency and accountability.

Sources of financing identified included bilateral donors (e.g. Norway which has already committed US$100 m for REDD+ activities), multilateral donors, government contribution through relevant sectors (e.g. forestry, agriculture, lands and water), carbon traders (sellers and buyers), the private sector and NGOs implementing REDD+ related activities. Other sources included taxation of ecosystem service users (e.g. TANESCO,DAWASCO, MORUWASA, etc.), mining industries, and fund raising mechanisms (e.g. Fixed Trust Fund deposits in International Banks and investment in relevant sectors (income generating projects) were identified as sources of financing/funding. It was, further, suggested that funds be received as grants and deposited directly in the Trust account.

Identified uses of the NRTF funds included protection and conservation of forest resources (e.g. strengthening fire patrols, afforestation and enrichment planting), capacity building at all levels - including publicizing the Trust and REDD+ and its related activities, supporting carbon measurements at technical level, research and training on REDD related issues - and improving livelihoods of local communities through provision of alternative sources of income and energy.

The main identified beneficiaries of the NRTF were the government through relevant ministries/sectors, communities, researchers, students, NGOs and CSOs implementing REDD+ related activities. It was proposed that NRTF funds be disbursed to beneficiaries basing on submission of proposals by a registered entity or individual, verified carbon credits in accordance with guidelines approved by Trustees, relevance of activities to REDD+ initiatives, clearly stated monitoring and evaluation strategy for the proposed activity and contracts or agreements signed by a beneficiary to declare level of commitment to sustainable forest management. It was further suggested that payments be based on cheque deposits of funds to beneficiary's account upon approval of a demand driven proposal.

It was proposed that auditing of NRTF funds be done following government procedures. However, there may be need to engage a reputable independent, internationally credible or recognised firm approved by the Board of Trustees in order to meet requirements of foreign donors to the NTRF.

Major risks to the NRTF and risk management included misallocation or mismanagement of funds, unsustainable funding and carbon markets, inadequate political support, inflation and failure to meet stakeholders' expectations were identified as major risks which the proposed Trust might face. Rigorous audits, transparency in operation and law enforcement; design of fund raising mechanisms, government support and establishment and promotion of internal carbon markets; awareness raising on REDD+ related issues and ensuring political support and stability as mechanisms to manage the risks would avert the risks.

It is, therefore, recommended that:

(i) Strong involvement and commitment from government is crucial in the establishment and operationalisation of NRTF. This commitment should include providing start-up capital for

operationalisation of the Fund. The balance of the USD 100 million committed by the Royal Norwegian government also be transferred to NRTF account as a start-up package;

(ii) Relevant ministries, private sectors, NGOs and CSOs be requested by VPO as coordinator of environmental issues to appoint trustees;

(iii) Board of Trustees of NRTF draws members from MNRT, VPO, Ministries responsible for Lands, Agriculture, Finance, Justice and Constitutional Affairs, Agriculture, Livestock, and Environment in Zanzibar, NGOs, CSOs and Private sector;

(iv) NRTF Trustees consider serving on voluntary basis in order to cut down costs and ensure that most of the its funds go to implementation of field activities;

(v) NRTF employs at most 10 staff namely CEO, 3 Accountants, 2 Directors (Technical and Finance and Administration), 1 secretary, 2 drivers and 1 office attendant;

(vi) NRTF staffs including CEO be recruited by the VPO in accordance with government recruitment procedures

(vii) the key minimum qualification for a CEO of NRTF be a Masters degree in natural resources management with knowledge of Climate Change issues, business skills and 10 years experience, for a Technical Director, be a Masters degree in natural resources management, with knowledge of Climate Change issues and 5-7 years experience, for Finance and Administration Director, be a Masters degree in Human Resource Management/Business administration, be a CPA holder with 4-5 years experience, for Chief Accountant be an Advanced Diploma in Accountancy, for Assistant Accountant and for supporting staff, possession of Advanced level secondary school Certificate with added office management skills;

(viii) NRTF staff be employed on 3 year contract terms renewable based on performance in order to instil efficiency and ensure injection of new ideas;

(ix) NRTF needs to undertake aggressive fund raising to ensure sustainability. The proposed Trust Fund should consider lobbying the private sector (e.g. financial institutions like Standard Chartered and others; telecommunication companies like VODACOM, ZAIN and TIGO; Coca Cola and others) to support its activities as part of corporate responsibility. In addition, the NRTF should search for carbon markets aggressively;

(x) NRTF prepares an operations manual for its financial and human resources management, which has to be approved by Board of Trustees;

(xi) NRTF considers engaging an internationally credible/recognised firms to carry out external auditing of its funds in order to meet donors' requirements; and

(xii) NRTF be established and operationalised by June 2011 to facilitate implementation of REDD+ activities.

(b) Role of REDD+ for rural development[11]

Results from this In-Depth Study show that the deforestation and forest degradation are to a large extent attributable to rampant poverty. The study confirms that there is high dependence on fuelwood and charcoal as sources of energy. Hence, recommendations are made towards making the prices of electricity, kerosene, natural gas and carbonized briquettes become affordable to most people. Energy switch to renewable resources of energy such as solar, wind, biomass, geothermal is recommended with the condition that the extent of use of these alternative fuels is left to the market forces with appropriate incentives and regulations in place to determine their economic viability and social acceptability.

[11] Mwakaje *et al.* (2010).

Increase in rural income generation through facilitation of forest related projects such as beekeeping, butterfly keeping, ecotourism, employment, etc, is also recommended. Also adoption of intensive farming practices so as to avoid shifting cultivation which leads to deforestation process is encouraged. Finally, promote of cooperative markets for provision of credits, and improvements of socio-economic infrastructure (roads, education, health and water) are highly recommended.

There should be possibilities of loosening up some REDD+ regulations in order to allow certain environmentally friendly activities to be undertaken in forest conserved areas or forest under REDD programmes but with certain conditionality. These activities may include allowing people to get into the forest reserves for rituals, worshipping, and for collecting medicines or mushrooms, et cetera.

The study further shows that the present traditional charcoal production kilns and stoves are very inefficient (8-12 percent). The study recommends that both charcoal producers and charcoal users should be trained on sustainable and improved charcoal production skills and charcoal use patterns.

Furthermore, the study notes that the REDD+ programme will require a clear and coordinated institutional framework at all levels for its efficient and effective performance. However, it confirms that present organizational structure has some shortcomings in its implementation, especially as far as natural forest resources management is concerned. For example:

- Currently there is no clear mechanism for ensuring equal cost/benefit sharing in participatory conservation programme such as PFM, WMAs and CBFM programmes between the centre, the local and other stakeholders. Hence, agreements between concerned parties cannot be signed in order to affect equal benefit sharing between small and large stakeholders with respect to such programmes.
- Presently there are no mechanisms to improve transparency and addressing issues of corruption.
- Many local communities in Tanzania have had a bad experience with natural resources conservation programmes initiated from above. This is not only because of the “fine and fence” policies of earlier programmes, but more so for failed initiatives.

This means that care should be taken when introducing REDD+ activities in the country as follows:

- Proper awareness creation on REDD+ activities and on what the local people should expect is an imperative component in the implementation of this Strategy.
- Gender relations are likely to be affected or disrupted as is the case with other cash crops. Something ought to be done to make sure that equal rights on claims to land are secured for the spouses as required by land policy and land law. This will lead to stable household livelihoods.
- There are overlaps and conflicts between and within sectors and/or sectoral ministries. They should be harmonized or call for reforms of policies in order to accommodate changes in natural resources use systems and, in particular, the new demands that will be posed by the REDD+ initiative.

- In case of conflicting interests among and within government bodies', directives and decisions on these issues need to be clearly spelt out by the office responsible for environmental matters.

(c) Legal and institutional framework review in the context of REDD+ intervention[12]

This in-depth study reviewed Tanzania's laws and institutional set-up pertaining to environmental management, land tenure, forestry conservation and related contractual arrangements. The review was intended to help create an understanding of the legal basis or gaps in initiating and executing REDD+ projects in Tanzania. It also provides recommendations on necessary legislative changes that need to be undertaken in order to not only provide solid legal and institutional foundations for REDD+ projects in the country but also to enable the government and REDD+ stakeholders to enter and execute win-win REDD+ related agreements.

The study employed library and desk based research as its main research methodology. Researchers collected and compiled selected laws and policies and related articles from various libraries and documentation centres and undertook a systematic review thereof. The review of these laws enabled the researchers to understand their coverage on climate change management and mitigation in Tanzania.

From the literature reviewed, it is apparent that there is a gap in the foundation of the legal and policy framework upon which REDD+ initiatives could be founded. Along the same vein, the findings of show, however, that the institutional framework to support REDD+ programs provide a basis for reform and restructuring of existing institutional arrangements in order to comfortably take on board REDD+ programs. Policies and laws are not explicitly clear on institutional and stakeholder mandates, procedures and benefit sharing mechanisms in relation to REDD+. The existing framework largely lacks detailed implementation procedures, guidelines and Regulations.

The analysis of the various provisions of the law that have a direct bearing on REDD+ initiatives paint a rather gloomy picture. There is no adequate coverage of REDD+ related issues in the provisions of the law. This is also true for related policies. The potential areas of conflict in the legislation governing natural resources and environment which have implications for REDD+ have been pointed out. The conflicting provisions of the Forest Act, Village Land Act and the Local Government (District Authorities) Act have been highlighted.

Field survey findings indicate that some of the stakeholders in critical areas related to REDD+ are not fully conversant with the legal framework governing REDD+. Some local communities have expressed reservations on the REDD+ initiatives, equating it with other projects that they have been bombarded with, but failed to deliver, in some instances. Some professionals even perceive REDD+ as just another slogan.

At the institutional level, the finding of this study point out that the provisions of the law need to be harmonized to charge a specific authority with REDD+ mandates. The Forest and Beekeeping Division is charged with management of national forest reserves and has powers to allocate them to public and private organizations. The Minster responsible for environment under EMA also

[12] LEAT (2010)

has some control on regulating forests. Other different legislations that have a bearing on climate change and the depletion of the ozone layer have been noted. In some cases, there is no cross-referencing of the provisions of these laws, requiring a critical eye to take cognizance of them.

It is also clear that while there is no clear provision of the law that permits the carrying out REDD+ activities, there is also no provision of the law that prevents them. To this end, the existing legal framework may allow the carrying of initial REDD+ projects but substantial amendments of the laws need to be undertaken so as to provide a robust foundation for REDD+ activities.

Finally the study points out that given the weaknesses that have troubled the Tanzanian government in the course of negotiating agreements, REDD+ activities should be undertaken under revised provisions of the law and not on the basis of contractual agreements. This will eliminate the possibilities of creating avenues for corruption and backroom deals. The law must be explicit enough to provide a procedure of applying for REDD+ project licenses. These licenses should be issued by respective government bodies at the village, district and national levels.

At a general level, the study is of the opinion that the existing legal and policy framework must be reformed and new provisions invoked and re-aligned (in terms of Regulations and guidelines) to enable a more coordinated inter-sectoral approach in dealing with REDD+. That is to say, REDD+ must be a national agenda in order to effectively address the relatively poor coordination between sectors and the mix up in the chain of command. In doing this a system of accountability must be put in place.

At a more specific level and in view of the conclusions drawn in this report, it is recommended as follows:

1. Given the fact that there is no direct provision of the law that allows REDD+ activities in the country, there is a need to provide a purposeful interpretation of existing statues. Where this is not possible, then there will be a need to amend the Forest Act, 2002 to provide a mechanism of establishing REDD+ projects in the country not only as a conservation measure but also as a tool of enabling Tanzania to meet its obligations under the UNFCCC as well as providing an avenue of obtaining revenue and improving livelihoods.
2. The Forest Act is in conflict with the Village Land Act (VLA) and the Local Government (District Authorities) Act, 1982 in relation to the powers of the village government in the management and in the making of by-laws. This needs to be addressed and harmonious provisions be enacted.
3. The provisions of the Forest Act, 2002 interfere with the powers of the village government to enter into legal agreements, including joint management agreements upon which REDD+ projects could easily take place. The Act needs to be amended so as to respect those powers.
4. While it is important to respect the powers of the village governments to enter into agreements it needs to be emphasized that REDD activities

should only take place in the country in total compliance of Section 146 of the Local Government District Authorities Act of 1982 which requires village governments to enter into such ventures which are beneficial to the villagers. To this end, there must be tangible benefits that they are going to bring to the villagers improved livelihoods. Also, such agreements must be negotiated at a level playing ground. To this end, village governments and local governments authorities must be availed the necessary legal, financial and economic expertise to negotiate those agreements. All facts must be laid down and it must be clear, from the word go, of how much both parties are going to obtain. The agreements must contain review and renegotiations scenarios and be in a language that villagers can comprehend.

5. The Forest Act, 2002 also infringes on the power of village governments as far as establishment of village forests is concerned. This is coupled with a very bureaucratic procedure of establishing village forests. The relatively simpler and participatory procedure provided for under the provisions of the VLA and the Land Use Planning Act 2007 should be adopted.
6. The analysis of the Environmental Management Act (EMA) 2004 provisions reveals that by and large the Forest Act, 2002 is in compliance with it. However, EMA provisions have a direct bearing to the Forest Act in that forest officers are no longer simply bound and guided by the Forest Act, 2002 and the by-laws made there from but also the provisions of the EMA which takes precedence over the provisions of the Forest Act. To this end, Environmental Impact Assessment (EIA) and Strategic Environmental Assessment (SEA) are supposed to be conducted under the provisions of the EMA, 2004 and thus the Director of Forestry should no longer be the approving authority.
7. Carrying out of REDD activities in Tanzania will also entail the carrying out of SEA as required by EMA. This is because the Act requires that SEA be carried out whenever there is a proposal to enact new laws or regulations or to initiate programs or plans. To remove ambiguity we are of the view that the Forest Act, 2002 should be amended to include a provision requiring the carrying out of SEA as mandated by EMA, 2004 whenever an amendment to the Forest Act, 2002 or new regulations and plans have to be undertaken. In addition, if it is deemed that the carrying out of SEA is not necessary the Director through the Minister responsible for forests (MNRT), should cause to be submitted to the Minister responsible for the Environment an exhaustive statement as to why the carrying out of the SEA is not necessary.
8. Since environmental management requires the participation of all key stakeholders requires the coordination of the activities of each sector institution, the co-ordination mechanism that is provided for by EMA, 2004 is a giant step in bringing about coordinated management of the environment in the country. To this end, the study proposes that the Forest Act, 2002 should adopt the coordination scheme provided for by EMA and charge the Environmental Officer to ensure that the Forest and Beekeeping Division is in constant contact with other environmental sectors and

coordinate their activities and programs so as to foster sound environmental management. This, however, should not take away the need to formulate cross-sectoral coordination amongst sectors in the Ministry of Natural Resources and Tourism (MNRT). Thus each law governing an environmental sector within MNRT must mandate collaboration and coordination and provide a system of consultation, coordination and decision-making process in matters that impinge on more than one sector.

9. The Forest Act, 2002 is silent on the need to carry out environmental audits. Since EMA requires that forest reserves be managed by the Forest Act, 2002 it is imperative that the requirement for carrying out of environmental audits be entrenched into the Act. To this end, the Forest Act shall mandate that environmental audits be carried out for all projects that are considered to have a significant environmental effect and those that were initiated after the carrying out of the EIA. The Division Officer in collaboration with environmental audit experts recognized by National Environment Management Council (NEMC) should carry out those audits. This is important as it will enable the audit of REDD+ projects to determine how beneficial they have been to the environment and its people.
10. The Forest Act, 2002 and EMA should be harmonized to provide for the carrying out and licensing of REDD+ projects by respective bodies such as the village governments, district authorities, the Forest and Beekeeping Division (FBD) and the Division of the Environment. This will remove the allegations of corrupt transactions from certain quarters. The laws should also provide for an elaborate application and review process to ensure that the applications will bring the intended benefits and results to all stakeholders.
11. The Forest and Beekeeping Division should be clearly mandated, by an enactment of a law, (Regulations or amendment of EMA and the Forest Act) to be the overall institution charged with implementing REDD+ activities in the country.
12. This study has addressed REDD+ issues as they relate to legal, policy and institutional framework in Tanzania Mainland. The focus on Tanzania Zanzibar has been limited to SEA. The findings strongly suggest that there is a need for further studies on the REDD+ initiatives in Zanzibar in view of the fact that Multilateral Environmental Agreements (MEAs) are a Union matter under the framework of the Constitution of the United Republic of Tanzania. Findings also strongly suggest that there is a need to conduct a Strategic Environmental Assessment before embarking on REDD+ activities. This is also a requirement under EMA.

(d) Development of business case for carbon trade through REDD+ initiative[13]

In order for the country's forestry sector to benefit from REDD+ crediting it has to have overall strategies that will aim at reducing all or some of the CO_2 emissions. If all the deforestation and degradation were to be stemmed completely, and forests biomass allowed to grow at 1.25

[13] FORCONSULT (2010)

tons/ha/year, the country could potentially earn $630 million, assuming the selling price of carbon is $ 5 per tCO_2. It is against this huge potential for REDD+ business that the government of Tanzania considers the REDD+ policy a viable option for meeting the country's obligations to manage her forests and woodlands on a sustainable basis and, at the same time, respond to poverty reduction initiatives.

As such, the government is in the process of developing a REDD+ Strategy for implementing REDD+ policy. The process started in 2008. However, despite the existence of some REDD+ initiatives in Tanzania, little is known about their present status. There is little or no information on what projects have been undertaken and where they have been implemented. This in-depth study sought to answer these questions through a detailed review of existing carbon trading projects in Tanzania. The purpose for the study was twofold:

- to assess and document the status of REDD+ related projects in Tanzania and,
- to draw lessons for scaling up these initiatives.

The process for developing a business case started with the identification of existing REDD+ related activities currently operating in the country and other potential activities. These were examined to review opportunities for carbon marketing, including negotiations, liability and contractual issues. A review of the constraints facing the current REDD+ related projects was done in order to draw up lessons and recommend best approaches.

Identification of REDD+ related activities were done through literature search/reviews and consultative meetings with stakeholders. Furthermore, consultations and inputs from the private sector and rural communities including their perceptions on roles, opportunities, challenges and recommendations were explored. Visits to existing specific project areas were done for the assessment of their profiles and carbon marketing prospects. The country was clustered into seven zones to avoid visiting all regions. The seven FBD zones which have extension facilities were adopted.

The study identified the following categories of REDD+ related projects in the country:

- Existing REDD+ related projects
    - National REDD+ Strategy
    - REDD+ Demonstration projects
- Existing REDD+ related voluntary projects, e.g. K:TGAL and Carbon Tanzania
- Existing activities with potential for REDD+, e.g. PFM, WMAs and related programmes
- Existing activities that reduce pressure on deforestation and forest degradation
- Other Non-REDD+/CDM projects

Following the Bali Road map, Tanzania decided to participate in implementing REDD+ demonstration activities. There are nine pilot REDD+ projects that had been commissioned to different NGOs. However, only seven projects had already taken off as of July, 2010.

In Tanzania, very few REDD+ related voluntary funded projects that were under experimentation exist. These are the Kyoto: Think Global Act Local research project and the Carbon Tanzania. Activities with potential for REDD+ are Participatory Forest Management (PFM) and Wildlife Management Areas (WMAs). PFM and WMAs contribute positively to

REDD+. However, the current speed under which PFM projects are established has been observed to be very low. Access to REDD+ finances could potentially facilitate and speed up this process and possibly reduce the high levels of deforestation and forest degradation.

WMAs are inter-village associations or CBOs promoted by GoT through the Wildlife Division. They are situated in tracts of villages or districts which are rich in wildlife and other natural resources. They are set aside to be conserved and managed by communities. The financial benefits accrued by WMAs are supposed to flow back to the communities to support management of resources and alleviate poverty. WMAs areas have high potential for REDD+.

Existing activities that reduce pressure on deforestation and forest degradation include all the activities addressing the drivers of deforestation. In addition the following activities are noted as key examples that would enhance REDD+ implementation:

- Land use planning programs, including intensifying agriculture and animal husbandry
- Tree planting in woodlots, agro-forestry and plantation forests
- Wood energy efficiency projects

There are a number of NGOs and projects dealing with environmental conservation throughout the country. Most of these are in the regions of Dodoma, Iringa, Mbeya and Singida. All these organization/projects have a primary goal of initiating activities that reduce pressure to the dwindling natural forests and improving livelihoods there by advocating:

- Better land use practices such as establishing land use plans, combat soil erosion;
- Improve good governance in forest management;
- Improved domestic energy use and create public awareness on alternative sources of energy;
- Promoting alternative income generating activities such as beekeeping; and
- Promoting tree planting.

Examples of such NGOs are DONET, Sunseed Tanzania Trust (STT), DOBEC, MIGESADO, INADES, HADO, Earth Greenery Activities Japan (EGAJ) TFCG, LAMP, World Vision Central Zone, Green Resources Ltd and Tanganyika Wattle Company Limited.

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Carbon trading refers to the buying and selling of emission permits (rights to pollute) or emission reductions (offsets) that have been either distributed by a regulatory body or generated by GHG emission reduction projects. Six GHGs are included in 'carbon' trading: carbon dioxide, methane, nitrous oxide, sulphur hexafluoride, hydro-fluorocarbons and per fluorocarbons Carbon dioxide gas is the most relevant to REDD initiative. GHGs emissions are traded in the form of reductions equal to one metric ton of carbon dioxide equivalent (tCO_2e), the most common GHG.

GHG emission reduction credits can be accrued through either project based transactions or trade allowance based transactions. Both project based transactions and trade in emission allowances can be either compliant under the Kyoto Protocol (Kyoto-compliant), or operated on a voluntary basis and thus not Kyoto-compliant. Examples of Kyoto-compliant transactions are all CDM activities in the case of project based transactions, and exchange of carbon offsets in the EU-ETS. All carbon credits exchanged through these systems count towards countries' emission reduction targets under the Kyoto Protocol.

On the other hand, non Kyoto-compliant or voluntary reductions include projects that yield carbon offsets but are not formally registered under the Protocol, and trades on voluntary exchanges such as the CCX where the carbon credits do not count towards the emission reduction targets under Kyoto. The proposed REDD+ policy has been seen as favouring the national level approach with the advantage that 'leakage' will be avoided through balancing out of gains and loses internally. Under this policy, the reference scenario will be the baseline against which achievements made by a country can be measured and credited. However, there is considerable uncertainty at the moment about how baselines may be determined for operationalisation of REDD+ policy, since it is not yet decided what will be included.

The possible options include crediting:

- reduction in emissions from deforestation;
- reduction in emissions from degradation;
- enhancement;
- forest conservation; and
- carbon stock.

Since the REDD+ policy is likely to be undertaken nationally, the country deforestation baseline would be determined by depicting historical land use changes from satellite imageries and typical carbon stock data for different types of forests to calculate the changes in terms of tons of carbon. After developing national level reference scenarios for the whole country, the system of 'nested baselines' is needed to operationalize REDD+ internally for the different geographic regions and to account for different forest regimes, e.g. national parks, forest reserves, community forests, and private forests. This system is needed in order to provide incentives to stakeholders who are responsible for reductions in carbon losses within the country.

Each REDD+ project must complete a series of activities that will verify that the project is actually contributing to the national REDD+ strategy. The technical criteria of baseline, additionality, leakage, and permanence have also been mentioned. It is not yet clear what the rules will be as regards the use of REDD+ funds internally, since this is a matter that will be decided by each country for itself, but it is probable that an internal verification mechanism for individual forest projects within a country will be necessary. Verification is done by an independent party and establishes that the carbon measurements have been done to a defined standard.

It is necessary to avoid fraud at the local level and to ensure that the country does not claim international carbon credits which it has not in fact realized. The independent party would have to be a licensed and registered agent, in the same sense as a chartered accountant, but would not necessarily have to be external to the country. Under a REDD+ approach it is likely that this would be arranged nationally.

After verification, forest owners' carbon will be purchased by the national REDD+ scheme. With this arrangement, international marketing of carbon by individual projects will not be necessary, but probably will be done centrally by a national agency. Marketing will form part of the national overhead activities.

The carbon market in Africa and in Tanzania in particular is still in its infancy. As it was also observed, there are no fully operational REDD+ related carbon projects in Tanzania. However, there were programs already in motion, such as WMAs and PFM, which were close enough to being REDD+ related activities that could easily be structured as such, given a few minor adjustments. There are also those REDD+ related projects that are slowly emerging in Tanzania, particularly among private and public organizations.

However, observed potential projects have remained in the realm of ideas due to lack of technical and marketing support combined with lack of regulatory frameworks to support such activities. Notably, awareness of carbon trading and its development potential was lacking among individuals, and public and private organizations. Reviewing the REDD+ models for Brazil, Indonesia and Madagascar shows that Tanzania has a comparatively high potential for carbon trade.

Recommendations on how best the REDD+ business can be implemented in Tanzania are organised based on a conceptual REDD+ production chain that identifies four key areas of sustainable forest management, regulation and governance, market or fund access and funds transfer and management.

(e) Preparation of REDD+ information needs, communication and REDD+ knowledge management[14]

Findings under this in-depth study reveal that through innovative ways in accordance with various respective policies, the forest resource managing agencies, i.e. forest department and forest adjacent communities among others, have made attempts to address the conflict between rural livelihood security issues experienced by the primary forest resource user and their respective conservation aims. Each approach incorporates unique elements of conflict management through varying levels of stakeholder participation that have produced significantly different results. The analysis also demonstrates that the present policy and institutional environment on forests has had a large impact on the success of various participatory interventions. Evidently, poor inter-agency collaboration is an additional obstacle and constraint that further places the entire forest resource under jeopardy, and thereby compromises each stakeholders underlying interest of a well-managed forest for sustainable livelihood and for REDD+.

A supplementary assessment concludes that, the present mechanisms are not equipped in dealing with the conflicting information on REDD+/Forests, REDD+ knowledge management and need for communication on REDD+, respectively. A modality to coordinate horizontally across sectors (agriculture, wildlife and forestry among others) and vertically between parastatal, central or local government institutions is desirable and feasible. Consequently, a problem solving approach encompassing multi-sectoral collaboration through the formation of an expanded partnership in management of REDD+ knowledge, information networking and communication is recommended as a way forward in the long path of resolving conflicts and improving the overall quality of management of forest resource in the context of REDD+.

[14] Regalia Media Limited (2010).

2.2.3.2 Pilot projects

A total of 10 ground pilot projects were also identified and facilitated[15]. These included:

- Approaches to organizing REDD+ work at the local level, with a focus on governance and tenure;
- Incentive schemes that provided equitable benefit sharing mechanisms, especially to local communities;
- Baseline studies and methods for estimating deforestation, carbon sequestration and emissions;
- Participatory methods for monitoring, assessing, reporting and verifying; and
- Approaches to address drivers of deforestation and forest degradation.

Other related REDD+ programmes in support of the REDD+ Strategy include the UN-REDD Programme, Valuing the Arc Programme, and the National Carbon Accounting System (NCAS-T). In addition to the specific projects and studies listed above a number of projects and programmes are on-going among NGOs, the private sector as well as in other sectors related to REDD+, such as agriculture, mining and road construction. These activities have been identified and analysed. Lessons and experiences gained from the on-going pilot projects as well as analysis of other sectors' projects will inform the development of this 'living' national Strategy.

[15] In order to accomplish this task a request for proposals was advertised for NGOs based in Tanzania to apply or submit or develop concept notes. Forty six NGOs submitted their concept notes. After a rigorous review process 10 NGOs qualified and were selected to undertake the exercise.

CHAPTER THREE

BASELINE CONDITIONS AND SITUATION ANALYSIS

3.1 The Forest Resource Base

3.1.1 Tanzania mainland

Tanzania is endowed with vast forest resources. In 2005 Tanzania Mainland had a total forest area of 35.257 million hectares (ha) representing 39.9% of the total land area.[16] Woodlands occupy most of the forest area, which cover about 90% of the total forest area. The rest are mangrove forests, montane forests, small parches of coastal forests and plantations of softwoods and hardwoods. However, 57% of all of these forests are on general land with open access and only 43% of the forested land is designated as forest reserves (FRs) and national parks (protected). These forests are supposed to be managed for either production and/or protection based on forest management plans.

The forests provide a range of benefits, from ecosystem services to wood and non-wood products (NWFPs) primarily within local villages and households. The value of these forests is high. The combined value of forest goods and services is $ 2.2 billion which is equivalent to 20.1% of Gross Domestic Product based on 2006 prices. The wood products include: firewood, charcoal, round wood and sawn wood. The most important use of wood in Tanzania is for fuel and about 95% of the country's energy supply is met by fuelwood. The NWFPs consist of game meat, medicinal plants, fodder, latex, beverages, dyes, fibres, gums, resins, oils, beeswax and honey, tannins and toxins. Several of these are subsistence products providing nutrition, critical in situations of drought and famine.

Traditional medicine is the only affordable alternative available to most rural and urban population. Ecosystem services which accrue from the forests include: watershed functions, maintenance of soil fertility, and conservation of biodiversity, sustaining cultural values, carbon dioxide (CO_2) sequestration, climatic amelioration and eco-tourism. Forest areas also support agriculture and livestock.

Despite all the invaluable goods and services provided by natural forests, there are high rates of deforestation and degradation. Although a worldwide problem, deforestation and forest degradation is most acute in Sub Saharan Africa (SSA) where it is characterized by decreasing production of forest products and food and worsening levels of poverty and malnutrition. For Tanzania, between 2000 and 2005, high rates of deforestation led to a loss of 412,000 ha of forest per year. Deforestation and degradation are taking place in both reserved and unreserved forests but more so in the later due to inadequate resources to implement active and sustainable forest management (SFM).

[16] FAO (2009)

Other than deforestation and degradation, there is growing evidence that climate change is impacting on forests and forest ecosystems and therefore livelihoods of forest dependent communities as well as national economic activities that depend on forest products and services. The problem is manifesting itself through, amongst others, unusually high temperatures, floods, droughts, hurricanes, epidemics, poor crop yields, unreliable water supplies, and increasing fire intensity. River flows and water stocks in reservoirs may decline considerably under a warmer climate while forest ecosystems may shift their ranges and lose some of their biodiversity.

Thus, climate change might have dramatic consequences on Tanzanian forests, and may make some sites unsuitable climatically for some of the endemic species that are found there. However, currently little is known about climate change's effect on forests and how this may impact on the livelihoods of the communities. Evaluation of the impacts of climate change on forests and forest ecosystems and livelihoods is an urgent area of study.

On the other hand, forests are important sinks for removing CO_2 from the atmosphere and are currently one of the technologies that are being used for mitigating future climate change. Forest loss and other land use change contribute 20-25% of green house gases; avoiding deforestation and degradation, i.e. REDD, is now part of the solution in tackling climate change.

The challenge to manage forest resources as a national heritage in an integrated and sustainable basis to optimize their environmental, economic, social and cultural values have been in a constant threat by human activities such as encroachment into reserved forests, shifting cultivation, wildfires, illegal logging[17], mining, wood-fuel extraction and more recently is the introduction of large-scale farming of bio-fuel production. (Box 1). These human activities contribute significantly in deforestation and forest degradation activities which lead to greenhouse-gases (GHG) emissions.

Box 1: Key Estimates on the Contribution of Forests to the Tanzanian Economy[18]

Tanzania's forests provide:
- Employment to about 1 million people officially and about 5-10 times more unofficially and part-time.
- 10-15 percent share of Tanzania's registered export earnings.
- 2-3 percent of GDP for officially recorded forest products with the major cash value being derived from timber, customary products and fuel.
- 95 percent of Tanzania's energy supply through woodfuels.
- Potential for tourism, the pharmaceutical industry and carbon sequestration, which is not captured presently. The value of Tanzanian forests for recycling and fixing carbon dioxide is estimated to be US$ 1,500 per ha by Salmi and Monela (2000) and US$ 664 per ha by Turpie (2000).
- around 75 percent of building materials.
- 100 percent of indigenous medicinal and supplementary food products.

One recent study[19] argues that the progressive decline in the value of harvested woody resources at a given distance from the city of Dar es Salaam over the past decade and increasing distance of transport for equivalent-value products over time suggest a likely unsustainable "logging down

[17] For example, in 2005, records from China show that the country imported 10 times more timber from Tanzania than Tanzania's total declared exports, with the Tanzanian government losing estimated revenue of US $58 million (Ahrendsa, *et al.,* 2010).
[18] Norconsult (2002:14)
[19] Ahrendsa, *et al.* (2010)

the profit margin" scenario akin to the sequential "fishing down the food web" resource utilization patterns seen in unmanaged marine habitats. At current levels of demand and continued outward expansion of the exploitation waves, it is predicted that there will be no high-value timber species remaining in Tanzanian coastal forests up to 220 km from the city in 2010 and up to the southern Tanzanian border within 37 years. A recently opened bridge across the Ruvuma River at the southern Tanzanian border is likely to facilitate encroachment of the degradation wave into Mozambique.

Charcoal production is predicted to continue to expand in line with urban demand and a lack of affordable alternatives, and the inner wave of charcoal extraction is very likely to continue traveling outward. It is probable that these trends will be accompanied by further reductions in public goods such as carbon storage, biodiversity retention, and supply of water. With raw material exports to generate foreign currency revenue for sub-Saharan governments, alongside 73% of the urban population across sub-Saharan Africa [currently experiencing the world's fastest rate of urbanization] reliant on biomass fuels, mainly charcoal, the implications derived from the Tanzanian analysis extends beyond Tanzania. An ability to predict the future spatio-temporal dynamics of forest degradation across sub-Saharan Africa may provide a vital tool for targeted policy interventions for biodiversity preservation, climate change mitigation, and human development, particularly within the context of REDD+.

3.1.2 Zanzibar

Forest vegetation in Zanzibar covers about 63,908ha equivalent to 23.7% of the total land area (Table 3.1). This involve bush and tall trees in coral rag areas (6,964ha), mangroves (19,748ha), high forest and forest plantations (9,505ha), coconut plantations (6,958ha) and mixed wood vegetation (19,733ha). Forest Protected Areas (FPAs) under government administration are totaling 11,960ha. 36 Community Forest Management Agreements (CoFMAs) are operationalized to support the village communities in managing community forest resources. These CoFMA are mainly allocated around Jozani National Park (9 CoFMAs), Ngezi-Vumawimbi Nature Forest Reserve (10 CoFMAs), Kiwengwa-Pongwe Forest Reserve (10 CoFMAs) and at Wide Area south of Jozani National Park (7 CoFMAs).

Table 3.1: Broad forestry land-use classes of Zanzibar (ha)[20]

Land use Type	Unguja		Pemba		Total	
	Area (ha)	%	Area (ha)	%	Area (ha)	%
1. Coral rag forests	**85,254**	**53.9**	**13,075**	**12.2**	**98,329**	**37.1**
- Ferns, grass, individual trees or groups of trees (subclass 1-3)	34,247		7,697		41,329	
- Bush vegetation, crown cover>50% (subclass 4-6)	44,886		4,534		49,420	
- Bush and tall trees (subclass 7-9)	6,121		844		6,964	
2. Mangrove forests	**6,829**	**3.7**	**13,919**	**13.0**	**19,748**	**7.4**

[20] Leskinen and Ali (1997).

Land use Type	Unguja		Pemba		Total	
	Area (ha)	%	Area (ha)	%	Area (ha)	%
- Untouched	3,935		6,116		10,051	
- Thinned	1,895		7,803		9,697	
3. Agricultural Land	**16,176**	**10.2**	**8,857**	**8.3**	**25,034**	**9.4**
- Large scale fields	7,578		316		7,894	
- Agricultural shamba plots					17,139	
4. Settlement areas	**5,538**	**3.3**	**2,320**	**2.2**	**7,858**	**3.0**
- Towns and villages	4,663		2,109		6,772	
- Military camps	146		105		251	
- Roads and other built up areas	729		105		834	
5. Gov't Plantations (and the main high forests)	**7,141**	**4.5**	**2,364**	**2.2**	**9,505**	**3.6**
- High forests	4,663		1,456		6,119	
- Forest plantations	1,895		170		2,065	
- Rubber plantations	583		738		1,321	
6. Agroforestry Systems	**37,891**	**23.9**	**47,193**	**44.1**	**85,084**	**32.1**
- Coconut	4,955		2,003		6,958	
- Mixture of agricultural crops	30,313		44,286		74,599	
- Other plantations	2,623		1,054		3,527	
7. Mixed woody vegetations	**437**	**0.3**	**19,296**	**18.0**	**19,733**	**7.4**
Total	**158,267**		**107,024**		**265,292**	

Zanzibar's forests form part of the East Africa Coastal Forests Eco-region, one of the world's 200 biodiversity hotspots. Despite their global significance and importance, deforestation rates are estimated to be at least 1% per annum. Zanzibar's Forest Policy and the Poverty Reduction Strategy (also known as MKUZA in Kiswahili) reflect the need for Community Forest Management (CoFM) to combat deforestation and reduce poverty. There are significant forest areas in Zanzibar (in excess of 60,000 ha) that could be potentially managed as CoFM to directly benefit the local communities. CoFM essentially provides the legal framework for community groups and government to both own and manage forests and woodlands for their own objectives/benefits. However, despite a favourable policy environment for the implementation of pro-poor CoFM, deforestation and forest degradation in the community forests is on the increase and CoFM practice in Zanzibar remains a challenge for the reasons outlined below.

3.1.2.1 Insecure forest land tenure and rights

To-date the implementation of CoFM in Zanzibar has not gone beyond a few sites. Institutional and forest land tenure arrangements for CoFM as well as roles and responsibilities of various key stakeholders need a thorough review and both have been major stumbling blocks to enhancing the implementation of CoFM as a national approach across the islands. The National Forest Management Plan (2009-2020)[21] of Zanzibar states "The uncertainty over land tenure has, to some extent, negatively affected community/farm forestry development. Thus, the Land Tenure Act of 1992 and related legislation aims to address some of these problems, especially the insecurity of tenure by individual farmers and the lack of clarity for community management initiatives through

[21] Ministry of Agriculture, Livestock and Environment (2009).

the process of land adjudication. In order to fully engage local communities in forestry activities the process of determining land ownership is very important".

This has resulted in weak implementation of community forestry arrangements and reducing leakage outside the control of both the community and DCCFF. Women's lack of participation in governance structures makes them unable to claim their rights and benefits, and could lead to them being excluded further, as could also happen with the poor. There are varying approaches to CoFM in Zanzibar since there is no one officially institutionalized CoFM manual derived from legislative guidelines. Adequate institutional arrangements and procedures are required to secure coherent formulation of Community Forest Management Agreements (CoFMAs) and their implementation.

3.1.2.2 Inadequate economic incentives for forest conservation

This is particularly the case with higher value forest land that has high timber value and/or medium to high agricultural potential. However, increasingly this is also a concern in areas of lower value forest as the opportunity cost of maintaining high quality forest cover rises with the growing demand for agricultural/grazing land and charcoal.

3.1.2.3 Inadequate incentives for men and women in local communities to engage in CoFM

Limited understanding of the potential of CoFM and the predominantly conservation oriented CoFM approach acts as a disincentive for communities to engage in forest management. Opportunities for acknowledging community rights to harvest forest products to meet basic forest product needs, and for forest based income generating/micro-enterprise development have not been captured adequately. Building and strengthening sustainable utilization principles based on forest resources assessment in all existing and new CoFMA sites has the potential to create a strong incentive for communities to engage into the CoFM process, as benefits become tangible. In addition, the potential of carbon sequestration adding financial resources through REDD carbon finance to CoFM has not yet been realized in Zanzibar or in East Africa.

3.1.2.4 Limited capacity of community-based institutions and local governments to deliver quality forestry support services and influence forest policies

Although Zanzibar has a favourable policy framework for the implementation of pro-poor CoFM, this has not yet been fully translated into practice. The understanding that CoFM entitles communities to be not only protectors but also decision makers in forest management still needs to be developed. Forestry support services through DCCFF and local governments which aim to introduce CoFM as a power sharing strategy require a new interpretation of the roles and responsibilities of various government actors.

Presently, there are 37 Village Conservation Committees (VCCs) on both Unguja and Pemba islands, which have been formed by the villages through facilitation of the DCCFF with support from various projects. Both the VCCs and their umbrella bodies, i.e. Jozani Environmental Conservation Association (JECA); South Environmental and Development Conservation Association (SEDCA) in Unguja, and Ngezi-Vumawimbi Natural Resources Conservation Organization (NGENARECO) in Pemba Island, suffer from low capacity to deliver forest extension and advocacy services.

There may be women represented on VCCs and the umbrella bodies, but their culture forbids them from speaking out and challenging male dominated norms. The bodies also lack capacity to protect and promote the rights and interests of local forest users, particularly women, to become agenda setting actors and, hence, influence policy formulation and implementation both at local and national levels. Consequently, local communities lack information on their rights under the existing forest policy and a 'common voice' and mechanism to demand their forest rights and to hold government and other service providers accountable.

3.1.2.5 Weak communication and limited access to information and experience

Despite a good number of experiences in Zanzibar and mainland Tanzania, the lessons learned from CoFM are not always shared and valuable information remains dormant. Hence it is not accessible to the public at large, practitioners in the field, policy makers and the global community. A platform for CoFM learning and experience sharing does not exist in Zanzibar, preventing the scaling-up of CoFM. HIMA intervention has a long-term focus to create opportunities for learning that will continue beyond the project's lifetime.

3.1.2.6 Heavy dependence of Zanzibari population on forest goods and services

Over 90% of population in Zanzibar depends heavily on traditional biomass fuels (charcoal and firewood) as their main source of energy for cooking. The 2007 energy balance survey[22] indicated that 95% of the energy sources came from biomass, with petroleum products contributing 3% and electricity 2%, while demand for wood fuel in Zanzibar town is about 1.5 million cubic meters per year. The extraction of charcoal and firewood from the forest to meet the growing demands (as the population continues to grow at the rate of 3.2% per annum) and conversion of forest land to agriculture are the root causes of deforestation and degradation in Zanzibar.

MKUZA confirms that the scarcity of reliable, affordable and efficient energy services in Zanzibar is increasingly becoming a constraint for implementing development programmes. Improved forest management, on-farm tree planting for charcoal and firewood supply, and a household energy switch from charcoal/firewood to other alternative sources such as LPG gas, particularly in urban and peri-urban areas, provide long lasting potential remedies to the problem.

3.2 Land Resource Base

Land use categories in Tanzania are as shown in Table 3.2. It should be noted, however, that reports on the percentage distribution of various land use categories differ according to approaches used by the authors. A country wide land use study is urgently needed. The situation is even more compelling with regard to forest resources, where knowledge on the extent of the resource is particularly limited and outdated[2]. Regular resource assessments have not been carried out due to inadequate financial resources and consequently management has not been based on reliable data[2]. A three year National Forest Resources Monitoring and Assessment Project has been underway for some time now. Its results may help in rectifying the situation.

[22]Magessa (2008).

Table 3.2: Percentage distribution of land use categories in Tanzania Mainland[23]

Land use type	Area (000 ha)	Percentage
Smallholder cultivation	3,880	4.1
Large scale cultivation	585	0.6
Urban development	1,600	1.7
Inland water	5,900	6.3
Grazing land	48,740	51.7
Forest and woodlands	33,555	35.6
Total		100.0

Several land use related studies have been carried out in Tanzania, but they have mainly covered small areas at a level of a forest area, Village, Ward, Division or District.[24,25]. Overall, the studies show decreasing forest/woodland resources and increasing areas under cultivation due to deforestation. The main direct causes of deforestation and degradation were shown to be shifting/permanent cultivation and firewood and poles gathering and charcoal production. The main underlying cause was found to be population growth. For example a study done in the northern parts of the Coast Region showed that tree cover was worse in 1998 than ten years ago (1991) due mainly to charcoal production for Dar es Salaam and nearby urban centres (Table 3.3).

Table 3.3: Land cover changes in the Coast Region, Tanzania, 1991-1998 [24]

Cover type	Areal extent, 1991 (ha)	Areal extent, 1998 (ha)	Net change (ha)	7-Year change (%)
Open woodland	183,000	99,000	-84,000	-46
Bushland	152,000	223,000	71,000	47
Closed woodland	119,000	91,000	-28,000	-24
Mixed cultivation	60,000	94,000	34,000	57
Grassland/fallow	12,000	3,200	-8,500	-73
Thicket	4,900	3,900	-1,400	-29
Bushed grassland	3,500	19,000	16,000	441

Table 3.5 shows that both the open and closed woodland decreased while other cover categories such as thicket, bush land, bushed grassland and mixed cultivation showed a tremendous increase in areal extent[25]. The direct and indirect causes of the deforestation are discussed in Section 3.

[23] FBD (2000).
[24] Nduwamungu (2001).
[25] CHAPOSA (2002).

The study concluded that, it was true that in the absence of any further disturbance after tree cutting, the areas may progressively revert to woodland. However, in the face of increased population and the demand for agricultural land, such areas may not be given enough room to regenerate.

3.3 Past Experiences with Reducing Deforestation and Forest Degradation

3.3.1 Centralized natural forest management

The FBD holds primary responsibility for the management of natural forests in FRs. However, in practice, the decentralized system of government places much responsibility for forest conservation and management with FBD district administrations. Exceptions are made for several major catchment forests and for forests with high biodiversity values; all these remain under the direct management of FBD. Overall, centralized management of FRs is poor leading to deforestation and degradation. This is due to among others: low staffing levels, lack of motivation caused by poor working conditions (e.g. lack of transport and adequate field work budgets) and relatively low salaries. Further, forest management and law enforcement are lower priorities in local government when compared to revenue collection.

3.3.2 Participatory forest management (PFM)

3.3.2.1 Overview

Tanzania has benefited from many years of implementing PFM programmes which have helped to integrate communities into forest management and thus address some of the policy and critical forest governance issues concerned with deforestation and forest degradation. This experience provides a value basis for rapid REDD+ readiness.

By the mid-1990s a global shift towards decentralized forest management was taking place, with delegation of forest management rights and responsibilities to a local level as a strategy to achieve SFM and development. In Tanzania, as elsewhere, this led to a major review of forest policy and legislation. The Forest Act of 2002 thus makes transfers of forest resource ownership and management responsibilities to local communities feasible.

Consequently, a community-based approach to securing and managing forests, generally referred to as PFM, has emerged as a central element in the FBD's strategy for ensuring the sustainable management and conservation of Tanzania's forests[7]. There are three main objectives of PFM in Tanzania namely (i) improving rural livelihoods, (ii) conserving and regenerating forest resources and (iii) promoting good governance.

In Tanzania, the two major approaches to the implementation of PFM are CBFM and JFM. The two approaches differ in terms of forest ownership and cost/benefit flows. In 2006, FBD undertook a detailed survey of PFM in the country. Table 3.4 shows the results of this survey and how far PFM had spread in mainland Tanzania by then.

Table 3.4: Overview of PFM on mainland Tanzania

Total area of forest covered by PFM arrangements	3,672,854 ha
Percentage of total forest area under PFM	10.8
Number of villages involved in PFM	1,821
Percentage of total villages involved in PFM	17.5
Number of villages with approved management plans or signed Joint Management Agreements	531
Number of districts with ongoing PFM processes	57

3.3.2.2 The implementation of CBFM

CBFM, where trees are owned and managed (using a management plan) by a village government through a Village Natural Resources Committee (VNRC), applies on village or private land. By 2008, the area under CBFM was 2,345,000 ha which represents 11.6% of unreserved forests. A number of PFM studies have since reported improved forest regeneration, biodiversity, forest growth and well-being of community members.

The factors that may negatively influence communities as regards taking up CBFM are unfair benefit sharing or fears of this, lack of availability of forest land, lack of community interest in forest management (which may itself relate to opportunity cost involved in foregoing other activities, or to the availability of alternative income sources), an unfavourable legal and policy environment, lack of facilitation capacity, and lack of availability of up-font internal and external financing. Experience shows that village leaders, particularly the members of the village forest reserve committee, participate more than others in different forest activities, especially those involving payment of wages. Other villagers are not given the chance to participate.

This situation can only be expected to become worse when the REDD+ funds become available to villages. A major consideration is that if villagers as a whole do not see any benefits, then they are likely to withdraw their cooperation from the communal effort for increasing carbon stock. This might jeopardise the anticipated contribution of CBFM to the REDD+ policy. Therefore, for the success of CBFM under REDD+, a system to ensure fair sharing of benefits needs to be established.

3.3.2.3 The implementation of JFM

JFM is currently a strongly favoured approach to the management of state owned forests, with management responsibilities and returns divided between the state and the communities adjacent to the forest. It takes place on “reserved land” owned and managed by either central or local government. Villagers typically enter into agreements to share management responsibilities with the forest owner. The Forest Act requires joint management agreements prepared by the central government, or designated district authority, to be formally made with local communities adjacent to the state forests before any JFM initiative starts. Table 3.5 gives an overview of JFM in Mainland Tanzania by 2006. By 2008, the area under JFM was 1,780,000 ha, mostly montane and mangrove FRs.

Table 3.5: An overview of JFM in mainland Tanzania, 2006

Area of forest covered by JFM management plans	1,612,246 ha
Percentage of total area reserved by National or Local Government under some form of Joint Management Agreement	11.6%
Primary forest types where JFM has been promoted	Montane and Mangrove
Number of National Forest Reserves with JFM	150
Number of Local Authority Forest Reserves with JFM	60
Primary regions where JFM is implemented	Morogoro, Iringa, Pwani, Tanga, Kilimanjaro
Number of villages with JFM has been established or in process	719
Number of villages that have signed JMAs	149

The main challenges of PFM include:[26]

- High donor dependency, casting doubts on its sustainability;
- Too short in duration to effectively empower communities to manage the forest effectively; PFM has proven to be a very long process, some villages involved for at least three to five years have still not completed the process.
- Poor exit strategies by some NGOs.
- Under few PFM management plans are silvicultural rules implemented.
- Cost-benefit sharing mechanism under PFM still not fully operational. There are thus no benefit sharing mechanisms that may inform REDD+.
- Although there exists a favourable legal framework for PFM at national level, awareness of this among villagers and general public is still limited and should be raised.
- There are human and financial resources available to promote PFM (local NGOs and some donor funds) but it was observed that a flat ceiling rate is issued to the district for PFM activities without taking into consideration the district's location, population and forest resources endowment.

3.3.2.4 Forest plantations

Tanzania embarked on large scale plantations development in the 1950s. Currently, there are 19 state owned industrial plantations covering some 89,000 hectares mainly planted with softwoods and a few hardwood species. There are nearly 70,000 ha of privately owned plantations. The small area of private forests is owned by corporations, e.g. TANWATT Co. Ltd., largely owned by the Commonwealth Development Corporation in Njombe, private individuals and NGOs. It consists of mainly plantations established for specific productive functions. TANWATT, for example, established black wattle plantations (*Acacia mearnsii* De Wild) to produce tannin from wattle barks, mainly for export. Other private areas are established under the village afforestation programme and farm forestry for the market. The productivity of government plantations is

[26] TNRF (2009)

generally low (15 $m^3ha^{-1}yr^{-1}$) due to use of unimproved seed and low intensity management. With improved seed and good forestry practice a yield of up to 30 $m^3ha^{-1}yr^{-1}$is possible.

On the other hand, privately owned plantations have been found to have high productivity due to careful site selection, intensive cultural practices and selection of genetically improved seed/propagules. Government owned plantations are characterised by planting and replanting backlogs, low intensity site preparation techniques, poor quality trees due to use of un-improved seed and low survival due to poor species-site matching and delayed or low intensity weeding. It is also noted that they are generally neglected or have irregular pruning and thinning, constant fire, disease and pest attacks, and generally suffer illegal felling and encroachments.

On a positive note, new plantation tree species have been introduced in order to increase biodiversity, and reduce the impacts of fire, diseases and insect outbreaks. There have never been efforts to expand the government forest plantations areas for many years now. On the other hand, the area under private sector plantations is increasing. Overall however, the total area of forest plantations which is about 150,000 ha is low given high domestic and export demand of forest products and the fact that Tanzania is one of the few African countries with potential areas for expansion of forest plantations.

3.3.2.5 Woodlots and trees on farm

During the 1970s, Tanzania encouraged individuals and communities to establish woodlots and trees on farm (ToF) aimed to meet the increasing demand for wood and NWFPs, as well as improve environmental services. Response has been variable, and adoption of these activities is not promising in most parts of the country. To the contrary, people in a number of districts responded positively to tree planting.

With regard to individual and community woodlots, management has generally been variable. In places like Makete, Southern Tanzania, individual woodlots have generally showed satisfactory performance and now have a significant contribution to the livelihoods of the communities. While communal woodlots is another important source of wood and NWFPs, they have in some cases become free access resources and the weakening of traditional systems of management have led to resource degradation.

On the contrary, today ToF constitute a vast tree resource in Tanzania and form a major source of wood and NWFPs for domestic use and for sale. However, little information is available as to their extent and overall contribution to wood production as most national forest inventories tend to focus only on “designated forest lands”. In view of the increased demands on forest products and declining “forest land”, all indications are that ToF will become a major source of wood supply to meet growing rural and urban demand, provided issues such as tenure and access to markets are sorted out.

At present, the sources of most of the plantings for ToF are largely unknown. While nursery raised seedlings are sometimes planted, especially for the exotic tree species, trees are also established from transplanted naturally regenerated seedlings (wildings) on farm. Other trees are retained while establishing new farms in forested areas. Some studies have shown that the

quality of ToF is generally low. This is due to low seed quality linked to inbreeding and poor selection of trees for seed collection, low availability of quality planting stock/seed, and sometimes poor species-site matching. Support to farmers in the form of improved germ plasm can lead to significant improvement in productivity, quality and resistance against pests and diseases of ToF.

With regard to tree management, activities include pruning, pollarding and thinning for overcrowded trees, which excessively shade food and cash crops. Silvicultural advice is generally limited, and thus most of these operations are based on the farmer's own experience. Consequently, the quality of the trees for use, especially for timber is generally low. Imparting silvicultural management skills among farmers would improve wood quality for various uses.

The sale of wood and NWFPs produced from ToF has often been problematic. Farmers need to be assisted in all aspects of marketing and value addition to improve their returns from sale of wood and NWFPs.

3.3.2.6 Forest landscape restoration

Forest landscape restoration is a process for re-establishing ecological integrity and enhancing human well-being in deforested or degraded landscapes. Natural regeneration, assisted natural regeneration, enrichment planting, plantations, agroforestry and various soil and water conservation techniques are all used in forest landscape restoration.

In Tanzania, techniques already in use include plantations, natural regeneration, agroforestry and various soil and water conservation techniques. Plantations are too restricted in extent to provide sustainable livelihoods and environmental services for the large land areas demanding restoration, while assisted natural regeneration and enrichment planting have been tried only in research activity.

Studies concluded that natural regeneration through active involvement of local communities promoted under PFM, and supported by the new forestry legislation and programme, was by far the most promising option for restoration of the large areas of degraded land in Tanzania. CBFM is regarded as the most appropriate way to achieve forest landscape restoration, and is expected to be successful because local communities are allocated clear forest land rights, and traditional knowledge and practices are taken into account.

An example of a successful forest landscape restoration is the *ngitili* system of agro-pastoral communities in Shinyanga Region, Tanzania. Studies have found that more than 350,000 ha of land were occupied by restored or newly established *ngitili*, of which about 50% was owned by groups and another 50% by individuals. Benefits from *ngitili* were estimated at US$ 14 per person per month, which is much higher than the average monthly spending per person in rural Tanzania (US$ 8.5).

Although the science of landscape restoration may be new, efforts to restore degraded landscapes in Tanzania are not. The success stories on forest landscape restoration (e.g. *ngitili* and SULEDO) have always been associated with situations where communities were actively involved, and their interests, local knowledge and practices taken into account. This notion is already part of the current policies and legislation in almost all sectors, which provide the

necessary enabling environment for restoration of degraded lands. The initial positive impacts of landscape restoration provide guidance and encouragement for wider success in the future.

3.3.2.7 Integrated conservation and development and landscape based projects

Conservation of biodiversity and ecosystem services has for several decades been achieved by the "fines and fences" (non participatory) approach to conservation. In the mid-1980s, the World Wildlife Fund (WWF) first introduced Integrated Conservation and Development Projects (ICDPs) to attend to some of the problems associated with the "fines and fences" approach. ICDPs are biodiversity conservation projects with rural development components aimed to improve livelihoods and reduce human pressures on biodiversity.

ICDPs have mainly been implemented at the level of sites/watersheds and not landscapes. Examples in Tanzania include the East Usambara Mountains Project in Amani, Tanga, the Soil and Conservation and Agroforestry Project in Lushoto and the Conservation and Management of the Eastern Arc Mountains Forests Project based in Morogoro, Tanzania. The projects aimed at biodiversity conservation, increasing agricultural productivity and reducing poverty by encouraging communities to undertake income generating activities.

There are success stories from some of these projects, and there are many lessons learnt. Despite the efforts to improve the management of the FRs and community activities in the projects outlined above, problems of natural resource degradation, biodiversity loss and rural livelihood decline persist. To reverse this situation, increased, long term and landscape focused investment is key. All stakeholders must participate effectively.

Other than the integrated conservation and rural development programmes discussed in the foregoing paragraph, the Government has recently promulgated a campaign for agricultural revolution popularly known as KILIMO KWANZA (KK). The campaign emphasizes increased production, intensification of agriculture, efficient use of inputs, effective marketing and sustainable use of natural resources.

The likely effects of KK on REDD+ are mixed. On the one hand, increased productivity and incomes are likely to reduce dependence and pressure on forest resources leading to increased conservation and REDD+. On the other hand, it is envisaged that it will take long for the poor farmers who are most dependent on forest resources to access necessary inputs to improve agriculture. Therefore, continued dependence on forest resources and thus increasing deforestation and degradation are still expected in the short term.

3.4 Drivers of Deforestation and Forest Degradation

Major direct causes of uncontrolled deforestation and degradation in the forests are: settlement and agricultural expansion, overgrazing, firewood and charcoal production, uncontrolled fires, timber extraction, development of infrastructure/industry, refugees and most recently the introduction of large scale agriculture of bio-fuel production. These direct causes of uncontrolled deforestation and thus land degradation are driven by market and policy failures, rapid (and uncontrolled) population growth and rural poverty, and the state of economy.

The analysis of the drivers and underlining causes of deforestation and forest degradation are based on desk studies. Further analysis is needed to identify and understand the drivers,

underlining, causes and impacts in various agro-ecological zones so as to develop eco-regional specific strategies and programmes that can be utilized to address them.

3.3.1 Direct causes of D&D

The major direct causes of uncontrolled deforestation and degradation in the forests are:

- Agricultural expansion, human settlements and processing: reduced fallow shifting cultivation and permanent agriculture, development of human settlements, wood for curing tobacco, wood for fish smoking and making burned bricks;
- Overgrazing: mainly due to large herds of cattle arising from unwillingness among livestock owners to de-stock and the fact that most of the forests/woodlands are open access (not reserved);
- Firewood and charcoal production: rapid population increase and fast rate of urbanisation have increased the demand for these products while poverty has prevented transition to other sources of energy;
- Uncontrolled fires: fires during land preparation for shifting cultivation, collecting honey, charcoal making, hunting or livestock owners burning to prepare areas to provide green flush for livestock and to control pests such as ticks. Late season fires are most destructive;
- Timber extraction: one of the major causes of loss of forests. It can also damage the remaining smaller trees, destroy much of the original forest and disturb the topsoil. Other effects include: suppression of regeneration by weeds or failure to regenerate and damage to the watershed functions of the forests;
- Development of infrastructure/industry: Investments in road and railway construction, industries, hydroelectric projects and mineral and oil extraction, necessary to meet development objectives, often entail environmental trade-offs;
- Refugees: land clearing for refugee campsites, construction material, fuelwood and agricultural crop production constitute a major threat to forest resources in refugee-populated areas associated with rapid depletion of forests and land degradation; and
- Bio-fuel production: This is more recent. Large areas of natural forests habitats (e.g. the Coastal forests) with high biodiversity are been cleared to give way to biofuel crop farming.

The relative importance of these factors has not been determined, but land use/cover change studies show the major causes of deforestation and degradation to be: shifting cultivation, timber extraction, firewood/ poles gathering, charcoal production and overgrazing as the major causes.

3.3.2 Underlying causes of D&D

The causes of uncontrolled deforestation and thus land degradation are driven by several factors, as discussed below.

3.3.2.1 Market failures

Market failures refer to the inability of market prices under certain conditions, such as the presence of open access exploitation, externalities, incomplete information and imperfect competition, to reflect accurately the value of marketed and non-marketed or non-tradable environmental services[27]. Such failures also mean that markets are unable to ensure equitable

[27] Wardle and Kaoneka, (1999).

resource and income distribution to promote maximization of collective welfare of the society. Under corrupt conditions, a government has no motivation to move from administrative stumpage pricing to competitive stumpage markets.

3.3.2.2 Policy failures

Policy failures are consequent upon the inability of governments to institute strict centralised management without adequate financial and managerial capacity, whose consequence has been inefficient management of forest resources; inability of governments to adequately define property rights thereby rendering forests an "open access" resource with consequent risk of over-exploitation and general resource degradation and lack of investment incentives on forest activities; and inability of governments to charge a sufficiently high forest rent which reflects the real financial cost of managing forests.

The low forest rent creates an incentive for inefficient use and over-exploitation of forest resources. The implementation of old forest policies has made it almost impossible to adequately address emerging opportunities and constraints imposed by national aspirations, international agreements and conventions. Non-forest incentives (pricing policies, tax incentives and other subsidies) encouraging private investments in leading sectors such as agriculture, energy, mining and transportation, lead to forest conversion to these uses.

Effects of implementing structural adjustment programmes (SAP) have included reduced financial capacity of forest departments to manage forest resources effectively. Also peasant farmers who, hitherto, depended on subsidized farm inputs have been compelled to encroach forests in order to expand farmlands to meet the rising demand of food a consequence of family expansion and population growth. This has lead to an upsurge in deforestation and degradation. On the other hand, higher crop prices have resulted in increased land clearance as new land is opened up for cultivation.

3.3.2.3 Rapid population growth and rural poverty

Reports by Palo[28] among others have shown that there is a significant correlation between population pressure and deforestation, especially when there is a prevailing poverty, an ambiguous land tenure system, and lack of agricultural intensification, market and policy failures, and political instability. Rapid population growth often intensifies pressure to convert forest areas to other uses, as well as exploit forests for short-term benefits (e.g. food and fuelwood supply). Poverty-led environmental degradation is responsible for much of the deforestation and degradation of forests. As vividly shown by the in-depth studies and material from literature reviews and consultative workshops, the majority of rural poor rely heavily on forests and woodlands for income and subsistence. While some traditional rural communities have developed comparatively sustainable forms of resource use, many others are compelled, by circumstances, often beyond their control, to exploit forests unsustainably for short-term gain.

Hence, the major direct causes of uncontrolled deforestation and forest degradation are as summarized in Table 3.6. Although, the relative importance of each of these factors has not been determined, land use/cover change studies show the major causes of deforestation and forest

[28] Palo, (1999).

degradation to be shifting/permanent cultivation, timber extraction, firewood/ poles gathering, charcoal production and overgrazing as the major causes. Since this Strategy puts much emphasis on sustainable forest resource use and local communities' participation, these problems have provided the basis for the Strategic Implementation Options outlined in the Strategic Results Area 10 in Chapter Six of this Strategy.

Table 3.6: Some direct drivers of deforestation and forest degradation in Tanzania

Drivers	**Deforestation**	**Forest degradation**
Expansion of subsistence shifting cultivation: reduced fallow shifting cultivation and development of permanent agriculture	√	
Expansion of commercial farming (e.g. biofuels, tobacco, sisal, tea): Large areas of natural forests habitats with high biodiversity cleared for monocropping	√	
Development and expansion of human settlements	√	√
Lack of village land use plans	√	√
Uncontrolled forest fires: land preparation for shifting cultivation, collecting honey, charcoal making, hunting or livestock owners burning to prepare pastures and to control pests and vectors.	√	√
Over-exploitation of forests for timber and building poles: loss of forests, damage of growing trees, and disturbance to the topsoil and suppression of regeneration by weeds; damage to the watershed functions of the forests	√	√
Overgrazing: large herds grazed in forests and woodlands that are mostly open access resources	√	√
Expansion of mining activities: mineral and oil extraction often entail environmental trade-offs	√	√
Infrastructure development: Investments in road and railway construction, industries, and hydroelectric projects necessary to meet development objectives often entail environmental trade-offs	√	
Firewood and charcoal production: fast rate of urbanisation have increased the demand for biomass energy for domestic use, curing tobacco, fish smoking and making burned bricks	√	√
Influx of refugees due to civil strife in neighbouring countries: land clearing for campsites, construction material, fuelwood and agricultural crop production	√	√
Poor forest governance & weak law enforcement: inadequate financial and managerial capacity, inadequately defined property rights rendering forests as "open access" resources. Inability of market prices to reflect the true value of marketed and non-marketed or non-tradable forest resources and environmental services	√	√

3.5 Forest Carbon Trading Mechanisms

Carbon trade involves the sale of carbon credits. The trade is a market-based mechanism for helping mitigate the increase of CO_2 in the atmosphere. Basically, there are two main types of Carbon Trading Schemes that are operating globally to-date. These are Voluntary Carbon Trading (VCT), which is not operated under the Kyoto Protocol and the official Kyoto Protocol Carbon Trading Mechanisms.

The VCT involves companies offsetting GHG emissions from their activities and products on a voluntary basis as part of their corporate responsibility. The conditions to participate in the

VCT are relatively less stiff, and have no international legal binding requirements. The official forest carbon trading is possible through the Clean Development Mechanism (CDM) of the Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC). Under the Kyoto Protocol, developed countries are required to reduce their emissions of greenhouse gases by about 5% of their 1990 levels by the years 2008 – 2012. These countries can meet their reduction targets for CO_2 emissions in a variety of ways such as: through improved energy efficiency, by substituting fuels that produce less CO_2, and by using renewable energy sources. By undertaking project activities, developed country parties can generate carbon credits which can be used to offset their reduction commitments.

Investment in certain kind of tropical forests management is also a possibility through CDM. This enables them to invest also in projects in developing countries and to use these to offset their reduction commitments. The CDM essentially provides a market mechanism for the sale of carbon credits or CERs, from developing countries. It has been agreed that in the first commitment period (2008-2012), CDM project activities will be limited to *afforestation* and *reforestation* only. Improved forest management and avoided deforestation are not eligible under CDM at present.

Reduced D & D may play a significant role in climate change mitigation and adaptation, and may generate a new financial stream for sustainable forest management in developing countries. This has prompted re-negotiation of climate change policy for the post-2012 period to include REDD+. This new policy is currently under discussion by Parties to the UNFCCC regarding crediting or otherwise rewarding reductions in carbon emission by reducing rates of deforestation and forest degradation. Under REDD+, developing countries would, on a voluntary basis, aim to reduce the rate at which their forests are being lost, and receive compensation in proportion to carbon emissions saved compared to a baseline which would represent the 'without intervention' case or some other agreed target.

As already pointed out, REDD+ policy negotiations started at CoP 11 in Montreal, Canada, in 2005, and continued at CoP 12 in Nairobi in 2006. During the CoP 13 in Bali in 2007 major advances were made, and there was a clear commitment of Parties to deal with this issue in the context of an overall package for a post-2012 regime. The Decision at CoP13 in Bali expressly focuses on reduced emissions from deforestation and degradation. Other possible options mentioned were 'sustainable forest management', 'forest enhancement' and 'conservation'.

The decision also explicitly recognizes that the needs of local and indigenous communities should be addressed when action is taken to reduce emissions from deforestation and degradation. It was also agreed to start pilot activities to support REDD+ as a climate mitigation measure. However, technical issues with respect to baseline determination for crediting REDD+ were left for further study. The discussion continued at CoP 14 in Poznan, Poland, in December 2008. The negotiations were envisaged to culminate in agreement on this post-2012 regime at CoP 15 in Copenhagen (December, 2009). However, negotiations did not culminate at the CoP 15, but shaded some future hope as stipulated in the Copenhagen Accord.

The government of the United Republic of Tanzania considers the REDD+ policy a viable option that can provide opportunities for the country to meet its obligations of managing her

forests and woodlands on a sustainable basis and at the same time respond to poverty reduction initiatives accordingly. In this respect the government is envisaging to participate in the future REDD+ policy and in its development under fund based financing arrangements, through this National REDD+ Strategy and through future advances as may be negotiated in the coming CoPs. For effective implementation of readiness process, key institutional and coordination structures have been put in place as elaborated in Chapter Four of this Strategy.

3.6 Capacity Building and Infrastructure Development

Some developing countries like Tanzania are left behind in important international policy negotiations and participation in policy implementation due to lack of capacity and the necessary technology to assist them benefit from emerging opportunities such as REDD+. Given that REDD+ is a new policy initiative requiring intensive application of new and complex technologies in various areas, capacity building in terms of training and infrastructure development is needed at all levels. Tanzania committed itself to make a deliberate effort to ensure that the capacity of local institutions was built accordingly during REDD+ piloting phase. In this regard available capacity and infrastructure for effective implementation of the carbon accounting system were, and still are, limited, especially in the areas of modelling, GIS simulation, monitoring and evaluation, and carbon stock assessments.

The REDD+ Strategy has put a considerable emphasis on capacity building and infrastructure development at the national and sub-national levels. A four year research and training programme on Climate Change, Impacts, Adaptation and Mitigation in Tanzania (CCIAM) was initiated to support the REDD+ implementation capacity in the country. The programme is on-going and is being implemented by the Sokoine University of Agriculture (SUA) in collaboration with the University of Dar es Salaam (UDSM), Ardhi University (ARU) and the Tanzania Meteorological Agency (TMA).

The purpose of this programme is to: develop and sustain adequacy in national capacity to participate in climate change initiatives and address the effects and challenges of climate change. The emphasis of the programme is on better management of forest and other land based resources for REDD+ readiness. The programme also addresses socio-economic and gender aspects related to climate change. Its focus is on developing and undertaking training and educational programmes contributing to scientific knowledge on climate change with particular emphasis to the REDD+ initiatives. The programme will also contribute to capacity building among other REDD+ actors at all levels of society in the country.

The programme addresses the following specific objectives:

- To determine and develop appropriate climate change mitigation and adaptation strategies in forestry, other land uses, ecosystems and biodiversity management
- To assess climate change impacts on and vulnerability of ecosystem services and livelihoods under REDD+ initiatives
- To conduct policy and legal framework analysis of climate adaptation and mitigation with emphasis on economic efficiency, ecological effectiveness and wider political legitimacy
- To develop and undertake capacity building, dissemination and strategic interventions for adaptation and mitigation to climate change

It is expected that by the end of the programme, a comprehensive research and methodology development programme for climate change adaptation and mitigation will have been completed and enable Tanzania to implement the post-2012 climate mitigation and adaptation regimes. Specific focus areas for capacity building include, *inter alia*, development and undertaking of human capacity building to address adaptation and mitigation to climate change, mainstreaming climate change issues in tertiary institutions curricula, conducting specialised climate related training at various levels for Tanzanians with special emphasis on climate and ecological modelling, MRV and remote sensing using REDD+ pilot areas as study sites.

Other focus areas are developing modules incorporating analytical modelling in socio-economic and ecological issues to be used for analysis of adaptation to climate change and variability, developing short courses on different topics on climate change for policy makers and trainers, conducting training and dissemination workshops for various stakeholders, enhancement of special skills in modelling for technicians and scientists and engagement of various young and senior professionals in exchange programmes involving Norwegian and Tanzanian postgraduate students and other young researchers.

The focus on physical infrastructure development includes establishment of a database to pool all information generated by the programme, provision of equipment such weather monitoring equipment (Automatic Weather Stations), data loggers, GIS software and equipment, and computers, provision of reliable internet services and connectivity in partner institutions to facilitate access of scientific information for research, strengthening the existing climatological monitoring station network and communication system by TMA, and strengthening the existing climate research and establish modelling laboratories.

Others are to avail hardware and software for short course training of various participants on modelling climate change effects, improvement of field research laboratory at Mazumbai for monitoring of climate change impacts on high forest ecosystems and related biodiversity, strengthening of research laboratory for monitoring of climate change impacts on aquatic ecosystems and related biodiversity at UDSM, and acquisition of tide gauges for continuous observation reference station for sea level monitoring by ARU.

3.7 Research

The actual REDD+ implementation, education and training programmes require enormous support from research findings. The global scope of climate change necessitates that the research programme should aim at internationally recognised findings that can be debated globally. This calls strongly for international collaboration between research institutions to establish scientific networks to meet the global challenges of climate change.

There is generally lack of comprehensive research and methodology development programme for climate change adaptation and mitigation activities in Tanzania. Equally important, is lack of focused research in support of REDD+ implementation. Carrying out focused research in the areas of REDD+ relevant to Tanzania is, therefore, necessary.

3.8 Information Knowledge Dissemination and Networking

As pointed out earlier the REDD+ policy is still evolving and is expected to start in 2013. The period from now to when the REDD+ starts will involve a number of different pilot activities within and outside countries which will generate a lot of lessons and experiences. For specific countries and international communities to benefit from these lessons and experiences from pilot activities there should be in place an efficient communication and information sharing mechanism. However, there is poor communication and information sharing networks in most developing countries, including Tanzania.

An in-depth study on information and communication needs and REDD+ knowledge management[29] has shown, for example, that although through innovative ways the forest resource managing agencies have attempted to address the conflict between rural livelihood security issues experienced by the primary forest resource user and their respective conservation aims, poor inter-agency cooperation and collaboration is an obstacle and constraint that places the entire forest resource base under jeopardy, and thereby compromises each stakeholders underlying interest of a well-managed forest regime for sustainable livelihood and for REDD+.

The study also notes that the present collaborative mechanisms are not equipped in dealing with the conflicting information on REDD+/Forests, REDD+ knowledge management and need for communication on REDD+, respectively. A modality to coordinate horizontally across sectors (agriculture, wildlife and forestry among others) and vertically between parastatal, central or local government institutions is desirable and feasible. Consequently, a problem solving approach encompassing multi-sectoral collaboration through the formation of an expanded partnership in management of REDD+ knowledge, information networking and communication is recommended as a way forward in the long path to resolving conflicts and improving the overall quality of management of the country's forest resource base in the context of REDD+.

[29] Regalia Media Limited (2010)

CHAPTER FOUR

GOVERNANCE OF FOREST RESOURCES FOR REDD+

4.1 Overview

About 18 million ha of forests (50%) have been gazetted as forest reserves under the central government, local authorities, village land forests and plantation forests. The rest of the forests are on General Lands that are unreserved. Most of the deforestation occurs in General Land forests as well as degradation over much of the total forest area. Studies have revealed a considerable level of human disturbance even inside the reserved forests.

Although PFM has been found to be effective in halting deforestation and reversing degradation in unreserved forests and is now included as a major element in Tanzania's National Forest Policy and its subsequent Forest Act of 2002, currently only 12.8% (about 4.1 million ha) of the country's forests are under such management owing to lack of funds and capacity. The current speed under which PFM projects are established is also very low. Access to REDD+ finances through fund based financing arrangements could potentially facilitate and speed up this process and possibly reduce the high levels of deforestation and forest degradation.

Centralized forest management and PFM are the main strategies used by the FBD to ensure the sustainable management and conservation of Tanzania's forests. However, SFM is not being fully realized due to among others poor governance at local as well as district, regional and national levels. At the local level, key governance issues concern (i) corruption, (ii) elite capture and/or (iii) minority marginalization in terms of access to forest resources, (iv) low accountability, (v) lack of transparency, (vi) low participation, and (vii) weak law enforcement. At higher levels, the main issues are corruption, weak law enforcement, and accountability.

Weak governance is partly attributed to the existing public forestry sectors' institutional framework. The forest sector administration involves the FBD of the Ministry of Natural Resources and Tourism (MNRT), the Prime Minister's Office Regional Administration and Local Government, in the Mainland, and the DCCFF of the Ministry of Agriculture and Natural Resources in Zanzibar. The administration has been weak, especially in linking the local governments, regional administration and central government levels.

To improve governance at local level that will eventually facilitate sustainable PFM, the village institutions need capacity development in areas such as planning, mobilization, finance management, good governance, and lobbying. The local/central government needs to provide the different skills through various training programmes done at village level. At district and regional levels, protection of the FRs against the various threats they face is key to ensure maintenance of habitat cover and quality. These and other issues related to forest governance in the context of REDD+ are the subject matter of this Chapter.

4.2 Institutional Structure and Coordination

REDD+ is anchored on the forest resource base. Findings from the REDD+ for Rural Development, and the Legal and Institutional Arrangement in-depth studies reveal that through innovative ways in accordance with various respective policies, the forest resource managing agencies, i.e. the forest department and forest adjacent communities, among others, have made attempts to address the conflict between rural livelihood security issues experienced by the primary forest resource users and their respective conservation aims.

Each approach incorporates unique elements of conflict management through varying levels of stakeholder participation that have produced significantly different results. The analysis also demonstrates that the present policy and institutional environment on forests has had a large impact on the success of various participatory interventions. Evidently, poor inter-agency collaboration is an additional obstacle and constraint that further places the entire forest resource under jeopardy, and thereby compromises each stakeholders underlying interest of a well-managed forest for sustainable livelihood and for REDD+.

A supplementary assessment concludes that the present mechanisms are not equipped in dealing with the conflicting information on REDD+/Forests, REDD+ knowledge management and need for Communication on REDD+, respectively. A modality to coordinate horizontally across sectors (agriculture, wildlife and forestry among others) and vertically between parastatal, central or local government institutions is desirable and feasible.

Consequently, this Strategy has adopted a problem solving approach encompassing multi-sectoral collaboration through the formation of an expanded partnership in management of REDD+ knowledge, information networking and communications as a way forward in the long path of resolving conflicts and improving the overall quality of management of forest resources in the context of REDD+.

4.2.1 National level

In accordance with the Environmental Management Act, 2004, Section 15 and 75, all environmental management issues, including climate change, are coordinated by the Vice President's Office. In line with this Act, the functions of the Division of Environment approved by the President on 5th February 2007 mandate the Division to coordinate all climate change issues, including their adaptation and mitigation. Reducing emissions from deforestation and forest degradation is one of the mitigation options to address the impacts of climate change.

The government has subsequently put in place a National Climate Change Steering Committee (NCCSC) and National Climate Change Technical Committee to oversee and guide the implementation of climate change activities in the country. The NCCSC is an inter-ministerial committee which comprises Permanent Secretaries (PS) from 13 ministries (i.e. the Prime Minister's Office (PMO), the Ministry of Energy and Minerals (MEM), the Ministry of Finance and Economic Affairs (MFEA), the Ministry of Industry, Trade and Cooperatives (MITC), the Ministry of Natural Resources and Tourism (MNRT), the Ministry of Justice and Constitutional Affairs (MJC), the Ministry of Lands Housing and Settlements (MLHC), the Ministry of Agriculture and Food Security (MAFS), the Ministry of Fisheries and Livestock Development (MFLD), the Ministry of Foreign Affairs and International

Cooperation (MFIC), and the Ministry of Agriculture, Livestock and Environment of the Government of Zanzibar (MALE). The NCCSC reports to the Vice President's Office.

4.2.2 Institutional framework for REDD+ activities

In order to avoid overlaps and duplication of efforts, the same institutional arrangement will also serve for REDD+ activities (Figure 1.1). The NCCSC which handles all climate change related issues in Tanzania will serve as a top decision making body for the national REDD+ scheme and general overseer for the implementation of this Strategy. Technical issues will be handled by the National Climate Change Technical Committee.

4.2.2.1 The National Climate Change Technical Committee (NCCTC)

The NCCTC is made up of Directors of the various Ministries in the National Steering Committee. Its function is to oversee all technical issues related to the implementation of climate change issues, including the implementation of this National REDD+ Strategy. The NCCTC reports to the steering committee.

4.2.2.2 National Carbon Monitoring Centre (NCMC)

When operational the NCMC will provide technical services on measuring, reporting and verification of REDD+ activities across the country. It will be a depository of all data and information concerning REDD+, including the NCAS. The centre will report to the NCCTC. The Centre will be manned by competent national professionals. Modalities for establishment of the Centre are currently on-going.

The existing composition of members of the above committees may be broadened as the need arises. However, both the FBD and the DCCFF will have an important role in implementing, supervising and operationalizing the REDD+ initiative. This is based on the already existing initiatives in the forestry sector, such as PFM that includes JFM and CBFM. Likewise, local Government will ensure smooth implementation of REDD+ related activities in their areas of jurisdiction.

4.2.2.3 The REDD+ Task Force

A REDD+ Task Force (TF) has been appointed by the Government to oversee implementation of technical and operational issues in relation to REDD+ readiness. The TF is an interim arrangement which will eventually be replaced by more permanent structures such as the NCCTC.

Currently, the TF consists of 8 technical officers drawn from the DoE and FBD, Zanzibar and Local Government with the provision to co-opt members from other sectoral organizations as needed. It is chaired by the DoE. The TF is charged with identifying critical challenges and opportunities as well as addressing all issues at national and sub-national levels leading to the development of a suitable REDD+ strategy for the country. Their ToR include the following:

- Develop the National REDD+ strategy based on the National REDD+ Framework;

- Develop reference level scenarios and MRV systems for accounting deforestation and forest degradation separately, both at local and national levels;
- Adopt a system in which not only the carbon saved by reduced deforestation and degradation, but also the additional carbon sequestered by sustainable management of existing forests, will be subject to crediting; and
- Propose and facilitate a transparent system of institutional arrangement for implementing REDD+, which allows funds received at the national, state or project level to be dispersed fairly to those stakeholders, such as the communities practicing CBFM, who have been active in conserving forests and the carbon within.

The TF is also involved in the coordination of all REDD+ related interventions such as the FCPF National Carbon Accounting System (NCAS) through support by the Clinton Foundation Climate Change Initiative and UN-REDD, development of a REDD fund mechanism, and the testing of MARV methods and technologies.

The TF and its facilitation are required specifically to deliver the following outputs:

- Assist REDD+ demonstration projects to develop methodologies for Monitoring Reporting and Verification (MRV), and make sure that lessons learnt are consolidated and disseminated;
- Knowledge base on climate change and REDD+ in Tanzania developed and disseminated;
- Coordination mechanisms to facilitate development of a National REDD+ Strategy established and functional;
- Conceptual Framework for National REDD+ Strategy and Action Plan prepared and discussed;
- National and local level consultation and awareness creation on REDD+ processes established and implemented;
- Lessons learned from study tours in-country and internationally to study experiences from programmes and initiatives to reduce deforestation are consolidated and disseminated;
- Transparent and independent mechanism for a possible REDD+ Fund for Tanzania developed and operational;
- Draft National REDD+ Strategy and Draft Action Plan prepared and discussed at all levels;
- Special in-depth studies needed for the development and implementation of the REDD+ strategy planned and implemented; and
- National REDD+ Strategy and Action Plan prepared and submitted.

Due to the temporal nature of the TF, its membership has been limited. However, for effective implementation of the REDD+ readiness, as it involves cross sectoral issues, membership of the TF will need to be increased to include other sectors such as Ministry of Agriculture, NGOs, Forest Dependent People's Organisations and the private sector. The permanent institution that will follow the TF will reflect this expanded nature of the structure.

4.2.2.4 The REDD Secretariat

Currently, activities of the TF are facilitated by a Secretariat based at the Institute of Resource Assessment (IRA) of the University of Dar es Salaam. The IRA was identified by MNRT-FBD/VPO-DoE/RNE in March 2009 to facilitate for 18 months the consultation process leading to the development of this National REDD+ Strategy, and to facilitate the initial stages of quick start activities of REDD+ implementation to mid-2010. The Project was subsequently extended to December 2010. After that time, a more permanent structure for the follow up of REDD+ related activates would be put in place.

The facilitator assists the TF in preparing the country for the REDD+ process as well as promoting a diversified set of activities aimed at testing mechanisms to improve the incentives for sustainable forest management, including reduced deforestation and forest degradation, and to assist in developing capacities at all levels for the national processes for making Tanzania ready for the international markets for environmental services, in particular the carbon markets.

4.2.2.5 Regional and district level coordination

The coordination of REDD+ at the regional and district levels adheres to the existing government local government institutional structure. The Regional Administrative Secretariat serves as the link between the Ministries and the District Councils. REDD+ related activities are coordinated at the regional level through the Regional Secretariat. At the district and municipal levels, Environmental Committees as established by EMA, 2004, will serve as coordinators for REDD+ activities in their respective areas (Figure 1.1).

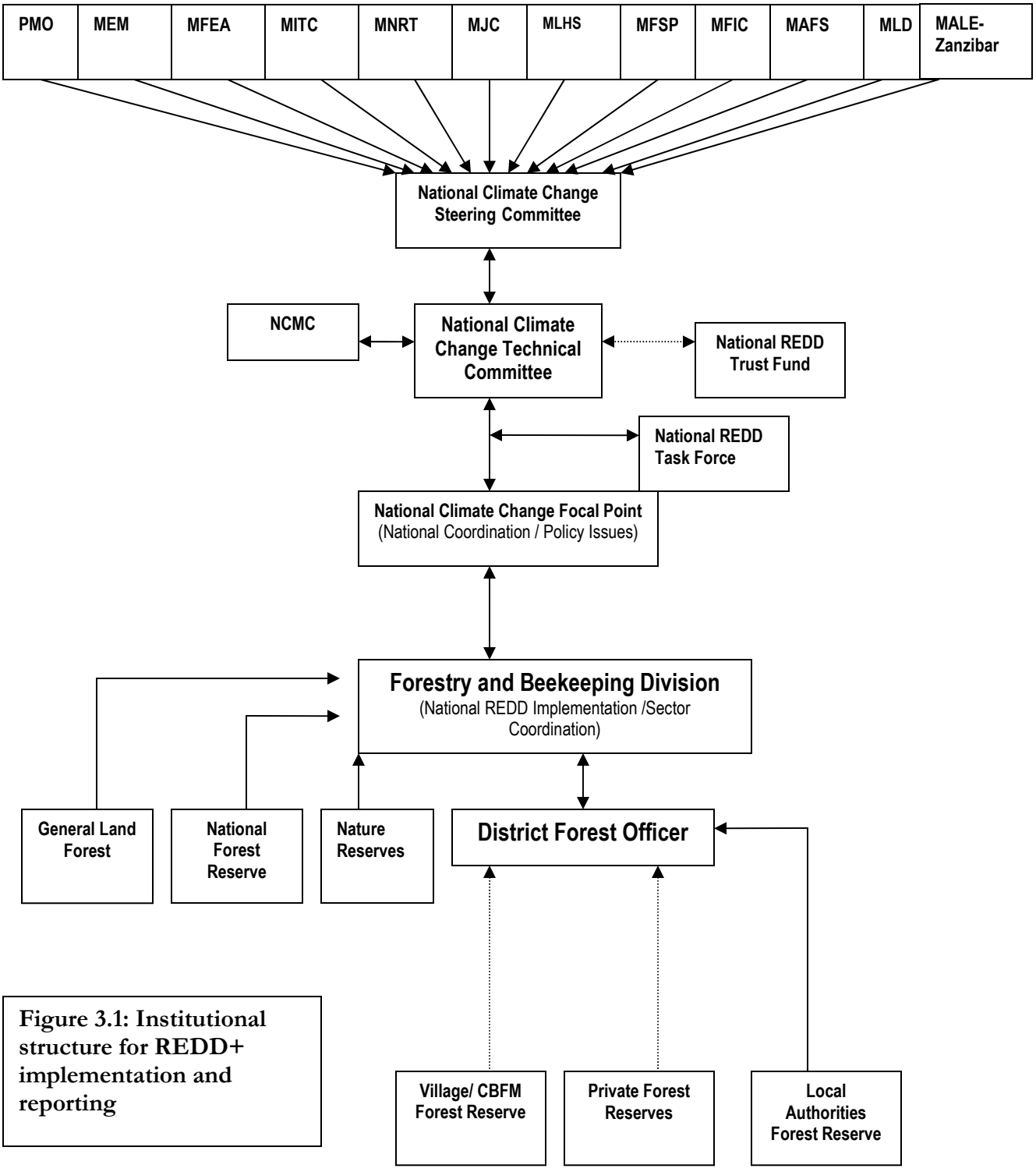

Figure 3.1: Institutional structure for REDD+ implementation and reporting

Figure 3.1: Institutional structure for REDD implementation and reporting

4.2.2.6 Increasing capacities of institutions to manage and coordinate REDD+ activities

For effective and transparent implementation of REDD+, a coherent and credible institutional framework with well informed and capable personnel to manage and coordinate REDD+ activities at national and sub-national levels is necessary. In view of the fact that REDD+ is a cross-sectoral initiative involving stakeholders at ministerial and local government levels, civil society and the private sector, it provides challenges of effective coordination, decision making and governance.

These possible sources of inefficiencies can be minimized through effective capacity building and awareness raising. Through the REDD+ readiness plan training and building of capacities of all institutional structures involved in the REDD+ process and support to the functioning of these structures was envisaged. The capacity building activities were implemented through the following activities:

- Training needs assessment at all levels.
- Strengthening capacities of national steering and technical committees
- Strengthening capacities of REDD+ TF and Secretariat, and
- Training and awareness raising for LGA and other key stakeholders in all districts.

4.3 Policy Environment and Legal Framework

4.3.1 Tanzania mainland

An enabling policy environment and legal framework are important for the implementation of the REDD+ policy. They are both needed to recognize the importance of forests in climate change mitigation and call for responsible ministries to put measures to appreciate climate change and address its impacts as a result of global warming.

4.3.1.1 Policy environment

Hence, this Strategy takes cognizance of a number of relevant policies and legislations that need to be considered when implementing it. Policies and legislations provide highlights of key policy issues that need to be taken on board to ensure that both livelihoods and environmental concerns are clearly addressed in the Strategy in order to ensure that forest resources are conserved or used in a sustainable manner and poverty levels of the communities living adjacent to them is reduced. Policies and legislations relevant to REDD+ interventions in Tanzania include National Vision of development to 2025, National Strategy for Growth and Poverty Reduction (MKUKUTA), the National Environmental Policy (1997), the Forest Policy (1998) which encourages participatory forest management and seeks to integrate biodiversity values in forest management, and the Land Policy (1995). Others are the National Agriculture and Livestock Policy (1997).

(a) National Vision 2025

The general Vision of Tanzania 2025 is to graduate the country from a least developed country to a middle-income country with a strong competitive economy by improving socio-economic opportunities, public sector performance and environmental management. The Vision

encourages a sustainable development endeavour, on inter-generation equity basis, such that the present generation derives benefits from the rational use of natural resources of the country without compromising the needs of future generations.

(b) National Strategy for Growth and Poverty Reduction (MKUKUTA)

The Cabinet and Parliament adopted MKUKUTA, the second Poverty Reduction Strategy, in early February 2005. MKUKUTA makes linkages with Vision 2025 and is committed to the Millennium Development Goals (MDGs) as internationally agreed targets for reducing poverty. MKUKUTA aims at poverty reduction through three broad outcomes:

- Growth and reduction of income poverty;
- Improved quality of life and social well being;
- Good governance and accountability.

MKUKUTA acknowledges the link between poverty and environment, builds upon MDG 7, and it includes relevant targets in each of the three outcomes. Out of MKUKUTA's 108 targets, 15 are directly linked to environmental issues. MKUKUTA's targets on the environment relevant to forest resources are as follows:

Cluster 1: Growth and reduction of income poverty

- Target 1. Reduced negative impacts on the environment and people's livelihoods
- Target 2. Reduced land degradation and loss of biodiversity
- Target 3. Increased contributions to incomes of rural communities from wildlife, forestry and fisheries

Cluster 2: Improvement of quality of life and social well-being

- Target 13. Reduced vulnerability to environmental disasters
- Target 14. Soil, forest and acquatic ecossytems that people depend on for production and reproduction conserved
- Target 15. Reduction in land degradation and loss of biodiversity

Cluster 3: Governance and accountability has targets (and strategies) on equitable access and use of natural resources, general public participation, and transparent and accountable use of natural resources.

Specifically, MKUKUTA contains the following strategies and objectives related to natural resource management:

- Promote transparent trade in natural resources (forestry, fisheries, wildlife, agriculture) based on sustainable use principles, and promote measures to eliminate illegal trade in natural resources (Cluster strategy 1.1.8);
- Pursue policies that attract public and private investments in agriculture (including livestock) and natural resources, promote diversification to non-farm activities (Cluster strategy 4.3.1);
- To increase contributions from wildlife, forestry, and fisheries to incomes of rural communities, as an operational target under the general goal of reducing income poverty in rural areas. This target has the following specific cluster strategies:

- o Develop programmes for increasing local control and earnings in wildlife management areas, and establish locally managed natural resource funds, tapping on local traditional knowledge;
- o Scale up PFM in all districts, as a mechanism for increasing income of rural communities from natural resource management;
- o Harmonize natural resource sectors policies and strategies and remove any conflicts in laws and regulations. Improve land conservation measures, and community-based and environmentally sound natural resource management.

- Natural resources and other ecosystems that people depend upon for production and reproduction conserved (Operational target 3.12);

All these notwithstanding, MUKUKUTA targets are broad and may be difficult to monitor and evaluate. The instrument charged with mainstreaming the environment into the poverty reduction processes is the Environmental Management Act of 2004 through the EMA Implementation Support Program (ISP, 2007- 2012) in the Vice President's Office. However, with a Tshs 34 billion deficit on the Tshs 40.7 billion EMA-ISP budget (VPO, 2008) the likelihood of achieving any meaningful implementation is limited. The lack of support is problematic as EMA-ISP is a key instrument for MKUKUTA implementation and monitoring.

(c) National Environmental Management Policy (1997)

Tanzania has promulgated the National Environmental Management Policy (1997) (NEP) and other sector specific policies, which provide the policy guidance on how its environment and natural resources will be sustainably managed. There is in place a solid institutional framework mandated among institutions to coordinate the implementation of policies and enforce laws that have been enacted by the Parliament for the conservation and management of the environment and natural resources.

The role of NEP, 1997 can be summarized to include the following:

i. Developing consensual agreement at all levels for the challenge of making trade-offs and the right choices between immediate economic benefits to meet short term and urgent development needs, and long term sustainability benefits;
ii. Developing a unifying set of principles and objectives for integrated multi-sectoral approaches necessary in addressing the totality of the environment;
iii. Fostering Government-wide commitment to the integration of environmental concerns in the sectoral policies, strategies and investment decisions, and to the development and use of relevant policy instruments which can do the most to achieve this objective;
iv. Creating the context for planning and coordinating at a multi-sectoral level, to ensure a more systematic approach, focus and consistency, for the ever-increasing variety of players and intensity of environmental activities.

One of the major thrusts of NEP is that it provides for the need to develop ways for encouraging a holistic multi-sectoral approach to environmental management by integrating environmental concerns in sectoral policies, strategies and decisions. In that way it creates the context for cross-sectoral planning and coordination.

NEP articulates the concept of shared responsibility and distinct accountability for environmental management so as to inculcate collective responsibility in environmental management without blurring specific mandates and responsibilities that have been assigned to each institution.

NEP is comprehensive and covers environmental mandates assigned to other sectors. Paragraphs 45 to 60 of the Policy provides on sectoral policies covering agriculture, livestock, water and sanitation, health, transport, energy, mining, human settlement, industry, tourism, wildlife, forestry and fisheries. This position is also reciprocated and reflected in sectoral policies by including paragraphs on environment management in general and specifically on the requirement of undertaking an EIA.

The NEP in its diagnosis of the state of the environment in Tanzania identified six major problems that require urgent attention. These are problems of:-

i. Land degradation;
ii. Lack of accessible, good quality water for both urban and rural inhabitants;
iii. Environmental pollution;
iv. Loss of wildlife habitats and biodiversity;
v. Deterioration of aquatic systems; and
vi. Deforestation.

In finding solutions and tackling these problems the NEP outlines its overall objectives as follows:-

i. to ensure sustainability, security and equitable use of resources for meeting the basic needs of the present and future generations without degrading the environment or risking health or safety;
ii. to prevent and control degradation of land, water, vegetation, and air which constitute life support systems;
iii. to conserve and enhance our natural and man made heritage, including the biological diversity of the unique ecosystems of Tanzania;
iv. to improve the condition and productivity of degraded areas including rural and urban settlements in order that all Tanzanians and aesthetically pleasing surroundings;
v. to raise public awareness and understanding of the essential linkages between environment and development, and to promote individual and community participation in environmental action;
vi. to promote international cooperation on the environment agenda, and expand our participation and contribution to relevant bilateral, sub-regional, regional, and global organizations and programs, including implementation of Treaties.

Challenges and problems identified in the NEP as well as the overall objectives have informed the enactment of the Environmental Management Act, 2004.

(d) Forest Policy (1998)

The first Forest Policy in the then Tanganyika was promulgated in 1953. The policy emphasised among other things the need to protect forest resources and managing them in the most productive way to meet present and future needs. The policy envisaged shared responsibilities,

but there were no legal provisions to enforce such envisioned responsibilities[30]. The Forest Legislation of 1957 was not effective beyond the government controlled forest estate because it was not explicit on how to monitor forest development in areas outside state ownership. The consequence has been massive deforestation in the forests on general (public) lands (57% of total forest area).

Thus for over four decades, Tanzania has been implementing a Forest Policy of 1953, until 1998 when a new policy was approved by the government[31]. The overall goal of the National Forest Policy is to enhance the contribution of the forest sector to the sustainable development of Tanzania and the conservation and management of her natural resources for the benefit of present and future generations. The objectives of the forest sector on the basis of the overall goal are as follows:

- Ensured sustainable supply of forest products and services by maintaining sufficient forest area under effective management;
- Increased employment and foreign exchange earnings through sustainable forest-based industrial development and trade;
- Ensured ecosystem stability through conservation of forest biodiversity, water catchments and soil fertility; and
- Enhanced national capacity to manage and develop the forest sector in collaboration with other stakeholder.

The Policy encourages community and private sector involvement in forest management through establishment of Village Land Forest Reserves (VLFRs), individual, group and community forests over which they have full rights of ownership and management and Joint Forest Management (JFM) through joint management agreements with government where communities have user rights and management responsibilities. All this aims at enhancing conservation of forests by reducing illegal use of the resources.

The forest Policy explicitly makes reference to linkage with other sectors. These include agriculture, livestock, mining, energy, wildlife, beekeeping, environment and land. Policy failures in some of these sectors have contributed to the deforestation and degradation of forest resources. This has been due to inadequate sectoral coordination and harmonization of policies[31].

The forest Policy has been revised to take into consideration significant changes and climate change issues which have occurred in the country since 1998. The revised forest policy awaits government approval. Following approval of the forest Policy, the National Forest Programme (NFP) will be revised to accommodate REDD+ issues.

Similarly, both the current National Forest Policy of 1998 and its subsequent National Forestry Programme of 2001 recognize and promote sustainable forest management and utilization. This is demonstrated by the three policy objectives which put emphasis on: i) improved forest quality through sustainable management practices, ii) improved livelihoods through increased forest revenues and secure supply of subsistence forest products, and iii) improved forest governance at village and district levels through effective and accountable natural resource management

[30] Kaoneka, (2000).

[31] URT (1998).

institutions. However, these legal documents are not explicitly pointing out on climate change issues.

(e) National Land Policy (1995)

Land tenure issues are fundamental to the sustainable utilization of land resources. Security of land tenure and forest resources influences the level of investment on land and conservation of land based natural resources thus, forest resource management depends on land tenure and local community tenure rights. According to the National Land Policy (1995), in Tanzania, the President owns the land in trust for present and future generations. The Commissioner for Lands acts on behalf of the President and administers the land. Granted right of occupancy, which is the main form of tenure, can either be acquired through a grant by the Commissioner for Lands or through customs and tradition.

The deforestation and degradation reported in the previous paragraphs has been a result of among other things insecure land tenure resulting from absence of land use planning[32]. While the land policy[33] recognizes the existence of two main types of tenure: customary (deemed) land rights and granted right of occupancy, the forest resources in the unreserved or general land (57% of area) are open access resources due to unclear ownership, absence of security of tenure and formal user rights[7]. As a result, these forests have been under constant pressure for conversion to other competing land uses such as agriculture (shifting cultivation), livestock grazing, settlements and industrial developments and also suffer from repeated forest fires[7]. Current cross sectoral efforts are geared at provision of property rights to communities and the private sector to sustainably conserve and manage the forests and trees on the general lands[7].

(f) Water Policy (2002)

The main objective of the National Water Policy of 2002 is to develop a comprehensive framework for sustainable development and management of the nation's water resources and putting in place an effective legal and institutional framework for its implementation. The policy aims at ensuring that beneficiaries participate fully in all stages of water resource development.

The Policy recognizes the fundamental but intricate linkages between water and socio-economic development, including environmental requirements. The Policy expounds on the importance of water for domestic use, agriculture, livestock keeping, mining, energy, fisheries, environment, human health, wildlife and tourism, forestry, navigation and trans-boundary requirements.

In view of this, the Policy calls for an Integrated Water Resource Management in Tanzania so that “there is equitable and sustainable use and management of water resources for socio-economic development, and for maintenance of the environment"[34]. Several policy measures are proposed to ensure sustainable conservation and utilization of the water resources. Some of these measures include the conservation of catchment forests which is of interest to REDD+.

[32] FBD (2001).

[33] URT (1995).

[34] URT (2002)

(g) National Energy Policy (2003)

This Policy takes into account the structural changes in the economy and political system at national and international levels. The economic liberalization has had major implications on energy development and consumption. Increased private investment in mining, tourism, manufacturing, finance and communication has increased demand for reliable and cost effective energy. Human population and urbanization have also increased pressure on energy.

The main objective of the Energy Policy is to improve the welfare and living standards of Tanzanians. The Policy aims to provide input in the development process of the country by establishing a reliable and efficient energy production, procurement, transportation, distribution and end-use system in an environmentally sound manner and with due regard to gender issues.

The strategic focus of the Policy in meeting the main objective is to undertake the following activities:

- Develop domestic energy resources, which are least cost-effective.
- Promote economic energy pricing.
- Improve energy reliability and security, and enhance energy efficiency.
- Encourage commercialization and private sector participation.
- Reduce forest depletion; and
- Develop human capacity for energy resources management.

Even with the Energy Policy in place since 2003, Tanzania is still facing major problems regarding energy. Only about 10 % of the 35 million people in Tanzania are connected to the national grid, and in rural areas, this is about 1% of the population. Over 90% of the energy consumed is from fuel wood and charcoal, thus putting more pressure on forest resources. Power cuts in urban areas are also so frequent - even when there have been sufficient rains to fill the dams - that energy switch to save the forests may prove an uphill task.

(h) National Human Settlements Development Policy (2000)

The overall objective of the National Human Settlements Development Policy (NHSDP) is to promote the development of sustainable human settlement and to facilitate the provision of adequate and affordable shelter to all people, including the poor. The policy outlines a number of objectives including environmental protection within human settlements and protection of natural ecosystems against pollution, degradation and destruction.

The NHSDP recognizes planning and management of human settlement areas as one of the broad human settlement issues. Within this regard, the NHSDP identifies environmental protection as one of the strategic issues in human settlement planning and development. NHSDP also addresses the following issues:

- lack of solid and liquid waste management, leading to environmental deterioration;
- Emission of noxious gases from vehicles and industrial activities as a major cause of air pollution in urban areas;
- Encroachment into fragile and hazardous lands (river valleys, steep slopes and marshlands) leading to land degradation, pollution of water sources, etc;
- increasing dependence on firewood and charcoal as a main source of energy in human settlements leading to depletion of forest, environmental deterioration and air pollution; and

- Unauthorized sand mining in river valleys leading to environmental degradation.

4.3.1.2 Legal framework

All along, Tanzania had several pieces of legislation on natural resources, which touched on some issues of environment. Most of these pieces of legislation aimed at regulating use and management of natural resources have evolved along sector lines governing specific environmental sector. Nevertheless, a notable development in Tanzania has been the change in approach in legislating on management of natural resources and the environment. There has been a shift from the solely "command and control" approach to more participatory type of management of resources.

Also, most of the pieces of legislation enacted after the Rio Conference in 1992 have provisions on conservation of biodiversity and the use of environmental management tools such as General Management Plans (GMPs) and Environmental Impact Assessment (EIA). Hence, although it fails to mention specific issues on climate change mitigation, the legal framework in Tanzania promotes sustainable forest management and protection, which are important for the implementation of this Strategy.

(a) Environmental Management Act (2004)

The enactment of the Environmental Management Act (2004) has provided framework legislation for environmental management in Mainland Tanzania. This is a comprehensive piece of legislation providing for mechanisms and forums of coordination as well as tools/instruments of environmental management.

(b) Forest Act No 14 of 2002 (Cap 323) and Beekeeping Act (2002)

Following review of the National Forest Policy in 1998, the government enacted Forest Act No 14 of 2002 (Cap 323 R.E 2002)[35]. The Act is the legal instrument to implement the National Forest Policy. The Act among others provides for implementation of Participatory Forest Management (PFM) in the form of Community Based Forest Management (CBFM) and JFM.

(c) Land Act (1999) and Village Land Act (1999)

Forests are dependent on what happens to the land they grow into. Hence there is a strong linkage between land and forest legislation. In 1999 the Land Ordinance of 1923, which used to be the principal governing statute regarding land tenure and management in Tanzania, was repealed and replaced by two pieces of legislation, the Land Act No. 4 of 1999 and Village Land Act No. 5 of 1999, which came into force on May 1, 2001.

The National Land Act and Village Land Act of 1999[36] provide the legal framework for three land categories, namely general land, reserved land and village land. General land is a residual category i.e. unoccupied land that is available for other purposes. It includes all land that is not reserved land or village land. Reserved land denotes all land set aside for special purposes, including FRs, game parks, game reserves, land reserved for public utilities and highways,

[35] URT (2002).

[36] URT (1999).

hazardous land and land designated under the Town and Country Planning Ordinance. The village land constitutes all land in the village. Hence, the Village Land Act deals with the management of the latter category of land, while the Land Act deals primarily with the management of reserved land and general land in line with the sectoral pieces of legislation that the reserved lands are established under.

The authority to demarcate and register villages lies with the Commissioner for Land. Most of the villages are not yet registered and their lands may be categorised as General Land. The insecurity with the general lands stems from its definition, which is provided in the Land Act: "'general land' means all public land which is not reserved land or village land. There are no provisions in either Act that clarify to what exactly the definition refers. There is little doubt that this definition raises concern of freeing 'surplus' land from villages, including forest lands, for external investors.

4.3.2 Zanzibar policy and legal framework to support forestry issues

4.3.2.1 National Forest Policy

The Zanzibar National Forest Policy sets forth the interest of the government and the people of Zanzibar in the conservation and development of forest resources. The general goal of the policy derived from the principles of sustainability and welfare of the people shall be as follows: "Protect, conserve and develop forest resources for the social, economic and environmental benefits of present and future generation of the people of Zanzibar".

4.3.2.2 Environmental Policy (1992)

The policy aims at conservation and protection of environment and efficient utilization of natural resources assets for sustainable development. The environmental policy priorities largely concur with forest policy strategies on educating the public on the need for environmental protection and conservation, promoting agro-forestry practices, intensifying genetic resource conservation programmes and promoting conservation of soil and water resources.

4.3.2.3 Agricultural Sector Policy

The Agricultural Sector Policy (ASP) and Strategic Plan (SP) recognize the importance of forests in agricultural productivity. The policy acknowledges that, major limitation facing agricultural sector in achieving high agricultural productivity is the depletion of on-farm natural resources base, including soil fertility and moisture. Thus the SP emphasizes sustainable approach to on-farm conservation and biodiversity.

4.3.2.4 Tourism Policy

The National Tourism Policy underlines the importance of environmental conservation in tourism development especially conservation of ecologically sensitive areas such as Jozani Chwaka Bay National Park, Ngezi–Vumawimbi Nature Forest Reserve and Kiwengwa-Pongwe Forest Reserve for the development of eco-tourism activities. It calls for the enforcement of Environmental Management and Sustainable Development Act pertaining to Environmental Impact Assessment (EIA) in all tourism development activities.

4.3.2.5 National Land Use Policy and Plan

The National Land–use Plan provides background information on population, human settlements and community resources, and provides planning recommendations for different sectors such as forestry, agriculture, tourism, coastal and marine resources management. It identifies areas for forest development activities.

4.3.2.6 Fisheries Policy

The Fisheries policy recognizes that fishing is an important economic activity for the people and puts emphasis on increasing awareness on the need of sustainable management of marine resources and calls for community participation in coastal resources management. Development of Marine and Coastal Environment Management Programme under which mangrove is a component of concern, provides opportunity to ensure mangroves are effectively managed so as to improve fish breeding grounds, and hence increase fisheries productivity.

4.3.2.7 Energy Policy

As the energy policy is being formulated, the working agenda under the department of energy recognizes the contribution of forest sector in support of energy production for the people of Zanzibar. The fact that over 90% of the population depends on wood as a source of energy for cooking and heating is a result of the escalating tariffs of electricity and petroleum products, which in turn put more pressure on the remaining natural vegetation.

4.3.2.8 Forest Resources Conservation and Management Act No. 10 of 1996

This forest legislation supports the implementation of forest policy and provides legal room for communities to participate and engage in forest management programmes in Zanzibar Islands. Formulation of Community Forest Management Agreements is a result of this Act.

CHAPTER FIVE

BASELINE ESTABLISHMENT, MONITORING, VERIFICATION AND REPORTING

5.1 Overview

The basic requirement for a country to implement REDD+ among others things includes baseline setting, regular reporting of progress, establishing a monitoring system that generates new information, institutional capacity and establishing a system to verify findings and ensuring transparency.

Monitoring and reporting for REDD+ entails developing the Monitoring, Assessment, Reporting and Verification (MRV) system which will provide required set of systems to understand carbon and ecosystem services related data such as carbon stock changes, water quantity and quality, biodiversity and ecotourism. Monitoring is also essential for keeping track of co-benefits and the degrees of equity in managing resources under REDD+, including changes over time as the frameworks mature and settle. In addition, a robust monitoring system will provide social and economic information on impacts and benefits of REDD+ at community levels. The design and implementation of MRV frameworks relevant for REDD+ will require especially careful attention and involvement of various actors at national sub-national and local revels.

Tanzania intends to establish a participatory and functional MRV system to monitor deforestation and degradation and respond to the needs for data collection, synthesis and analysis of data and information and provision of information on all aspects of REDD+. The MRV system will also monitor rural livelihoods, conservation of biodiversity, key governance factors related to REDD+ implementation and assess the impacts of the REDD+ strategy in the forest sector. The monitoring system will be implemented at national, sub-national and local levels, involving Government and state actors, civil society, NGOs, private sector entities, local government authorities including villages, women groups, the youth and teens and consumer groups.

Through the National REDD+ Framework's vision of a Low Carbon Development Strategy (LCDS), Tanzania is poised to be a leader in dealing with climate change and forestry. The GoT sees an opportunity to implement a LCDS by reducing emissions of GHGs from deforestation and forest degradation, and to receive payments through fund based financing arrangements for the reduction. Tanzania has recognized the UN REDD mechanism as a key part of the LCDS, and is one of the countries that have benefited under the World Bank Forest Carbon Partnership Facility (FCPF). The resultant LCDS and this National REDD+ Strategy have marked the first steps of a larger goal of integrating forests into the national economy and global climate change mitigation effort. This goal can only be achieved by establishing a comprehensive forest carbon measurement, reporting, and verification (MRV) system as proposed hereunder.

The design of a national MRV system should be developed from a policy perspective that prioritizes the overall objectives of lowering carbon emissions without hindering and potentially enhancing economic growth. To fulfil the policy requirements of this Strategy and the LCDS the

MRV system needs to support decision-making through reliable, accurate and current information on forests, forest cover change and greenhouse gas emissions.

The information should be continuously available and focused on policy areas where action be taken. The Government of Finland through FAO are supporting Tanzania to put in place a very robust Forest Resource Assessment and Monitoring System (NAFORMA), this will fulfil the policy requirements of this Strategy and the LCDS the MRV system needs to support decision-making through reliable, accurate and current information on forests, forest cover change and greenhouse gas emissions (GHGs). On the other hand, through the Royal Norwegian Government support to the Government of Zanzibar, a process is under way in Zanzibar to survey the Islands' wood biomass that will also conform to the NAFORMA initiative.

The Clinton Climate Initiative (CCI) has been working with the GoT/UN-REDD to develop such a comprehensive MRV system for emissions of GHGs resulting from changes in land use. While the system and the tools proposed here will allow the GoT to meet the United Nations Framework Convention on Climate Change (UNFCCC) and the Intergovernmental Panel on Climate Change (IPCC) criteria of robustness, transparency, and verifiability while helping to meet the challenges of monitoring permanence, avoiding leakage, and establishing the additionally of emissions reduction. The actions proposed will bolster the on-ground and satellite data measurement base for Tanzania, and will incorporate this into a flexible GHG accounting, reporting and decision-making support system. The system and tools are consistent with the IPCC guidelines and in line with the suggested GOFC-GOLD methods and the emerging standards and protocols of the intergovernmental Group on Earth Observations (GEO).

A 9-step process will be developed to ensure the MRV system will meet any eventuality of an UNFCCC agreement. The 9-step process would ensure that both international reporting and national policy needs (e.g. entity level crediting) will be met. The 9-steps can be divided in three phases that can be implemented in parallel:

1. Design a comprehensive system capable of consistent estimation at national and sub-national scales and be able to incorporate results into a decision-making environment;
2. Develop models, time-series consistent inventory, reference emission levels, and define research needs and other data and methodological needs; and
3. Develop standard operational procedures including capacity building; data infrastructure, hardware and software implementation; and quality assurance, quality control and verification.

Tanzania is one of nine countries where the UN-REDD Programme is supporting the development of REDD+ readiness and one of the ten countries under the GEO-FCT National Demonstrators. The country has been developing several MRV tools and methodologies over the past year, with the support of various international initiatives. During the first week of February 2010, the Government of Tanzania represented by the Ministry of Natural Resources and Tourism, Forestry and Beekeeping Division organized a Measurement, Reporting and Verification (MRV) workshop in Tanzania, with the support of the UN-REDD Programme. The workshop was to share experiences and results from actual projects in the country and to harmonize with ongoing initiatives in other REDD+ countries.

In terms of monitoring and reporting, Tanzania needs enhanced capacity and capturing of relevant data, combined with work by other players, UN REDD Programme should provide that capacity and deliver the required data. Capacity building on MRV needs at the national level to assess the specific forest areas under REDD+ that need to be monitored and the results reported upon, these could be provided in the form of training on remote sensing, GIS, IPCC Good Practice Guidance, and linked to the ongoing Tanzanian National Forest Inventory work (NAFORMA) and various work conducted with different actors.

Consultation with various actors about their related MRV work in country and internationally, identified three main areas that are central to ensuring successful MRV REDD+ establishment in Tanzania. These are:

1. Need to reinforce MRV country coordination for provision of data and methodologies
2. Need to strengthen institutions that deal with issues related to forest assessment, monitoring and reporting
3. Need to strengthen cross-sectoral participation and approach (both vertical and horizontal)
4. Need to have the NCAS-T and the National Carbon Monitoring Centre (NCMC)

5.2 Establishing the Baselines

A key aspect of determining the carbon benefit of any forest carbon project is to accurately quantify the levels of carbon changes to known levels of precision. Determination of carbon changes requires baselines against which additional carbon benefits as a result of carbon project can be determined.

The activity of setting out a national reference scenario is currently being spearheaded by the Forest and Beekeeping Division through the support of the UN-REDD project and the National Forest Resources Assessment and Monitoring (NAFORMA). The entire forest estate within the country or most of it will then be needed to participate in order to contribute to the national efforts of reducing deforestation and forest degradation, so as to be able to account for REDD+ against the baselines. This calls for the contribution of different forest regimes, e.g. national parks, forest reserves, community forests, and private forests indicating a large number of different stakeholders to be involved. This will require a system to aggregate baselines from all forest regimes. With this system the individual baselines from different regions and different regimes will add up to the national reference scenario. The government can identify and prioritize high degradation areas and/or specific forest management regimes such as Participatory Forest Management (PFM).

Under REDD+, the reference scenario will be the baseline against which achievements made by a country can be measured and credited. However, there is considerable uncertainty at the moment about how baselines may be determined for operationalization of REDD+ policy, since it is not yet decided what will be included. The possible options include crediting: reduction in emissions from deforestation; reduction in emissions from degradation; enhancement; forest conservation; and carbon stock. The last two options relate to forests with long protection status which would be credited based on the maintenance of carbon stock which would be compensated

through a "conservation" fund that would be included under REDD+.

Since the REDD+ policy is likely to be undertaken nationally, the country deforestation baseline would be determined by depicting historical land use changes from satellite imageries and typical carbon stock data for different types of forests to calculate the changes in terms of tons of carbon. The caviat, however, is that Tanzania has inadequate resources to access remote sensed data and even the available ground data on forest carbon stocks are in patches and inadequate.

In the IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry (*GPG-LULUCF*), REDD+ related activities are covered in three categories:

(i) "forest land converted to other land" – deforestation
(ii) "forest remaining as forests" – degradation, forest conservation, sustainable forest management, and enhancement of carbon stocks
(iii) "other land converted to forest" – afforestation/reforestation of non-forest land.

IPCC GPG is at present a widely acceptable official document that provides methodologies for the estimation of emissions and removals of GHGs. It refers to two basic data inputs:

(i) Activity data i.e extent of emission/removal category: in case of deforestation refers to area of deforestation presented in hectares over known time period. This can be determined using the following approaches:
    - Approach 1. Identifies the total area for each land category and provide net area changes i.e deforestation minus afforestation
    - Approach 2. Involves tracking of land conversions between categories, resulting in a non-spatially explicit land-use conversion matrix
    - Approach 3. Extends Approach 2 by using spatially explicit land conversion information, derived from sampling or wall to wall mapping techniques

    Under a REDD+ mechanism, land cover/land use changes will need to be identifiable and traceable. Thus Approach 3 is the only option that will meet this goal.

(ii) Emission factors i.e emissions/removals of GHGs per unit area eg. CO_2 emitted or sequestered per hectare. The carbon changes are determined in the five IPCC pools: above ground biomass, below ground biomass, litter, dead wood and soil organic carbon. There are three Tiers of data for emission factors in the IPCC GPG that are derived from ground measurements:

    - Tier 1: The use of IPCC default values such as above ground biomass in six ecological zones per Africa, Asia and Latin America (IPCC Emission Factors Data Base – EFDB). This provides crude estimates of ±70% of the mean.
    - Tier 2: This is the improvement of Tier 1 where country specific data collected within the national boundary are used. More detailed strata may also be delineated to improve the precision of estimations.

- Tier 3: Uses actual inventory with repeated measurements from permanent sample plots for the directly determination of forest biomass changes. This is the most rigorous approach associated with highest level of efforts.

Moving from Tier 1 to Tier 3 increases the accuracy and precision of the estimates, but also increases the complexity and the cost of monitoring. Before moving to Tier 3, approach 2 for activity data and a combination of Tier 1 and 2 for emission factors could be used. This information can be provided through NAFORMA. As more data is generated from demonstration activities during the REDD+ piloting phase, higher tier levels will be used in the monitoring system. Internationally acceptable methods, guidelines, and standards should be used for the collection of high quality data.

5.3 Approaches for Assessing Historic Carbon Stocks and Emissions

Forest inventories so far conducted in Tanzania have been geared towards assessing forests for reconnaissance and land use management classifications. The FBD conducted different management and reconnaissance forest inventories and land use management classifications. During 1971 -1973 the Government under the financial support from Canadian International Development Agency (CIDA) conducted a reconnaissance indigenous forest inventory for five blocks, i.e. Kilimanjaro, Tanga, Kilombero, Tabora and Mtwara. During 1975/1977 an industrial inventory was done by Jaako Poyry in five blocks previously inventoried in Kilimanjaro, Tanga, Kilombero, Tabora and Mtwara.

In 1996 the Swedish Government through SIDA supported a reconnaissance forest inventory in three regions of Singida, Arusha and Dodoma for the period 1992-1996. In 1999, the FBD conducted a study on the status of Non Timber Forest Products in Tanzania. The Catchment Forest Project also carried inventories for some forest reserves for the preparation of forest management plans. During 2005 the FBD conducted a reconnaissance forest inventory in 11 districts covering Liwale, Mkuranga, Tunduru, Nachingwea, Rufiji, Kilwa, and Kisarawe in the southern part of the country and Kilombero/Ifakara and Mvomero Districts in the east; Handeni and Kilindi in the north and Mpanda District in the west.

Nevertheless, these inventories are fragmented and lack continuity to enable follow up for the determination of change in the forest resources. The sampling intensities were low - in places hardly reaching 0.1%; and hence resulting in low precision estimates. It is difficult to give an acceptable appreciation of how much forest exists and what had happened over the last decades. The quality of some of existing maps is questionable. However, the vegetation classification system used by Hunting and Technical Services can be used to create a new map to be used as basis for change detection. FAO AFRICOVER map may also be useful in this regard.

Apart from the FBD forest inventories mentioned above, several inventories for individual forest reserves have been carried out by researchers and students from within and outside the country. However, there is no archive for the data generated from these inventories.

A number of remote sensing data sources of reasonable quality are also available free of charge. These include the FAO Remote Sensing Survey with original Landsat scenes of 1975, 1990,

2000, and 2005. These with a combination of some available digital maps can be useful in change detection analysis.

Also since there is no data on change in forest stocks for all forest types, a historical trend as regards degradation is difficult to be established. This implies that a reference emission level based on historical data is virtually impossible, and that a rather different system for carbon accounting needs to be established. Degradation and forest enhancement will, therefore, need to be captured within the MRV system.

The National Forest Resources Monitoring and Assessment (NAFORMA) has been adopted as the national framework for assessment, monitoring, reporting and verification of REDD+ related activities, data and information. NAFORMA is expected to deliver the following:

- Train on national forest inventories and remote sensing
- Determine land use cover changes for the past
- Determine the rate of deforestation
- Identify drivers of deforestation
- Produce a map showing different forest types and their detailed stocking parameters
- Conduct case studies to quantify emission factors for different forest types
- Design a forest monitoring system using PSP

With this information, a national REDD+ baseline will be established through a National Carbon Accounting System (NCAS-T). The National REDD+ Strategy expects that it shall make use of the data and analysis compiled by the NCAS-T to provide robust estimates of emissions resulting from land use change.

The construction of the REDD+ baseline will start as the data becomes available. However, a system of interlocked baselines will be adopted to operationalize REDD+ internally in different geographic regions and to account for carbon in different forest regimes such as national parks, forest reserves, community and private forests. The sum of the different baselines from different regions and forest regimes will add up to the national reference scenario.

5.4 Experiences from Carbon Stock and Other Biodiversity Measurements

Tanzania already has valuable experience from carbon stock and other biodiversity measurements from the Valuing the Arc project in the Eastern Arc Mountains. The approach adopted involved the use of high resolution satellite imagery and ground measurements to access carbon levels from above and below ground carbon pools. The Valuing the Arc Programme, through SUA with other collaborators, have been implementing a series of detailed permanent carbon assessment and monitoring plots across the Eastern Arc Mountains region using the 1 Ha Tropical Ecology Assessment and Monitoring (TEAM) methodology.

The Valuing the Arc Programme, with technical support from the Natural Capital Project, has developed a model and methodology for using the Tanzanian land cover map and available carbon data (above and below ground) to map the distribution of carbon across the eastern part of the country to provide a simple way to visualize the distribution of carbon in Tanzania. The

Valuing the Arc approach will be used to map out carbon levels in different forest and woodland regimes for the sub-national levels in the country.

5.5 Monitoring for REDD+

A key aspect of determining the carbon benefit of any forest carbon project is to accurately quantify the levels of carbon changes to known levels of precision. After setting up a baseline as pointed out in the foregoing, a system of monitoring the changes needs to be established. Monitoring of international support functions occurs throughout the project implementation.
NAFORMA has been adopted as one of the national data set framework for monitoring, reporting and verification of REDD+ related activities, data and information. The inventory based on *Permanent Sample Plots* is the backbone of this National REDD+ Strategy's MRV.

5.6 Verification of the Measurements

Before the transactions of carbon credits take place verification of the measurements is necessary. Verification is done by an independent party and establishes that the carbon measurements are reliable and accurate. Both national and international levels verification will be necessary since the baselines will be set at these levels. The verification of the national baselines will require independent verifier.

Within the country the independent party would have to be a licensed and registered agent, in the same sense as a chartered accountant, but would not necessarily have to be external to the country. Ideally the verifier will undertake ground spot measurements to check the accuracy of the field measurements by the villagers. After verification, carbon will be purchased through a national REDD+ scheme.

At present the country lacks knowledge on international independent verifiers & verification. Similarly, the system for independent verification at the national level is missing. It is, therefore, important to establish independent semi-autonomous National Carbon Monitoring Centre (NCMC) for this purpose. Apart from verification of the carbon data using approved guideline, the NCMC will among other things undertake the following core tasks:

a) Continuous development and maintenance of the national MRV system which will be initially designed with a special focus on forest carbon, but extendable in the long term to cover all the other emission sources,
b) Development and improvement of approved carbon assessment methods,
c) Training of foresters on the approved carbon assessment methods,
d) To host a national carbon database and a REDD+ Project Registry,
e) Development of a rigorous quality control procedure for data exchanged by projects, government and research institutions;
f) Identification of data needs and outsourcing of field data collection, mapping and compilation of carbon accounts to government or private entities with sufficient human resources and technical expertise to carry out the tasks;
g) To verify incoming data against given specifications, link the data to other national data bases such as NAFOBEDA, and publish the national carbon account layers through an open-access web platform;

h) To facilitate international reporting by providing information to VPO/DoE, which has the official reporting mandate; and
i) To participate and contribute actively in international expert fora and to follow up development of the international MRV standards.

5.7 Regular Reporting

Reporting will be needed at various stages and levels. Individual projects need to report on the carbon data to the national REDD+ scheme for funding. This should be done regularly. The government will then market the carbon to the international community. Reporting on the financial flow and livelihood issues will also be required at all levels.

Tanzania has adequate support to access remote sensed data and even bridge the gap in available ground data on forest carbon stocks. The technological and human capacity to undertake baselines will be supported by various institutions, including NORAD, UN-REDD, the GEO-FTC, Google Earth, the Lidar Project, et cetera.

CHAPTER SIX:

THE STRATEGIC IMPLEMENTATION OPTIONS

6.1 Overview

Following the Bali Road Map (Decision 2/CP.13) the United Republic of Tanzania is participating in implementing pilot activities. Among other provisions, the Road Map requests Parties to explore a range of actions, identify options and undertake efforts, including pilot activities, to address the drivers of deforestation relevant to their national circumstances. The focus is to reduce emissions from deforestation and forest degradation thus enhancing forest carbon stocks through sustainable management of forests.

Currently, two initiatives support implementation of REDD+ pilot activities in Tanzania. These are the Tanzania-Norway Partnership and UN-REDD. The outputs of activities being implemented contributed to a package for show casing at the CoP 15 and 16 in Copenhagen (Denmark) and Cancun (Mexico), respectively, forming a basis for negotiation on the post-2012 agreement. They have also contributed to the development of strategic implementation options for this Strategy as elaborated hereunder.

6.2 Key Issues and Strategic Interventions

This National REDD+ Strategy identifies ten (10) main strategic interventions and/or key result areas for the REDD+ implementation process in Tanzania. These areas are derived from key issues identified in the foregoing chapters, and from the drivers of deforestation and forest degradation and their underlying causes as elaborated therein. The matrix in the following paragraphs provides strategic statements and rationale for each key result area, as well as its goals, strategic objectives, expected outputs and key performance indicators for monitoring.

Key Result Area 1: REDD+ baseline scenario, monitoring, reporting and verification framework established

Strategic Statement and Rationale

The transactions of carbon credits require an effective MRV system that will ensure reliable and accurate measurements and reporting for validation. A national baseline scenario and reference emission levels are key aspects of determining carbon benefits of any forest carbon scheme. Accurate determination of carbon changes based on historical trend against which additional carbon benefits are made as a result of any scheme is thus also important. Integrated methods to quantify REDD+ and other forest benefits are as well important to realize equitable co-benefit sharing. However, carbon monitoring, assessment and verification present technical challenges. Historical forest data, on which predictions are based, is unreliable or non-existent. There are now fast and accurate ways of measuring carbon stocks with new technologies such as satellite

imaging and computer modeling so it should be possible to measure and verify carbon reductions. Nevertheless, there is the question of cost for the relatively new technology and capacity building required to carry out effective monitoring and accounting.

Goal 1: To set baseline scenario and reference emission levels for future monitoring, reporting and verification.

Strategic Objectives

1. To determine a national baseline scenario and reference emission levels by December, 2011.
2. To establish a national monitoring, reporting and verification system by December 2011.
3. To establish an integrated methodology to quantify REDD+ and other forest benefits such as biodiversity, ecotourism, and water catchment related to payment for environmental services by December, 2012.

Strategic Activities

1. Training national experts on preparation of baseline scenario and reference emission levels.
2. Acquiring, designing and maintaining the necessary infrastructure (both soft ware and hard ware) and equipment for determining baseline scenario and reference emission levels, and for MRV.
3. Determining model national baseline scenario and reference emission levels.
4. Training on preparation of MRV.
5. Determining MRV system.
6. Operationalizing National Forest Resource Monitoring and Assessment (NAFORMA) methodology and system.
7. Operationalizing National Carbon Accounting System for Tanzania (NCAST).
8. Operationalizing MRV system for Tanzania.
9. Developing integrated methods to quantify REDD+ and other forest benefits such as biodiversity, ecotourism, and water catchment related payment for environmental services.

Outputs and Key Performance Indicators

- 200 national experts fully trained by June, 2011.
- Functional National Baseline Scenario (REL and REF), MRV system and framework established by June 2011.
- A functioning model for determining national baseline scenario and reference emission levels in place by December 2012.
- 200 national experts fully trained by June 2011.
- A functioning national MRV system and framework established by June 2011.
- A functional national MRV system set by December 2012.
- IPCC compliant NAFORMA data sets available and in use through the National Forest and Beekeeping Database (NAFOBEDA) by 2012.
- A functioning NCAST in operation by 2012.
- A functioning MRV system for Tanzania in place by December 2012.
- A toolkit of integrated methods for quantifying REDD+ and other forest benefits in place by 2012.
- A database of manuals of integrated methods in NAFOBEDA in place by 2012.

Key Result Area 2: Financial mechanisms and incentive schemes established

Strategic Statement and Rationale

Development of a clear and transparent mechanism for receiving and handling REDD+ funds is a pre-requisite for REDD+ scheme. Active participation of all stakeholders is important in ensuring effective implementation of REDD+. Provision of sufficient incentives/compensation to motivate stakeholders to reverse the drivers of deforestation and forest degradation is central objective of REDD+ scheme. Analyzing aspects of social safeguard policies so as to assess likely positive or negative impacts is imperative for equitable distribution of resources accruing from REDD+.

Goal 2: To set sustainable financing mechanisms and incentive schemes for REDD+.

Strategic Objectives

1. To develop a clear and transparent financial mechanism by December, 2012.
2. To develop a clear and transparent incentive/compensation scheme by December, 2012.
3. To establish a clear social safeguard policy by December 2012.

Strategic Activities

1. Training on management of REDD+ Funds.
2. Designing and establishing a functional National REDD+ Trust Fund.
3. Developing a financial accounting system for National REDD+ Fund.
4. Training of national experts on development of REDD+ incentives/compensation schemes.
5. Designing and establishing National REDD+ Trust Fund incentive/compensation schemes.
6. Developing a performance based scheme of payment of funds.
7. Building national capacities for conducting or undertaking SESA at national and local levels.
8. Undertaking an initial SESA (diagnostic work and analysis of the environmental and social context of the legal, institutional and biophysical activities) under REDD+ scheme.
9. Implementing measures to address disincentives of REDD+ schemes.

Outputs and Key Performance Indicators

- Number of national experts fully trained on management of REDD+ funds by June, 2012.
- A functional National REDD+ Trust Fund in place by 2012.
- A functioning financial accounting system for National REDD+ Fund established by 2012.
- Training of 200 national experts on development of REDD+ incentive/compensation schemes accomplished by June, 2012.
- Functioning incentive/compensation schemes established by June, 2012.
- A functioning performance based scheme of payment of funds established by December 2012.
- Number of trainings done to build nationals' capacities for conducting or undertaking SESA at national and local levels by 2012.
- SESA reports in place by 2010.

- Number of national and sub-national SESA project reports accessible and utilized by 2010.
- An action plan for addressing disincentives of REDD+ schemes prepared and the disincentives themselves being addressed by 2012.

Key Results Area 3: All stakeholders are engaged in the REDD+ implementation process

Strategic Statement and Rationale
Active participation of the private sector is important in ensuring effective achievement of REDD+ implementation. Active participation of Civil Society Organizations is important in ensuring effective implementation of REDD+.

Goal 3: To engage all stakeholders in the implementation of REDD+ schemes.

Strategic Objectives
1. To employ a participatory forest management regime so as to ensure engagement of all stakeholders in implementation of REDD+ schemes by December 2012.
2. To engage the private sector in the implementation of REDD+ schemes.
3. To engage Civil Society Organizations in the implementation of REDD+ schemes.

Strategic Activities
1. Training of forest adjacent/dependent communities on participatory management in the context of REDD+.
2. Adapting in the REDD+ scheme best practices and lessons learnt in engagement of all stakeholders under pilot REDD+ and CSOs project implementation arrangements.
3. Promoting active private sector engagement and support of REDD+ schemes promoted by 2010.
4. Training of private sector stakeholders in REDD+ schemes.
5. Assessing practices and lessons learnt from private sector engagement under pilot REDD+ projects implementation arrangements.
6. Adopting practices and lessons learnt from private sector engagement.
7. Training of Civil Society Organizations (CSOs) stakeholders in REDD+ schemes.
8. Active Civil Society Organizations engagement and support of REDD+ schemes.

Outputs and Key Performance Indicators
- Number of forest adjacent/dependent communities trained by 2012.
- Number of forest adjacent/dependent communities active in participatory management by 2012.
- Number of best practices and lessons learnt from engagement of all stakeholders under pilot REDD projects adopted in the REDD+ scheme by 2012.
- Number of best practices and lessons learnt from CSOs projects adopted in the REDD+ scheme by 2012.
- Number of private sector institutions engaged and supporting REDD+ schemes by 2010.
- Number of private sector executives and staff trained in REDD+ schemes by 2012.

- Number of practices and lessons learnt assessed by 2010.
- Number of practices and lessons learnt adopted in the REDD+ schemes by 2012.
- Number of CSOs executives and staff trained by 2012.
- Number of CSOs engaged and supporting REDD+ schemes by 2012.

Key Result Area 4: All REDD+ schemes are well coordinated

Strategic Statement and Rationale
For effective and transparent implementation of REDD+ schemes, a coherent and credible framework for coordination of all REDD+ activities at national and sub-national levels is necessary.

Goal 4: To coordinate all stakeholders in the implementation of REDD+ related activities.

Strategic Objectives
1. To develop a national framework for coordination of all REDD+ schemes so as to ensure effective implementation of REDD+ related activities by 2012.

Strategic Activities
1. Developing a national REDD+ coordination framework in line with existing structures and based on results of the in-depth studies (legal and institutional).
2. Building a REDD+ coordination capacity at all levels.
3. Supporting the existing and functioning conflict resolution mechanisms.

Outputs and Key Performance Indicators
- A functioning National REDD+ Coordination Framework developed by 2012.
- An effective national REDD+ coordination capacity building programme developed by 2012.
- Number of REDD+ related conflicts resolved by supported conflict resolution mechanisms by 2012.

Key Result Area 5: All fund based financing options are well understood

Strategic Statement and Rationale
For the country to benefit and make right decisions, relevant information on fund based financing options will be needed.

Goal 5: Exploration, analysis and negotiation for fund based financing options.

Strategic Objectives

1. To explore, analyze and negotiate for fund based financing options by 2012.

Strategic Activities

1. Exploring and analyzing all fund based financing options.
2. Engaging in fund based financing options negotiations process.

Outputs and Key Performance Indicators

- Number of fund based options documented (i.e. website) by 2012.
- Number of viable fund based options negotiated, accessible and utilized by 2012.

Key Result Area 6: Governance mechanism for REDD+ in place

Strategic Statement and Rationale

For the country to effectively participate in the REDD+ regimes efforts should be made to study and develop an appropriate institutional framework for REDD+ governance. For the country to have a conducive and an enabling environment for the implementation of REDD+ regimes it is important to review existing REDD+ related policies and legal frameworks. For stakeholders to have security on investing in REDD+ regimes, it is important to undertake in-depth studies on existing land tenure systems for ensuring security in land ownership.

Goals

1. To study and develop a robust institutional arrangement for REDD+ governance.
2. To review relevant policy and legal frameworks in the context of REDD+.
3. To undertake in-depth study on land tenure for enhancing security in land ownership in the context of REDD+.

Strategic Objectives

1. To develop a national institutional framework for REDD+ governance to ensure effective implementation of REDD and equity in co-benefit sharing by 2012.
2. To review, develop and have the government endorse policy and legal frameworks for REDD+ implementation by 2013.
3. To review and develop a viable national land tenure system so as to ensure security in land ownership for REDD+ schemes by 2012.

Strategic Activities

1. Undertaking in-depth study on institutional and legal framework in the context of REDD+.
2. Reviewing and/or developing a legal and institutional framework based on the in-depth studies.
3. To review all REDD+ related policies.
4. Reviewing REDD+ related legal frameworks.
5. Subjecting the endorsed REDD+ related policies and legal frameworks to SEA/SESA.
6. Commissioning in-depth studies to explore and analyse land tenure, security and ownership.
7. Creating country wide awareness on REDD+ related land tenure reforms and associated benefits.

Outputs and Key Performance Indicators

- SWOT analysis of existing institutional arrangements in the context of REDD+ accomplished by 2011.
- A robust institutional framework for REDD+ governance in place and operational by 2012.
- Number of REDD+ related policies reviewed, developed and endorsed by the government by 2013.
- Number of endorsed REDD+ related policies and legal frameworks subjected to SEA/SESA.
- Number of SEA/SESA reports available and disclosed to the public.
- Number of REDD+ related legal frameworks reviewed, developed and endorsed by the government and ready for use in REDD+ implementation by 2013.
- Number of in-depth studies reports ready by 2012.
- REDD+ related land tenure system in place and operational by 2012.
- Cost curves for REDD+ in Tanzania established by 2012.
- Number of land tenure issues addressed in the REDD+ related policy and legal frameworks by 2013.
- Number of hectares of land under REDD+ schemes by 2013.
- Number of actors involved in the REDD+ schemes by 2013.

Key Results Area 7: Training programme and Infrastructure for REDD+ developed

Strategic Statement and Rationale

For the country to effectively participate in REDD+, a training programme in key aspects of REDD+ is important and necessary. For REDD+ to be effectively implemented a national REDD+ infrastructure development (e.g. MARV system GIS, Remote sensing and Carbon Monitoring Centre) is necessary. Sustainable financing of REDD+ initiatives is a challenge. A sustainable REDD+ financing mechanism and compensation/incentive schemes need to be built at all levels.

Goals

1. To develop a comprehensive national training programme for REDD+.
2. To develop and put in place infrastructure for REDD+.
3. To build a national capacity for financial management and compensation/ incentive administration for REDD+.

Strategic Objectives

1. To develop an implementable national training programme for REDD+ by 2013.
2. To put in place and operationalize a national infrastructure for REDD+ implementation by 2013.
3. To build a sustainable REDD+ financing mechanism and compensation/ incentive schemes at all levels by 2012.

Strategic Activities

1. Undertaking a training needs assessment for REDD+.
2. Developing appropriate training modules for REDD+.
3. Supporting REDD+ training based on training needs assessment report.
4. Conducting a needs assessment of infrastructure requirement for REDD+.
5. Establishing and equipping appropriate REDD+ infrastructure.
6. Supporting development of REDD+ infrastructure/facility.
7. Undertaking an analysis of the sustainable REDD+ financing mechanisms.
8. Creating awareness programme to private sectors on REDD+ financing.
9. Linking financing mechanisms of REDD+ and other climate change financing sources (e.g. Payment for Environmental Services (PES)).

Outputs and Key Performance Indicators

- Training needs assessment report produced by 2012.
- Available capacity, gaps and proposed interventions identified by 2012.
- Number of training modules on REDD+ developed and operational by 2012.
- 50% of national capacity to undertake implementation of REDD+ projects built by 2013.
- An infrastructure needs assessment report produced by 2012.
- Available infrastructure, gaps and proposed interventions identified by 2012.
- Number of REDD+ infrastructure and facilities established and operational by 2012.
- 50% of the required REDD+ infrastructure/facility operational by 2013.

- Sustainable REDD+ financing mechanisms in place and operational by 2013.
- Awareness creation programme in place and operational by 2012.
- Number of REDD+ and other climate change financial links established by 2013.

Key Result Area 8: Current knowledge and scientific understanding of the target forests and adjacent communities improved through research

Strategic Statement and Rationale

The actual REDD+ implementation, education and training programmes require enormous support from research findings. The global scope of climate change necessitates that the research programme should aim at internationally recognised findings that can be debated globally. This calls strongly for international collaboration between research institutions to establish scientific networks to meet the global challenges of climate change.

There is generally lack of comprehensive research and methodology development programme for climate change adaptation and mitigation activities in Tanzania. Equally important, is lack of focused research in support of REDD+ implementation. Carrying out focused research in the areas of REDD+ relevant to Tanzania is therefore necessary.

Goals

1. To develop a comprehensive a well-funded national research programme for REDD+.
2. To develop and put in place the necessary research infrastructure for REDD+.

Strategic Objectives

1. To develop and implement a well-funded national research programme for REDD+ by 2013.
2. To put in place the necessary national research infrastructure for REDD+ by 2013.

Strategic Activities

1. Supporting a research needs assessment for REDD+.
2. Establishing and equipping appropriate research infrastructure for REDD+.
3. Supporting research aimed at developing improved methods of measuring carbon stored in forests and miombo woodlands, current and prospective deforestation rates and their impact on carbon, biodiversity and community benefits of improved forest management.
4. Supporting research aimed at developing efficient participatory assessment and monitoring procedures.
5. Supporting assessments of community-based projects aimed at alleviating poverty through different approaches to climate change adaptation and mitigation in REDD+ pilot areas.
6. Supporting REDD+ related demonstration projects at community level on biofuel technologies and options to facilitate REDD+ implementation.
7. Supporting research aimed at introduction of technologies/innovations for increasing carbon sink capacity, including afforestation and reforestation activities; promotion of agroforestry farming systems; protection of existing natural forests; strengthening forest fire prevention programs; and impact of afforestation on health of humans, farm animals and wildlife.
8. Supporting research aimed at introducing alternative energy sources and efficient utilization of biomass aimed at avoiding deforestation and forest degradation.

9. Supporting research undertakings to assess the social and environmental impacts of the introduced interventions.

Outputs and Key Performance Indicators

- Research needs assessment report produced by 2012.
- Available capacity, gaps and proposed interventions identified by 2012.
- Research infrastructure needs assessment report produced by 2012.
- Available infrastructure, gaps and proposed interventions identified by 2012.
- 50% of the required REDD+ research infrastructure/ facility operationalized and functional by 2013.
- Number of REDD+ related research projects supported by 2012.

Key Result Area 9: An effective information and knowledge communication system on REDD+ issues developed

Strategic Statement and Rationale

Effective and successful implementation of REDD+ will depend on how best Tanzania, other REDD+ countries and stakeholders will share experiences, lessons learnt and challenges encountered.

Goal

To establish a national REDD+ education, information communication and networking system.

Strategic Objective

1. To establish a national REDD+ education, information communication and networking system by 2013.

Strategic Activities

1. Developing a REDD+ education and information communication strategy (RICS).
2. Reviewing National Environmental Education and Communication Strategy (NEECS) to include issues related to REDD+.
3. Supporting implementation of RICS and NEECS.

Outputs and Key Performance Indicators

- REDD+ education and information communication strategy developed and operational by 2013.
- National environmental education and communication strategy reviewed and operationalized by 2012.
- Implementation of RICS and NEECS supported and operational by 2013.

Key Result Area 10: REDD+ strategy options for addressing drivers of D&D developed

Strategic Statement and Rationale
In order to be successful, a National REDD+ Strategy must target both direct and indirect drivers of deforestation and forest degradation (D & D). Tanzania has multiple drivers of D & D which interact in a complex structure. Major direct causes of deforestation and degradation in the forests are: settlement and agricultural expansion, overgrazing, firewood and charcoal production, uncontrolled fires, timber extraction, development of infrastructure and industry, the refugees factor and most recently the introduction of large scale agriculture for bio-fuel production. These direct causes of deforestation and thus forest degradation are indirectly driven by market and policy failures, rapid population growth and rural poverty, and the poor state of the national economy. For active and beneficial participation of Tanzania in REDD+ initiatives the national REDD Strategy has had of necessity to address the drivers of D & D.

Goal
To develop strategic options for addressing drivers of D & D.

Strategic Objective
To develop strategic options for addressing drivers of deforestation and forest degradation by 2010.

Strategic Activities

A. Poor farming systems
1. Supporting the introduction/promotion of innovations that contribute to reducing carbon emissions from productive activities, such as best agronomic practices; better range management practices; off-farm employment activities.
2. Supporting the enhancement of human resource capacity for mitigating climate change impacts including REDD+ related farmer field schools; strengthening field stations to serve students, farmers, extension officers and other stakeholders.
3. Supporting interventions that ensure communities have appropriate crops in terms of better yields, environmental friendliness, and high value that will generate higher income on smaller pieces of land.
4. Encourage agro-ecosystems that sponsor their own soil fertility, productivity and crop protection.

B. Expansion of commercial farming (e.g. tobacco, bio-fuels, etc.)
1. Advocate for formulation of adequate government policy on bio-fuel production.
2. Supporting Land Use Planning Commission to develop and implement proper land use planning and monitoring of activities of bio fuel companies.
3. Supporting village level awareness raising on land tenure issues.
4. Awareness raising to EPZ practitioners on REDD+ activities.

5. Enhancing green labelling systems.
6. Supporting TIC to develop REDD+ investment guidelines.

C. High demand of forest products

1. Creating normal forests structure to meet demand.
2. Promoting use of alternatives to wood products.
3. Approving management plans of natural forests with harvesting coups.
4. Promoting efficient use of forest products.
5. Promoting technologies to increase durability of wood products.
6. Promoting the use of lesser known timber species.
7. Promoting planting of indigenous tree species (plantations and on farms).

D. Poverty and lack of livelihood alternatives

1. Scaling up investment in non-forestry sector employment programmes targeting to rural areas to reduce forest dependency.
2. Investing in sustainable forest based enterprises to create more employment opportunities in the forestry sector (for both timber and NTFPs).
3. Providing vocational education to create skill-based training opportunity for economically poor and marginalized peoples.
4. Establishing environmental tax mechanism and using revenues to generate employment alternatives.
5. Channelling local government resources (i.e., matching funds and resource leverage) to forest-dependent communities to promote livelihood shifts and/or improvements.
6. Promoting PES mechanisms for income generation.
7. Promoting biomass conservation initiatives.

E. Limited access to cheap alternatives sources other than biomass

1. Promoting peri-urban plantations, village and institutions woodlots.
2. Increasing investment and access to technologies that enhance wood fuel efficiency and promoting wood fuel substitution.
3. Promoting cost-effective wood technologies.
4. Promoting greater access of alternative energy subsidies.
5. Promoting energy mix.
6. Promoting and subsidising modern charcoal production kilns.
7. Encourage establishment of woodlots for tobacco, fish curing and burned brick making.

F. Inefficient biomass energy use

1. Promoting use of wood fuel efficient technologies and wood wastes.
2. Promoting and supporting private investment in efficient and alternative wood technologies.
3. Piloting and promoting use of more efficient wood technologies.
4. Exploring and piloting environmentally sound alternatives to wood use (including wood recycling and recovery).
5. Adopting and building capacity in improved and cost-efficient forest product utilization technologies.
6. Accelerating participatory land use planning and establishment of VLFRs in general lands or JFM for villages adjacent to FRs.

7. Encourage establishment of trees on farm (ToF) and/or woodlots for firewood and charcoal.
8. Assisting communities to access firewood and/or charcoal energy saving stoves in order to reduce pressure on forests and reduce workload of fuelwood collectors.
9. Lobby for tax reduction on other sources of energy to encourage energy switch by poor rural and urban communities.
10. Promoting and encouraging the use of efficient technologies in charcoal production (Cf. Sustainable charcoal).

G. Weak law enforcement

1. Scaling – up participatory forest management regime.
2. Strengthening incentive packages for both government officials and community-based forest management groups.
3. Creating awareness on forest law enforcement issues.
4. Enforcing interregional forest and environmental laws and protocols.
5. Implementing effective, participatory M and E mechanisms at different levels.

H. Weak forest governance

1. Defining forest related property rights and accelerating participatory land use planning so that forests do not remain as open access resources.
2. Ensuring adequate financial, technical and managerial capacity for efficient centralized and decentralized management of FRs at all levels.
3. Supporting forestry sector institutional reform to increase accountability and transparency.
4. Strengthening inter-sectoral coordination and NGO/private sector coordination in order to harmonise approaches, avoid duplication, competition and conflict in implementation of interventions and ensure effective use of resources.
5. Harmonizing of policies and legislative instruments related to forest resources.
6. Monitoring of all forest investments and development projects to ensure adherence to the sector specific Environmental Impact Assessment (EIA) guidelines.
6. Promoting integrated planning, monitoring and evaluation of all forest development projects.
7. Developing policies that encourage private plantations, woodlots and ToF.

I. Addressing market failure

1. Moving from administrative to competitive stumpage markets.
2. Operationalizing payment for environmental services (PES) as a poverty reduction strategy for communities involved in protection of forest resources.
3. Promoting economic market pricing of wood products.
4. Studying the forest product (timber and wood fuel) value chains to identify weaknesses and "leakage" and assessing opportunities for tackling them.
5. Developing a mechanism to engage the private sector in the forest sector for the entire value chain of forest products, from planting to end-product development.
6. Carrying out studies to identify alternatives to the current tax and royalty systems for forest products and implementing recommendations to foster a more competitive market.
7. Promoting sales and export of value added forest products.

J. High cross-border demand for forest products

1. Sensitizing border authorities and collaborating with them for effective forest law enforcement – especially at border crossings.

2. Studying potential for involvement of local bodies in forest law enforcement and regulating the movement of forest products.
3. Promoting large-scale private plantations to meet both domestic and cross-border market demands.
4. Developing law enforcement strategies and inter-country negotiations under the East African Common Market.
4. Promoting exchange visits to strengthen sub-regional and regional cooperation on forests and environmental management.

K. Insecure land and forest tenure
1. Supporting participatory land use planning.
2. Supporting implementation of land reforms.

L. Inadequate funding for forest resources management
1. Enhancing mechanisms for ploughing back of forest royalties to the managing authorities.
2. Harmonizing forest administrative line of commands (local government V^{s} central government).
3. Exploring other potential financing options, including the proposed National REDD Fund.
4. Promoting PES to support sustainable forest management.
5. Approving cost-benefit sharing systems between the government and forest adjacent communities under Joint Forest Management (JFM).

M. Wood species preferences for timber
1. Promoting the use of lesser valued timber species.
2. Promoting environmentally-friendly wood utilization technologies.
3. Promoting awareness raising on timber species.

N. Low levels of awareness on the effects of fire to the forest ecosystems
1. Enhancing community participation and awareness raising in forest fires management
2. Developing institutional and technical capability of the publicity and extension unit/section, local community based institutions, private sectors, media and CSOs for awareness raising on forest fires.
3. Promoting awareness raising on forest fires to religious leaders.
4. Including awareness raising about forest fire management in school curricula.
5. Disseminating REDD+ information and communication strategy.
6. Supporting implementation of REDD+ information and Communication strategy.

O. Dealing with Fires
Dealing with forest fires is critical to reducing GHG emissions from forests. Besides releasing carbon from burning trees, such fires can have other destructive impacts resulting in more fires and emissions. First, smoke from fires is thought to decrease rainfall. Second, fires are believed to reduce regional evapotranspiration, which in turn contributes to the severity of droughts. Third, prolonged droughts can make forests less healthy and may lead to the death of the largest trees in the canopy. Then, as the canopy becomes more open and the accumulated litter dries, the forest becomes even more susceptible to fire.

- **Dealing with arsonic fires**

1. Improving relationship between forest management practitioners and forest adjacent communities.
2. Developing effective mechanism for forest fire monitoring and control.
3. Supporting implementation of existing strategies on forest fire management (e.g. Eastern Arc mountains fires strategy)
4. Developing forest fire strategy and local authorities to enact by-laws for forest fires management.
5. Training prosecutors and raising awareness to magistrates.
6. Establishing environmental friendly activities in the forests (e.g. Beekeeping).

- **Lack of early warning systems for wild fires**

1. Supporting access of remote sensing forest fires detection system.
2. Developing forest fire hazard models.
3. Developing a fire detection and response network.

- **Weak forest fire management**

1. Implementing plans for sustainable management of forest that enhance forest productivity under different forest management regimes.
2. Promoting cross-border forest fires management.
3. Enhancing forest fires management.
4. Periodically developing and implementing community based forest fire management plans based on risk assessment.
5. Promoting community participation in forest fire management and fire control.
6. Developing technical capacity among all stakeholders.
7. Establishing a forest fire surveillance and response departments in the FBD in the Mainland and DCCFF in Zanzibar.

P. Detrimental cultural practices

Areas characterized by a high cultural complexity and lack of affinity are likely to suffer from the unsustainable forest resource management. The culture of debarking trees, practices of shifting cultivation, keeping of large herds of cattle as a sign of wealth, or setting of fires to determine the longevity of one's life is some of the cultural practices that are detrimental to forest resource management.

1. Educating and advocating abandoning environmentally, socially and economically unfriendly traditions and cultural beliefs.
2. Enhancing awareness raising of forest fires.
3. Intervening on bad cultural practices.
4. Enforcement of laws, regulations and by-laws.
5. Supporting implementation of National Environmental Education and Communication Strategy (NEECS).

Q. The Refugees Factor

1. Promoting peace and conflict resolution in the region.
2. Promoting democracy and good governance.

3. Proper land use planning and monitoring of activities by refugees.

R Rapid population growth
1. Supporting family planning programmes.

S. Lack of land use plans and land use conflicts
1. Promoting integrated sectoral planning, monitoring and evaluation of land use planning
2. Developing and implementing participatory land use plans.
3. Promoting the use of GIS technology in planning.
4. Supporting land use planning commission to develop and implement national land use plans in the context of REDD+.
5. Documenting experience from the surveyed villages.
6. Supporting demarcation and mapping of village lands.
7. Developing clear engendered guidelines for land tenure.
8. Promoting land tenure reform at both national and local levels.
9. Reviewing and promoting land tenure reforms at all levels.
10. Develop and enforcing by-laws.
11. Developing buffer zones and clear forest boundaries.
12. Promoting cost-benefit sharing among various land users.

T. Dry season fodder shortage
1. Developing and executing plans to promote fodder production on private and general lands.
2. Implementing effective plans for sustainable management of forest that enhances forage productivity under different forest management regimes.
3. Promoting technologies for and access to concentrated feed at local level.
4. Scaling up fodder reserve system, especially silage and hay, for use during slack periods.

U. Introduction of alien and invasive species
1. Conducting detailed studies before introducing exotic species.
2. Increasing monitoring of importing and planting of exotic species.

CHAPTER SEVEN

STRATEGIC ENVIRONMENTAL AND SOCIAL IMPACTS ASSESSMENT

7.1 Overview

REDD+ activities have the potential to increase incentives for sustainable forest management. However, REDD+ schemes do not automatically guarantee a capacity to link carbon sensitive policies with pro poor and environmental policies (for income, employment generation, for asset/rights/biodiversity preservation and for social/cultural cohesion). REDD+ induced changes to legal frameworks that regulate incentives, rights, financing options (including taxation) and practices do not necessarily ensure environmental safeguards and possible impacts on the environment as well as livelihoods and rights of communities.

Strategic Environmental and Social Impact Assessment (SESA) is a tool that seeks to integrate both social and environmental impact issues into the policy-making process, leading to sustainable strategies, policies and development programmes. According to the Environmental Policy and the Environmental Management Act, any new strategies, policies and development programmes that are likely to have significant impacts on the ecological and socio-economic character of the development sector, should be subject to a SESA. A monitoring system should be set in place to ensure that unforeseen impacts are detected, and a process to address negative impacts put in place before a particular strategy, policy or development programme commences.

Tanzania has a detailed environmental protection Act (EMA, 2004) and regulations which guide the conduct of environmental impact assessments and audits. The development of SESA for this Strategy will be informed by an analysis of the current environment policies and regulations, World Bank Safeguards and any foreseen social and environmental impacts resulting from the implementation of this Strategy.

The ToR for the SESA will include an initial diagnostic work, including an initial analysis of the environmental and social context of the legal, institutional and biophysical activities as presented in Chapter Four, stakeholder analysis designed to map out the expected outcomes, opportunities and risks related to the REDD+ readiness, consultations with key stakeholders and interest groups, including forest-dependent peoples in a transparent manner. The SESA will give special consideration to livelihoods, resource use rights (including those of forest dependent Peoples), conservation of biodiversity, cultural heritage, gender needs, capacity building and good governance.

National capacities and tools for conducting SESA for the proposed strategic implementation options are very limited at the moment. This capacity will have to be built at national and local levels. The National Environmental Management Council which is responsible for enforcement of environmental policies legislation and regulations will coordinate SESA activities at national and sub-national levels. It will also assist in capacity building for SESA at those levels. REDD+ pilot projects have just started and it is too early to anticipate any impacts.

A SESA may conclude that a development proposal is likely to have a significant negative impact on all or part of a specific sector. If, for overriding reasons, the project is still planned to

go ahead, minimization of damage, mitigating measures, and/or compensation measures should be established. The following sections provide a socio-economic, cultural and environmental impact assessment framework for activities proposed for this Strategy.

7.2 Approach

The impact assessment framework will be based on the knowledge of the complexity of the Strategy being implemented as it includes socio-economic, cultural and environmental issues and concerns inside and outside the REDD+ spectrum of activities. This knowledge translates into time scale, skills and resources needed for the implementation of this Strategy. The approach to the impact assessment framework will draw largely from the objectives and strategic implementation options outlined in Chapter Four of this Strategy.

The approach should take cognizance of the fact that this Strategy is essentially dealing with a "multiple land use" enterprise whose forest resources are increasingly becoming under pressure from different development initiatives, including expansion of agriculture, settlements and biofuel developments. Hence for every proposed activity in the respective strategic implementation option, socio-economic, cultural and environmental impacts will have to be identified, predicted and evaluated. The magnitude and significance of the identified impacts will assist decision-makers to make informed decisions with full understanding and awareness of the positive and negative impacts of implementing this Strategy.

Impacts of this Strategy will be identified through group work using normal checklist methods. These impacts will be predicted in terms of their magnitude, extent, reversibility, and sensitivity of the environment. Other impacts will be in terms of concerns of stakeholders and socio-political and policy implications in comparison with the situation without this Strategy or without the proposed implementation options.

Having predicted them, the impacts will further be assessed or evaluated for significance by considering various socio-economic, policy and environmental factors, including:

- the magnitude and likelihood of the impact and its spatial and temporal extent;
- the likely degree of recovery of the affected environment;
- the value of the affected environment;
- the level of public concern, and
- the socio-political and policy repercussions.

In such a SESA relative significance will be based on rating the impacts through a matrix that compares a range of options. The ratings will be based on a –3 to +3 continuum. In the evaluation, the impacts that have scored –2 and –3 and those that have scored +2 and +3 will be considered significant and worth consideration for mitigation or enhancement. Impacts that have scored 0, -1 or +1 will be considered insignificant and hence not worthy of any further consideration.

The assessment should come up with a detailed Environmental and Social Management Plan (ESMP) which will clearly indicate strategies and processes to be adopted during the REDD+ process, national and sub-national capacity building measures to ensure effective implementation of the ESMP, estimated implementation costs, and a simple monitoring system to monitor impacts.

7.3 Potential Risks

Certain risks are prone to face the country as it implements the National REDD+ Strategy. These risks, which will be from the external and internal environments, will have to be constantly monitored and relevant mitigation measures taken.

7.3.1 External risks

1. It has been estimated that investments of US$13–33 billion will be needed every year to halve GHG emissions from forests by 2030[37]. In the context of an ailing world economy money on this scale may not be realizable.

2. Investors in a REDD forest will want to see their investment protected over the long term. Sustaining the forest in the long term may lead to a modern form of colonialism whereby wealthier nations with a stake in forest carbon will have a say in what developing-country governments like Tanzania do with their land.

7.3.2 Internal risks

1. Lack of REDD+ projects support due to weakening of political commitment on the part of both national and local governments in case of unpalatable policy reforms.

2. Lack of cheap and appropriate alternative sources of energy to wood biomass in the short term may make it difficult for some communities to participate in the implementation of this Strategy.

3. While REDD+ may be able to match amounts for poor farmers' compensations, matching lost income from lucrative agricultural production such as biofuel cultivation or from valuable timber will be very costly, thus disrupting payments, or the amount falling short of the value of the timber in the forest or what could be grown on cleared land; in which case a return to cutting down trees could quickly occur.

4. The possibility of leakage, whereby deforestation is simply shifted from one place to another; making the permanence of emissions reductions uncertain.

5. Unresolved carbon methodological issues. Uncertainities in accuracy, fairness and effectiveness of monitoring, reporting and verification of REDD+ schemes may be a disincentive for continued participation of some communities in the schemes.

6. Poor people could be prevented from cutting down trees for small-scale farming or fuel but not receive any compensation in return because they do not own the forest and the land.

7. Injection of REDD money into areas where land-use rules are weak and poorly enforced, and where most serious deforestation currently occurs, could exacerbate corruption, exploitation and lawlessness.

[37] World Bank (2009).

8. REDD activities could set off a forest land-grab, with bureaucrats, companies and elites seizing control from the rural poor for whom ownership often relies on customary arrangements and is therefore hard to prove legally.

9. Relatively poorly resourced government departments may not be able to absorb large amounts of money such as will be accessible through REDD.

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APPENDICES

Appendix 1: LIST OF STUDIES AND DOCUMENTS CONSULTED

1. *National REDD Framework*
2. *In-depth Study for Development of National REDD Trust Fund*
3. *In-depth Study on Legal and Institutional Set Up for REDD*
4. *In-depth Study on Business Case for REDD*
5. *In-depth Study on REDD for Rural development: Land Use & Land Tenure*
6. *In-depth Study on REDD Knowledge Management & Information Communication*
7. *National Forest Programme*
8. *Proposals for Pilot REDD Demonstration Projects*
9. *Proceedings of REDD Consultations Workshops*
10. *National Environmental Policy*
11. *National Environmental Act*
12. *National Forest Policy*
13. *National Forest Act*
14. *National Land Policy*
15. *National Land Act*
16. *Village Land Act*
17. *National Energy Policy*
18. *National Human Settlements Development Policy*
19. *Eastern Arc Mountains Conservation Strategy*
20. *National Environmental Education Communication Strategy*
21. *Readiness Preparation Proposal (RPP)*
22. *Copenhagen Accord*
23. *Norway-Tanzania Letter of Intent*
24. *National Strategy for Adaptation and Mitigation (NAPA)*
25. *National Strategy for Economic Growth and Reduction of Proverty (NSGRP)/MKUKUTA*
26. *National Forest Resources Assessments and Monitoring (NAFORMA)Project Document*
27. *Hifadhi ya Misitu ya Asili (HIMA) - Piloting REDD in Zanzibar through Community Forest Management Project Proposal.*

Appendix 2: GLOSSARY

Additionality
The requirement that an activity or project should generate benefits, such as emissions reductions or carbon
stock enhancements, that are additional to what would happen without the activity.

Afforestation
The conversion of non-forest land to permanent forested land for a period of at least 50 years (as defined by the Kyoto Protocol).

Agroforestry
A forestry approach that integrates trees and shrubs with crops and/or livestock to create more diverse,
productive, profitable, healthy and sustainable land-use systems.

Alienable and Disposable Lands
Refers to those lands of the public domain which have been the subject of the present system of classification
and declared as not needed for forest purposes"

Ancestral Domain
Area generally belonging to indigenous cultural communities/indigenous peoples (ICCs/IPs) comprising lands, inland waters, coastal areas occupied or possessed by ICCs/IPs, by themselves or through their ancestors, communally or individually since time immemorial, continuously to the present except when interrupted by war, force majeure, deceit, stealth, as a consequence of government projects or any other voluntary dealings entered into by government and private individuals/corporations, and which are necessary to ensure their economic, social and cultural welfare.

Ancestral Domain Sustainable Development and Protection Plan
Plans for the sustainable management and development of the land and natural resources as well as human resources within ancestral domains based on indigenous knowledge systems and practices and on the principle of self-determination.

Annex I and non-Annex I countries
Under the UN Framework Convention on Climate Change (UNFCCC), nations fall into three categories: developed countries (Annex I countries), developing countries (non-Annex I countries) and central European economies in transition (Annex B). In accordance with the principle of 'common but differentiated responsibilities', Annex I countries have greater commitments to enacting policy and reporting than non-Annex 1 countries.

Assisted natural regeneration
The technique involved mixed planting and maintenance of indigenous tree species to promote biodiversity, particularly in degraded areas. Prior to the introduction of valuable species in forest areas, native pioneer species are used to simulate natural regeneration.

Auditor – A recognized, qualified and independent professional who evaluates which of the individual CCB Standards criteria are satisfied by the project in question. Based on this determination, the project may earn CCB Standards approval or, in exceptional cases, achieve Gold Level status. Given that investments in carbon offset projects are likely to take place before projects are initiated, it is important that *ex ante* (i.e.*' beforehand')* validation assessments are performed, such as through the use of the CCB Standards.

Biomass
The total dry mass of living organic matter.

Canopy Cover
The share of the surface of an ecosystem that is under the tree canopy. Canopy cover is also referred to as 'crown cover' or 'tree cover'.

Carbon market
A market in which greenhouse gas emission reductions are traded, usually in the form of carbon credits. Carbon markets can be voluntary (where emissions reductions targets are not regulated) or compliance (where carbon credits are traded to meet regulated emissions reductions targets). The largest carbon market is currently the EU Emissions Trading System (ETS).

Carbon sequestration
The removal of carbon from the atmosphere to long-term storage in sinks through physical or biological processes, such as photosynthesis.

Carbon Dioxide Equivalent (CO2e) – Is the universal unit of measurement used to indicate the global warming potential of each of the seven greenhouse gases. It is used to evaluate the impacts of releasing (or avoiding the release of) different greenhouse gases. The Global Warming Potentials (GWP) of the three GHGs associated with forestry are as follows. CO2 persists in the atmosphere for about 200-450 years and its GWP is defined as 1. Methane persists for 9-15 years and has a GWP of 22 (meaning that it has 22 times the warming ability of carbon dioxide). Nitrous oxide persists for about 120 years and has a GWP of 310.

Carbon Pools – A reservoir of carbon. A system that has the capacity to accumulate or release carbon. Carbon pools are measured in terms of mass (e.g., metric tons of carbon). The major carbon pools associated with forestry projects are: live biomass (including above and below ground components, i.e., roots), dead biomass, soil, and wood products.

Carbon sink
A pool or reservoir (e.g. a forest) that absorbs or takes up carbon released from other components of the carbon cycle, and that absorbs more than it releases.

Carbon stock
The quantity of carbon contained in one of five main carbon pools in forests: aboveground biomass, below ground biomass, dead wood, litter and soil organic matter.

Carbon stock enhancement
Refers to activities such as assisted natural regeneration, afforestation and reforestation to enhance the quantity of carbon contained in degraded forestlands or denuded area.

CCBA public comment period – Is the process in which CCBA posts project documents that are under evaluation by an auditor for conformance with the Standards on www.climate-standards.org for at least 30 days with an invitation and link for public comments to which the auditor must respond in the audit report.

Clean Development Mechanism (CDM) – Is a mechanism established by Article 12 of the Kyoto Protocol for project-based emission reduction activities in developing countries. The CDM is designed to meet two main objectives: to address the sustainable development needs of the host country, and to increase the opportunities available to Treaty Parties to meet their reduction commitments. Under the CDM, Annex I (industrialized) countries can accrue 'certified emission reduction units (CERs), which are tradable carbon 'credits', in return for financing carbon reduction project activities in non-Annex I (developing countries) that help further their sustainable development. http://cdm.unfccc.int

Closed forest
Formation where trees in various storey and undergrowth cover a high proportion (>40 percent) of the ground and do not have a continuous dense grass layer. They are either managed or unmanaged forests, in advance state of succession and may have been logged over one or more times, having kept their characteristics of forest stands, possibly with modified structure and composition.

Co-benefits
Benefits arising from REDD-plus in addition to climate mitigation benefits, such as enhancing biodiversity, enhancing adaptation to climate change, alleviating poverty, improving local livelihoods, improving forestgovernance and protecting rights.

Conference of the Parties
The governing body of the UN Framework Convention on Climate Change, which meets once a year.

Deforestation
The conversion of forest to another land-use, or the long-term reduction of the tree canopy cover below the minimum 10% threshold. Tanzania uses the FAO definition (FAO, 2001).

Degradation
Changes within the forest, whether natural or human-induced, that negatively affect the structure or function of the stand or site, and thereby lower the capacity of the resulting degraded forest to supply products and/or services. The Intergovernmental Panel on Climate Change (IPCC) has not concluded on a specific definition, though in their working definition degradation refers to "direct, human-induced, long-term loss (persisting for X years or more) of at least Y% of forest carbon stocks [and forest values] since time T and not qualifying as deforestation".

Enrichment planting
The introduction of valuable species into forest areas, where economic species are lacking. This is usually done in combination with measures to ensure favorable conditions for natural regeneration.

Forest
Tanzania currently adopts the Food and Agriculture Organization of the United Nations definition of 'forest', which refers to land with an area of more than 0.5 hectare and tree crown cover (or equivalent stocking level) of more than 10 percent. The trees should be able to reach a minimum height of 5 metres at maturity in situ. It consists either of closed forest formations where trees of various storeys and undergrowth cover a high proportion of the ground or open forest formations with a continuous vegetation cover in which tree crown cover exceeds 10 percent. Young natural stands and all plantations established for forestry purposes, which have yet to reach a crown density of more than 10 percent or tree height of 5 meters are included under forest. These are normally forming part of the forest area, which are temporarily unstocked as a result of human intervention or natural causes but which are expected to revert to forest. It includes forest nurseries and seed orchards that constitute an integral part of the forest; forest roads, cleared tracts, fire breaks and other small open areas; forest within protected areas; windbreaks and shelter belts of trees with an area of more than 0.5 hectare and width of more than 20 meter; plantations primarily used for forestry purposes, including rubber wood plantations. It also includes bamboo, palm and fern formations (except coconut and oil palm).
The UNFCCC allows for a more flexible forest definition: minimum canopy cover 10–30%, minimum tree height 2–5 m, minimum area 0.1 ha.

Forest lands
Lands of the public domain classified as needed for forest purposes. They include all forest reserves, forest reservations and all remaining unclassified lands of the public domain,

Forest Management Unit
Local-level bodies (whether local government, communities, private land holders) legally responsible for the management of a forestland under a specific management regime.

Greenhouse Gases (GHG) – Greenhouse gases are gaseous components of the atmosphere that trap infrared heat and contribute to the Earth's greenhouse effect. In addition to carbon dioxide (CO2), prominent GHGs related to forests include methane (CH4) and nitrous oxides (N2O).

High Conservation Values - There are six main High Conservation Values, based on the definition originally developed by the Forest Stewardship Council for certification of forest ecosystems, but now increasingly expanded to apply to assessments of other ecosystems http://hcvnetwork.org/.
1. Globally, regionally or nationally significant concentrations of biodiversity values;
a. protected areas
b. threatened species
c. endemic species
d. areas that support significant concentrations of a species during any time in their lifecycle (e.g. migrations, feeding grounds, breeding areas)

2. Globally, regionally or nationally significant large landscape-level areas where viable populations of most if not all naturally occurring species exist in natural patterns of distribution and abundance;
3. Threatened or rare ecosystems;
4. Areas that provide critical ecosystem services (e.g., hydrological services, erosion control, fire control);
5. Areas that are fundamental for meeting the basic needs of local communities (e.g., for essential food, fuel, fodder, medicines or building materials without readily available alternatives); and
6. Areas that are critical for the traditional cultural identity of local communities (areas of cultural, ecological, economic or religious significance identified in collaboration with the local communities).

Indigenous peoples
The term 'Indigenous Peoples' is used in a generic sense to refer to a distinct, vulnerable social and cultural group possessing the following characteristics in varying degrees:
a) self identification as members of a distinct indigenous cultural group and recognition of this identity by others;
b) collective attachment to geographically distinct habitats or ancestral territories in the project area and to the natural resources in these habitats and territories;
c) customary cultural, economic, social, or political institutions that are separate from those of the dominant society or culture; and
d) an indigenous language, often different from the official language of the country or the region.63

Key Biodiversity Areas – sites of global significance for biodiversity conservation that satisfy criteria based on a framework of vulnerability and irreplaceability defined in terms of species and population threat levels. www.iucn.org/dbtw-wpd/edocs/PAG-015.pdf.

Vulnerability
Regular occurrence of a globally threatened species (according to the IUCN Red List) at the site:
a) Critically Endangered (CR) and Endangered (EN) species – presence of at least a single individual; or
b) Vulnerable species (VU) – presence of at least 30 individuals or 10 pairs.
63 The World Bank Operational Manual, OP 4.10, July 2005, Article 4.

Irreplaceability
A minimum proportion of a species' global population at any stage of the species' lifecycle at the site. These thresholds vary based on the following sub-criteria:
a) Restricted-range species - species with a global range less than 50,000 km *and* 5% of global population at the site; or
b) Species with large but clumped distributions - 5% of global population at the site; or
c) Globally significant congregations -1% of global population seasonally at the site; or
d) Globally significant source populations -1% of global population at the site; or
e) Bio-regionally restricted assemblages.

Kyoto Protocol
A 1997 agreement under the UN Framework Convention on Climate Change. Annex I countries that ratified the Protocol committed to reducing their emissions of carbon dioxide and five other greenhouse gases by an average of 5.2 % between 2008 and 2012, compared to their 1990 level. The Kyoto Protocol now covers 189 countries globally, but less than 64% in terms of global greenhouse gas emissions. As of November 2009, the United States is the only signatory nation that has not ratified the Protocol. The first commitment period of the Kyoto Protocol ends in 2012.

Leakage
In the context of climate change, the carbon leakage happens when interventions to reduce emissions in one area, lead to an increase in emissions in another area. Carbon leakage is also referred to as "emissions displacement". Within the UNFCCC, leakage refers to the "increase in GHG emissions by sources which occurs outside the boundary of an afforestation/reforestation (A/R) Clean Development Mechanism (CDM) project activity which is measurable and attributable to the A/R CDM project activity".

Mangrove forest
Forested wetland growing along tidal mudilats and along shallow water coastal areas extending inland along rivers, streams and their tributaries where the water is generally brackish and composed mainly of *Rhizopora, Brugukm, Ceriops, Avicenia, Aegicerus,* and *Nipa* species.

Mixed forest
Forest in which none of the species groups such as conifer, broadleaved, bamboo and palm accounts for more than 75 percent of the tree crown cover.

Mossy forest
Forest stand found principally on high elevations and very rough mountainous regions characterized by steep ridges. The trees are mostly dwarf with stems and branches usually covered by epiphytes (moss) and dominated by *Podocarpaceae*, *Myrtaceae,* and *Fagaceae.*

Natural forest
Forest composed of indigenous trees, not planted by man.

Nested approach
Refers to a hybrid approach of structuring REDD+ that includes elements of both sub-national and national approaches. It allows for site-level project development and scaling up a national level over time, and requires consistent emission accounting between project-based, sub-national, and national levels.

Open Forest
Forest formations with discontinuous tree layer with coverage of at least 10 percent and less than 40 percent. They are either managed or unmanaged forests, in initial state of succession.

Payments for environmental services (PES)
In a PES scheme, a buyer that values environmental services pays to the provider or the manager of the land use supplying the environmental service if and only if, the seller actually delivers the environmental service. In REDD+, PES refers to a results based system in which payments are made for emissions reductions or carbon stock enhancements relative to an agreed reference level.

Permanence
The longevity of a carbon pool and the stability of its stocks, given the management and disturbance environment in which it occurs. A feature of land-based carbon projects is the possibility of a reversal of carbon benefits from either natural disturbances (e.g., fires, disease, pests, and unusual weather events), or from the lack of reliable guarantees that the original land use activities will not return after the project concludes.

Strategies have been identified that mitigate potential reversals such as the non-permanence risk analysis and buffer approach adopted by the Voluntary Carbon Standard or the establishment of contingency carbon credits, insurance, conservation easements and mixed portfolios of projects.

Precautionary principle
Defined in the Preamble to the *Convention on Biological Diversity* (1992) as: '[W]here there is a threat of **significant reduction** or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.'

Project GHG accounting period
The time period over which the project will quantify net changes in GHG emissions reductions or removals.

Plantation forest
Forest stands established by planting or/and seeding in the process of afforestation or reforestation. It may be composed of broadleaved, coniferous, and/or mixed forests.

Production forest
Land that can be made available for timber and agro-forestry production, rangelands for grazing and other forest lands for special uses.

Protection forest
Area wholly or partly covered with vegetation managed primarily for its beneficial effects on water, climate, soil, aesthetic value and conservation of biodiversity.

Rainforestation
Refers to reforestation techniques that align with agroforestry to generate multiple environmental and social benefits.

Readiness
REDD+ country actions, including capacity building, policy design, consultation and consensus building, and testing and evaluation of a REDD+ national strategy, prior to a comprehensive REDD+ implementation.

Reducing emissions from deforestation and forest degradation (REDD and REDD+)
REDD refers to mechanisms currently being negotiated under the UN Framework Convention on Climate Change process to reduce emissions from deforestation and forest degradation, conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries.

Reforestation
The direct human-induced conversion of deforested/non-forested land to forested land through planting, seeding and/or promotion of natural seed sources. It refers to land that was forested, but that has been converted to nonforested land'. In the first commitment period of the Kyoto Protocol, reforestation activities were recognized on lands that were not forested on 31 December 1989, but have had forest cover at some point during the past 50 years.

Remote sensing
A scientific discipline which, in the context of REDD+, can be used to measure deforestation and/or forest degradation by a recording device that is not in physical contact with the forest, such as a satellite.

Restoration
The human-induced enhancement of degraded forestlands

Sub-national activity/development
Activities implemented at the sub-national level as part of a national REDD+ strategy. Governments, local authorities, communities, NGOs or private entities can implement sub-national activities. They may be embedded in a national or international crediting mechanism.

Sustainable Forest Management (SFM)
The term SFM has different meanings to different individuals and organizations. According to the UN General Assembly, SFM is 'a dynamic and evolving concept [that] aims to maintain and enhance the economic, social and environmental value of all types of forests, for the benefit of present and future generations'. In the REDD+ debate, some organizations make a distinction between 'sustainable forest management' (SFM) and 'sustainable management of forests' (SMF): SFM is then referring to industrial logging, while SMF is a broader term. The PNRPS refers to SFM as an umbrella term to cover activities that enhance and maintain the products and services provided by forests, including carbons storage, and seek to provide multiple social and environmental benefits.

Strict protection zones
These consist of natural areas with high biodiversity value, closed to all human activities except for scientific studies and or ceremonial or non-exclusive use by IPs. It may include habitats of

threatened species or degraded areas that have been designated for restoration and subsequent protection, even if these areas are still in various stages of regeneration.

Tier 1, 2, 3 inventory
The Intergovernmental Panel on Climate Change (IPCC) Good Practice Guidance tiers are levels of methodological complexity. Tier 1 is the most basic and uses default values, assumptions, and methods to estimate greenhouse gas emissions. Tier 1 data are highly generalized and may be very different from the actual situation in any given location on the ground.
Tier 2 uses national values; Tier 2 data are based on national-level inventories and studies, and are typical values for forest types present in that country. Tier 2 data are likely to be a little closer to the actual situation, but could still be very inaccurate for specific locations. It is likely that safety margins will be needed and deductions will be made to ensure estimates are conservative if Tier 1 and 2 data are used. Tier 3 is most demanding in terms of complexity and data requirements, and uses site-specific values for carbon stocks. Tier 1 data are default data on average carbon stocks.

Verification
Independent third-party assessment of the expected or actual emissions reductions of a particular mitigation activity.

Voluntary carbon market
The voluntary carbon markets function alongside compliance markets. Buyers are companies, governments, NGOs and individuals who are voluntarily seeking to offset their emissions by purchasing verified emissions reductions.

Appendix 3: STANDARDS, TOOLS & SOURCES FOR REDD PROJECTS

This Appendix provides a list of references and suggestions which may help project developers to design projects that will comply with the CCB Standards. Not all of these references are relevant to all projects, and it is the responsibility of the project developer to consult these or other sources as needed to satisfy the Standards criteria.

3.1 Standards for Project Development

WCS REDD projects have adopted two primary sets of standards for developing projects:

The Voluntary Carbon Standard (VCS), http://www.v-c-s.org/
The VCS program provides a robust, new global standard and program for approval of credible voluntary offsets. VCS offsets must be real (have happened), additional (beyond business-as-usual activities), measurable, permanent (not temporarily displace emissions), independently verified and unique (not used more than once to offset emissions).

Climate Community and Biodiversity (CCB) Standards developed by the Climate, Community and Biodiversity Alliance, http://www.climate-standards.org/index.html

The Climate, Community and Biodiversity Project Design Standards (CCB Standards) evaluate land-based carbon mitigation projects in the early stages of development. The CCB Standards foster the integration of best-practice and multiple-benefit approaches into project design and evolution. The Standards identify projects that simultaneously address climate change, support local communities and conserve biodiversity. They also promote excellence and innovation in project design, mitigate risk for investors and increase funding opportunities for project developers. Although CCB certification is not valid on it's own for certifying emissions reductions; rather, it adds value to VCS certified projects through biodiversity and community benefits.

The Climate, Community & Biodiversity (CCB) Standards were created to foster the development and marketing of projects that deliver credible and significant climate, community and biodiversity benefits in an integrated, sustainable manner. Projects that meet the Standards adopt best practices to deliver robust and credible greenhouse gas reductions while also delivering net positive benefits to local communities and biodiversity.

The CCB Standards identify land-based projects that are designed to deliver robust and credible greenhouse gas reductions while also delivering net positive benefits to local communities and biodiversity. The Standards can be applied to any land-based carbon projects including both projects that reduce greenhouse gas emissions through avoided deforestation and forest degradation (REDD) and projects that remove carbon dioxide by sequestering carbon (e.g., reforestation, afforestation, revegetation, forest restoration, agro-forestry and sustainable agriculture). The CCB Standards are important for all phases of project planning and management, from design through implementation and monitoring.

The First Edition of the CCB Standards was released in May 2005 after a rigorous two year development process based on input from community and environmental groups, companies, academics, project developers and others with expert knowledge or affected by the standards. The Standards were then tested on projects in Asia, Africa, Europe and the Americas and peer reviewed by the world's leading tropical forestry institutes: the Center for International Forestry Research (CIFOR) in Indonesia, the Tropical Agricultural Research and Higher Education Center (CATIE) in Costa Rica and the World Agro-forestry Centre (ICRAF) in Kenya. The CCB Standards have become the most widely used and respected international standard for the multiple-benefits of land-based carbon projects.

Although there are no standards for measurement of forest management regimes developed for Tanzania, there is a growing body of literature that addresses the effectiveness and sustainability of different forest management regimes and ways to measure this. Up to now, different approaches to monitoring forest quality and area have been tried. These include work using remote sensing (FBD, 2006; Hall, J. (Ph.D.) and Persha, L. (Ph.D.)); forest disturbance transects (FBD 2005, Pfleigner, K. (Ph.D.)) and more participatory techniques, including threat reduction assessments such as Margoluis and Salafsky (2001), and community based monitoring.

3.2 Tools & Sources for REDD Assessment and Monitoring

3.2.1. Assessment of Original Conditions in the Project Area

a) Intergovernmental Panel on Climate Change (IPCC), 2006. *Guidelines for National Greenhouse Gas Inventories Volume 4 Agriculture, Forestry and Other Land Use.* http://www.ipccnggip.iges.or.jp/public/2006gl/vol4.html

b) Rapid Rural Assessment methodologies, including:

1. Chambers, R. 1992. *Rural Appraisal: Rapid, Relaxed, and Participatory*. Institute of Development Studies Discussion Paper 311. Sussex: HELP;

2. McCracken, A., W. Pretty and G. Conway. 1988. *An Introduction to Rapid Rural Appraisal for Agricultural Development.* International Institute for Environment and Development, London; and

3. Food & Agriculture Organization. 1997. *Rapid Rural Appraisal.* Marketing Research and Information Systems, Chapter 8. Rome. http://www.fao.org/docrep/W3241E/w3241e09.htm

c) Ravi Jayakaran. 2002. *The Ten Seed Technique: a modified participatory learning and action (PLA) technique.* http://www.entrepreneursdumonde.org/pratiques/files/Ten-Seed%20Technique.pdf

d) Rapid Biodiversity Assessment methodologies, including:
1. Ramsar. 2005. Resolution IX.1 Annex E i Guidelines for the rapid assessment of inland, coastal and marine wetland biodiversity. Kampala.
http://www.ramsar.org/res/key_res_ix_01_annexei_e.pdf; and

2. Biodiversity Survey Network. http://biosurvey.conservation.org/portal/server.pt

e) High Conservation Value Resource Network. http://hcvnetwork.org/

f) Global HCVF Toolkits. http://hcvnetwork.org/resources/global-hcv-toolkits

g) European Bank for Reconstruction and Development (EBRD). 2007. Biodiversity Conservation and Sustainable Management of Living Natural Resources, Performance Requirement 6. Draft revised Environmental Policy. London.

h) Inter-American Development Bank (IADB). 2006. Natural Habitats and Cultural Sites. Environment and Safeguards Compliance Policy, Policy Directive B.9. Sector Strategy and Policy Papers Series ENV-148.
Washington, DC, USA.

i) International Finance Corporation (IFC). 2006. Biodiversity Conservation and Sustainable Natural Resource Management, Performance Standard 6. *International Finance Corporation's Performance Standards on Social & Environmental Sustainability.* Washington, DC.

j) Langhammer, P.F., Bakarr, M.I., Bennun, L.A., Brooks, T.M., Clay, R.P., Darwall, W., De Silva, N., Edgar, G.J., Eken, G., Fishpool, L.D.C., Fonseca, G.A.B. da, Foster, M.N., Knox, D.H., Matiku, P., Radford, E.A., Rodrigues, A.S.L., Salaman, P., Sechrest, W., and Tordoff, A.W. 2007. Identification and gap analysis of Key Biodiversity Areas: Targets for comprehensive protected area systems. *Best Practice Protected Areas Guidelines Series No. 15.* International Union for the Conservation of Nature (IUCN),
Gland, Switzerland.

k) The World Bank Group. World Bank Operational Policies:

OP 4.01 Environmental Assessment,

OP 4.10 Indigenous Peoples,

OP 4.12 Involuntary Resettlement,

OP 4.36 Forests,

OP 4.04 Natural Habitats and

OP 4.11 Physical Cultural Resources. *Operational Manual.* Washington DC, USA.
http://go.worldbank.org/DZDZ9038D0

l) Asian Development Bank (ADB). 2007. Safeguard Requirements for borrowers/clients – Environment (Attachment A). Consultation Draft of the Safeguard policy Statement. Metro Manila, Philippines, http://www.adb.org/Documents/Policies/Safeguards/Consultation-Draft.pdf

m) UN Permanent Forum on Indigenous Issues (UNPFII) brochure.
http://www.un.org/esa/socdev/unpfii/documents/unpfiibrochure_en07.pdf

n) ENvironment and COmmunity based framework for designing afFORestation, reforestation and revegetation projects in the CDM (ENCOFOR) toolkit.
http://www.joanneum.at/encofor/index.html

3.2.2. Baseline Projections

a) Additionality – Various economic and financial tools can be used to prove additionality, including: payback period with and without carbon financing; economic analyses showing that, without carbon financing, the project would be less profitable than other competing land-uses; analyses showing that the project would not be realized because of barriers such as lack of financial capital, prevailing practices, lack of capacity or knowledge, and institutional or market barriers. Project proponents can also describe if there are similar projects in the area. If yes, are the projects financed privately or publicly? Is climate change financing used to make the comparable projects viable?

b) Use of peer-reviewed programs for: calculating changes in carbon stocks (e.g., FullCAM, CO2FIX, GORCAM, CAMFor, TimberCAM): and predicting future land use trends (GEOMOD58 or FRCA59).

c) Other tools may include local models, default baseline factors for the region, analysis of historical data, published deforestation rates, existing development plans, or other peer-reviewed models.

d) Remote sensing techniques and Geographical Information Systems (GIS) can detect and measure past and current rates of land cover change and project rates and types of change into the future.

e) Hamburg Institute of International Economics (HWWA). *Baselines for CDM and JI Projects – Standardization of Select Baseline Aspects*. http://jiq.wiwo.nl/probase/prob_fr.pdf

f) The UNFCCC Clean Development Mechanism (CDM) has published approved methodologies for land use baselines: 60
http://cdm.unfccc.int/methodologies/ARmethodologies

g) Wollenberg, L., D. Edmunds and L. Buck. 2000. *Anticipating Change: Scenarios as a Tool for Adaptive Forest Management*. Center for International Forestry Research (CIFOR). www.cifor.cgiar.org/acm/methods/fs.html

h) GOFC-GOLD Project Office. 2008. *Reducing greenhouse gas emissions from deforestation and degradation in developing countries: a sourcebook of methods and procedures for monitoring, measuring and reporting, GOFC-GOLD Report version COP13-2*. Natural Resources Canada. Alberta, Canada.
http://www.gofc-gold.uni-jena.de/redd/

i) Brown, S., M. Hall, K. Andrasko, F. Ruiz, W. Marzoli, G. Guerrero, O. Masera, A. Dushku, B. DeJong, and J. Cornell, 2007. Baselines for land-use change in the tropics: application to avoided deforestation projects. *Mitigation and Adaptation Strategies for Global Change*, 12 (6):1001-1026.

j) CATIE and World Bank BioCarbon Fund. 2008. *Tool for Afforestation Reforestation Approved Methodologies (TARAM)*. http://wbcarbonfinance.org/Router.cfm?Page=DocLib&CatalogID=40526&zrzs=1

k) Salinas, Z. and Hernández, P. eds. 2008. A Guide for Forestry and Bioenergy CDM Project Design (In Spanish). *Guía para el diseño de Proyectos MDL Forestales y de Bioenergía*. CATIE. Turrialba Costa Rica. 232 p.

l) Also see references under G1.

3.2.3 Project Design and Setting of Goals

a) SouthSouthNorth CDM Practical toolkit. http://www.cdmguide.org

b) Forest Stewardship Council (FSC) *Principles and Criteria for Forest Stewardship*. 2002. Forest Stewardship Council. Bonn, Germany http://www.fsc.org/fileadmin/webdata/public/document_center/international_FSC_policies/standards/FSC_STD_01_001_V4_0_EN_FSC_Principles_and_Criteria.pdf

c) Sustainable Forestry Initiative. http://www.sfiprogram.org/sfi-standard.php

d) IUCN World Commission on Protected Areas, 2003. *A Guide to Securing Protected Areas in the Face of Global Change: Options and Guidelines*. http://biodiv.wri.org/pubs_description.cfm?PubID=3904

e) Pearson, T., S. Walker and S. Brown. 2006. *Afforestation and Reforestation under the Clean Development Mechanism: Project Formulation Manual*. ITTO and Winrock International. http://www.winrock.org/ecosystems/tools.asp?BU=9086

f) Walker, S., T. Pearson, S. Petrova and P. Munishi. 2008. Carbon market opportunities for the forestry sector of Africa. Winrock and FAO. Presented at 16th Session of African Forestry and Wildlife Commission, Khartoum, Sudan. http://www.winrock.org/ecosystems/files/Winrock_FAO_Carbon_opportunities_in_Africa.pdf

g) Cock, M.J.W. 2004. *Biosecurity and Forests: An Introduction - with particular emphasis on forest pests.* FAO Forest Health and Biosecurity Working Paper FBS/2E. ftp://ftp.fao.org/docrep/fao/006/J1467E/J1467E.pdf

h) Parrotta, J.A., J.W. Turnbull, N. Jones. 1997. Catalyzing native forest regeneration on degraded tropical lands. *Forest Ecology and Management* 99 (1-2): 1-7.

i) World Agroforestry Centre: Tree Database.

http://www.worldagroforestry.org/sites/TreeDBS/TreeDatabases.asp

j) Diversified project activities may include: primary or secondary forest conservation; reforestation or revegetation; agro-forestry plantations; densification; enrichment planting; introduction of new cultivation practices; introduction of new timber harvesting and/or processing practices (e.g., reduced impact logging); reduced tillage on cropland; improved livestock management; soil conservation; bio-energy production, improved fodder bank for livestock production, etc.

k) Scott, D.F., L.A. Bruijnzeel, and J. Mackensen. 2004. The hydrological and soil impacts of forestation in the Tropics. In M Bonell & LA Bruijnzeel (eds.) 2004. *Forests, Water and People in the Humid Tropics*. CUP.

l) FAO Land and Water Division. http://www.fao.org/landandwater/default.stm

m) FAO Soils Bulletins. For instance: N°57 'Soil and water conservation in semi-arid areas', N°64 'A study of the reasons for success or failure of soil conservation projects', N°68 'Field measurement of soil erosion and runoff', N°50 'Keeping the land alive. Soil erosion: its causes and cures.' http://www.fao.org/documents

n) R.J. Klein, E.L. Schipper, & S. Dessai. 2003. *Integrating Mitigation and Adaptation into Climate and Development Policy: Three Research Questions*. Tyndall Centre Research Paper #40. www.tyndall.ac.uk/publications/working_papers/wp40.pdf

a) Madlener, R. Robledo, C. Muys, B. and J. Blanco Freja. 2006. A Sustainability Framework for Enhancing the Long-Term Success of LULUCF Projects. *Climatic Change* 75(1-2):241-271.

h) Stand Management Cooperative, University of Washington, College of Forest Resources. This cooperative is an example of a regional database focused on high quality information on long-term effects of silvicultural treatments, treatment regimes on stand and tree growth and development and wood and product quality. www.cfr.washington.edu/research.smc

3.2.4 Management Capacity and Best Practices

a) Livernash, Bob (ed). 2002. *Closing the Gap: Information, Participation, and Justice in Decision-Making for the Environment*. WRI, Washington DC (USA). http://pubs.wri.org/pubs_description.cfm?PubID=3759

b) National Natural Resource Management Capacity Building Framework. Australian Natural Heritage Trust.
http://www.nrm.gov.au/publications/frameworks/pubs/capacity-building-framework.pdf

c) Walker, B., S. Carpenter, J. Anderies, N. Abel, G. S. Cumming, M. Janssen, L. Lebel, J. Norberg, G. D. Peterson, and R. Pritchard. 2002. Resilience management in social-ecological systems: a working hypothesis for a participatory approach. *Conservation Ecology* **6**(1):14. www.consecol.org/vol6/iss1/art14/

d) International Labor Organization Declaration on Fundamental Principles and Rights at Work. www.ilo.org/public/english/standards/decl/index.htm

3.2.5 Legal Status and Property Rights

a) Centro de Derecho Ambiental y de los Recursos Naturales (CEDARENA). 2004. *Study of Land Tenure and a Conservation Strategy for Private Lands in the Core Area of the Osa Biological Corridot, Costa Rica.* Key lessons learned at: http://www.eco-index.org/search/results.cfm?projectID=701.

b) March Colchester (ed.). 2001. *A Survey of Indigenous Land Tenure*. A Report for the Land Tenure Service of the Food and Agricultural Organisation. http://www.forestpeoples.org/publications/survey_indig_land_ten.shtml

c) Bruce J.W., 1998. *Review of Tenure Terminology*. Tenure Brief 1, Land Tenure Center, University of Wisconsin-Madison. http://pdf.wri.org/ref/bruce_98_review_tenure.pdf (In Spanish 'Conceptos sobre tenencia de la tierra' http://minds.wisconsin.edu/handle/1793/22007)

d) Land Tenure Center, University of Wisconsin-Madison. http://www.ies.wisc.edu/ltc/

e) World Bank. 2004. *Involuntary Resettlement Sourcebook: Planning and Implementation in Development Projects* . Washington. http://publications.worldbank.org/ecommerce/catalog/product?item_id=2444882

f) The project design should be flexible enough to accommodate potential modifications required to secure regulatory approval.

g) UN Environment Programme (UNEP). *Legal Issues Guidebook to the Clean Development Mechanism.* http://www.cd4cdm.org/Publications/CDM%20Legal%20Issues%20Guidebook.pdf

h) Certified Emission Reductions Sale and Purchase Agreement (CERSPA). This is a free, open-source contract template for buying and selling Certified Emission Reductions (CERs) generated under the Kyoto Protocol's Clean Development Mechanism (CDM). http://www.cerspa.org

i) UN Treaty database. http://untreaty.un.org

j) UN Declaration on the Rights of Indigenous Peoples. http://www.un.org/esa/socdev/unpfii/en/declaration.html

3.2.6 Assessing Net Positive Climate Impacts

a) Intergovernmental Panel on Climate Change, 2006. *Guidelines for National Greenhouse Gas Inventories, Volume 4: Agriculture, Forestry and Other Land Use* http://www.ipccnggip.iges.or.jp/public/2006gl/vol4.html

b) *Good Practice Guidance for Land Use, Land-Use Change, and Forestry* (especially Chapter 4.3 on LULUCF projects). IPCC. http://www.ipccnggip.iges.or.jp/public/gpglulucf/gpglulucf_contents.htm.
Also, see other references therein.

c) The Land Use, Land-Use Change, and Forestry (LULUCF) Guidance for GHG Project Accounting (LULUCF Guidance). http://www.ghgprotocol.org/files/lulucf-final.pdf

d) California Climate Action Registry Protocols for Measuring Carbon Fluxes. http://www.climateregistry.org/tools/protocols.html.

e) UNFCCC Clean Development Mechanism (CDM) website. http://cdm.unfccc.int

f) CDM and Joint Implementation (JI) Validation & Verification Manual, developed by the International Emissions Trading Association (IETA) and the World Bank Carbon Finance Group. http://www.ieta.org/ieta/www/pages/index.php?IdSiteTree=1146

g) Brown S., 1997. *Estimating Biomass and Biomass Change of Tropical Forests: a Primer*. FAO Forestry Paper - 134. http://www.fao.org/docrep/W4095E/W4095E00.htm

h) Pearson, T., Walker, S., and Brown, S. 2006. Guidebook for the Formulation of Afforestation and Reforestation Projects Under the Clean Development Mechanism. http://www.itto.or.jp/live/Live_Server/2863/ts25e.pdf

i) CATIE and World Bank BioCarbon Fund. 2008. *Tool for Afforestation Reforestation Approved Methodologies (TARAM).* http://carbonfinance.org/Router.cfm?Page=BioCF&ItemID=9708&FID=9708

3.2.7 Assessing Offsite Climate Impacts ('Leakage')

a) Control plots can be used to compare carbon stock changes within a project area to those on surrounding lands.

b) Monitoring changes in areas without fixed plots can also provide insight into potential leakage.

c) Leakage contracts can be used, e.g., requiring timber concessionaires not to exceed logging quotas on non project lands and to adopt sustainable harvesting regimes.

d) Projects that incorporate a variety of activities in an integrated and holistic manner may reduce the likelihood of generating negative leakage (see G3).

e) Schwarze, R., J. Niles, & J. Olander. 2002. Understanding and Managing Leakage in Forest-Based Greenhouse Gas Mitigation Projects. *Philosophical Transactions of the Royal Society, Series A* 1797:1685-1703. http://pdf.dec.org/pdf_docs/Pnacy489.pdf

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h) Tool for Afforestation Reforestation Approved Methodologies (TARAM). CATIE and World Bank BioCarbon Fund. 2008. http://carbonfinance.org/Router.cfm?Page=BioCF&ItemID=9708&FID=9708

3.2.8 Monitoring of Climate Impact

a) Standard techniques for field measurements of vegetation and soil should be used based on accepted protocols.

b) Intergovernmental Panel on Climate Change. *Good Practice Guidance for Land Use, Land-Use Change, and Forestry,* http://www.ipccnggip.iges.or.jp/public/gpglulucf/gpglulucf_contents.htm.
Also, see other references therein.

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d) Pearson, T.R.H., S. Brown and R. Birdsey. 2007. *Measurement guidelines for the sequestration of forest carbon.* USDA Forest Service General Technical Report NRS-18. http://www.nrs.fs.fed.us/pubs/gtr/gtr_nrs18.pdf

e) The following CDM Executive Board tool can be used to test the significance of emissions sources: http://cdm.unfccc.int/EB/031/eb31_repan16.pdf

3.2.9 Assessing Net Positive Community Benefits

a) Colfer, C. J. P. (ed.). 2005. *The Equitable Forest: Diversity, Community, and Resource Management.* RFF, Washington DC (USA).

b) The International Council on Mining and Metals (ICMM) indicators on community engagement. http://www.icmm.com/page/629/community-development-toolkitc)

World Resources Institute (WRI). 2003. *Assessing Access to Information, Participation, and Justice for the Environment: A Guide*. Washington DC, USA, http://pubs.wri.org/pubs_description.cfm?PubID=3814

d) Stec, S. 2003. *Handbook on Access to Justice under the Aarhus Convention*. REC, Szentendre (Hungary).

http://www.elaw.org/system/files/aarhus.Access.Justice.pdf

e) Ellis, F., 2000. *Rural Livelihoods and Diversity in Developing Countries*. Oxford University Press.

f) Livelihoods Connect: *Sustainable Livelihoods Toolbox*, Learning Guide, Key Documents. http://www.livelihoods.org/info/info_toolbox.html

g) The Sustainable Livelihoods Approach. www.ifad.org/sla/

h) Pasteur, K. *Tools for Sustainable Livelihoods: Livelihoods Monitoring and Evaluation*. IDS, 2001. http://www.livelihoods.org/info/tools/Pas-ME01.rtf

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j) Smith, J., Scherr, S.J. 2002. *Forest carbon and local livelihoods: assessment of opportunities and policy recommendations*. CIFOR Occasional Paper. No. 37. 45p. http://www.cifor.cgiar.org/publications/pdf_files/OccPapers/OP-037.pdf

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l) CARE. 2002. *Household Livelihood Security Assessments. A Toolkit for Practitioners*. http://pqdl.care.org/pv_obj_cache/pv_obj_id_8A7F2883250B950EFE54587EE785726E169E2B00

m) PROFOR Program on Forests -The World Bank: The Poverty-Forest Linkages Toolkit. http://www.profor.info/content/livelihood_poverty.html

3.2.10 Assessing Offsite Stakeholder Impacts

a) Borrini-Feyerabend, G. (ed.) 1997. *Beyond Fences: Seeking Social Sustainability in Conservation*. IUCN, Gland (Switzerland). http://www.iucn.org/about/work/initiatives/sp_cprihome/sp_cpri_othersites/index.cfm

b) Also, see references under CM1.

3.2.11 Assessing Community Impact Monitoring

a) Jain, S.P. and W. Polman. 2003. *A Handbook for Trainers on Participatory Local Development*. FAO, RAP publication 2003/07. http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/006/AD346E/ad346e0e.htm

b) WWF Biodiversity Support Program. *Lessons from the Field. Linking Theory and Practice in Biodiversity Conservation.* Issue 1, 1998. http://www.worldwildlife.org/bsp/bcn/learning/Lessons/lesson1/bsp.htm#Keeping

c) Community Based Natural Resource Management (CBNRM) toolkit http://www.cbnrm.net/index.html

d) World Bank. 2003. *A Users guide to Poverty and Social Impact Assessment*. Annex: Economic and Social Tools for Poverty and Social Analysis. http://siteresources.worldbank.org/EXTSOCIALDEV/Resources/3177394-1167940794463/PSIAUsersGuideAnnexEnglishMay_2003.pdf

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3.2.12 Assessing Net Positive Biodiversity Impacts

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b) G. K. Meffe and C. R. Carroll. 1997. *Principles of Conservation Biology*, 2nd Edition. Sinauer Associates, Inc. Sunderland, MA.

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e) IUCN. The IUCN Red List Categories and Criteria, Version 3.1. IUCN Species Survival Commission. IUCN, Gland, Switzerland and Cambridge, UK. http://www.iucnredlist.org/static/categories_criteria_3_1

f) IUCN Red List (searchable by country). http://www.iucnredlist.org

g) CITES (searchable by country for species threatened through international trade). http://www.cites.org

h) Talk to appropriate regulatory groups and consult national databases for additional lists of threatened species.

i) Global Invasive Species Database, developed by the IUCN/SSC Invasive Species Specialist Group (ISSG) as part of the global initiative on invasive species led by the Global Invasive Species Programme (GISP).
http://www.issg.org/database/welcome

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3.2.13 Assessing Offsite Biodiversity Impacts

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3.2.14 Monitoring Biodiversity Impact

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c) Tucker, G., Bubb P., de Heer M., Miles L., Lawrence A., Bajracharya S. B., Nepal R. C., Sherchan R., Chapagain N.R. 2005. *Guidelines for Biodiversity Assessment and Monitoring for Protected Areas.* KMTNC, Kathmandu, Nepal.
http://www.unepwcmc.org/collaborations/BCBMAN/PDF/PA_Guidelines_BMA.pdf

3.2.15 Assessing Climate Change Adaptation Benefits

a) Although the magnitude of the impacts of climate change remains speculative, there are several scientific tools that predict regional impacts from likely future climate change. For particular regions, these models may show, for instance, increased flooding or droughts, more extreme weather events, changes in temperature and rainfall, and other stresses to ecosystems. Regional climate projection tools may be available for some areas.

b) The recommended modeling tool is Maxent because of its ease of implementation and performance. http://www.cs.princeton.edu/~schapire/maxent/

c) Recommended climatologies are IPCC4 A1 or A2 scenarios, Hadley or Japan high resolution GCM, downscaled to 1km (also available on the internet at http://www.worldclim.org).

d) Materials on FAO website on climate change adaptation http://www.fao.org/climatechange/home/en/.

e) CHF – Partners in Rural Development. July 2007. Ethiopia, the path to self resiliency. http://www.chfpartners.ca/publications/documents/Report.pdf

34.2.16 Assessing Exceptional Community Benefits

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http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/0,,contentMDK:21517522~isCURL:Y~menuPK:336998~pagePK:148956~piPK:216618~theSitePK:336992,00.html

b) Poverty Measurement and Analysis: PovertyNet, The World Bank
http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPOVERTY/EXTPRS/0,,contentMDK:20177055~pagePK:210058~piPK:216618~theSitePK:384201,00.html

c) Inter-Country Comparisons of Poverty Based on a Capability Approach: An Empirical Exercise.
http://www.undp-povertycentre.org/pub/IPCWorkingPaper27.pdf

d) Introduction to Poverty Analysis. The World Bank Institute, 2005.
http://siteresources.worldbank.org/PGLP/Resources/PovertyManual.pdf

a) World Bank. 2003. *A Users Guide to Poverty and Social Impact Assessment.* Annex: Economic and Social Tools for Poverty and Social Analysis. http://siteresources.worldbank.org/EXTSOCIALDEV/Resources/3177394-1167940794463/PSIAUsersGuideAnnexEnglishMay_2003.pdf

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e) Maxwell, D., B. Watkins, R. Wheeler and G. Collins. 2003. *The Coping Strategies Index: Field Methods Manual CARE/WFP*. http://www.fao.org/crisisandhunger/root/pdf/cop_strat.pdf

f) Community Vulnerability to Food Insecurity: Assessment Methodology. Food for the Hungry, 2006. http://www.foodsecuritynetwork.org/resources/foodsecurity/fh_community_vulnerability_to_food_insecurity_assessment_methodology.doc

g) New Approaches for Measuring Household Food Insecurity and Poverty: Adaptation of US Household Food Security Scale to Developing Country Contexts. Food and Nutrition Analysis (FANTA). http://www.fantaproject.org/publications/hfss.shtml

h) Food Security Network (Food for the Hungry and USAID) resource page. http://www.foodsecuritynetwork.org/resources/foodsecurity.html

i) Food Insecurity and Vulnerability Information and Mapping Systems (FAO website dedicated to larger scale mapping of poverty and vulnerability). http://www.fivims.net/

j) Ravi Jayakaran. 2002. *The Ten Seed Technique: a Modified Participatory Learning and Action (PLA) Technique.* http://www.entrepreneursdumonde.org/pratiques/files/Ten-Seed%20Technique.pdf

3.2.17 Assessing Exceptional Biodiversity Benefits

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G.W., Master, L.L., Moore, R., Naidoo, R., Ridgely, R., Schatz, G.E., Shire, G., Strand, H., Wettengel, W. and Wikramanayake, E. 2005. Pinpointing and Preventing Imminent Extinctions. *Proceedings of the National Academy of Sciences* 51:18497-18501

c) Integrated Biodiversity Assessment Tool (IBAT) (for maps of Key Biodiversity Areas and protected areas).
http://www.ibatforbusiness.org/ibat/

d) Alliance for Zero Extinction. http://www.zeroextinction.org/

e) For the purposes of GL2, 2.5, bioregions at a minimum should follow the ecoregional classifications defined by the following references:

For terrestrial: Olson, D.M., Dinerstein, E., Wikramanaya, K.E., Burgess, N.D., Powell, G.V., Underwood,E.C., D'Amico, J.A., Itoua, I., Strand, H.E., Morrison, J.C., Loucks, C.J., Allnutt, T.F., Ricketts, T.H., Kura, Y., Lamoreux, J.F., Wettengel, W.W., Hedao, P. and Kassem, K.R. 2001. Terrestrial Ecoregions of the World: A New Map of Life on Earth. *Bioscience*, Vol. 51, No 11: 933-938.
http://www.worldwildlife.org/science/ecoregions/WWFBinaryitem6498.pdf;

For freshwater: Abell, R., Thieme, M.L., Revenga, C., Bryer, M., Kottelat, M., Bogutskaya, N., Mandrak,N., Balderas, S.C., Bussing, W., Staissny, M.J., Skelton, P., Allen, G.R., Unmack, P., Naseka, A., Ng, R., Sindorf, N., Robertson, J., Armijo, E., Higgins, J.V., Heibel, T.J., Wikramanayake, E., Olson, D., Lopez, H.L., Reis, R.E., Lundberg, J.G., Perez, M.H.S., Petry, P. 2008. Freshwater Ecoregions of the World: A New Map of Biogeographic Units for Freshwater Biodiversity Conservation. *Bioscience*, Vol. 58, No. 5.: 403-414. http://www.worldwildlife.org/science/ecoregions/WWFBinaryitem8903.pdf;

For marine: Spalding, M., Fox, H.E., Allen, G.R., Davidson, N., Ferdana, Z.A., Finlayson, M., Halpern, B.S., Jorge, M.A., Lombana, A., Lourie, S.A., Martin, K.D., McManus, E., Molnar, J., Recchia, C.A., and Robertson, J. 2007. Marine Ecoregions of the World: A Bioregionalization of Coastal and Shelf Areas. *Bioscience*, Vol. 57, No. 7: 573-583.
http://www.worldwildlife.org/science/ecoregions/marine/WWFBinaryitem6091.pdf.

f) Further information and maps are available at:
Terrestrial: http://www.worldwildlife.org/science/ecoregions/item1267.html
Freshwater: http://www.worldwildlife.org/science/ecoregions/freshwater.html
Marine: http://www.worldwildlife.org/science/ecoregions/marine/item1266.html