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The Republic of Sudan
Ministry of Agriculture and Forests
National Forest Corporation

REDD+ SUDAN

Reducing Emissions from Deforestation and Forest Degradation (REDD+) Readiness Program

BENEFIT SHARING MECHANIZIM FOR SUDAN`s REDD+ PROGRAM DEVELOPING

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Executive Summary

The broad objective of the assignment is to study the setup of national and sub-national benefits sharing through provision of practical and implementable options for benefit sharing guidance that support the implementation of Sudan's REDD+ Strategy. The potential effects of climate change in Sudan include: reduction in ecosystem integrity and resilience; a decline in biodiversity; decrease in forest and rangelands areas and areas under cultivation; decline in biomass production and gum Arabic and other crops yield, and frequent spells of drought. The Sudan prepared the Project Initiation Plan (PIP) for promoting low carbon development to encourage a move towards low carbon and resilient development and promote investment in GHG mitigation projects, in order to be able to claim carbon revenues and meet its obligation towards contributing to the global mitigation efforts and meet the eligibility requirement of accessing climate financing through the established Green Climate Fund. Sudan is rich with diversity of forest resources which supports economic development. Sudan's forests contribute significantly to livelihood of local communities in provision of fuelwood, building materials and Non-Wood Forest Products (NWFPs). However, deforestation is taking place at an alarming rate. Between 1990 and 2005, Sudan lost an estimated 12% of its forests (8.8 million ha). The afforestation and reforestation activities in Sudan lag far behind expectation resulting in the forest sector being a net Carbon dioxide emitter.

Sudan is a party to many global and regional multilateral environmental agreements (MEAs) and ratified several global environmental conventions. Moreover, Sudan is signatory to the UNFCCC and its Kyoto Protocol. The Forests National Corporation is a self-financing entity relying on the collection of revenues from the royalties outside the reserved forests, returns on investments and the proceeds of sales of the forest reserves. Forest policies of Sudan (1932, 1986 and 2006) give special consideration to sustainable social and economic development which maintains or enhances environmental quality and resource productivity on a long term basis. Moreover, Sudan's 1998 Constitution stressed the subject of Environment in item (13) of the first chapter. Participatory Forest Management (Joint forest Management – JFM and Community Forestry Management – CFM) represent the future opportunity for reducing emission of gases from deforestation and degradation of forest resources. The Land Settlement and Registration Act, issued in 1925, provided for individual rights and interests over land. In 1970, the government promulgated the Unregistered Land Act that bestowed ownership of all lands on government.

About 75% of Sudan's GHG emissions come from deforestation and forest degradation. Reducing emissions from deforestation and forest degradation (REDD+) has thus, emerged as a promising mechanism both for reducing emissions from forestry sector and for supporting good forest governance. REDD+ is seen as one of the viable tools for reducing emissions since it is primarily based on incentives from the transfer of financial benefits, and can, if well designed, implemented and enforced, generate additional benefits such as enhanced governance, more secure (tenure) rights, improved environmental services, and income from REDD+ related activities. REDD+ also poses substantial potential costs, including restricted access to land and resources, and the costs of improving policy and governance frameworks. Equitable benefit sharing is imperative if REDD+ is to result in sustainable emissions reductions, realize substantial benefits for forest communities, and avoid making vulnerable people worse off. Benefit sharing is, in other words, an ethical obligation that helps make REDD+ effective, equitable, sustainable, and accepted. Establishing equitable benefit sharing is likely to be challenging in practice, including because of lack of clarity and difficulty estimating what actual REDD+ benefits and costs will be, weak governance, weak or poorly enforced land tenure rights, and high resource needs for effective implementation and monitoring. Despite these challenges Sudan should move ahead with getting 'REDD+ ready', including through implementation of REDD+ pilot projects. Emerging lessons from these pilot projects should be considered in the design of REDD+ benefit sharing mechanism

This report builds upon individual interviews conducted between January and February 2017, facilitated by the Focal Points of the REDD+ initiatives in different states of Sudan. Roundtable discussions among the focal points facilitated at the 5 regions of the REDD+ program. In addition to the group discussion with the focal points, there were group discussions with selected communities at the 5 regions and face-to-face interviews with local communities. Existing publications on REDD+ and CBNRM were consulted for this assignment besides self-administered questionnaires with all the focal points.

In the absence of any pilot project in Sudan, the Benefit Sharing Mechanism has not yet been tested and is still considered as an unresolved issue in REDD+. This report focuses on raising key questions to identify options for developing REDD+ Benefit-Sharing Mechanism for Sudan. The Benefit-Sharing Mechanism needs to operate effectively for various actors at multiple levels in Sudan, and ensures that participating community members will receive fair and substantial benefits. Legal arrangements and regulation rules should be put in place to ensure a fair benefit sharing system. However, these regulations and rules should be flexible enough to accommodate local-specific circumstances and allow local actors to appropriately adapt the mechanisms to their needs. A National REDD+ Trust Fund needs to be established in Sudan, but this should be preceded by the creation of a national carbon payments distribution mechanism which is yet to be developed. A nested approach is advocated for international/ national to local distribution of REDD+ benefits in Sudan, since it offers the greatest benefits for eligible local communities. This proposed benefit sharing mechanism presents an example of institutional and governance arrangement. Key considerations include the accountability, representativeness, and perceived legitimacy of local communities and endogenous groups targeted to be served. Proposed pilot approaches include a mix of community, household, and/or individual payments; institutional arrangements, including new and existing organizations and rules. There are advantages and limitations to each approach, but a key factor in all cases should be communities' preferences. Participatory Forest Management (PFM) will be a key anchor for REDD+ in Sudan, and likewise, Sudan's REDD+ can help expand PFM. However, PFM should not be considered as the only option for implementing REDD+ in Sudan; its key challenges have to be addressed, particularly those related to Joint Forest Management (JFM) agreements. REDD+ benefit sharing should be designed, implemented and monitored in accordance with the developed national safeguards system which emphasize participation; free, prior and informed consent; representation; transparency; accountability; gender equality; land, forest and carbon tenure; dispute resolution; monitoring; capacity; and sustainability. Benefit sharing should take account of REDD+'s broader governance context and political economy.

Sudan is a partner country of the UN-REDD Programme and requested technical support for their REDD+ readiness process through the targeted support mechanism. Sudan has developed a Readiness Preparedness Proposal (R-PP) which was submitted to the World Bank's Forest Carbon Partnership Facility (FCPF) in late 2013 for consideration, and will be resubmitted in June 2014. The FNC, in its capacity to implement and coordinate all forestry and REDD+ issues and agreements to which Sudan is a member was formally requested to join the World Bank's initiative of Forest Carbon Partnership Facility (FCPF) and benefit from the REDD readiness phase. Sudan considers the REDD+ mechanism to be a priority area for development in the management of forest resources and rangeland in the presence of a number of enabling factors for the implementation of benefit sharing mechanism. For example, the concept of benefit sharing is not new to Sudan, and has traditionally been practiced. During the last few decades the modern concept of benefit sharing was introduced by extension services in relation to the management of gum Arabic belt. In the process of developing REDD+ benefit sharing, Sudan identified key elements which encompasses different variables, namely, the definitions of benefits and the benefit distribution models, the determination of beneficiaries, the constitutional benefit sharing, contractual arrangements, and linking land rights to REDD+. For the implementation of the pilot projects, special consideration should be given to reviewing Sudan's Forest Policy, sources of funding, monitoring, building institutional capacities and replicating project successes, stakeholders' analysis and roles, gender analysis, capacity building and land tenure.

Acronyms and Abbreviations

AEWA	African-Eurasian Water Bird Agreement
ARP	Agricultural Revival Program
CARE	Corporation of American Relief Everywhere
CBD	Convention on Biological Diversity
CBO	Community Based Organization
CDM	Clean Development Mechanism
CERs	Certified Emissions Reductions
CFM	Community Forestry Management
CIFOR	Centre for International Forestry Research
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
Co^2	Carbon Dioxide
COP	Conference of the Parties
COP	Conference of Parties
CSO	civil society organizations
CSO	Civil society organisation
EU	European Union
FAO	Food and Agriculture Organization
FCPF	Forest Carbon Partnership Facility
FIFD	Department of International Development
FINNIDA	Finish International Development Agency
FNC	Forests National Corporation
FRA	Forest Resources Assessment
GDP	Gross Domestic Product
GEF	Global Environmental Fund
GEF	Global Environment Facility
GHGs	Green House Gases
GoS	Government of Sudan
HCENR	Higher Council for Environmental and Natural Resources
IES	Institute of Educational Science
IFAD	International Fund for Agricultural Development
IIES	Institute of International Economic Studies
ILO	International Labor Organization
IUCN	World Conservation Union
JFM	Joint Forest Management
KFW	Kasigau Wildlife Works
LDCs	Least Development Countries
LUCF	Land Use Change and Forestry
MDGs	Millennium Development Goals
MEAs	multilateral environmental agreements
MEPD	Ministry of Environment and Physical Development
NAMAs	Nationality Appropriate Mitigation Actions
NAP	National Adaptation Plan
NAPA	National Adaptation Plan of Action
NCSA	National Capacity Self-Assessment
NEMA	National Environment Management
NGO	Non-Governmental Organization
NMMs	New Market Mechanisms
NPEM	National Plan for Environmental Management

NTFPs	Non Timber Forest Products
NWFPs	Non Wood Forest Products
PES	Payment for Environmental Services
PFM	Participatory Forest Management
PIP	Project Initiation Plan
REDD	Reducing Emissions from Deforestation and forest Degradation
REDD+	Reducing Emissions from Deforestation and Forest Degradation and Enhancing Forest
RPP	REDD Preparedness Proposal
SCC	Sudan's Church Council
SCF	Save the Children Fund
SESA	Social and Environmental Services Assessment
SIDA	Swedish International Development Agency
TNA	Technology Needs Assessment
TOT	Training of Trainers
UNCCD	United Nations Convention to Combat Desertification
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Program
UNEP	United Nation Environment Program
UNESCO	United Nation for Education, Science and Culture Organization
UNFCCC	United Nation Framework Convention on Climate Change
UNFF	United Nations Forum on Forests
UN-REDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation
UNSO	United Nations Sodano Sahelian Office
USAID	United States Agency for International Development
VCUs	Verified Carbon Units
WASH	Water supply and Sanitation Policy

Table of Contents

List of Tables

List of Figures

List of Plates

1. Introduction

There is a substantial advance in understanding of climate change, its causes, its consequences and its remedies. An important element in understanding vulnerabilities to climate change is in linking current and projected exposures to climate change with other existing stresses and conditions that are responsible for hardship and low levels of economic welfare. Climate change often adds to these existing stresses, increasing the vulnerability of such communities and ecosystems (Neil et. al, 2007). Climate change is increasingly recognized as a critical challenge to ecological health, human well-being and future development. Accordingly, Climate change is becoming an urgent global environmental and humanitarian problem, threatening disruption of ecological processes, alterations of land-based and aquatic food production systems, increasing risks to human health, challenging maintaining and improving human wellbeing, risks to biodiversity and species survival, undermining of economic growth and resilience, and increasing conflict and violence (IPCC 2014a). Tropical deforestation and forest degradation are one key part of the problem, with 12% of total GHG emissions in the period 2000–2009 coming from forests and other land uses and therefore potentially an important part of the solution (IPCC 2014b; Goodman and Herold 2014).

Sudan, Africa's largest country, was split in two countries in July 2011. The Sudan Central Bureau of Statistics, estimates the population of Sudan as 39 million (2011), growing at 2.7%, with more than 30 million people living in rural areas. Over 80% of Sudan's employment takes place in the agricultural sub-sector of the economy, the majority of the population are farmers and pastoralists living on subsistence farming and livestock herding mostly nomadic type. However, an increasing number of people live in urban areas, such as the tri-metropolis capital Khartoum which resembles a, triangularly shaped city sided by the Nile and its two tributaries (the White and Blue). The share of urban dwellers in the population increased from 27% in 1990 to 42% in 2009. Sudan embraces diverse biological resources, which represent an important national asset and heritage. It is rich in both underground and surface natural resources including forests, wildlife, water, pasture and rangelands, coastal and marine resources, and arable lands in addition to oil, gas and a range of metallic and non-metallic minerals (African Forest Forum 2011). The country's natural resources have mostly remained under-developed because of political and economic constraints. The Forests National Corporation (FNC) estimates that, after separation of South Sudan, forests cover about 11.60% of the total area, agricultural land 13.70%, rangelands 26.40%, and water bodies 0.17%. The average annual incremental growth of stock volume is estimated at 1.340 million cubic meters with 5 % annual removal. The United Nations Environment Program (UNEP) has indicated that between 1990 and 2005 the country lost 11.6 % of its forest cover. The recent biodiversity countrywide assessment undertaken by the National Biodiversity Strategy and Action Plan Project (NBSAP 2000-2010), constituted a significant benchmark for marking the different ecosystems, habitats and species in Sudan (USAID 2012).

1.1. Objectives of the Assignment

The broad objective of the assignment is to study the setup of national and sub-national benefit sharing through provision of practical and implementable options for benefit sharing guidance that support the implementation of Sudan's REDD+ Strategy. The specific objectives of the study are:

1. To propose benefit sharing mechanism for the National REDD+ Programme in Sudan that provides practical and implementable options for benefit sharing based on any existing schemes or a completely new approach;
2. To specify options which could be established with low to moderate level changes to existing policies.
3. To identify, assess and analyze the existing benefit sharing mechanisms and arrangements in Sudan
4. Formulate options for a benefit sharing mechanism in Sudan

5. To identify the beneficiaries, their legitimate claims, equity in benefit sharing, efficient distribution of costs and benefits, the institutional structures needed for fiduciary control and management, and the processes for decision making and implementation.

1.2. Scope of the Study

The study attempts to **i**dentify existing benefit sharing mechanisms in natural resources management in Sudan and assess their effectiveness, efficiency, equity and adequacy for use in the National REDD+ Programme, with particular reference to the policy and regulatory environment of benefit sharing in Sudan. Elaborate how such existing benefit sharing mechanisms are complementary to, or conflict with the proposed benefit sharing mechanism for REDD+ and how they impact or integrate with those REDD+ benefits. Moreover, the study gives special emphasis to identification of factors that influence the ability of local stakeholders to generate reduced emissions and enhanced removals of greenhouse gases, as a function of environmental, geographical and demographic conditions or other barriers. It would also propose a mechanism to incorporate these factors into the determination of benefits to stakeholders, such that an equitable sharing of benefits may be reached. Identification of how the benefits can be calculated from information on REDD+ eligible activities in the Monitoring & Evaluation system, the Land Monitoring System, the National Forest Monitoring System and/or other information systems pertaining to the National REDD+ Programme is considered as a core issue of the study besides assessing risks associated with the benefit sharing mechanism, such as elite capture, solicitation or offering of bribes, embezzlement and other forms of financial misconduct – and propose fiduciary control mechanisms to mitigate the risks. Finally, all options of benefit sharing shall be described in detail to highlight the key characteristics of the specific proposed benefit sharing options, including types of benefits and beneficiaries, conditions under which it could operate, capacity required to implement it, and legal or regulatory actions that are required to establish the benefit sharing mechanism. Figures (1a and 1b) show the vegetation cover before and after cessation of the Republic of Southern Sudan.

Figure (1a): Vegetation Cover of Sudan

Figure (1b): Vegetation Cover of Southern Sudan

Accordingly, this assignment is the recent activity of REDD+ in Sudan and focus on benefit sharing mechanism. Implementation of REDD+ is envisaged to generate benefits to all stakeholders involved in REDD+ activities proposed in Sudan's National REDD+ Strategy. Appropriate benefit sharing mechanisms ensuring equitable distribution benefits is essential for the success of REDD+ implementation. Stakeholders involved in REDD+ activities is highly significant according to their contributions to reduced deforestation, degradation, sustainable forest management and enhancement of carbon stock. The designing of benefit sharing arrangements for National REDD+ Strategy will include identifying the range and categories of benefits and beneficiaries specific to proposed activities and geographic locations, the process/s for how benefits will be equitably and efficiently shared, the institutional structures needed and the processes for transparent decision-making and implementation.

1.3. Methodology

The study opts for multiple methods based on scientific evidence-based research that is facilitated by multiple approaches for information collection, literature synthesis and analysis tools. These include intensive literature review and stakeholders' consultations. The data for this study was collected from 5 sites, namely; Sennar (Blue Nile, White Nile, Gezira, and Sennar states), Kassala (Red sea, Kassala, and Gedarif states), Ed damr (Nile and Northern states), Elobied (North Kordofan, South Kordofan, and West Kordofan states), and Elfasher (North Darfur, South Darfur, East Darfur, West Darfur, and Central Darfur states). All the states were represented in this study, except Khartoum State. The field work was carried out during the period 12 January–2 February, 2017. Special consideration was given for the consistency

of this work to compliment the work of the other components of the national REDD+ process, including REDD+ Strategy development, Social and Environmental Services Assessment (SESA), and Feedback and Grievance Redress Mechanism, to ensure consistency and avoid duplication which will be provided by the National Focal Point will avail to the Consultant the required information about the status of these components. The work of data collection was supervised by the REDD+ Secretariat and the Consultant through close coordination with relevant taskforces.

Two types of data were collected for this study, namely; primary data and secondary data. The secondary data was collected through an extensive desk review of available secondary information including useful documents and references. The documents of Forest Carbon Partnership Fund (FCPF) project particularly REDD+ strategy for Sudan and other materials introduced in the relevant workshop formulated the basis of understanding the present situation of REDD+ in Sudan. Moreover, other sources like National Adaptation Plan of Action (NAPA), National Adaptation Plan (NAP) project, NAPA follow-up project, National Capacity Self-Assessment (NCSA): Report and Action Plan, Technology Needs Assessment (TNA), National Environment Management (NEMA), Carbon Sequestration Project and other relevant sources, and others were consulted in this study. The primary data was collected through structured interactions with key stakeholders (primary and secondary stakeholders). Face-to-face interviews with primary stakeholders (local people from selected communities) were made to investigate the possibility of implementing REDD+ in Sudan. A total of 118 respondents were interviewed in the five sectors. The construction of the questionnaire followed the guidelines of Burchinal (1986) and FAO (1985). Table (1) shows the selected sites in the different sectors and the respondents. The main aim of the household questionnaire was to record all household livelihood activities from all sources and the value of household income in the 12-month period prior to the date of the interview. Other purposes of the questionnaire were to record the type and value of all household assets including land and household goods, tenure of household lands, access to utilities (water, toilet, electricity, cooking technology and fuel), household activities on forest lands in the two-year period prior to the interview, subjective perception of well-being change in the two-year period prior to the interview, and knowledge of and involvement in REDD+.

Moreover, a self-administered questionnaire was directed to the focal points of all the states about 2 – 4 weeks before visiting the sectors. This method was used because the respondents are literate and able to follow written instructions and understand the issues being investigated, and sufficiently motivated to complete the questionnaire on their own. The aim of the self-administered questionnaire is to collect reliable data from all the states and to make the focal points acquainted with the main topics of the group discussions, which will be organized during the field visit.

Table (1): Selected sites and Respondents for the Study

	States	Selected Communities	No. Of Respondents
1	Sennar, Blue Nile, Gezira, and White Nile	Amarat Hago	22
2	Kassala, Red sea, and Gedarif	Baryay	17
3	Nile River and Northern	Cedoon	28
4	N. Kordofan, S. Kordofan and W. Kordofan	Drisso	26
5	N., S. , E. , W. and Central Darfur	Um marakig	25
Total			118

The main contents of the self-administered questionnaire included: reasons for sharing benefits, needs for benefit sharing, transfer of benefits, responsibilities need to be fulfilled in order for the benefit to be delivered, elements of benefit sharing, the central stakeholders for functioning of a benefit sharing mechanism, the role of funders, expected role of the managers and administrators, expected roles of implementing agencies, the role of the verifiers, the required initiatives for benefit sharing mechanisms, relevant activities to REDD+ benefit sharing, appropriate benefits and their determination, the expected

fields of capacity building, benefit sharing work when rights are unclear, secure of rights, benefit sharing arrangements (national, sub-national. performance based arrangements, or sub-national performance based arrangements)**,** activities that can adhere to REDD+ benefit sharing and activities that can reduce deforestation**.**

Two group discussions were organized during the course of data collection. The first group discussion was made with the focal points of all the states of the Sudan, except Khartoum State, and the second with the local communities**.** The aim of the first group discussion was to discuss the relevance, applicability, enabling factors, challenges of application of benefit sharing in Sudan, and the output of the self-administered questionnaire. The second group discussion was made with local communities selected by the focal points at the different regions. The main issues explored during the discussion included: understanding of the benefit sharing concept, best method for application of the benefit sharing, the suitable benefit sharing mechanism, willingness to participate, methods of payments, transparency, conditionality and accountability of benefit sharing, preference of contracts or negotiations, in addition to other issues that may emerge during the discussion. After the group discussion, the hypothetical REDD+ scenario designed and used to elicit people's preferences for benefit types and timing. Special attention was given to land size, values, carbon price, and the 10 year time-frame. Three scenarios were explored, namely; successful REDD+ activities over 10 years, suggested percentage payback of REDD+ benefit, and part of the forest converted to agriculture payback of REDD+ benefits or vice versa. During this phase a wide range of forest and range custodians besides line ministries whose activities impact forest and range resources were visited. In addition, courtesy visits and discussions with civil society organizations and Gum Arabic Producers Associations (GAPAs) were undertaken.

1.4. Consultancy Team

The assignment was led by a national consultant responsible for the different aspects of the assignment, specially, forestry law, policies regulation and incentives and other forms of benefits or services provided, and the development of options for a REDD+ benefit distribution suitable for the context of Sudan. The national consultant was supported by a specialist in the field of community development to provide a detailed overview of incentive schemes and other financial instruments for community development that are currently in use in Sudan, including details on how these current policies complement or contradict with the objectives of the National REDD+ Programme. The other consultant has extensive experience in field of spatial analysis to provide an in-depth spatial analysis of natural resources in Sudan, in support of the consultancy team. International consultant contributed high quality, up-to-date detailed information on benefit distribution systems for REDD+ from around the globe to inform the process of developing a suitable benefit distribution system for Sudan. Special emphasis was given to modalities of benefits sharing, attribution of results to REDD+ practitioners, equity and the integrity of the system. The international consultant contributed significantly as a Review Editor to the final shape of the report.

2. Sudan and Clean Development Mechanism (CDM)

The potential effects of climate change in Sudan include reduction in ecosystem integrity and resilience, and a decline in biodiversity, decrease in forest and rangelands areas and area under cultivation, decline in crop, biomass production and Gum Arabic yield. The forestry vulnerability assessment results suggest that, during the periods between 2030 and 2060, the humid agro climatic zones will shift southward, rendering areas of the north increasingly unsuitable for agriculture (Sudan First National Communication, 2003). The responses to climate change impacts are limited due to the fact that Sudan has not yet developed a comprehensive national climate change policy and strategy. In addition, there is inadequate coordination and collaboration between different institutions dealing with climate change. In view of this, there is need to develop a national climate change policy which will guide coherent, systemic responses to the challenges posed by climate change at all levels. Despite the success of the CDM in mobilizing investment for low carbon development projects, stakeholders have raised concerns about the cumbersome and data intensive procedures as well as a lack of consistency within the mechanism. Going

forward, the opportunity is for the CDM and carbon finance to move to mitigation actions at scale, and to draw linkages with next generation instruments such a Nationally Appropriate Mitigation Actions (NAMAs) and New Market Mechanisms (NMMs). In this regard, the CDM's program of Action and Standardized Baselines can act as an important starting point for sector-wide activities particularly in LDCs. Sudan established a process to promote CDM, REDD+ and carbon investment opportunities to support low-carbon national development process. Moreover, Sudan has prepared a CDM strategy to support carbon investment, strengthening CDM procedures, building capacity within the potential CDM actors in Sudan, assess the potential for CDM in the different sectors, and develop capacity and awareness for the preparedness phase of REDD+ and the Redd Preparedness Proposal (RPP). The CDM strategy created interest in carbon financed projects and currently a couple of projects in different sectors are in the pipeline for CDM registration. To be able to achieve the result of the GHGs mitigation, the Sudan prepared the Project Initiation Plan (PIP) for promoting low carbon development in consultation with the concerned government agencies and various development partners. The objective of the PIP is, to move towards low carbon and resilient development and better promote investment in GHG mitigation projects. This will help Sudan to claim carbon revenues and meet its obligation towards contributing to the global mitigation efforts, and meet the eligibility requirement of accessing climate financing including through the newly established Green Climate Fund.

Sudan's net contribution to global GHG emission is very meagre. The first GHG inventory indicated that the emission from Land use Change and forestry sector represent 75% of total GHG emissions in Sudan. The emissions were mainly attributed to deforestation and forest degradation brought about by high demand for fuel wood, charcoal production and transformation of forests into agricultural land. As natural sinks and stores of carbon, these ecosystems contribute to the biological mitigation of GHG through the sequestration of Carbon Dioxide. Afforestation, reforestation and restoration of natural habitats, as well as more efficient energy use, will improve and consequently minimize the loss of carbon storage and sinks. Improved ecosystems and environmental management practices not only provide economic gains and improved ecological services, but also result in greater agro-biodiversity and increased carbon sequestration. Emissions from LUCF have recently started to decline as a result of reductions in forest and grassland conversion, coupled with the expansion in afforested areas and managed forested land, in addition to improved application of the inventory methodology. In spite of Sudan's low emission levels, a number of priority development initiatives outlined in the Sudanese 25-year strategy (2007 – 2031) provides the policy directions to all economic and social sectors, and incorporates the country's environmental strategy, clearly stating that environmental issues including climate change responses must be embodied in all development projects. Despite the lack of a comprehensive policy and legislative framework for climate change mitigation, a number of individual relevant sectorial policies exist. In addition, the assessment of Sudanese sectors provides a huge set of opportunities for mitigating GHG emissions as mentioned above. The development of frameworks for coordination and exchanges between the different institutions working in areas related to climate change is essential. Governance and coordination lie at the heart of the Sudan Climate Change Policy, but it is important that governance mechanisms are in place to ensure coherent, cross-sectorial action that address local-level priorities and ensure the transparency and openness of the responsible agencies and allowing public participation and access to information.

3. Sudan and the Multilateral Environmental Agreements

Sudan is a party to the following global and regional multilateral environmental agreements (MEAs): Ramsar Convention on Wetlands (1971); Convention Concerning the Protection of the World Cultural and Natural Heritage (UNESCO WHC 1972)Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES 1973); United Nations Convention on the Law of the Seas (1982) and the Convention on the International Maritime Organization (1958); and Regional Convention for the Conservation of the Environment of the Red Sea and the Gulf of Aden (PERSGA - 1982); Vienna Convention for the Protection of the Ozone Layer (1985) and the Montreal Protocol on Substances that

Deplete the Ozone Layer (1987); Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (1989); Bamako Convention on the Ban of the Import into Africa and the Control of Transboundary Movement of Hazardous Wastes within Africa (1991); Convention on Biological Diversity (CBD 1992); United Nations Convention to Combat Desertification (UNCCD 1994); United Nations Framework Convention on Climate Change (UNFCCC - 1994); the Rotterdam Convention on the Prior Informed Consent (PIC) Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (1998); African-Eurasian Water bird Agreement, AEWA) Cartagena Protocol on Biosafety (2000; Stockholm Convention on Persistent Organic Pollutants (POPs 2001); African Convention on the Conservation of Nature and Natural); Resources (Africa Convention 2003).

Following the Earth Summit, Sudan ratified several global environmental conventions and through funding availed from the Global Environmental Fund (GEF), Sudan formulated and adopted several strategies and action plans such as: National Action Plan to Combat Desertification, Sudan first National Communication and National Biodiversity Strategy and Action Plan. However, due to lack of resources during the civil war era, the country was not able to assign resources for the implementation of these environmental strategies and action plans. The Sudan NCSA Project was implemented by the Higher Council for Environmental and Natural Resources (HCENR) from 2005 to 2007 to identify national capacity constraints and priorities to meet the obligations included in the three Rio Conventions (Biodiversity Conservation, Climate Change and Desertification). The NCSA process is to complement other national action plans such as Sudan Post-Conflict Environmental Assessment developed in coordination with UNEP and launched by the Ministry of Environment and Physical Development (MEPD), July 2007. The National Plan for Environmental Management (NPEM) in post-conflict Sudan was sponsored by UNEP, EU and the Nile TEAP and carried out by HCENR. The Sudan Strategic Plan (2007 – 2031) includes a Five Year Action Plan which aims at achieving balanced development, reducing poverty, making progress towards achieving Millennium Development Goals (MDGs), stressing public accountability, good governance and environment conservation.

4. The Framework of Sudan's Climate Policies and Measures

Developing policies and strategies on climate change and environment in Sudan started with the formulation of the national communications under the UNFCCC, for the years 2003 and 2013 from which NAPA 2007, the national action program for combating desertification 2006, and RP (2008 – 2011) were formulated. The national development strategies have similar objectives to climate change adaptation plans, such as the Interim Poverty Reduction Strategy (IPRSP 2013), which partly aims to create synergy between adaptations to climate change and achieving better livelihoods opportunities, the five years program for economic reform (2015 – 2019); the National Agricultural Investment Plan for the agricultural sector (Naip, 2012), which is considered as a strategic communication tool for the government decision-makers and development partners. In addition to NAPA, 2007, and the National Biodiversity Strategy and action plan (NBSAP); which serves as a guide for conserving biological diversity of the country covering plant, forestry, range, farm animal, wildlife, marine and in-land waters biodiversity, biotechnology and bio-safety. Additionally there are other sectoral policies and strategic plans; such as the forestry policy (2006) the wildlife policy (2014); the strategic action plan for conservation of range and pasture plants in semi-desert and low rain savannah (2011); the national investment plan for the agricultural sector 2012; national water supply and sanitation policy, (WASH); 2009. All the above strategies aimed to flag the sustainable developmental goal of ensuring sustainable and integrated management of natural resources. Moreover, Sudan has initiated other sectoral strategies for biodiversity, water, agriculture, population, poverty reduction etc. Policies and strategies were reinforced by legislation based on Sudan's 1998 constitution. The Environmental Protection Act was enacted in 2001 and provides a framework for policies and legislation for enforcing executive actions by federal and states organs (GoS, 2007). The objective of the act is the protection of the environment and conservation of natural resources through enhancing coordination between government and other national institutions including private sector and civil society organizations (CSO). Sudan is also a signatory to the

UNFCCC and its Kyoto Protocol. The HCENR in 2013 characterized Sudan as a "hotspot" for key future climate impacts and vulnerabilities in Africa. According to Sudan's 2nd National Communication Report (GoS, 2013), Sudan is considered highly vulnerable to climate change, which poses threats to the Sudanese communities, natural resources, and the national economy. Since ratification of the Rio convention, Sudan had implemented several activities under MEAs, which have direct relations to climate change adaptation and development priorities. The outcomes of these include first and second national communications, NAPA and NAP. Implementing the various MEAs has led to activities such as government policies and strategies, national programs intergovernmental/multilateral processes in addition to other multilateral activities. At national level line ministries developed climate change related development polices, such as the Agricultural Revival Program (ARP) of 2008 – 2011 and five years economic reform program 2015 – 2019. The Forest Policy (2006) supports climate resilient livelihoods via encouraging income diversification, facilitating microfinance and providing access to land (Ministry of Agriculture and Irrigation, 2012)

5. The Comprehensive National Strategy, 1992 – 2002

The 25–years strategy provides policy directions to all economic and social sectors, and incorporates the country's environmental strategy. It states clearly that environmental issues must be embedded in all development projects (GoS 2007). This strategy was designed to be executed in three stages; its first fiscal year being 1992/1993, and terminated in 2002. The strategy encompasses five key objectives, among others.

- The environmental objectives: deal with the protection and improvement of the environment, rehabilitation of the tree covers, rationalization of the exploitation of natural resources, awareness raising, environmental education, and involvement of local people in different phases of projects.

- **The natural resources objectives**: focus on the direction of more investments to the sub-sector, participation of the local citizens and increasing afforestation and preservation of natural resources.

- The objectives of forestry: aim to increase reserved lands under forests, pasture and wildlife habitat to 25%, provision of energy, realization of agricultural and forest complementarily, enhance Gum Arabic production and encouraging participation of communities in forest projects.

- **The industry objectives**: focus on achieving self-sufficiency in pulp and paper, and self-sufficiency in the production of carton boxes of all types for vegetable and fruit exports.

- **The energy objectives**: concerned with the protection of the environment and rehabilitation of forests, development of alternative energy sources, wood and improvement in the use of wood and charcoal stoves (Bayoumi, 1995).

Natural resources legislation, management and institutions matters relating to the exploitation of natural resources had been incorporated in the responsibilities and terms of reference of the central government departments. Each department has been assigned the responsibility for the management of a single resource. The gradual processes of decentralization and devolution of power seems to have very little impact on this basic set up as the sector-based legislation, professional practice and tradition continued.

6. Forests of Sudan

In 1990, the Government in Khartoum established the FNC to replace the Forests Administration to provide a more dynamic structure to meet the supply of goods and services of the forests of the country. In recognition of this reality, there have been growing efforts at community forestry since the early 1990's which included: restocking of the Gum Belt, participatory, community forestry efforts at agroforestry, including tree planting for windbreaks around villages in the north, and projects to promote community involvement in the conservation and management of officially reserved forests. Figure (2) shows the vegetation cover of Sudan. The largest share of wood consumption is for energy use by the household and services sectors representing about 95% in form of firewood and charcoal, followed by the industrial sector. The major wood fuels of commercial use is in the brick making industry consuming

52% of wood consumed in the industry sector, equivalent to about 550000 cubic meters in 1995 and 770000 cubic meters in 1999 (HCENR 2003).

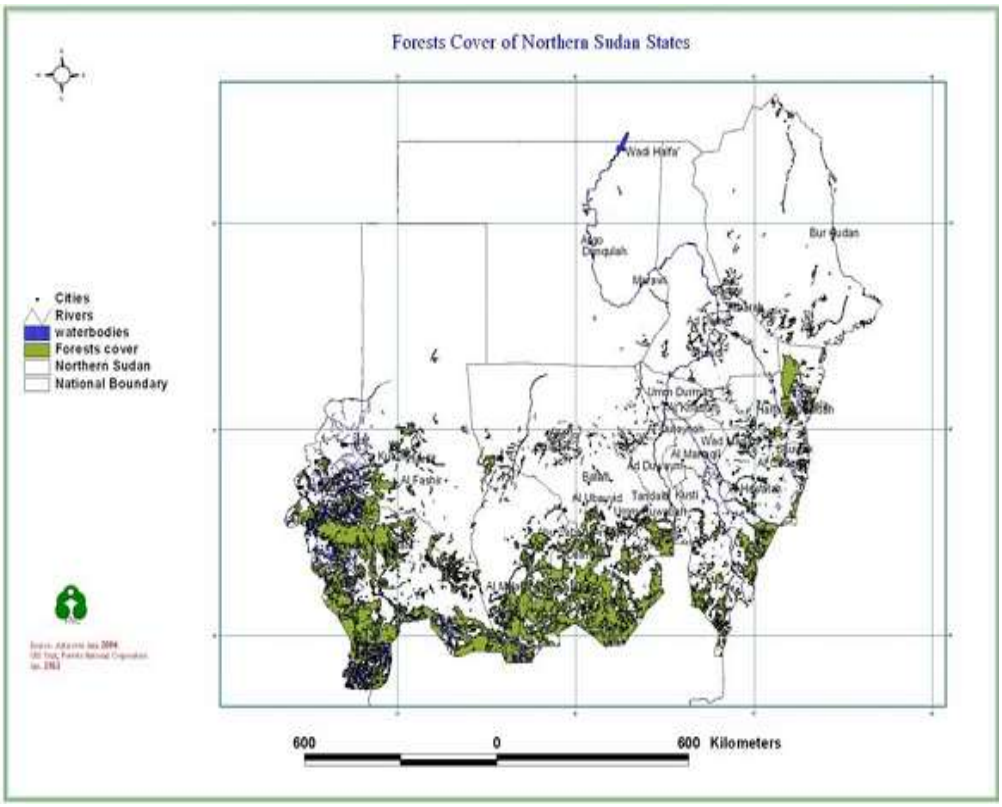

Figure (2): Sudan Forest Cover

Following a forest sector review by the World Bank, a new Forest Act was issued and the Forests National Corporation (FNC) was created in 1989 with broader mandates. FNC is self-financing and there is no government budgetary support. Many forest related legislations remain largely un-enforced and its operations concentrate at the federal level with continuous conflicts over states forests management systems. There are three types of forests in Sudan: federal forests, state forests, and community/private forests: Table (2) shows Sudan's land use types.

Sudan is characterized by variation in climatic zones and consequently rich diversity of forest resources. Forests contribute significantly to the traditional sector as well as to economic development. The forests in Sudan are either reserved forests (natural forests and plantations) or natural non-reserved forests.

Table (2): Sudan's Land Use Types (Feddans)

State	Agriculture	Forest	Rangelands	Urban	Bare areas	Water bodies	Total
Khartoum	171885.3	37842.2	1695295	58399.5	195247.7	21641.8	2180311.4
Jazeera	1761939.9	5320.8	667288.9	28971	0	10876.6	2474355.9
Blue Nile	2042096.2	1071771.5	1075379.5	4314.3	0	24766.2	4219409.7
Sennar	1976947.9	626381.2	931459.8	3560.7	24664.4	19155.1	3582144.4
W. Nile	1459892.8	609781.1	185960.8	8120	21419.2	47185.9	4006045.6
Northern	158125	20507.3	467277.9	7903	35661506.8	127561	36442884.4
R. Nile	162620.5	212507.9	3420954.9	10356.6	7497175.3	52692.7	12937734
Gedarif	3221523.6	522087.4	2079853	13934.7	9570.4	2026.1	5849006.9
Kassala	797522.1	899977	2849609.9	41987.3	403683.6	9873.2	5002643.9
Red Sea	100423.8	331434.1	2290225.3	8737.3	18899005.4	233.3	21630047.9
N.Kordofan	3025128.7	637074.2	8899416.6	32278.5	6257614.5	1569	18853074.8
S.Kordofan	1213703.4	4139292.7	2607011.9	6296	71109.6	885.8	8038295.2
W.Kordofan	3474435.2	3137866	4629175.8	20356.5	23542.3	369.3	11285754.6
N.Darfor	2181131.2	830515.5	7845671	17163.2	18676386.9	102.7	29551077.8
S.Darfor	3441510.3	6009313.1	482193.2	17193.8	40686.3	44.4	13870974.5
W.Darfor	624112.3	2734491.3	3877549.4	1487.9	638301.9	590.1	7880254.7
Total	258129981	21826163	45677965	281060.6	90001344.6	319573.3	187804015.7
%	14	12	24	0.0014	47	0.007	

Plate (1a): Sunt Reserve Forest Forests

Plate (1b): Bare areas in Sunt Reserve

Government plantation relies mainly on rain fed system in the Savannahs region. In spite of the relatively small area of forests plantations in Sudan and limited contribution to the economy and livelihoods, Sudan possesses a huge experience in the establishment and management of plantations, which goes back to the middle of the 20th century. Forests of Sudan represent a major source for fuelwood supply particularly in rural areas. Figure (3) shows the vegetation cover of Sudan, while Figure (4) shows the map of the major divisions and sub-divisions of forest resources.

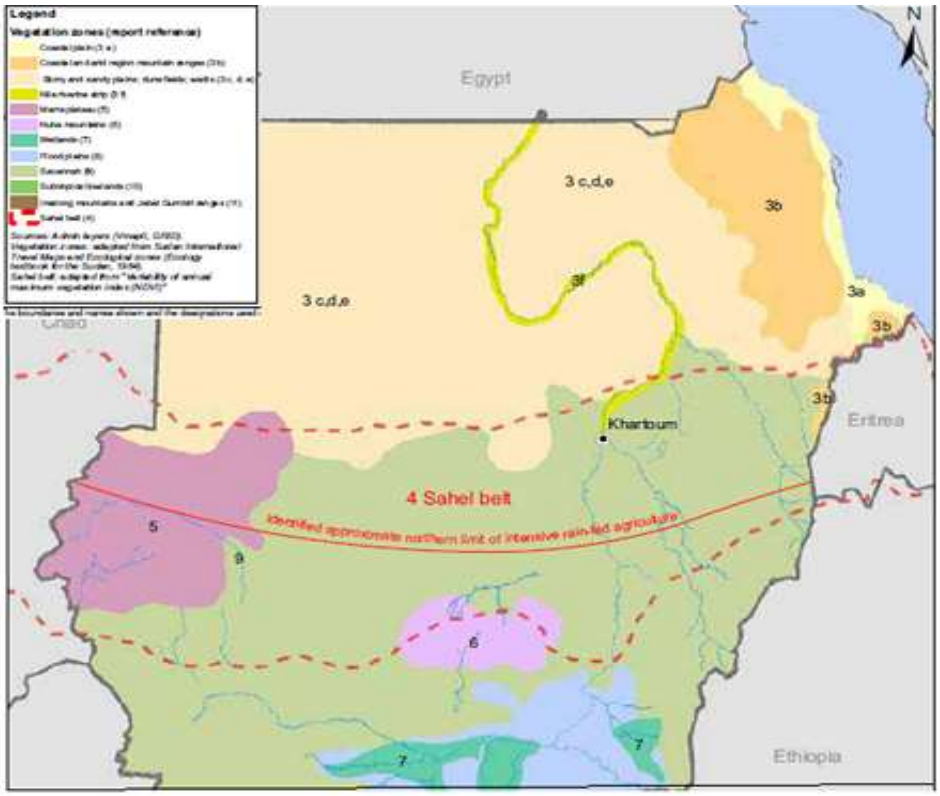

Figure (3): Vegetation of Sudan

Most of the country's forests are open or semi-open habitat, with 4% of Sudan's land area mandated, as forest reserves that receive a special level of protection and management. The forest reservation process, which started in 1923, was only able to settle and finally gazette about 3000000 feddans an equivalent to 1.7 hectare (0.4% of the total area of the country). Forests and woodlands outside forest reserves are threatened by expanding agriculture and urbanization or needs for energy (FAO, 2000). There is a good opportunity for reducing biomass energy use with adoption of energy alternatives and improvement in energy use.

A number of government decrees passed in 1993 brought the area under forest reserves to 12660149 million feddans making up 2.2% of the total area of the country. Forestry is now receiving more consideration and commitment from the government as a potential safeguard for alleviation of poverty, enhancing agricultural production, and improving rural livelihoods. The Government has put more emphasis to support the forestry sector within the framework of Agricultural Revival Policy that started in 2008. Table (3) shows major and sub-division of forest resources of Sudan.

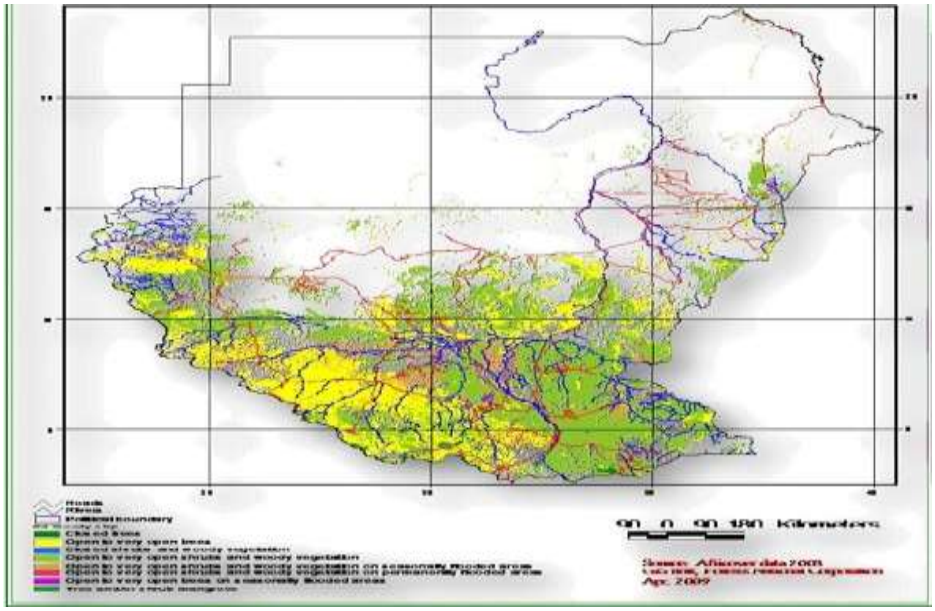

Figure (4): Major Divisions and Sub-divisions of Forest Resources

Table (3): Forest Resources of Sudan

Major division	Sub-division	App. Area km2
Desert		726000
Semi-desert	Acacia tortilis – Maerua crassifli desert scrun	
	Semidesert grassland on clay	187000
	Semidesert grassland on sand	104000
	Acacia mellifera-Commiphora desert scrub	86000
	Acacia glaaucophylla-Acacia etbaica scrub	31000
Woodland Savannah	Low rainfall on clay soil	
	Acacia mellifera thornland	
	on dark cracking clays	96000
	On soils formd in situ	52000
	Commiphora and Boscia	119000
	Acacia seyal savanna woodland-Combretum cordofanum-Albizza-Terminalia-Sclerocarya-Anogessus-Prospis	49000
	On sand	
	Acacia seyal savanna woodland	65000
	Combretum cordofanum-Albizzia	86000
	Terminalia-Sclerocarya-Anogessus- Prosopis	65000
	Special areas	
	Toposa area	36000
	Hill catena	70000
	Bagarra catena	18000
	Ragaba catena	34000
	High rainfall	
	Anogeissus-Khaya-Isoberlinia savanna woodland	311000
	Woodland savanna recently derived from rain forest	36000

Source: FRA 2010

6.1. Forest Situation

Sudan is characterized by wood scarcity and recognized as a wood deficit area. The majority of the forest resource base is made up of open woodlands and Acacia type savannahs. Sudan was also once the source of 80% of the world's supply of Gum Arabic. In some cases in Kordofan, demand for Gum Arabic was so high and led to adoption of an indigenous agroforestry practice of "Gum Gardens". In the mid-1980's, Gum farmers, faced with low prices for their outputs as a result of the ineffectiveness of the monopoly control of the market by the parastatal Gum Arabic Trading Corporation and a 40% tax increases on its export, many small producers chose to cut down their trees and convert them into charcoal just before abandoning the area. The mountain forests of the Red Sea Hills and Jebel Marra also have more significant tree cover but these, despite reservation and attempts at management, have long been under heavy cutting pressure. Sudan also has some special forests characterized by unique ecological conditions, typically related to the presence of water and drainage-ways. Along the Nile and other rivers, there are some stands of more productive Sunt Forests (*Acacia nilotica*) which grows to greater size but is much sought after for rustic building materials and even cut commercially for railway sleepers because of its strength and durability. Table (4) shows the forests' areas in the different regions.

Table (4): Number of Sudan's Forest Reserves

Region	No of reserves	Total Areas
Northern	71	96792
Khartoum	26	61644
Kordofan	252	3219806
Darfur	182	3915908
eastern	205	1808392
Central	485	1808685
Total	**1221**	**10911227**

6.2. FNC Financial Resources

The FNC is a self-financing entity relying on the collection of revenues from the fees prescribed for the royalties from outside the reserved forests and returns on investment and the proceeds of sales from the forest reserves. The FNC has three main financing mechanisms, the first is the self-finance mechanism from FNC own resources, the second is the National Development funding mechanism which finances development projects, and the third is through projects funded by other donor organizations and private sector. The available financial resources are well below the minimum capacities required to plan and to implement sustainable forest management. The wide range of products and services derived from forests is fully acknowledged, moreover, FNC is often not positioned to fully capture the benefits from management of forests. Royalty in Sudan is collected in accordance with the Royalty Order of 1939 with exemption of product collected for consumption. Royalties constitute the major source of revenue to the FNC with respect to forest products. Licenses on the other hand are pre-paid fees for obtaining approval for cutting of forests or collection of NWFPs for marketing. Revenue accrues from the sale of forest products obtained from forest reserves are based on license from FNC. In case of acquisition of forest products from inside forest reserves, usually the sealed tender system is used. Expanding the service functions would necessitate mobilization of additional resources, by increasing fees and royalties for forest products and by seeking a government grant. Given the low charges on forest products, up to a certain level service functions can be supported by higher royalty rates and fees. Reliance on government grant to support service functions makes FNC unduly dependent on the vagaries of budget allocation, defeating the very rationale of establishment of FNC. The Forest Act of 1989 (presently amended to Forests and Renewable Natural Resources Act of 2001), provide some level of authority to the FNC to develop or alter tariffs on royalties on forest products, and collect fees according to regulations published from time to time (Mahir and El Doma 1995). There are no specific forest charges on processed forest products. However, a general sales tax is levied on the sale of processed forest products. Fines and penalties are levied on forest offenses. Forest products that are produced illegally can be confiscated and

sold by the government. Such products are often sold through auctions. There are other forestry support fees which encompass a local fee levied on forest products (including NWFPs), in addition to the royalties. Unlike royalties,- which is unified across the states- the fees rates differ from one state to another. In general, the rates range between 20 - 50 % of the royalty rate for the product.

6.3. Afforestation and Reforestation

Afforestation and reforestation activities have been practiced in the Sudan since 1911, yet these activities often not thoroughly systematic and concentrated in the reserved forests. The annual afforestation and reforestation programmes ranged from 5000 to 10000 feddans during the period 1910-1950 to some 12000 to 85000 feddans during the 1990s and to 150000 - 200000 feddans of forest plantations during the period 2000-2009 depending on availability of resources, including foreign aids and assistance. Institutional efforts in afforestation and reforestation programmes are restricted to the reserved forests that are almost exclusively owned by FNC. The community forests are recognized as a source of revolving funds to support village development. The main objective in establishment of shelterbelts in farms is to compensate for the deforestation created by the expansion of mechanized agriculture. The shelterbelts were established based on a presidential decree, which state that 10% of the area of any mechanized farm scheme should be maintained as a forest cover. Figure (6) shows the annual planting areas for the period 2002 – 2010, while Figure (5) shows the annual forest establishment for the period 1990 – 2010.

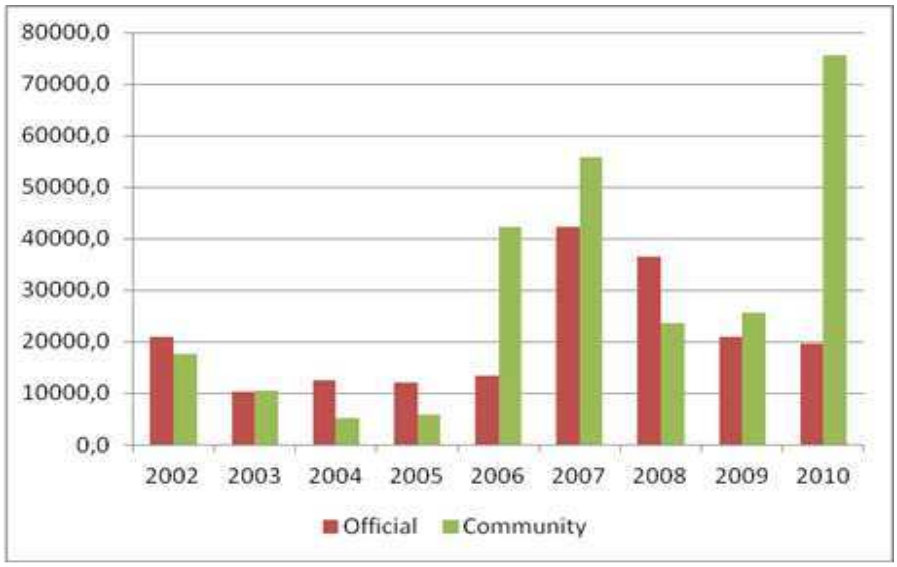

Figure (5): Annual planting areas during 2002-2010 (Feddan)

However, the forest cover within mechanized farms is designed as a shelterbelt in order to serve as a protective shelter for the agricultural scheme. The private sector is involved in forest development through profit making from sales of wood and NWFPs particularly Gum Arabic.

Table (5): Annual forest Establishment for the Period 1990 - 2010

	Annual forest establishment (1000 ha/year)			
Years	1990	2000	2005	2010
Forest expansion (Afforestation)	75	70	60	50
Deforestation	174.415	174.415	174.415	174.415
Human induced deforestation	174.415	174.415	174.415	174.415

Reforestation	5424	5639	5854	5940
	5424	5424	5424	5424

Source: FRA, 2010

Irrigated plantations of *Eucalyptus microtheca* established as woodlots and windbreaks are widely spread over central Sudan and West Darfur for sales of poles. Gum Arabic gardens are managed for Gum production sold locally to small entrepreneurs or transported to auction centres. Gum producers associations enhance the development of farmers owned Gum gardens and support marketing of the produce. Some sugar companies and agricultural schemes have implemented programmes for tree planting in their estates. Private farmers in Jebel Marra and the Gezira have positively reacted to FNC forestry extension messages and established their own woodlots. As wood market is currently deficient of supplies, it is expected that private and community forest plantations are going to expand. Moreover, there are opportunities for development of forest industries from the valuable timbers. Table (6) shows the afforestation and reforestation (in ha) 1990 – 2009, while Table (7) shows the forest areas of out-growers in afforestation and reforestation areas during the period 1990 – 2009.

Table (6): Afforestation/reforestation areas (in ha) from 1990 to 2009

Period	Public (in and outside reserved forest)		Community		Total
	Total	Average/yr	Total	Average/yr	
1990-1994	122,940	24,590	56,390	11,280	179,330
1995-1999	117,230	11,160	60,170	12,030	177,400
2000-2004	69,870	13,970	52,440	10,490	122,310
2005-2009	133,630	26,730	107,980	21,600	241,610

Source: FNC (2011b)

Table (7): Forest area of out-growers

Type of out-grower plantation	Area (feddan)
Gum Arabic gardens	1500000
Community forests	165417.1
Companies plantation (private and government companies)	300056.12
Total	1956473.22

Source: FNC 1996

6.4. Deforestation in Sudan

Plantations areas constitute a small fraction compared to natural forest reserves and forests outside reserves. The most important forests in the Sudan may be the Gum Arabic belt, which is used to indicate a zone of mainly 520,000 km2 in an area that extends across central Sudan accounting for one fifth of the country's total area (IIED and IES 1990). The belt acts as a natural barrier to protect more than 40% of the total area of Sudan from desert encroachment. The belt also represents a site of intense and diverse human activities where most of the agriculture and animal production are practiced. This includes irrigated agriculture, mechanized rain fed agriculture, and traditional rain fed agriculture and forestry (Ballal 2002). Several factors contributed to the deterioration of the stocking density of the belt with an alarming rate of deforestation.

Between 1990 and 2005, Sudan lost an estimated 12% of its forests (8.8 million ha). The steady degradation and loss of Sudan's forest is attributed to the heavy population's reliance on wood to meet energy needs, drought and desertification, the expansion of mechanized agriculture, and the lack of effective forest governance (UNEP 2007). The deforestation rate of natural forests can only be

extrapolated from these ad hoc surveys and from global Forest Resource Assessments (FRAs) done by FAO in 1990, 2000, 2005, 2010, and 2015. The FRA of 2015 indicates that the forest area declined, before the creation of the Republic of Southern Sudan, from 76.4 million ha in 1990 to 69.95 million ha by the end of 2009. Moreover, the Global FRA of 1990 and 2010 indicated a declining trend in the forest cover from 32.1% (76.4 million ha) to 29.4% (69.95 million ha). FAO reported that Sudan has already lost an average of 589,000 ha/ year between 1990 and 2000, through significant and consistent deforestation across the country. This amounts to an average annual deforestation rate of 0.77%. Between 2000 and 2005, the rate of deforestation increased by 8.4% to 0.84% per annum. In total, between 1990 and 2005, Sudan lost 11.6% of its forest cover or around 8,835,000 ha. Forests and woodlands are continuously being encroached upon by agriculture and urbanization or otherwise degraded by uncontrolled felling. A number of government decrees passed in September 1993 brought the area under forest reserves to 10.0 million ha equivalent to 4.0% of the total country area, at the time. Darfur has lost more than 30% of its forests since Sudan's independence and rapid deforestation is ongoing. Figure (6) shows the deforestation trend in Sudan for the period 1990 – 2010 (FRA, 2010).

Deforestation and over utilization of the vegetation are the prime causes of desertification and sand encroachment. FNC (2001) reported that the commercial sector in its endeavour to maximize profits and reduce the costs, concentrated its activities in the central plains, drawing 59% of its resources from the low rainfall savannah and 38% from the poor vegetation of the semi-desert region. The irrational felling and overexploitation of the forest resources started from 1971 when the popular local government system was implemented (FNC 2001). Short in financial resources or support from the central government, the local government councils depended heavily on the forest resource to finance social services.

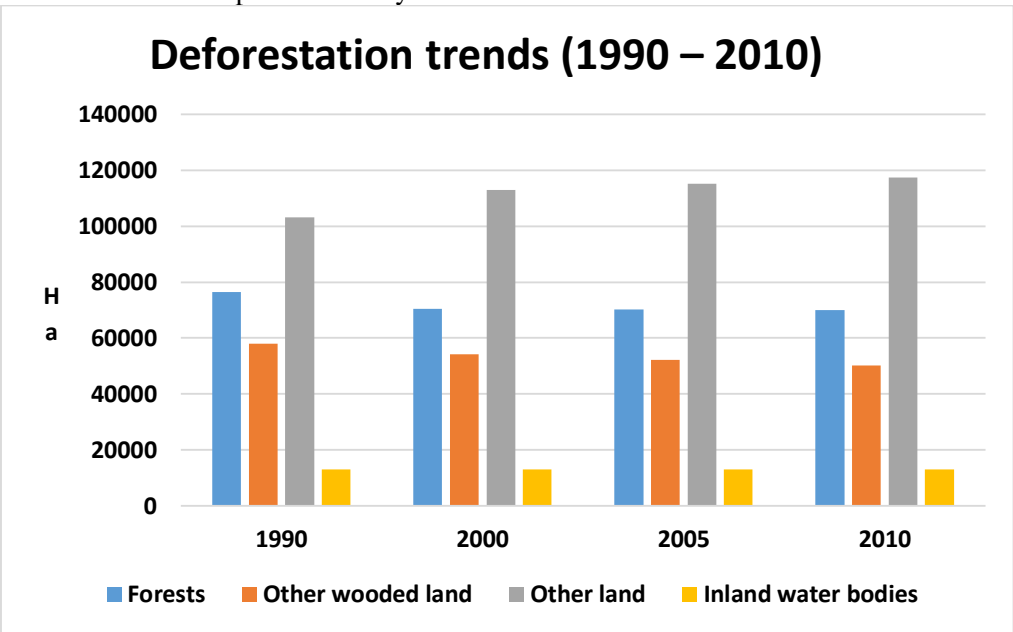

Figure (6): Deforestation Trends (1990 – 2010)

Energy assessments of 1992, revealed that the annual consumption of fuel wood in the Sudan amounted to 67.6 million cubic meters, of which 52.5 million m^3 were consumed in northern Sudan. The annual allowable forest cut of the country amount to 44.3 million m^3. Thus the consumption exceeded the country's annual allowable cut by more than 23 million m^3. Mechanized rainfed agricultural expansion is accelerating deforestation in Blue Nile and southern Kassala (NEA 1982). Sid Ahmed (1999) stated that the cultivated demarcated areas increased from 11.3 million feddans during 1989 and 1993 to 14.4 million feddans in 1998. The mechanized agriculture totalled 36 million feddans by the end of the last century.

Areas in virgin forest land are thus continually being opened up for mechanized farming at an annual rate of about 147000 ha.

The underlying causes of deforestation and forest degradation can be summarized as follows:

1. Climatic and environmental variables which include intrinsic aridity and erratic rainfall coupled with recent setting in vagaries of climate change and the attendant extremes of climatic phenomena such as drought and floods;
2. Human and animal population growth, demographic changes and change in societal aspirations and consequent pressure on scarce resources. This led to increase in demand for food. Accordingly, trees have to sacrifice to provide vacant lots for farming. This was coupled with increasing demands for wood and NWFPs, and fodder.
3. Influx of political and environmental refugees and internally displaced people (IDP) due to wars and civil strife leading to encroachment on forest areas and increased use of trees for different purposes;
4. Urbanization contribute to sprawing into forests and woodlands to satisfy the growing needs for building materials and fuelwood for brick ,lime-making and bakeries,
5. Resource degradation due to genetic pollution through invasive alien species and seasonal wild land fires.
6. Economic, industrial, physical and infrastructure development like petroleum extraction, mining activities and power transmission lines.

6.5. Contributions of Forests to Livelihoods

Sudan's economy is predominately based on the agriculture sector which contributes to about 48% of the GDP. Forests in Sudan contribute to socio-economic development, environmental protection functions and livelihood support (Elsiddig et al., 2007). According to FAO, the forestry sector contributes as much as 13% to the gross domestic product (GDP) of Sudan. The UNEP, 2012 estimated the fuel-wood requirement for 2006 stood at 27-30 million m^3. Based on the 1995 FNC survey, fuel-wood contributed 78% of the energy needs of Sudan. The energy consumption study confirmed that the per capita consumption of fuel wood is 0.7 m^3 per annum. Moreover, the diverse NWFPs have substantial contribution to the livelihood at the household level and at the national level since the majority of the population of Sudan (70.5%) is rural and forest dependant for livelihood, energy and building materials. Contribution of the forest sector to the national economy is underestimated where the formal national accounts reveals an under estimation of the forestry sector to the GDP in the range of (1-3%).

The majority of households in rural areas obtain their income from sales of firewood, charcoal and NWFPs mainly Gum Arabic. Figure (7) shows Per Capita wood consumption in the household sector (M3 round wood)**.** Fuel wood traders obtain wood from auctions at government forests blocks and wood yards and distribute the fuel wood at small scale depots in big towns. The sector has developed forest-based industries including wood-based industries (sawmilling), non-wood based industries using Gum Arabic, tannin material and paper industry. Sudan forests produce diversity of NWFPs that constitute potential sources for industrial development for local use and for export. At the local level, cottage industry is recognized at every household. Traditional cottage industry supplies the market with many products that are attractive to tourism. Smaller quantities of wood are used for turnery, handicrafts, tool handles, utensils, beds saddles and other uses. Household sector has the highest share of consumption (80 - 90%) of all wood products. Wood fuel forms the bulk of the consumption (87.5%), while construction, maintenance and furniture wood form 7.2%, 3.8% and 1.5 of the 1994 consumption, respectively. Annual per capita consumption for wood was estimated at 0.973 m^3 of round wood. There is significant variation among the states in relation to urbanization, income level, ecological zones and education. The annual household per capita wood consumption is estimated in the average of 0.653 m^3 for urban households and 0.37 m^3 for rural households. Charcoal on average constitutes the highest component of annual household

wood consumption (43%) while construction, furniture and maintenance wood consumption constitute 13.5% of the total annual household per capita consumption.

Sudan's forests also provide services such as watershed protection by stabilizing off-site soil and reduction of off-site sedimentation, reducing flood peaks on streams in small watersheds, replenishing groundwater and watercourses and provision of shade and fodder for livestock. Mangrove forests of the Red Sea coast serve sink functions, holding excess nutrients and pollutants that could otherwise flow directly into coastal lagoons and coral reefs. In the northern deserts, trees stabilize sand dunes and provide shade (USAID 2007a; UNEP 2007). Wood Consumption by Industries (traditional industries) during 1994 accounted for 6.8% of the total wood products consumption 98.5% of which is in the form of firewood. As far as NWFPs are concerned, Gum Arabic is the most important NWFP. It provides employment for approximately 2.5 million of the rural people in the Gum Belt of the Sudan during the dry season and in terms of foreign trade it used to rank second to cotton among the country's exports up to early 1970s (NAPA, 2007). Other NWFPs of economic importance include resins, fibres, bees honey, wax, fruits, leaves, foods, game, fisheries, aromatic and medicinal plants that grow in the forests. This reflects the rich diversity of indigenous tree species producing NWFPs for consumption and income generation by various communities. A long list of such species exists and can be managed in natural forms and plantations to provide non - timber material (Elsiddig 2004).

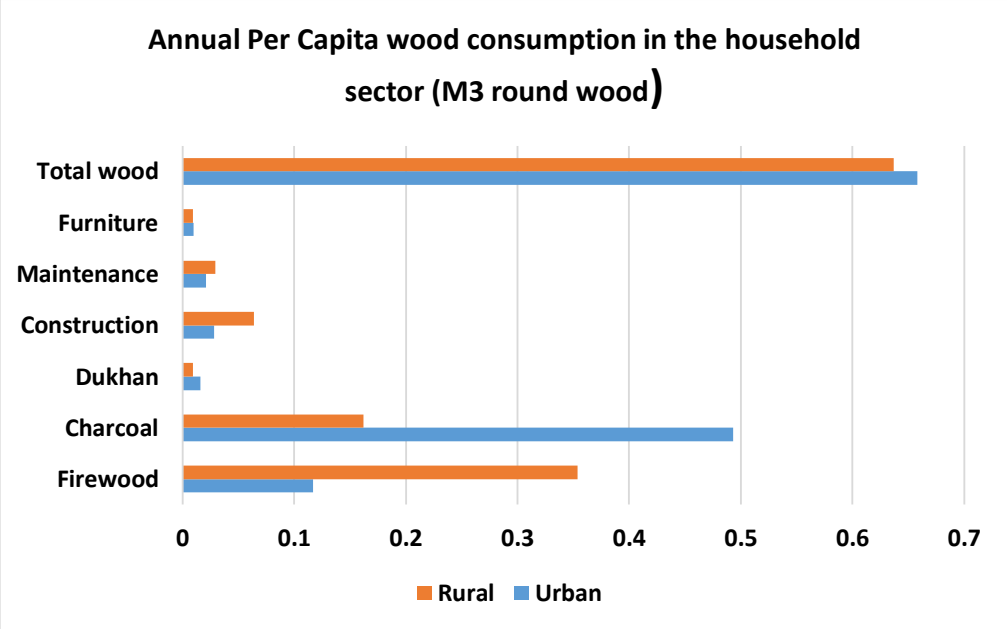

Figure (7): Annual Per Capita Wood consumption in the household sector (m3)

6.6. Forest Policies and Legislation

6.6.1. Forest Policy

The national environmental management policy provides the framework to guide environmental and resources management and is the cornerstone of the country's commitment to sustainable social and economic development. The overall policy goal is sustainable social and economic development, which maintains or enhances environmental quality and resource productivity on a long-term basis. This goal was consistent with the UN Millennium Development Goal (now Sustainable Development Goals), which aims to integrate the principles of sustainable development into country policies and programs and reverse loss of environmental resources. The specific goal of the policy is to raise public awareness to understand and appreciate linkages between the environment and development; and ensure individual and community

obligation and participation in environmental improvement activities. Four forest policies were issued in the Sudan, namely; 1932, 1986, 2006, and 2015 policies. The last two policies were not ratified by the council of ministers.

6.6.1.1. Sudan Forest Policy of 1932

The Sudan Forest Policy was issued in 1932 to solve conflicts between the central authority and the provincial authority and to manage the forest resources on sound sustained scientific basis (Bayoumi, 1995). The broad objectives of this policy were development of the forest resources of the country to secure national requirements in forest products to achieve some self-sufficiency and reduce imports; and to set aside a reasonable amount of forests well distributed among the different parts of the country to serve as protective and productive forests (Bayoumi 1996). The Central and Provincial Forest Ordinances of 1932 were issued to give effect to the Sudan Forest Policy of 1932. By the Royalties Order of 1939, "fees" are levied on all timber, firewood and charcoal except that obtained on permit from areas outside forest reserves and is used for trade purposes. It also includes timber, firewood and charcoal exempted from or allotted a lower rate of royalty. The objective of the royalties order was to discourage people from cutting trees outside forest reserves (Bayoumi 1983).

6.6.1.2. Sudan Forest Policy 1986

The 1932 Sudan Forest Policy was revised and a new forest policy was formulated and approved in 1986. The main objectives of the new policy are protection, establishment and development of the forest resources of the country (FNC, 1996). The new policy divides forest reserves into protective and productive forests which are administratively encompassed under three classes (National, Regional and Other Forests). The latter was further divided into private, communal and institutional forests. The policy outlined some measures to achieve its objectives. Among these objectives are mobilization of community and international efforts, restriction and regulation of rights and privileges, encouragement of the private sector and landowners, development of Gum forests, investigation of best methods of forest development, combating desert encroachment, supply of forest products for national and regional areas lacking forestry resources. It also aims to protect agricultural areas through shelterbelts, extension services, and promotion of the recreational role of forests (Bayoumi 1995).

6.6.1.3. Sudan Forest Policy 2006

The new Forest Policy of 2006 identified the vision for the Sudan forestry sector which stresses that forestry resources will be used in a wise, efficient and sustainable manner according to the values and in response to the needs of the people of Sudan (Hamed 2007). The new policy gives special consideration to poverty eradication through creating job opportunities, achieving food security, and bringing about improvements to the countries' physical environment. The national goals and policy priorities were derived by the major stakeholders to include: governance of the forestry sector, population welfare, a greener Sudan, maintaining competitiveness, promoting peoples participation, land use and tenure, conflict resolution, development of job and income generation programs and conservation of biodiversity. The forest policy and forest law 2006 encourage the allocation of forest use right to owners and promote the establishment of community, individual and private forests. The specific objectives of the Forest Policy 2006 focused on maintaining forestry competitive advantage through: (1) promoting forests and wood industries; (2) provision of energy alternatives; (3) NWFPs. Specific objectives also focused on greening Sudan through addressing issues of desertification and deforestation and on land tenure and conservation of biodiversity (Sudan Forestry Sector Review 2007). However, National forest policies have moved away from a focus on strict protection and commercial production to approaches geared towards using forest resources in pursuit of sustainable development goals, and to the economic benefit of local communities. The 2006 forest policy was not approved by the Council of Ministries.

6.7. Forestry in the 1998 Sudan Constitution

Sudan 1998 Constitution stressed the subject of Environment in item (13) of the first chapter, which reads as follows: "*the State should work towards protection of the environment and its natural equilibrium to achieve sustainable development for the coming generations". As such, Forests are regarded as one of the most important factors which constitute the natural environment because of its multiple direct benefits as well as its indirect benefits in protecting the environment*". The Constitution in its item No. 2/112 pointed out clearly that the division of forest wealth between Federal and State authorities is a joint concern to be decided upon by both Federal and State authorities.

7. Participatory Forrest Management (PFM)

The private forests are part of a strategy aiming to increase tree cover in the Sudan and play a significant role in the economy of the Sudan. Gum Arabic is an export commodity in addition to its contribution to livelihood support. Moreover, the forests of the out-growers provide forest products and services at local and regional levels. The impact of the forests of the out-growers group in environmental protection is recognized. These forests play measureable contribution in climate change mitigations. Table (8) shows the private forests of Sudan. The main functions of participatory forestry include establishment of protective forests and the creation of "village forest areas" or "urban phalloid areas. The success of participatory forestry programs, irrespective of the models, depends largely on effective people's participation at various stages of their implementation.

Table (8): Private forest ownership

	Type of ownership	Area in hectare
1	Forests owned by Gum Arabic producers	6,006,112
2	Forests owned by individuals	48660
3	Forests owned by communities	165814
4	Forests owned by companies	126074
	Total	6,346,660.00

Source: FNC reports

In Sudan, among the different options within the Forest Polices, there was special emphasis on the role of the forests in environmental protection and the establishment of community, private and institutional forests. PFM can provide a range of benefits in addition to carbon financing from access to and use of firewood, fodder, and NTFP.

7.1. Community Forestry

Sudan's community forests development and management experience is less than three decades old. Driven by fuel wood scarcity and environmental protection, community forestry started in early 1984 through extension and awareness raising campaigns. After separation of South of Sudan in 2011, the area covered by forests and woodlands is estimated by the FNC as 21,826,166.62 ha, equivalent to 11.6% of the area of Sudan. The Gum Belt is the main theatre for community forestry management. Sudan is responsible for 80% of the world's Gum Arabic production and trade (NAPA, 2007). The country exports 45,000 tons of Gum Arabic annually, and the crop accounts for an average of 17% of Sudan's annual export earnings (NAPA, 2007). Gum Arabic is produced from the sap of the *Acacia senegal* and *Acacia seyal*. The Gum Arabic industry provides a critical source of income for rural communities with forestland access (FAO 1993; FAO 1999; UNEP 2007). The total area of the reserved forests is 4.8% and the area occupied by protected areas is 5.7% of the area of the Sudan, respectively. This entails that, 10.5% of the area of Sudan is currently under forestry and other natural resources uses, while the CNS (1992-2002) allocated 25% of the country's total land for natural resources, namely forestry, range & pasture and wildlife. Now the intervention of community forestry almost exists in all the states of the country, particularly in the central region.

7.2. Joint Forest Management

PFM is a general term describing community involvement in the management of forests. JFM is a form of PFM that takes place in forests on "reserved land" – land that has been set aside by government as part of either Local Authority or National Forest Reserves. Villagers and government may decide to establish JFM for a range of reasons. The output (and legalization) of the process is a Joint Management Agreement that spells out how the costs and benefits of forest management are shared between the forest owner and the neighboring villages participating in the JFM. There are seven guiding principles for JFM, these are: communities as forest managers, JFM as applicable to all kinds of forests, forest adjacent communities as the target population for JFM, communities as decision-makers not just protectors, equitable sharing of costs and benefits of forest management, making the most of the existing village frameworks, and the changing role of FBD and district council staff.

8. The Forest and Renewable Natural Resources Act 2002

The act provides the framework for the management and protection of forests and renewable natural resources encompassing pasture and range as well as the framework governing the managerial system of the forestry sector. The Act spelled out the FNC's objectives in intensifying afforestation activities, developing production of different types of gums, NWFPs, encouraging popular participation and presents a good model for sustainable management (Hamed 2007). The regulations of the forest law includes: financial and administrative affairs regulations – 2007, Royalites and Fees Regulation 2006, Training Regulations – 2007. In the formulation of the forest and renewable natural resources act (2002), special considerations were given to some old decrees like Ministerial Resolution No. 268/1991: Council of Minister Decree No. 40, 1997, memorandaum of understanding betweent FNC and states, Ministerial Resolution No (8l/2001) which deals with resolution organizing and controlling dealings in the Genetic Resources of Tree and Shrub species, Ministerial Resolution No.50/2001 'obtaining the approval of the Agricultural Lands Disposition Committee', Ministerial Resolution No. 51/2001' banning the approval of agricultural project in the nation forests zones', Ministerial Resolution No. 52/2001' banning of cutting of all trees in natural forests and in the non-attached areas, including trees around/or in Houses of Government, Utilities or Public Roads. And Resolutions of the Chairman of the National Salvation Revolution Command Council; Resoution 628 – Attachment of forests.

9. Land Tenure Legislation, Forest Tenure and Land Use

The Land Settlement and Registration Act, issued in 1925, provided for individual rights and interests over land. In 1970, the government promulgated the Unregistered Land Act that bestowed ownership of all lands on government. Private ownership of land is limited to the registered rights before the coming into force of the Unregistered Land Act of April 1970. Unregistered land is almost 95% of the Sudan land area. Although the government has the formal ownership of the unregistered land, it has not been able to exercise effective control over land allocation and utilization. The native administration was abolished and was no longer having control over land allocation. Until now, Sudan has no national land use policy, nor a legislation that deals with land use. This is one of the main factors of natural resource-based conflicts in the country. Sector-based legislation that influenced land use was issued from time to time. Examples are the Forestry Act of 1989, Crop Control Act of 1972, Food Protection Act of 1973, Pesticides Act of 1974, Environmental Health Act of 1975, Wildlife and National Reserves Conservation Act of 1986, the Seeds Act of 1990 and the Land Disposition and Construction-planning Act of 1994. The basic feature of Sudan legislation pertaining to environmental issues is that it is sector-based.

At the state level after the launching of the federal system of government, environmental matters and concerns became divided between the portfolios of the state ministries for agriculture and animal resources, health and engineering affairs. The Ministry of Agriculture has responsibility over agriculture, forests, the environment and animal resources. Legislations dealing with natural resource management have several shortcomings. There is no co-ordination or interactive mechanism that brings these bodies together over a joint issue and common concern. Most of the tenure rights for forest and pasture resources

are under customary laws based on tribal structure. The Title to Land Act of 1899, the Land Settlement and Registration Act, issued in 1925 provided land title on the basis of continuous cultivation as privately owned land. Lands and the resources on them were unregistered but customs and regulations defined all unregistered lands as common properties. Land allocation to any land uses was under the control of tribal leadership in collaboration with formal institutions. During the 1970s and 1980s, concern was focused on environmental and development policy issues in relation to land use categorization under government control. The Land Tenure System Act of 1970 influenced the uses of natural resources and shaped the form of tenure (FOSA 2000). The ambiguity in the tenure system led to diminishing of natural forests leading to a decline of forest cover from 40% to approximately 29% in 2005 (FRA 2005). Sudan lacks a comprehensive environmental and natural resources policies and legislation for land and resource tenure in an integrated approach (Atta Elmoula 1985; Tolentino 1994). Organization of land tenure is imbedded in the Land Settlement and Registration Act (1925), the Acquisition Act (1930), the Town/Village Planning Act (1961), the Unregistered Land Act (1970). This situation generated conflicts of interest between land users. However, forestland under customary tenure is stable due to the effectiveness of the traditional laws governing tenure and use (Sudan Report, 1991). However, forest reservation is well understood as an efficient and effective tenure system that provides for forest ownership at government, communal, private and enterprise levels.

10. REDD+ Mechanism

The UN-REDD Program is the United Nations collaborative initiative on Reducing Emissions from Deforestation and Forest Degradation (REDD) in developing countries. The Program was launched in 2008 and builds on the convening role and technical expertise of the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Program (UNDP) and the United Nations Environment Program (UNEP). The UN-REDD Program supports nationally-led REDD+ processes and promotes the informed and meaningful involvement of all stakeholders, including Indigenous Peoples and other forest-dependent communities, in national and international REDD+ implementation. Specifically, the UN-REDD Program supports national REDD+ readiness efforts in two ways: (i) direct support to the design and implementation of UN-REDD National Programs; and (ii) complementary support to national REDD+ action through common approaches, analyses, methodologies, tools, data and best practices developed through the UN-REDD Global Program. The latter also has a mechanism for direct support to countries through a targeted support mechanism. REDD+ is based on incentives from the transfer of financial benefits and if well designed, implemented and enforced, generate additional benefits such as enhanced governance, more secure (tenure) rights, improved environmental services, and income from REDD+ related activities. It also poses substantial potential costs, including restricted access to land and resources, and the costs of improving policy and governance frameworks. Equitable benefit sharing is imperative if REDD+ is to result in sustainable emissions reductions, realize substantial benefits for forest communities, and avoid making vulnerable people worse off. Benefit sharing is, in other words, an ethical obligation that helps make REDD+ effective, equitable, sustainable, and accepted. Establishing equitable benefit sharing is likely to be challenging in practice due to: lack of clarity and difficulty estimating what actual REDD+ benefits and costs will be, weak governance, poorly enforced land tenure rights, and high resources needed for effective implementation and monitoring (Campese 2012).

Tropical deforestation and forest degradation are one key part of the problem, with 12% of total GHG emissions in the period 2000–2009 coming from forests and other land uses (IPCC 2014b) and therefore potentially an important part of the solution (Goodman and Herold 2014). When REDD+ was launched at the Bali COP in 2007, it involved several innovations aimed at overcoming decades of failure in attempts to reduce tropical deforestation. REDD+ would create a performance-based, conditional system for delivering rewards to those stakeholders who avoid elimination or degradation of forests. Policies and measures would be implemented at the national and subnational levels to lay the institutional groundwork for REDD+ and exert leverage toward assuring its success (CIFOR 2014). The REDD+ mechanism is still

under negotiation at the level of the UNFCCC. In 1997 the UNFCCC adopted the Kyoto Protocol, with binding emission reduction targets for Annex I countries. Under AR-CDM plantations could be laid out in developing countries on non-forest land or forest land that did not bear forest cover at any time after 1st January 1990. Due to the restrictions and the complexity of implementation only a handful of projects were approved and became operational. Sudan has registered some Clean Development Mechanism (CDM) projects, but not for afforestation or reforestation (Elsiddig 2012).

In response to the failure of including a comprehensive instrument for the forestry sector in the Kyoto Protocol, the Coalition for Rainforest Nations was established and proposed an additional instrument under the notion "Reducing emissions from deforestation in developing countries, which was accepted by the Subsidiary Body on Scientific and Technological Advice (SBSTA) of the UNFCCC to further develop options for discussion at CoP-13 (Bali-2007). REDD was discussed and its scope was expanded to include reducing emissions from forest degradation, enhancement and conservation of forest carbon stocks, and sustainable management of forests. The mechanism was renamed to its current form and abbreviated to REDD+. CoP-15 (Copenhagen 2009) did not provide much progress for REDD+, but defined the framework for Measurement, Reporting and Verification (MRV) and the need to establish a "national forest monitoring system", for the recording, analysis and reporting of reduced emissions and enhanced removals. More progress was made during CoP-16 (Cancun-2010) on technical issues for non-Annex I countries. CoP-17 (Durban-2011) recognized the secondary benefits from REDD+, specifically that it can "promote poverty alleviation and biodiversity benefits and ecosystem resilience". The negotiations between the Parties to the UNFCCC have led to a number of decisions on REDD+ with instructions for countries choosing to implement REDD+, these decisions are (CIFOR 2014):

- To identify drivers of deforestation and forest degradation and the means to address them;
- To identify activities that result in reduced emissions and stabilization of forest carbon stocks;
- To use recent IPCC guidance and guidelines for estimating anthropogenic forest-related emissions by sources and removals by sinks, forest carbon stocks and forest area changes;
- To establish robust and transparent national forest monitoring systems and sub-national systems as part of national monitoring system;
- Use a combination of remote sensing and ground-based forest carbon inventory approaches for estimating anthropogenic forest-related GHG emissions by sources and removals by sinks, forest carbon stocks and forest area changes;
- Provide estimates that are transparent, consistent, as far as possible accurate, and that reduce uncertainties, taking into account national *capabilities and capacities.*

Reducing emissions from deforestation and forest degradation (REDD+) has emerged as a promising mechanism both for reducing emissions from forestry sector and for supporting good forest governance. Although the mechanism has been formally recognized since the 15th COP to the UNFCCC (Copenhagen, 2009), many questions about the design and implementation of national REDD+ architectures remain unresolved. Even at COP 18 (Doha, 2012), parties were still grappling with issues related to monitoring, reporting and verification, reference levels, sustainable financing for REDD+, and the effective, equitable and efficient distribution of benefits (PwC 2012). In particular, the issue of benefit sharing has captured considerable attention among both policymakers and local communities. Certainly, the success of REDD+ in achieving effectiveness, efficiency and equity will depend greatly on the design and implementation of its benefit sharing mechanisms, which will operate across multiple levels of governance (Thuy 2013).

11. Sudan REDD+ Mechanism

Sudan is a partner country of the UN-REDD Programme and requested technical support for their REDD+ readiness process through the targeted support mechanism. Sudan has developed a Readiness Preparedness Proposal (R-PP) which was submitted to the World Bank's Forest Carbon Partnership Facility (FCPF) in late 2013 for consideration, and resubmitted in June 2014. Sudan's is an active

member in international events concerning environment issues among which is REDD+. Sudan emphasized the need for greater attention to forests and range issues at the policy level, to recognize the importance of these areas for livelihoods, the necessity of improved governance for broader national social and economic development, the mitigation of and adaptation to Climate Change and the urgent need for finance for forests and rangelands. In this regard there were many recommendations to FAO and member countries, such as: recommendation for countries to give strong emphasis to Sustainable Forest & Rangeland Management including in protected areas in Low Forest Cover Countries, recommended FAO to undertake studies on barriers between forest and range resources in Near East countries, and recommendation for FAO to integrate CC into forest and range sectors at both policy and field levels (FAO 2012).

The FNC is responsible of implementing and coordinating all forestry and REDD+ issues and agreements to which Sudan is a member. It is also the Designated National Authority (DNA) for the Kyoto Protocol and UN-REDD partner. In this capacity, FNC was formally requested to join the World Bank's initiative of Forest Carbon Partnership Facility (FCPF) and benefit from the REDD readiness phase. Sudan considered the REDD+ mechanism a priority area to support in the management of forest resources and rangeland in the country. Since the emergence of the REDD+ mechanism at the UNFCCC (COP 11 - Montreal, 2005), it has evolved to a state where the Government of Sudan considered it feasible for implementation. The Republic of Sudan has received a grant through the FCPF of the World Bank to support Sudan in preparing for the implementation of its National REDD+ Programme. The involvement of the GoS in REDD+ Process was made through two phases. Phase I culminated in the development of Sudan's REDD+ Preparedness Strategy. The task was undertaken by the FNC and supported by the UK Department of International Development (DIFD) and UNEP Sudan Country Office. Phase II attempted to formulate Sudan's REDD+ Readiness Preparation Proposal (RPP). This phase was undertaken by FNC and supported by UNDP Sudan Office. This phase focused on amplifying and updating the REDD+ Preparedness Strategy focusing on developing a National Forest Reference Emission Level and/or a Forest Reference level, to help in the development of a system for National Forest Monitoring, Co-benefits and Safeguards. The REDD+ preparedness encompassed preparation of the REDD+ strategy through assessing Land Tenure, Forest Laws, Policy and Governance, REDD+ Strategy Options, REDD+ Implementation Framework and Safeguards. Among other issues are; changes of forest/woodlands into agricultural land, mining disturbance of ecosystem and landscape, shrinkage of plant cover, pollution, physical development, encroachment on forest and range lands, conversion of forest/rangelands into other land use, socio-economic factors, conflicts and absence of forest authorities from scene, wild land fires, overcutting of wood forest and range resource degradation, livestock population, overgrazing, degradation, impact on regeneration and loss of genetic resources.

Having an effective REDD+ in Sudan requires the need to conduct a capacity building needs assessment (CBNA) for REDD+; developing a competency framework for REDD+; and finally on the basis of the CBNA, design and implement a Capacity Building Action Plan (CBAP) besides information Management.

The activities related to the Sudan REDD+ started with the submission of the Readiness Preparation Proposal (R-PP) which followed the structure provided in the latest version of the FCPF/UN-REDD R-PP formats with six distinct components (chapters**).**

Component 1: Organize and Consult: this component encompassed national readiness management arrangements, information sharing and early dialogue with key stakeholder groups,
Component 2: Prepare the REDD+ Strategy**:** this component dealt with assessment of land use, land use change drivers, Forest Law, Policy and Governance, REDD+ Strategy Options, REDD+ Implementation Framework, and social and environmental impacts during readiness preparation and REDD+ implementation**.**

Component 3: Develop a national Forest Reference Emission Level and/or Forest Reference Level.
Component 4: Design systems for national Forest monitoring and information on safeguards, national monitoring System, and designing an information system for multiple benefits, other impacts, governance, and safeguards.
Component 5: Schedule and budget; and
Component 6: Design a Program Monitoring and Evaluation Framework

12. Sudan's REDD+ Activities

The current high rate of deforestation and forest degradation for energy, crop cultivation, browse and grazing material and other important livelihood needs makes the forest sector one of the highest priority areas in Sudan's efforts to contribute to global climate change mitigation. Land use activities including forest and range sectors are well recognized for their vital contribution to sustainable development in Sudan, where these sectors support the livelihoods for more than 70% of the population, provide habitat for wildlife together with shade, grazing and browse material for the national livestock herds. A recent report prepared with support from the African Development Bank highlighted land use activities including forestry and range resources as some of the high priority sectors for mitigation activities and low carbon development strategy in Sudan. FNC established a national REDD+ unit to develop the framework for a REDD+ strategic plan in collaboration with UNDP and HCENR. The inception workshop of REDD+ was held in August 2010, and targeted Training of Trainers (TOT) from different States to develop the capacities of local people and related institutions. The first REDD+ capacity building inception workshop was followed by the following activities: Quick assessment of the forest resources, forest classification according to the benefits and co-benefits of REDD+ (identify forest classes), awareness-raising for officers and indigenous people, assessment of some plantations and activities around community forests, the role and importance of REDD+ activities in relation to the national developmental processes, consultation in March 2011 to assess the degradation and deforestation rate and data related to local people and others dependent on forests in Sudan. These data sets were used as the basis of guidelines for 5 years strategic plan and framework for REDD+ in Sudan, and forest policy regarding the engagement of stakeholder, national local governance and civil societies in planning, implementation and management of REDD+.

The role forests play and the need for their conservation is well recognized**.** Sudan used its GEF STAR allocation to finance a forestry mitigation project, which includes afforestation/reforestation, forest management and biomass energy saving components. This project also includes a pilot on REDD+ for the purpose of building national capacity and gaining experience through practical examples**.** A recent report prepared with support from the African Development Bank highlighted land use activities including forestry and range resources as some of the high priority sectors for Sudan NAMAs and low carbon development strategy**.** Sudan contacted a number of potential donors and UN Agencies trying to raise support for preparation of its low carbon development plan as required by the Cancun Agreements of COP-16. The grant from the FCPF to the Republic of Sudan will be applied to the realization of the ultimate objective of the National REDD+ Program.

13. Benefit Sharing Mechanism

13.1. Background

REDD+ has raised the profile of benefit sharing in the forest sector. Sharing benefits, however, is not a new concept. Previous work on benefit sharing has focused on clarifying the concept and examining how benefit sharing could feed into broader development outcomes (Bahr et al. 2012). The response to the problems of deforestation and forest degradation in many developing countries (that lie in tropical zones) has been the devolution of forest areas to local communities. Devolution and decentralization of governance of forest resources are seen as less costly and efficient way of forest conservation. It is broadly recognized that without local people having a significant stake in the management of local forest resources, the efforts of the forest departments in protecting forest will often be ineffective (FAO

1992). The FCPF Readiness Fund requires that benefit sharing arrangements be assessed as part of national 'readiness' preparations, and requires countries to have a Benefit Sharing Plan under its Carbon Fund (FCPF 2013). REDD+ countries until now did not take into account seriously how to share benefits between forest owners and other actors on the carbon credit value chain, resulting in insufficient benefit-sharing arrangements (Davis et al, 2009).

Sharing of benefits in the forest sector occurs in a range of ways and is considered a keystone of community-based forest management arrangements. In these arrangements, management plans detail the allowed uses and distribution of any revenue generated from the sale of timber and NTFPs managed by the communities. Decentralized forest management, participatory management, PES, and other forest partnerships are shown to benefit local communities while contributing to the objective of REDD+. Most of the recent work on benefit sharing has adopted a more technical approach that focuses less on what constitutes a benefit and emphasizes how the benefits are shared (Peskett 2011). The notion of benefit sharing in natural resources was first formalized in international law in 1992 through the CBD, a move that was expected at the time to address problems with the governance of socio-ecological systems in developing countries (Nkhata et al. 2012a). The various approaches and options for benefit sharing mechanisms in each country tend to build upon existing benefit sharing models that are most familiar in each context (Thuy et al 2013).

Benefit sharing mechanisms involve a variety of institutional means, governance structures and instruments for distributing finance and other benefits (Luttrell et al. 2012). According to the UNFCCC (2007), benefit sharing mechanisms are created through what are known as REDD+ Policies and Measures. Two types of policy measures related to benefit sharing mechanisms are compensation for the foregone opportunity costs of deforesting the land and incentives to induce positive choices of behaviour (Peskett et al. 2008). These policy measures can be either be delivered upfront, to enable REDD+ activities to begin, or dispensed over time to guarantee their continuation (Gebara 2010). The FCPF mentions four major benefit-sharing models, namely, national level benefit sharing, subnational benefit sharing, national performance, and subnational input mechanisms. The suitability of any model depends on two major REDD+ variables: Governance, land rights and land tenure on one side and MRV systems on the other side (TFD. 2014).

Appropriate benefit sharing mechanisms ensuring equitable distribution of benefits is essential for the success of REDD+ implementation. Benefit sharing is a mechanism to identify the outcomes from an activity, and to distribute them. Effective benefit sharing design will create incentives for different stakeholders to initiate and support action to reduce emissions from deforestation and forest degradation. A distinction can be drawn between benefit allocation and benefit distribution. In a legal sense an approach to benefit allocation refers to how the basis for a benefit claim is established. The legal basis for establishing benefit claims begins with clearly defining these 'carbon rights', whether a benefit claim is linked to land rights or participation in REDD+ implementation. Where a policy choice to allocate benefits on the basis of participation or 'services', the holder of the carbon rights has either an obligation or a choice to distribute benefits (monetary or non-monetary) according to defined criteria and priorities. There are two main reasons to share benefits. The first is to create effective incentives by rewarding individuals, communities, organizations and businesses for actions that change land uses and reduce emissions. This means providing benefits somewhat above the costs of their sacrifices to change. The second reason is to build wider national legitimacy and support behind the REDD+ mechanism. This can only be achieved if people directly affected by REDD+ actions and the wider public are treated fairly and equitably. Figure (8) shows the vertical and horizontal national benefit sharing model.

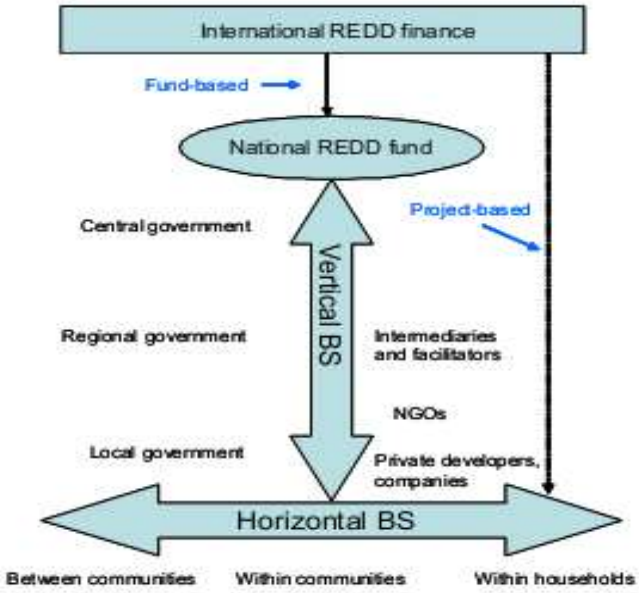

Figure (8): Vertical and Horizontal National Benefit Sharing

13.2. Definition of Benefit Sharing

Benefits from REDD+ can be carbon or non-carbon. The CDM provided a process for creating Certified Emissions Reductions (CERs), in the voluntary market, different methodologies can be used to create Verified Carbon Units (VCUs). Biodiversity benefits have also been defined in different biodiversity offset schemes. Clearly defining the benefits from REDD+ increases clarifies what the outcomes from REDD+ implementation will be, allowing investors to make decisions about whether to allocate resources. In the context of REDD+, benefit sharing is a mechanism to identify the outcomes from a REDD+ activity and then distribute them between stakeholders (Chapman and Martijn 2014). Benefit sharing has been defined as the distribution of both the monetary and the non-monetary benefits generated through the implementation of REDD+ projects and programs. It can be understood as the sum of many different mechanisms. At a broad level, debates about definitions of benefit sharing of non-human genetic resources under the CBD) offer a useful distinction between more technical legal definitions which focus on who has rights of access to and use of such resources, and definitions which are more rooted in ethics, introducing questions of justice into decisions about who should benefit. The Government of Ethiopia defined benefit sharing as distribution of revenue generated from the forest amongst the respective stakeholders as per their cost inputs for the sustainable management of the forest resources (Schroeder, 2007).

13.3. General Principles of Benefit Sharing

Benefit sharing arrangements are an important part of REDD+ stakeholder engagement because they help to create the incentives and support structures for the actions that will reduce emissions from deforestation and forest degradation. The Centre for International Forestry Research (CIFOR) uses the effectiveness, efficiency and equity as criteria to assess REDD+ initiatives. Benefit sharing structures should adequately address the needs and interests of vulnerable stakeholders and ensure that benefits are distributed fairly. Both UN-REDD and IUCN have also identified equity as a key component of benefit sharing. CIFOR has also discussed 'rationales' for allocating benefits, including allocating benefits to: actors with legal rights; actors achieving emissions reductions; low-emitting forest stewards; actors requiring compensation for opportunity costs; effective facilitators of REDD+ implementation; and the poorest in society. UN REDD Programme has identified several elements that should be incorporated into an effective benefit distribution system. These are Timeliness; Adequacy, Flexibility; Equity; Efficiency;

and Segregation. The IUCN focused on the institutional design of benefit sharing mechanisms and their effect on transaction costs, which can reduce the money available to distribute to beneficiaries (UN REDD. 2016).

Performance can be measured and reported some time after the interventions have been made, so the Benefits distribution system needs to offer incentives more regularly than the measurement interval. Stakeholders need assurance that other groups are not receiving disproportionate benefits. Measures to promote equity are greatly facilitated by transparency and broad-based participation. If costs incurred in managing a REDD+ programme are too high, the total benefits available for providing positive incentives is reduced, and the conditions of adequacy will be compromised. The process by which benefits are allocated to stakeholders must be independent of REDD+ fund management and financial transactions; and from technical, financial and management quality assurance. IUCN has identified various lessons for benefit sharing in REDD+ programmes from other forest management schemes, Integrated Conservation and Development Projects, PES, CDM and voluntary carbon markets, CFM, Extractive industries. Appropriate benefit sharing can induce cooperation. If existing benefit sharing systems are dysfunctional, dedicated benefit sharing systems are needed, and Infrastructure project safeguards available guidelines could inform REDD+. The FCPF Readiness Fund requires that benefit sharing arrangements be assessed as part of national 'readiness' preparations, and requires countries to have a Benefit Sharing Plan under its Carbon Fund, but has also commented that a prescriptive approach to benefit sharing is unlikely to be effective.

13.4. Experience of REDD+ Initiatives in Other Countries

REDD+ benefit sharing distribution strategies differ between geographic regions based on the relevant drivers of deforestation. Latin America would benefit most from the removal of key perverse incentives and by providing incentives against deforestation, while, Africa would seem to have the lowest project benefit outcome from REDD+ initiative. Incentives that would be useful focus on land-tenure reform through PES and PFM. PFM approaches are promising in Asia, and if combined with carbon financing, could provide benefits for both local communities and commercial enterprises (Costenbader 2011).

13.4.1. Latin America

Ranching and pasture conversion and subsistence agriculture represent the dominant driver of deforestation in Latin America. The largely PES-based policy schemes will need to target adequate REDD+ benefits to prevent cattle ranchers operating from outside forests. Moreover, REDD+ benefits need to remain "pro-poor" and offset opportunity costs of internal forest dependent local communities. Accordingly, in order to tackle ranchers and forest dwellers, REDD+ will depend on fundamental changes to policy and legal frameworks. Subsidies promoting conversion of forest to pasture land and property and tax laws enticing frontier colonization will need to be eliminated (Costenbader 2011). Brazil became an 'early bird' showcase for how REDD+ countries could potentially turn around high-deforestation scenarios to mitigate forest carbon emissions (Börner et al. 2013). The provision of a small economic reward makes this initiative in Brazil a pioneer in direct cash transfers for avoided deforestation (Das et al. 2005), and improve household well-being (Hanlon et al. 2010; Arnold et al. 2011; Barrientos 2012). There are different examples for successful REDD+ initiatives in Brazil. Acre's State System of Incentives for Environmental Services is known as the world's first jurisdictional REDD+ program (Duchelle et. al. 2014); while Bolsa Floresta program encompasses a set of integrated interventions aimed at conserving forests and improving the welfare of residents in selected sustainable development reserves (Bakkegaard and Sven 2014). Another example is Cotriguaçu Sempre Verde project, which focus on conservation and sustainable management of natural resources to promote social and economic development through conservation and sustainable management of natural resources (Guerra et. al. 2014). Moreover, Jari/Amapá REDD+ Project aims to protect an area of FSC-certified forest in the Jari Valley (Cromberg, 2014). Sustainable Landscapes Pilot Program in São Félix do Xingu is one of the largest municipalities in the world and has historically been a major contributor to deforestation in the Brazilian

Amazon (Garrish et al. 2014). Moreover, Sustainable Settlements in the Amazon is an initiative led by the Amazon Environmental Research Institute, which aims to pilot a model for smallholder production with low carbon emissions (Gebara 2014). The REDD Project in Peru "Nut Concessions in Madre de Dios" is attempting to enhance the livelihood strategies of Brazil nut producers and provide incentives to maintain the forest on which they depend and Valuation of Environmental Services in the Managed Forests through a sub national REDD+ initiative led by the Peruvian non-profit organization. The initiative aims to reduce deforestation and degradation, conserve biodiversity, increase forest carbon reserves and improve livelihoods through the promotion of sustainable forest management. In Peru the REDD+ initiative has promoted sustainable forest management by community members through a variety of mechanisms. Many components of the initiative are similar to the proponent's previous activities, with the main additions being the carbon sequestration and deforestation baseline studies conducted in 2011.

13.4.2. Africa

Deforestation in Africa is driven primarily by subsistence and intensive agriculture. Commercial logging has the greatest impact and insecure property rights generally compound population pressures and agricultural expansion. Benefit distribution via PFM and/or PES approaches combined with land tenure reform would seem best placed to address local and indigenous communities clearing land, provided vertical and horizontal allocation mechanisms are equitable and efficient. In long-term forest concessions, improved allocation mechanisms and safeguards are provided to protect indigenous communities' tenure and forest use rights. Therefore, natural resource governance alone, in many countries has proven largely inadequate in tackling destructive patterns of forest degradation and subsistence farming. Without significant improvements in the fundamental design and implementation of forest management regulations, it is hard to see that REDD+ can lead to sustainable reductions in deforestation and forest degradation in Africa Costenbader 2011).

Tanzania is considered as the most pioneer country regarding REDD+ initiative in Africa. In Tanzania communities can receive financial benefits annually from the sale of their forest carbon credits and the situation would be better if benefit sharing and governance issues are well addressed. The identification, prioritization and economic value of all benefits and costs are still premature (Tassa et. al. 2010). In Tanzania, experience is beginning to emerge from benefit sharing mechanisms under ongoing REDD+ pilot projects though most are in early stages. Caplow et. al. (2014) gave another example for the REDD+ initiative which is referred to as Conserve forests in Zanzibar. The initiative used a tailor-made PFM approach based on CFM Agreements to reach goals that are specifically pro-poor and gender equitable. The initiative faces a mix of conditions, from favourable to unfavourable for its success (Tassa et. al. 2010). The objective of the initiative was to reduce deforestation and forest degradation driven by demand for agricultural land and fuelwood (Kweka 2014). TFCG and MJUMITA (2009) addressed the initiative of Making REDD Work for Communities and Forest Conservation in Tanzania which aim to demonstrate how emissions from deforestation and forest degradation can be reduced through CFM, while Dokken et. al. (2014) emphasized that this initiative is demonstrating a unique approach to reducing emissions from community forests by working with communities while delivering incentive payments to individuals. There are other example from Tanzania like Mpingo Conservation and Development Initiative and Community-Based REDD Mechanisms for Sustainable Forest Management in Semiarid Areas (Putri and Demetrius 2014).

In Kenya civil society organisations (CSOs) are working closely with the Kenya Forest Service and the Kenya Wildlife Service to come up with a formula for equitable sharing of benefits accruing from natural resources. Different sectors are engaged in the REDD+ program through PFM, water sector, wildlife, and tourism precedes (Kasigau Wildlife Works ,KFW 2010). In Cameroon, the Mount Cameroon initiative offers an example of REDD+ in the context of protected areas. Although the initiative has not yet attracted carbon funds, its conservation and livelihood efforts are being supported by the government. Another example from Cameroon is the Mount Cameroon REDD+ initiative which has supported

conservation and livelihoods as a means of securing sustainable funding after the end of official development assistance (Awono et. al. 2014).

13.4.3. Asia

In Asia, intensive and subsistence agriculture are the main factors for deforestation. Asian tropical deforestation, lacking enforcement, is due to new settlers and subsistence forest clearing. Asian states also actively promote large forest development and intensive labor based agriculture projects, all of which disrupt local communities and indigenous settlements, contributing to further land use change. PFM programs in some Asian countries have accounted for dramatic forest recoveries, and could provide promising options for delivering REDD+ if ownership rights are devolved and benefit sharing improvements are made. Additionally, Asian countries need to focus REDD+ financing both on revising national policy incentives and legal frameworks promoting agriculture-related deforestation and prioritizing payments among subsistence and intensive farmers to promote forest conservation and carbon sequestration practices (Costenbader 2011).

In Indonesia, the Kalimantan Forests and Climate Partnership was launched in 2010 as one of four official REDD+ demonstration activities (Masyhud 2010). Its objective was to demonstrate a credible, equitable, and effective approach to reducing GHG emissions from deforestation and forest degradation (IAFCP 2009. Another example from Indonesia is Katingan Project which is an ecosystem restoration initiative on a peat swamp forest. Despite persistence, good communication approach and careful attention to the licensing process, their story highlights that acquiring an ERC license to implement REDD+ is difficult for large Peat Forest Domes (Indriatmoko et. al. 2014). Another REDD+ initiatives is Community Carbon Pools, the goals of the project are to conserve the habitat of the endangered Bornean orangutan (Rawson 2013) and to reduce GHG emissions. The product of a creative undertaking to combine opportunities arising from two policy developments; internationally driven REDD+ (top-down approach), and national government policy (bottom-up) (Intarini et. al. 2014). Another example from Indonesia is Rimba Raya Biodiversity Reserve Project Initiative For-Profit Forest Carbon. The initiative intended to protect peat dome against planned conversion to oil palm plantations (Indriatmoko et. al. 2014). The TNC's initiative within the Berau Forest Carbon Program, East Kalimantan focuses on a low-emission program and serves as a model of low-emission development based on sustainable NRM (Anandi, et. al. 2014). Moreover, the Ulu Masen REDD+ initiative which was developed by the Government of Aceh (2007–2012), aimed to improve Aceh's economy and environment (Dunlop 2009). The initiative illustrates the vulnerability of jurisdictional REDD+ to electoral politics (Anandi et. al. 2014). Vietnam is also one of the REDD+ countries. The Cat Loc Landscape – Cat Tien National Park Pro-Poor REDD+ Project is considered as one of the first REDD+ initiatives in Vietnam. This initiative aimed to examine the potential for accessing the voluntary carbon market and support the establishment of a forest carbon facility to make direct payments to local villagers for arresting degradation and deforestation. Although the initiative did not end up making payments to local villagers as initially planned, the initiative has enabled to contribute to provincial and national REDD+ development (Huynh 2014).

14. Estimating Forest Loss and Carbon Emissions

To compare forest area, forest loss and carbon emissions associated with that loss; there is a need for one consistent method. According to FAO (2000), which defined forests as areas with at least 10% tree cover, it is possible to make use of existing global datasets that cover the entire tropics. Potentially higher quality, local data are not always available. Forest area and forest loss were estimated from FRA 2010 and 2015, which contains the results of a time series analysis of Landsat 7 ETM+ images on global forest extent and forest change between 2000 and 2012 at 30 m spatial resolution. There is significant debate over the extent to which this dataset actually represents forest and deforestation in the tropics. We use these data mindful of the fact that there is a controversy, yet believing these are currently the best globally comparable data for describing forest cover change.

Carbon emissions from aboveground biomass due to forest loss were estimated by multiplying the area of forest loss (activity data) with the respective forest carbon stock density values (emission factors). Carbon stocks were derived from the IPCC Tier 1 default values (IPCC 2006). The activity data has to be stratified by ecological zones according to the FAO Global Ecological Zone map (FAO 2001), and the respective average IPCC aboveground biomass density value for forest to each deforestation unit, using a conversion factor of biomass to carbon of 0.5. The estimates refer only to the carbon emissions from aboveground biomass and do not include other carbon pools (belowground biomass, litter, dead wood, soil carbon), or emissions from forest degradation. Emissions from aboveground biomass represent the major source of carbon to the atmosphere in most forest types, but in specific contexts, the total carbon emissions can be substantially higher, such as in peat forests where large amounts of carbon are stored in the soil.

15. Challenges and Risks Confronting Benefit Sharing Mechanism

There are already high expectations and challenges for REDD+, in terms of carbon, income and other benefits. But making REDD+ genuinely work for local forest communities in a way that is empowering, sustainable and equitable, will be a challenging task. Some CSOs have doubts and serious concerns about REDD+ regarding preservation of local people's rights and interests. Some of these potential challenges include the following:

- Uncertainty and lack of clarity in REDD+ benefits and costs which are uncertain and difficult to calculate.
- Lack of clarity and consensus regarding what equitable benefit sharing is.
- Ensuring quality governance is a challenging but critical part of ensuring that benefit sharing mechanisms are effective and equitable in practice.
- New and unclear performance criteria: REDD+ payments will likely be based on standardized, internationally defined criteria for performance. This presents a major challenge because REDD+ is developing ahead of clear guidance or consensus on what these criteria will ultimately be.
- Scheduling: REDD+ involves substantial upfront costs and ongoing investments, which will be prohibitive for many forest communities in the absence of pre-performance investments and regular, ongoing payments.
- Lack of fully operational natural resources benefit sharing mechanisms to build upon.
- Enforcement of and ambiguity over land tenure rights: While Sudan land law can provide a relatively strong framework for community land tenure, awareness; clarity and enforcement of these laws are often weak.
- Benefit sharing will require institutional support, financial and human resources, capacities and political will to be effectively implemented in practice.
- Integrating REDD+ in its broader context: Benefit sharing effectiveness and equity will be impacted by REDD+'s broader political and socio-economic context, including competing land pressures and livelihood needs.
- Benefit sharing arrangements should be set in law, as unclear or poorly enforced laws can make people vulnerable to losing out. However, a REDD+ specific law may not be necessary. Such laws should allow local actors to adapt mechanisms to their circumstances in appropriate ways.
- Fund transaction costs will have to be minimized allowing for the greatest benefits to reach local actors
- Timely and reliable payments will be critical to REDD+ effectiveness as related funds at various levels to different stakeholders face delays
- Individual, uncoordinated projects may pose a challenge to national carbon accounting and application of national REDD+ safeguards unless national systems can be consistently applied to all individual projects. This may put both investments and some local people's rights at risk
- There is a need to address challenging governance arrangements and relatively high transaction costs to ensure both projects level market access and consistent application of national carbon accounting and reliable safeguards implementation and monitoring.

- There are many cases of benefit sharing systems failing because decision making and implementation is dominated by elites, is highly politicized or lacks accountability. While the content of the national safeguards have not yet been elaborated, these are rather a few illustrative examples.
- Lack of coordination and communication between relevant governmental institutions to benefit sharing mechanism.

16. Benefit Sharing in Sudan

16.1. Enabling Factors for Benefit Sharing Mechanism in Sudan

There are several factors that enable the implementation of REDD+ initiatives in the Sudan, these are:

- Availability of land for forestry
- Availability of reserved forests
- The law which mandates the allocation of 5% and 10% of irrigated and mechanized rain fed agricultural schemes respectively to forestry provides additional land for investors.
- Stable and well-defined institutional frameworks for forest tenure and use rights
- Strong and consistent demand and markets for forest products in Sudan
- Tax and regulatory systems that recognize the long-term nature of forestry investments
- Strong forestry institutions that support information deliver
- Tax was reformed for community and private forest (reduced by more than 50%).
- Increases in per capita income for Gum producers encouraged investment in the forest sector.
- There is a potential to mobilize further financial resources for forestry in the future such as concern of forests into the climate change focus.
- There is attempt to establish a mature investment and financing circumstance for the Commercial plantations.
- The Decree of the Council of Ministers No. 40 (1997) pave the way for the implementation of benefit sharing mechanism since it divided the revenue from outside forest reserve “royalties” which is supposed to be levied by the FNC. The 40 % of the revenue which is supposed to be retained by the FNC can be used for a trial pilot benefit sharing project.

Recently, a series of preferential tax policy and decisions for NWFPs particularly Gum Arabic were issued to attract private sector and individuals investments into forestry and encourage the public private partnerships

16.2. History of Benefit Sharing in Sudan

It is not enough when the local people can repeat perfectly what they have learned to do even in the presence of the connected knowledge. This stage has to be followed by motivations or incentives to make the local people keen to take actions related to already specify goals. All the possible motivations of the different sub-groups making up the community have to be studied carefully before the identification of the systems that will give rise to satisfaction and prosperity within the community (Bochet 1983).

In Sudan the benefit sharing is not new. It has been practiced for periods extending over the previous decades, further promoted by extension work particularly in gum gardens. The rationale behind incentives in Sudan is the recurrent drought during 1970s, 1980s and 1990s, coupled with increased pressure on forests as a source of income, population pressure, desertification, poor agricultural productivity, limited government budgets and other environmental problems. The government attempted to mobilize and sensitize primary stakeholders in the rehabilitation, conservation, investment and sustainable management and use of forest resources. These attempts were hindered by the long-term nature of forestry investment in addition to the uncertainty and risk of plantation investments (Enters et al 2003). Unfortunately, the agenda of incentive was not addressed for encouraging the participation of local communities in forestry activities until the 1980s. Under the steady deforestation rates, the government introduced incentives to promote forestry and forestry-related activities. On the other hand,

several NGOs projects addressed the agenda of incentives in forestry activities. Some of the examples are; ENSO (Wad medani and Gedaref), FAO (rawashda), KADA (Gash delta), SCC – Edamer, and ACORD (Quala en nahal). These NGOs applied the participatory forestry on state land (taungyia) and focused on supplementary forestry extension, while FINNIDA (Tendelti) and UNSO (North Kordofan State) applied the model of social forestry project administered by FNC on communal land (Super Management Model). In their model food for work, provision of seeds and seedlings were used to sensitize and mobilize local people to participate in afforestation and reforestation programs. Incentives were also used in the Support Service Model by CONCERN (Kosti), FAO (central and eastern region), CARE (Kordofan), SCF (um ruwaba) through provision of extension services, technical assistance and some modest inputs. Similarly, the community forestry project with assistance of intermediary model provided local people with extension and technical advises. Different NGOs applied this model such as; Irish Aid/Plan Sudan (Gezirs), FAO/KADA (Kassala), and FAO/Education Ministry (Khartoum). In the Financial Incentive Program for Community Forestry Model the role of the extension service was to provide grant aid and technical assistance on request and monitor project progress. This model was practiced by ERC (North Sudan – Khartoum) (EL Mahdi and Des Mahony 1990).

The incentives provided by the FNC to promote social and farm forestry in Sudan varied between different states and included subsidized seedlings; survival incentives; subsidies to private nurseries, and extension and technical guidance to the farmers. Recently, attempts were made to reform taxes and charges imposed on Gum Arabic, and small Gum producers issued new financial policies to facilitate access to credit through the Microfinance mechanisms. Other types of incentives practiced in Sudan include purchasing of seedlings raised in private nurseries. Still, there is a need for more incentives to promote forest plantations in Sudan, and a new tax incentive regime should be established to promote the development of large-scale forest plantation. However, there is a need to provide economic incentives for communities to become involved in sustainable forest management, including ensuring that the full economic value of forests is appreciated, and reflected in both economic and forestry decision-making, paying particular attention to economic costs and benefits that accrue at the community-level, identifying, and dismantling the economic disincentives and perverse incentives that macroeconomic and sectoral economic policies provide and that hinder community involvement in sustainable forest management, and developing and testing economic incentive measures within the context of on-going attempts at community-based forest management (Elsiddig 2012).

17. Implementation of Benefit Sharing Mechanism

17.1. Introduction

Benefit sharing is a mechanism to identify and distribute the outcomes from an activity. Effective benefit sharing design will create incentives for different stakeholders to initiate and support action to reduce emissions from deforestation and forest degradation. In a legal sense, an approach to benefit allocation refers to how the basis for a benefit claim is established. Given that carbon is a natural resource intrinsically linked to land, the rights to own or use the carbon resource need to be clear. The legal basis for establishing benefit claims begins with clearly defining these 'carbon rights', whether a benefit claim is linked to land rights or participation in REDD+ implementation. The allocation of carbon rights and/or the financial benefits attached to those rights then depends on the legal structures underpinning different policy interventions used for REDD+ implementation. This step is followed by determination of a means for distributing those benefits (Peskett 2011a). The UNFCCC emphasizes the need for REDD+ implementation to enhance social and environmental benefits, but it does not prescribe a particular approach (Costenbader 2011). The FCPF Readiness Fund requires that benefit sharing arrangements be assessed as part of national 'readiness' preparations, and requires countries to have a Benefit Sharing Plan under its Carbon Fund, but has also commented that a prescriptive approach to benefit sharing is unlikely to be effective. Accordingly, countries need to decide what approach to benefit sharing will be most appropriate for their REDD+ programs. However, there are two main reasons to share benefits. The first is to create effective incentives and the second reason is to build wider national legitimacy and support

behind the REDD-plus mechanism (Forrester 2010). The design of benefit sharing may in theory be fairly simple. If land ownership and user rights are clear, then costs of sacrifices can be easily valued. This will make it relatively straightforward to achieve satisfactory law enforcement as well as transparent, accountable and effective government systems (Kimbowa 2011).

17.2. Developing REDD+ Benefit Sharing Mechanism

17.2.1. Requirements and Guidance for Benefit Sharing

UNFCCC encourages national action by requiring parties to: take legislative, administrative and policy measures to ensure that indigenous and local communities gain fair and equitable benefits from the utilization of genetic resources; create a national focal point on access and benefit sharing; and, develop and update voluntary codes of conduct, guidelines and best practices/standards in relation to access and benefit sharing (Mohammed 2011).

17.2.1.1. UNFCCC Requirements

According to REDD+ mechanism, Cancun Safeguards asked States to ensure the full and effective participation of relevant stakeholders, enhance other social and environmental benefits for sustainable livelihoods of indigenous peoples and local communities and their interdependence on forests, and acknowledge the importance of participation (Peskett 2011b). These broad requirements of the UNFCCC need to be adapted to fit unique national circumstances, and are contemplated within most REDD+ strategies. Although the UNFCCC emphasizes the need for REDD+ implementation, it does not prescribe a particular approach to doing this (Sikor 2010). Sudan has a rich experience in participatory approach where several communal activities in the fields of forestry, pasture and wildlife were formulated relying on the participation of local communities. GAPAs, Agriculturalists and Herders Unions are vital examples (Elsidding 2012).

17.2.1.2. Requirements from Other REDD+ Frameworks and Standards

All REDD+ programs aimed at achieving emissions reductions from REDD+ at scale through jurisdictional

approaches, have elaborated on the processes to manage the rights to carbon and non-carbon benefits including benefit sharing as a matter to be addressed in monitoring reports. Several voluntary standards have emerged to guide the behaviour of stakeholders involved in project level activities, such as the Climate, Community and Biodiversity Standards, which emphasize the importance of equitable benefit sharing. Sudan has ratified the CBD and extensive work was done in this respect (Watson et al. 2000).

17.2.1.3. Forest Carbon Partnership Facility

The Carbon Fund Methodological Framework requires that a Benefit Sharing Plan is submitted with the program documents which demonstrates how the program will generate and share a variety of benefits. The Framework should be designed in a consultative, transparent, and participatory manner (Zahabu 2006). The types of matters to be addressed in the Benefit Sharing Plan includes categories of beneficiaries; types and scale of potential monetary and non-monetary benefits that may be received from the program; benefit distribution criteria, process, and timelines, and monitoring process during implementation of the plan. The implementation is expected to be transparent. The proponent must undertake a review of the relevant issues arising from land and resource tenure regimes within the program boundary and make publicly available an assessment of those regimes. The program proponent is required to identify non-carbon benefits and demonstrate how the program is likely to generate and/or enhance such benefits (Smith and Scherr 2002).

17.2.1.4. Code REDD

Focusing on national or sub-national initiatives, the REDD+ Social and Environmental Standards require a transparent and participatory assessment of predicted and actual benefits, costs and risks of the REDD+

program for relevant rights holders and stakeholders groups at all levels with special attention given to women and marginalized and/or vulnerable people. The Code REDD standard states that revenues are to flow through to benefit the affected forest communities in an equitable and transparent way to guarantee that forest communities are compensated fairly for their involvement and for stewardship and/or ownership of underlying forest resources. This approach designates forest communities as appropriate beneficiaries of REDD+ projects or programs, irrespective of the underlying legal arrangements that may be in place to govern access to and use of the forest resources (Taku 2010).

17.2.1.5. Social and Environmental Standards (REDD+ SES)

The REDD+ SES aims to promote high social and environmental performance of government-led REDD+ programmes that promote poverty reduction and biodiversity conservation while ensuring commitments to human rights. The REDD+ SES is less prescriptive about who the appropriate beneficiaries are. It focuses on a transparent and participatory assessment of predicted and actual benefits, costs, and risks of the REDD+ program for relevant rights holders and stakeholder groups at all levels, with special attention given to women and marginalized and/or vulnerable people. It further requires that transparent, participatory, effective and efficient mechanisms should be established for equitable sharing of benefits of the REDD+ program among relevant rights holders and stakeholder groups (Smith and Scherr 2002).

18. The key elements of benefit sharing

After fulfilling requirements and guidance of benefit sharing, the REDD+ program identified the key elements of benefit sharing which encompasses different variables, namely, defining benefits, determining beneficiaries, defining the benefit distribution models, constitutional benefit sharing, contractual benefit sharing arrangements, and linking land rights to in REDD (Scherr et. al. 2004)**.**

18.1. Defining benefits

The term 'benefit sharing' lacks a clear or consistent definition. It usually refers to how financial incentives would be shared within countries. The CDM provided a process for creating CERs, providing one model for defining carbon benefits (Anandi et. al. 2014). Benefit sharing in REDD+ identifies the following key benefits from REDD+ implementation (Bakkegaard and Sven 2014):

- Sequestered forest carbon creating an emissions reduction. Carbon benefits can be commoditized as tones of CO^2 avoided, abated or sequestered after meeting specified criteria, are formally recognized under an arrangement, scheme or law or CERs under the CDM.
- REDD+ payments can be made for either carbon benefits or for participation in REDD+ implementation, financial benefits can be monetary or in kind;
- REDD+ can be implemented in a way that provides other benefits to local communities and biodiversity with the possibility that these could be commoditized.

Once the benefits flowing from REDD+ implementation are defined, the issue of how these benefits are to be divided between different stakeholders is important. While many benefits are anticipated from REDD+, the actual benefits and costs that will be forthcoming are uncertain, difficult to estimate, and will vary by context and time. The benefits that actually materialize will depend on many factors. Appropriate benefits are case specific. It can range from monetary rewards that are equal to an individual or organizations' opportunity cost to nonmonetary policy benefits that clarify property rights (Campese et. al. 2012).

The benefits could be environmental (like maintained and enhanced forest ecosystem, improved biodiversity and natural resource base, maintain and enhance forest ecosystems and others) or economic and social benefits (incentive payments and income from employment, enhance resilience of local communities, improved or enhanced availability of natural resource based materials, more secure land and forest tenures, and others). There are also broader issues that affect benefit-sharing design. The scale

of REDD+ implementation will affect benefit-sharing arrangements. In addition, the source of REDD+ finance can affect benefit-sharing arrangements (Caravani 2011).

18.2. Determining Beneficiaries

Potential beneficiaries from REDD+ might perceive a moral claim to benefit. A right to benefit needs to be linked to a legal instrument. The law has an important role in clarifying who the beneficiaries of REDD+ are, and the formal basis for benefit claims. Potential beneficiaries from REDD+ implementation can be (CIFOR. 2014) those who claim the emissions reduction generated from REDD+ implementation; governments who receive REDD+ payments, potentially as taxation revenue; those involved in REDD+ implementation (local communities), and society at large benefits from the climate, social and environmental impacts from REDD+ implementation as the case of CBOs, CSOs and networks (Caplow et. al. 2014). It is critical to identify who is entitled to claim benefits from REDD+, and on what basis, as an important aspect of a benefit distribution system. Legal frameworks therefore have an important role to play in clarifying the status of rights linked to benefits (Dokken et. al. 2014). The following stakeholders are central to the functioning of a benefit sharing mechanism (Dunlop 2009):

- Funders: to cover the cost of benefit sharing mechanism; benefit payments; and funding expansion and replication.
- The individuals or organizations that carry out the action or need to be compensated for losses or costs borne.
- Managers or administrators who provide fund management services; administer contractual arrangements with beneficiaries, monitor, report and possibly verify benefit sharing mechanism performance; continually improve benefit sharing mechanism governance and operations based on monitoring findings; assess long term impacts of benefit sharing mechanism; and contract out parts of the benefit sharing mechanism management process to external providers where appropriate.
- Implementing agencies: provide training and capacity building services; operate monitoring systems; assist with mapping and demonstrating community land rights; and develop public infrastructure for the beneficiaries.
- Independent verifiers: verify monitoring and reporting findings from fund manager or administrator; and provide potential training and capacity building.

18.3. Defining the Benefit Distribution Model

It is a top priority that the selection of benefit distribution model is set out in policy documents. Forest management policies based on forest concessions, PFM and PES schemes provide models for sharing benefits from forestry resources. Contracts between different stakeholders can be used to clarify benefit-sharing arrangements. From a theoretical perspective, benefit sharing is often described as either horizontal or vertical. Vehicles used to distribute money 'horizontally' could be community trust funds or contracts to structure the combination of horizontal or vertical distribution. In the context of REDD+, the law can play an important role in clearly outlining what entitlements flow from both participation in a REDD+ project and/or carbon ownership/use rights (Kimbowa et. al. 2011). The amount of benefits due to each beneficiary could be determined by constitutions, statutes or contracts which can influence how revenue from natural resources gets divided between different stakeholders (Intarini et. al. 2014).

There are many options for governing and distributing benefits within communities. Pilot approaches include a mix of community, household, and individual payments; monetary and non-monetary benefits; institutional arrangements; and rules (Leary et. al. 2008). There are advantages and limitations to each approach, but a key factor in all cases should be communities' preferences. For international/ national to local transfers, options include: (1) payments centrally collected and distributed directly to eligible local actors; (2) payments centrally collected and distributed through existing regional and local government systems; (3) individual projects/ actors directly access investors or funds; and (4) nested/ hybrid approach. However, Forest communities and other local carbon owners can aggregate their carbon to reduce

transaction costs through forming inter-village CBOs and partnering with external service providers (NGOs or private sector) (Luttrell et. al. 2012). Given that most countries seeking to implement REDD+ are in the early stages of implementing their national strategies and action plans, it is expected not to have in place fully designed national benefit distribution systems. The proposed approaches by many countries are being set out in policy documents, and they often make reference to benefit sharing models that already exist in other forest management policies or forest utilization approaches. Public funds can be used to disburse funding to different stakeholders. In a similar way, a community trust fund can be used at the local level. Forest management policies based on forest concessions, PFM and PES schemes provide models for sharing benefits from forestry resources (Rawson 2013).

18.4. The Time Dimension of REDD+ payments

REDD benefits are finite. The development of REDD+ payment schedules will be hard to predict and will depend on the establishment and stability of carbon prices and other factors (TFD. 2014). The needs of poor and marginalized groups are particularly urgent and may require more front-loaded payments to fill gaps in funding. Front-loading benefits for emission reductions or carbon stock enhancements for delivery in the future may also dilute incentives to follow through on management obligations (Tassa et. al. 2010). For effectively measuring and monitoring carbon, minimizing transaction costs, managing risk, and facilitating linkages between local actors and funding mechanisms, local carbon owners will often form aggregation bodies or chose service providers to pool their carbon. The governance of such arrangements should ensure full and effective community participation; be aligned with and accountable to local institutions; ensure accountability between levels of government and with non-state actors; be accepted/ perceived as legitimate by community, government and other actors involved in REDD+; and allow aggregation bodies or service providers to receive fair compensation for their costs, but not more than their fair share (UNEP 2007).

There are many options for distributing and governing REDD+ benefits within a village or community. The most important factor should be what the village or community prefers, considerations should be given to size of local populations and the number of households to ensure that carbon revenues are substantial. Cash payments can have the flexibility and transferability to allow recipients to more directly offset costs incurred and address their priority needs and preferences. In-kind benefits can sometimes be viewed as paternalistic and therefore, less acceptable and less of an incentive for conservation. In some contexts, a substantial cash influx may also lead to rapid market changes, such as food price inflation, impacting recipients and other communities (TFCG and MJUMITA. 2009).

18.5. Five features of well-functioning benefit sharing mechanisms

There is no one single blueprint for the definition and implementation of benefit sharing mechanisms for REDD (Schroeder 2007). To achieve a well-functioning benefit sharing system, the following requirements are needed (Sikor 2010):

- Stakeholders need to be carefully identified and engaged, and not just consulted.
- The amount of incentive payments to these stakeholders, the timing and the form in which this payment takes place need to be decided and linked directly to actions agreed upon.
- A mechanism, which is trusted and has the necessary accountability provisions, should be in place to disburse timely payments to stakeholders.
- Information about all transactions should be available in the public domain for scrutiny by civil society, government and private sector.
- Benefit sharing agreements should be flexible, allow for necessary changes based on learning, and have clear dispute settlement mechanisms.

18.6. Costs of REDD+ Mechanism

While much is anticipated from REDD+, its real benefits and costs are not yet clear. If the high expectations are not met, trust and political will for REDD+ can be undermined. It is important that

mechanisms incorporate realistic estimations of benefits and costs, accounting for uncertainty, though this will be challenging (Kweka 2014). There is also a need for a clear differentiation between compensation and net positive benefits. Compensation helps ensure that REDD+ does no harm. Table (9) shows the potential REDD+ costs. However, if benefits do not exceed real costs, there is no net positive benefit. Transaction and implementation costs are likely to be high, including for governance reforms, though these costs are often overlooked (Luttrell et. al. 2012). In all cases, benefits and costs are likely to be dynamic, changing over time and varying in how they accrue to communities and vulnerable people. REDD+ also introduces costs and risks that need to be considered in benefit sharing. These costs and risks are typically categorized in terms of opportunity, implementation, and transaction costs (Putri and Demetrius 2014).

Table (9): Potential REDD+ Costs as Perceive by the Focal Points

Cost types	Examples of potential REDD+ costs
Opportunity cost	- Physical or economic access to natural resources for livelihoods and subsistence use - Physical or economic access to natural resources for value-added activates - Tax revenue
Implementation costs	Land use planning Land tenure reform Governance reform Forest protection, improved forest and agriculture management Capacity building (alternative livelihood training and job training
Transaction costs	REDD+ program development (policy changes) Project design and development Negotiating agreements Emission reduction certificates Safeguard system development and monitoring

19. Legal Aspects of Benefit Sharing

19.1. Constitutional benefit sharing provisions

Given that constitutions sit at the top of national legal hierarchies, it is important that benefit- sharing arrangements are consistent with their rules. Constitutions might contain general, aspirational principles about providing incentives for environmental protection and/or benefit sharing as the case of Kenya and Ecuador. Constitutions can also specify how the revenue from forestry resources should be divided between different beneficiaries. Constitutions could state that all land and natural resources within a country are owned by the State, to be managed on behalf of the people (Vietnam and Cambodia). Such constitutional rules could have important consequences for benefit sharing in a REDD+ context (Forstater and Watson, 2013).

19.2. Contractual Benefit Sharing Arrangements

In the absence of clear legal frameworks for benefit sharing, and also in order to reflect the unique circumstances of a particular project, contractual arrangements have been used to determine benefit sharing arrangements at the project level, clarify the agreement between different stakeholders and allow parties to set aside issues in dispute. They can include a dispute settlement clause, which will establish the procedures to be followed in the event of a dispute. In the context of carbon transactions, the contracts between the buyer of emissions reduction credits and the sellers could contain a 'dispute settlement clause', which outlines the procedures to be followed in the event of a specified category of dispute. Dispute settlement procedures could refer the parties involved to private mediators/arbitrators or established procedures under local law. Conflicts linked to land and resource rights are expected to arise from REDD+ implementation (Phillips 2006).

19.3. Linking Land Rights to Benefit Sharing in REDD+

Clear land tenure and forest tenure are prerequisites for the effective implementation of REDD+ initiatives. Clear tenure helps to ensure the long-term permanence of emission reductions and other environmental benefits because unclear or insecure tenure is a driver of land use change and deforestation (Masyhud 2010). Clear tenancy facilitates the allocation of benefits from REDD+. Communities with clear and secure property rights are more likely to access natural resources and benefits from REDD+ than those with unrecognized or highly limited rights. In addition, agreed tenure arrangements lowers the potential for conflicts over benefits linked to forest resources, and enables benefits to be allocated among stakeholders (Pagiola 2006). Related to rights, land and carbon tenure security are central to equitable benefit sharing. In many countries, lack of clear, recognized, or enforced tenure rights for local forest communities, including pastoralists, is a primary obstacle for equitable benefit sharing (Mathews 1982). Laws can provide a relatively strong framework for communities' land and forest tenure security, and several REDD pilots are using project resources to assist communities in realizing these statutory rights. Community tenure security is often obstructed by cost-prohibitive and technically demanding requirements for implementation, low levels of awareness, weak enforcement of laws, and contradictions in interpretation and implementation of land laws. Even when statutory tenure is seemingly clear, there may be land conflicts (FAO. 2013).

20. Other Key Elements of Benefit Sharing Design

The Cancun safeguards provide guidance regarding other attributes of a benefit sharing system, which are mirrored in other frameworks/standards and the observations of leading organisations. Public participation and transparency are important requirements of an effective benefit distribution system (Mathews 1982).

20.1. Public Participation

Participation includes participation in REDD+ decision making, and participatory approaches to undertaking REDD+ activities (Thuy et. al. 2013). Different entry points for stakeholder participation include participation in the development of national strategies and action plans; participation in the preparation of regulatory instruments; and participation in decision making. Participation can take different forms such as: the ability to have access to information; the ability to make submissions and the status that is given to those submissions; representation on consultative bodies; and the ability to legally challenge decisions made with respect to plans made or decisions taken by government (Gray 2014). Public participation is likely to be a precondition for successful REDD+ implementation, and should be clearly regulated at the national level. There are a number of different options available for undertaking consultation and engaging participants, including: mandating regular admittance of the public to REDD-related meetings; implementing legally mandated consultations; establishing a permanent multi-stakeholder body; national legislation could identify the responsibility of national and local authorities in relation to access to information and participation rights. Laws could identify the types of REDD+ related information that is freely accessible, and clearly establish relevant responsibilities and rights and procedures to guarantee such access; and Legislation could establish overarching principles so that consultations are representative of indigenous people, including women and young people (USAID. 2012).

Plate (2a): Participation in development activities programs

Plate (2b): Participation in reforestation

Legislation should identify the specific levels of decision making at which participation will be guaranteed and to ensure transparency and predictability regarding how the rights and interests of stakeholders, communities and landholders are managed in order to provide external investors with certainty regarding processes. Special measures may need to be taken to support the participation of vulnerable or marginalised groups. Well-designed dispute resolution and grievance mechanisms can help identify problems and concerns, using a bottom-up approach; provide a channel through which people can gain recognition for legitimate concerns; increase the likelihood of resolving minor disputes quickly, inexpensively, and fairly; prevent the escalation of conflict and/or accumulation of grievances; foster greater trust, legitimacy and accountability within projects and programs or between stakeholders and contribute to continuous improvement of REDD+ policies and projects through "early warning" on adverse impacts of REDD+ (Bruce and Nielsen 2012; Schroeder 2007). When dealing with participation, special consideration should be given to gender equality which is important in benefit sharing, as REDD+ will have gender differentiated impacts, due in part to women's and men's different powers, roles, rights and responsibilities in forest governance (USAID 2015).

20.2. Transparency

A country's anti-corruption framework will play an important role in benefit sharing in several ways, including stakeholder participation - in terms of access to information, and legitimate/inclusive decision-making processes; and creating incentives for stakeholders to participate in REDD+, in terms of a REDD+ system's ability to deliver promised benefits and channel finance effectively. If confidence in the system is low, the incentives to participate in the initiatives that will reduce emissions in the forest sector will be reduced.

20.3. Capacity and Sustainability

Getting beyond policy and the readiness phase, equitable benefit sharing is not just a matter of good policy. It requires resources and the capacity of individuals and institutions to effectively implement mechanisms (Mathews 1982). The draft National REDD+ Strategy recognizes the need for capacity building to implement REDD+, though does not specifically address benefit sharing in this regard. When community members have the capacity and opportunity to understand and claim their rights and responsibilities, sustainable benefit sharing is more likely to occur. There is a need for making trial payments; facilitating land use planning and PFM; supporting development of new agricultural skills, fuel wood sources, and sustainable livelihood sources; and otherwise establishing a foundation for REDD+ with donor funding. Further, while the pilot projects are anchored in village governments and village

institutions, at this stage they are heavily reliant on NGO facilitation. How can a coherent national system be built up from such disparate approaches? These questions cannot be answered yet, but should not be overlooked as REDD+ benefit sharing preparations continue (Mohammed 2011). A key component of operationalizing transparency and accountability is timely information sharing – in project conceptualization, design, implementation, and monitoring. Information should be accessible to all parties, including communities.

20.4. Scale of REDD+ Implementation

Benefit distribution mechanisms will depend in part on the approach to REDD+ implementation. The options for REDD+ implementation are: a jurisdictional approach, project-level implementation, or a multi-scale nested approach (Mwayafu and Kimbowa. 2011). A jurisdictional approach is a national-level approach likely to result at first instance in incentives flowing to the national government based on performance against a national reference level. Moreover, a sub-national approach means that at first instance the incentives flow to a sub-national governmental entity based on performance against a sub-national reference level. The project-level approach means that incentives flow directly to project developers based on performance against a project baseline, and a project will not necessarily coincide with a governmental jurisdiction (noting that a government could overrule this). In the 'nested' approach, incentives can flow directly to sub-national entities and/or project developers in addition to national governments. Projects can be established within a sub-national approach, which exists within a national REDD+ program. Each 'forest mitigation activity' describes the end result of successful REDD+ implementation. In order to achieve these end results, many different initiatives could be used within a country. Each initiative could involve different circumstances and different beneficiaries, with the consequence that benefit sharing arrangements are likely to vary across the range of different REDD+ initiatives happening within a country - the allocation of rights and benefits, and the choice of benefit distribution vehicle, could all vary (USAID 2012).

20.5. Sources of Funds

In the UNFCCC process a donor model (grant-based approach) channels publicly-sourced REDD+ finance through multilateral funds or bilateral partnerships. It is up to countries to decide what kind of financing model they want to use. At the national or local level, the choice of financing model is important for designing incentives. At present, REDD+ is in the early stages of implementation often referred to as the 'readiness' phase, primarily financed by donor-funded capacity building initiatives (UN REDD, the FCPF). However, moving forward, private sector finance is expected to play a crucial role in REDD+ implementation given the scale of finance likely to be required. Key questions should be formulated to think through when determining the most appropriate financing model for REDD+ implementation (USAID 2015).

A fund to hold and disburse REDD+ finance could take many different forms. Money from public and/or private sources would be deposited into the fund structure; the money would then be disbursed according to specific criteria. The fund would be managed according to rules regarding its management. The FCPF has established the Carbon Fund to pilot payments for verified emission reductions from REDD+ to governments (Olbrei and Howes 2012). The Green Climate Fund could be a future source of REDD+ financing, although its operation is still being determined. Key issues to address when designing a fund include the fund's objectives, capitalization, governance structure, fiduciary management, implementation, conflict management, stakeholder participation, monitoring and reporting, and the basis upon which payments will be made. It is possible that existing fund structures could be utilized for the purposes of REDD+ implementation. In the context of REDD+, benefits can stem from forest rent or incentives associated with investments and activities aimed to reduce emissions and increase carbon stocks. Funding sources that can assist with generating benefits include public funds, international carbon fund, international carbon markets, performance and input based international donor funding (including Fast Start) and international NGO/private foundation funding (Nkhata et. al. 2012).

20.6. Monitoring

Fair distribution of benefits requires effective and transparent monitoring and reporting. A costs and benefits monitoring system should be integrated into relevant REDD+ systems, including the national carbon accounting system and the safeguards information system. The equity and effectiveness of benefit sharing will be impacted by REDD+'s broader governance context and political economy. Success for REDD+ at the national level will require policy changes both within and outside the forestry sector. Policy changes will create 'losers' and 'winners', and new opportunity costs for some parties may need to be compensated (Olbrei and Howes 2012).

21. Developing Sudan's Benefit Sharing Mechanism

21.1. Introduction

Benefit sharing which focuses on identifying benefits and their distribution for the welfare of local communities started to gain momentum as an important environmental issue. However, in a broad sense benefit sharing mechanisms already exist in Sudan, in the form of subsidies, grants and provision of services to rural populations such as agricultural extension. Since the mid-seventies and early eighties, Sudan received plethora of NGOs which worked in close coordination with local communities. Table (10) shows some of these NGOs. The stakeholders of these projects included local communities, households, individuals and governmental institutions (FNC and Forest Research Centre).

Different methods of incentives were deployed to encourage the participation of local communities in afforestation, rehabilitation, conservation and reforestation activities like; extension services, tax relief, subsides, grants, contribution in kind like seeds, plants, fertilizers, credit facilities, loans with reduced or no interest and longer grace periods, food aid and technical assistants. The participatory forestry program conducted by these NGOs depended largely on effective people's participation at various stages of their implementations. Many social forestry programs have stumbled along and eventually faded away.

The starting premise of this assignment attempts to develop benefit sharing mechanism for Sudan relying on the experiences and forms of benefit practiced in the country. Effective benefit sharing design will create incentives for different stakeholders to initiate and support action to reduce emissions from deforestation and forest degradation. Although the UNFCCC and the FCPF have not prescribed a particular approach to developing benefit sharing mechanism, they advised countries to decide what approach to benefit sharing will be most appropriate for their REDD+ programs. The core issue should focus on creating effective incentives to the beneficiaries and to build wider national legitimacy and support behind the REDD-plus mechanism. The Republic of Sudan has received a grant through the Forest Carbon Partnership Program of the World Bank to support Sudan in preparing for the implementation of its National REDD+ Program. The grant will contribute to laying the foundations needed for more sustainable management of its land and forest, and to enable Sudan to benefit from possible future systems of international payments for ecosystem services for REDD+.

21.2. Requirements and Guidance for Benefit Sharing

Sudan is qualified to address benefit sharing mechanism of the REDD+ and requirements from other REDD+ Frameworks and Standards. From a legal perspective, the constitution of the country addresses benefit sharing implicitly within the broader environmental issues. The forest policies of the country of 1932, 1986 and 2006 encourage the allocation of forest use right to owners (individual, community, private ... etc) and promote the establishment of community, individual and private forests. Moreover, the CNS (1992 – 2002) encourages the local population to participate in the preparation of forestry projects and their management. One of the objectives of Sudan's NAPA is to guarantee widespread representation of local stakeholders in the NAPA consultation process. Generally, the GoS is continuously developing and updating administrative and policy measures to ensure that local communities gain fair and equitable

benefits from the utilization of genetic resources. Sudan fulfils all the requirement of UNFCCC for REDD+ mechanism including ensuring the full and effective participation of relevant stakeholders, enhancing other social and environmental benefits for sustainable livelihoods of local communities. Moreover, Sudan has a rich experience in participatory approach where several communal activities in the fields of forestry, pasture and wildlife were formulated relying on the participation of local communities. GAPAs, Agriculturalists and Herders Unions are vital example.

22. The Key Elements of Sudan's Benefit Sharing

In an attempt to develop a benefit sharing mechanism for Sudan, special considerations were given to defining benefits, determining beneficiaries, defining the benefit distribution models, constitutional benefit sharing, contractual benefit sharing arrangements, and linking land rights to REDD**.**

22.1. Defining Benefits

The initial step for developing benefit sharing for Sudan is to define the benefits for local communities. The expected benefits include the sequestration of forest carbon creating an emissions reduction in addition to other benefits to local communities and biodiversity with the possibility that these could be commoditized. The appropriate benefits for Sudan could be monetary rewards that are equal to an individual or organization's opportunity cost to nonmonetary policy benefits that clarify property rights. The result from the self-administered questionnaire and group discussions with the focal points of the States was a list of environmental, economic and social benefits. Table (10) shows the benefit types and examples that can be generated from REDD+ benefit sharing mechanism in Sudan as perceived by the focal points of the States and the selected communities. The environmental benefits include: maintained and enhanced local forests ecosystems, an improved natural resource base, maintained and improved local and national biodiversity, well maintained and enhanced national forest coverage, and maintained and improved national forest ecosystems. While the economic and social benefits include: incentive payments and income from REDD+ schemes, enhanced livelihood and resilience to climate change, improved/enhanced availability of natural resource based materials, more secure land/forest tenure, enhanced local governance and institutional strengthening, and enhanced capacity and knowledge.

From the findings of Table (10), it is apparent that the entire respondents are aware about the most important environmental, economic and social benefits under Sudan circumstances. As far as equity of distribution of these benefits is concerned, the different focal points highlighted the importance of equitable benefit sharing as:

- Ensure that benefit sharing diminish the vulnerability of local communities;
- Fulfill obligations to realize positive net benefits for those contributing to REDD+;
- Reduce risks for REDD+ investors and funders;
- Address incentive agenda to enhance REDD+ effectiveness in reducing emissions;
- Enhance forest conservation;
- Enhance sustainability and enhancing people's capacity to reduce deforestation;
- Build trust and encourage active participation.

Table (10): Sudan's Potential REDD+ Benefits

Benefit type	Expected benefits	Respondents %
Environmental	- Maintained and enhanced local forests ecosystems	87
	- Improved natural resource base	78
	- Maintained and improved local and national biodiversity	90
	- Maintained and enhanced national forest coverage	100
	- Maintained and improved national forest ecosystems	69
Economic and social	- Incentive payments and income from REDD+ schemes	80
	- Enhanced livelihood and resilience to climate change	78

	- Improved/enhanced availability of natural resource based materials	86
	- More secure land/forest tenure	90
	- Enhanced local governance and institutional strengthening	87
	- Enhanced capacity and knowledge	85
	- Contribution to GDP	80
	- Financial savings from improved environmental services	95

22.2. Determining beneficiaries

In Sudan the legal right to the carbon is unclear. However, different legal instruments can be deployed to determine beneficiaries through the National Constitution; a statute, or other legislative instruments and Land and resource rights. The focal points of Sudan's REDD+ program prefer to resort to contracts or use negotiated benefit sharing agreements between participants. According to the project documents, the beneficiaries or stakeholders are the Ministry of Agriculture and Forestry, the Ministry of Environment and Natural Resources and Physical Development, the Ministry of Livestock and Pasture, the Ministry of Water Resources and Irrigation and Electricity, the Ministry of Tourism and Antiquities and Oils and Minerals, the Ministry of Welfare and Social Security, Universities, Women and CSOs, Pastoralists Union, Farmers Union, Women Union, Voluntary Organization Working on Environment and Development, and the Private Sector. The stakeholders' process analysis classified the stakeholders into primary and secondary. The purpose of identification of stakeholders is to involve these groups actively in the initiatives, and develop partnerships/alliances for the implementation of REDD+ mechanism. Table (11) shows the categories of stakeholders for Sudan. It is worth mentioning that, the external stakeholders should not be overlooked in the implementation of benefit sharing mechanism.

Table (11): Stakeholders process analysis for Sudan's REDD+ initiative

Primary stakeholders	**Secondary stakeholder**	**External stakeholders**
- Women and CSOs - Pastoralists Union - Farmers Union - Women Union -Voluntary Organization (Environm. & Development - Private sector	- Minister of Agriculture and Forestry - Ministry of Environment & N. Resources & Physical Development - Ministry of Livestock and Pasture - Ministry of Water Resources and Irrigation and Electricity - Ministry of Tourism and Antiquities and Oils and Minerals - Ministry of Welfare and Social Security - Universities	- Others

22.3. Defining the Benefit Distribution Model

Benefit sharing in Sudan is not new, but all types are not following a distinct model for distribution. All the forest policies of the country focused on the participation of local communities in the development activities without defining benefits and their distribution in these policy documents. Available models for forest management policies practiced in Sudan were based on PFM and PES schemes. Benefit sharing can be either horizontal or vertical. The bulk of the focal points in the different regions preferred contracts to structure the combination of horizontal or vertical distribution. They emphasized the difficulty of establishing community trust fund for benefit sharing due to the bad history of cooperatives at rural areas in the past. Moreover, since the benefit- sharing was not clearly stated in the Constitution or statues, for Sudan's benefit sharing mechanism, contracts between different stakeholders can be used to clarify benefit-sharing arrangements. It is much better if the distribution model is clearly embodied in the Laws. Until the distribution model is clearly identified in the Law, the Sudan's benefit sharing model can resort to contracts for the distribution of the model. Generally, in Sudan, a mechanism for distributing carbon payments from the international or national level to the local level has not yet been established, this necessitates establishment of a National REDD+ Trust Fund.

The different arrangements for benefit distribution (national approach, project approach and nested approach) are not necessarily mutually exclusive. The nested approach was advocated as advised by all the focal points at the different regions. The strength of this approach emerges from its flexibility in allowing substantial financial benefits for communities and incentives for deforestation. This is attained by allowing communities direct access to carbon markets, besides its reliability, transparency, and accountability that ensures the participating local people who also bear the cost of REDD+ access to the greatest possible benefits. The embracing of the focal points for the nested approach is backed by the fact that some of its activities will be conducted on individual basis while others are communal. However, a key factor in all cases should be communities' preferences. During the course of data collection, local communities preferred community and individual distribution of benefit sharing model; monetary benefits for individuals and non-monetary benefits for the communities. Another alternative is to aggregate the carbon from forest communities to reduce transaction costs through forming inter-village CBOs and partnering with external service providers (NGOs or private sector). Public funds can be used to disburse funding to different stakeholders.

22.4. The Time Dimension of REDD+ Payments

Establishment and stability of carbon prices and other factors are detrimental for development of REDD+ payment schedules for any country. REDD benefits are finite. The needs of poor and marginalized groups are particularly urgent today and may require more front-loaded payments to fill gaps in funding. The focal points in the different regions highlighted the importance of commitment to the set time schedule of payments as an important factor for success and sustainability of emission reduction activities. Commitment to agree upon time schedule of payments is a detrimental factor for the success of the benefit sharing mechanism in Sudan. To achieve this, the focal point and local communities highlighted in their discussions the need to consider the following regarding the payment:

- Full and effective community participation;
- Be aligned with and accountable to local institutions;
- Ensuring accountability between different levels of government and with non-state actors;
- Be accepted/perceived as legitimate by different stakeholders, and
- Allow aggregation bodies or service providers to receive fair compensation.

The distribution of benefits in cash or kind depends on many factors. There is a consensus that the determination of the method of distribution (cash or in kind) should be left to the preference of beneficiaries. In the distribution of benefits considerations should be given to size of local populations and the number of households to ensure that carbon revenues are substantial.

22.5. Costs of REDD+

For Sudan the real benefits and costs are not yet clear. This in turn will have impact on the sustainability of REDD+ initiatives. The focal points in the different regions have no idea about the real costs of REDD+ implementation. They recognized the different costs (opportunity cost, transaction cost and implementation cost), but they don't know how to calculate these costs. If the high expectations of beneficiaries are not met, trust and political will for REDD+ can be undermined. Transaction and implementation costs, as perceived by the focal points, are likely to be high, including for governance reforms, though these costs are often overlooked. It is important to consider that benefits and costs are likely to be dynamic, changing over time and varying in how they accrue to communities and vulnerable people. Table (12) shows the different costs and the examples of potential REDD+ costs.

Table (12): Potential REDD+ Costs

Cost types	Examples of potential REDD+ costs
Opportunity	- Access to NR for livelihoods, value added activities and subsistence use - Tax revenue

Implementation	- Land use planning, Land tenure and governance reforms - Improvement and protection of forests and agriculture management - Capacity building
Transaction	- REDD+ program development (policy changes) - Project design and development - Negotiating agreements - Emission reduction certificates - Safeguard system development and monitoring

22.6. Legal Aspects of Benefit Sharing

22.6.1. Constitutional Benefit Sharing Provisions

Under the title of natural wealth, the Sudan's constitution state '*Natural resources under or on the surface of the earth and in the territorial waters is public property regulated by law; and the State shall provide plans and appropriate conditions for the development of the financial and human resources necessary for utilizing such wealth*'. Accordingly, benefit-sharing arrangements are in line with the constitution of the country. For Sudan's REDD+ initiatives, it would be much better if the constitution clearly specify how the revenue from forestry resources should be divided between different beneficiaries. Such constitutional rules could have important consequences for benefit sharing in a REDD+ context. In Sudan, REDD+ benefit sharing rules have yet to be established in the legislative system. The forest policies of the country provide some guidance and relevant experience, but, benefit sharing is not fully operational, particularly with regard to JFM. Weak or poorly enforced laws can make those in a position of less power vulnerable to losing out on their equitable share of benefits. Clear and fair benefit sharing laws can help actors hold one another accountable and help protect vulnerable people's rights and interests.

Pilot projects are demonstrating ways that communities can define their benefit sharing terms. Benefit sharing may also be best covered by new regulation, rather than formal policy, to allow for relatively greater flexibility and ease of implementation. Such laws should be clear, strong, and enforceable, while also allowing local adaptation and appropriate community autonomy. Good policy is important but not sufficient in itself. There is a need for strong political will, sound governance and institutional arrangements, and substantial resources, including financing, time, and technical/ human resources capacity.

22.6.2. Contractual Benefit Sharing Arrangements

Since the constitution of the country does not clarify the benefit sharing, contractual arrangement is the best method for benefit sharing arrangements. This method can be used to determine benefit sharing arrangements at the project level and to clarify the agreement between different stakeholders and allow parties to set aside issues in dispute. The focal points interviewed in the sample highlighted the importance of contracts in the arrangement of benefit sharing for Sudan. In order to avoid conflicts and disputes associated with benefit sharing, the focal points emphasized that the contracts between the buyer of emissions reduction credits and the sellers could contain a 'dispute settlement clause' which outlines the procedures to be followed in the event of a specified category of dispute. The importance of the contracts will gain momentum particularly for issues linked to land and resource rights, which are expected to arise from REDD+ implementation.

22.6.3. Land Tenure and Benefit Sharing in REDD+

Clear land tenure and forest tenure are prerequisites for the effective implementation of REDD+ initiatives. In Sudan, land tenure is unclear and, in many cases, responsible for natural resource-based conflicts particularly between nomads and settled farmers. It also creates confusion regarding who is responsible for forest conservation and who is entitled to benefits. The Sudan government holds de jure titles of unregistered land but cultivars enjoy de facto customary rights. Customary land tenure is the most dominant in the rural areas of Sudan, whereby land is owned and disposed of in accordance with

customary regulations. The principal categories of customary tenure are communal/tribal tenure where ownership of land occupied by the community or tribe is vested in the paramount tribal leader as owner, who holds it in trust for the entire group, and clan/family tenure where land is vested in the head of the group as owner or trustee for the entire group. Customary tenure recognizes the rights of the individual to possess and use land subject to superintendence by his family, clan or community. The disadvantage is that it does not encourage record keeping, often making it difficult to resolve land use disputes. Other types of land tenure include freehold tenure and leasehold tenure. This situation necessitates the importance of taking action to make the necessary reforms to make land tenure clear to avoid false claims and disputes. Even when statutory tenure is seemingly clear, there may be land conflicts. These challenges should be acknowledged and addressed in the REDD+ benefit sharing mechanism.

23. Other Key Elements of Benefit Sharing Design

The Cancun safeguards provide guidance regarding other attributes of a benefit sharing system, which are mirrored in other frameworks/standards and the observations of leading organisations. Public participation can help to ensure accountability of REDD+ implementation to affected stakeholders, and transparency is important to ensure the integrity of REDD+ financial flows. Other important key elements of benefit sharing design beside participation and transparency are capacity building and sustainability.

23.1. Public Participation in Sudan

Participation can be considered as a key element in benefit sharing mechanism since they help to balance rights and interests of different stakeholders. It includes participation in REDD+ decision making, and participatory approaches to undertaking REDD+ activities. Plates (3a and 3b) show the participation of local communities in developmental activities. The focal points at the different regions assured different entry points for stakeholder participation, which include:

- participation in the development of national strategies and action plans;
- participation in the preparation of regulatory instruments; and
- participation in decision making on particular activities.

Plate (3a): Participation in afforestation program **Plate (3b): Consultation with local communities**

Historically, public participation in development activities and other fields in Sudan are evident particularly in rural areas. Traditional participation in the Sudan is known as *nafir* (reciprocal exchange of labors) where community members agglomerate to accomplish certain tasks. The majority of the NGOs who worked in Sudan did not find any constrains regarding participation of local communities in projects activities. All the visited communities during the course of data collection for this assignment expressed their willingness to participate in REDD+ initiatives. The traditional participation need to be clearly regulated at the national and regional levels. The focal points recommended the establishment of permanent multi-stakeholder bodies like GAPAs, farmers union, herders union and civil societies to regulate and enhance the participation of local communities. The focal points perceive participation in REDD+ initiative as a means to ensure transparent and informed decision making, build partnerships, facilitate law enforcement and prevent conflicts and corruption. Special measures may need to be taken to support the participation of vulnerable or marginalized groups. When dealing with participation, special consideration should be given to gender which is important in benefit sharing as REDD+ will have gender differentiated impacts, due in part to women's and men's different powers, roles, rights and

responsibilities in forest governance. The role of gender is highly acknowledged by the focal points of the different regions.

23.2. Transparency

A country's anti-corruption framework will play an important role in REDD+ implementation. The focal points accentuated that transparency can contribute to the success of benefit sharing through participation in terms of access to information. A key component for effective transparency and accountability is timely information sharing in project conceptualization, design, implementation, and monitoring. Information should be accessible to all parties, including communities.

23.3. Capacity and Sustainability

Equitable benefit sharing requires resources and the capacity of individuals and institutions to effectively implement the mechanisms. Capacity building for local communities and staff of government institutions is important for the implementation of National REDD+ Strategy. The institutional and policy reform require supportive action by many different means, including training for increased professional capacity and pro-innovation attitudes. The in-service training of GoS staff in natural resources management sectors has been particularly weak in recent decades. Much of the academic and in-service training is in need of revision in the light of a rapidly changing society, economy and environment. That includes issues of natural resources management governance and decentralised management, an understanding of socio-economic and environmental economic analysis, green economics and international climate change mechanisms and instruments, IWRM in relation to NRM, IT and information management, etc. Gender objectives are cross-cutting in almost all topics.

The focal points identified the following areas of training: file keeping, adult learning principles, training needs assessment, methods and awareness raising to make local people qualified to understand and claim their rights and responsibilities. For the government institutions, the focal points suggested the following areas of training, namely, valuation of vegetation cover, calculation of emission, monitoring, reporting and verification, community mobilization and sensitization, sustainable livelihoods approach, participatory approaches, land use planning, conflicts resolution, and evaluation.

24. Scale of REDD+ Implementation

Since benefit sharing is immature, even for the pioneer countries in Latin America, Asia and Africa, it is advisable to formulate 2 – 3 projects in Sudan as pilot projects. The entire interviewed sample of the focal points asserted that the two forests which were subjected to JFM in Sudan (ELrawashda and Elain Reserved Forests) could be considered in the piloting of benefit sharing mechanism. It is true the approach of JFM was introduced by NGOs. Local NGOs can play similar role for the implementation of the benefit sharing mechanism in Sudan.

25. Sources of funds for Benefit Sharing in Sudan

In the UNFCCC process a donor model (grant-based approach) channels publicly sourced REDD+ finance through multilateral funds or bilateral partnerships. If this fund is available for Sudan, it can be used for funding pilot project(s) relying on the local level for designing incentives. Since Sudan is in the state of early stage of implementation 'readiness' phase which can primarily be financed by donor-funded capacity building initiatives (UN REDD, the FCPF). The focal points suggested other sources of finance such as the National Trust Fund, according to which the country should establish Carbon Bank to be seeded from different sources like the taxes and royalties, the fees of Environmental Impact Assessments, and fees of vehicles licensing, and others. Moreover, other sources, in the absence of international NGOs, local NGOs can act as a mediator for the implementation of benefit sharing mechanisms in Sudan.

Moving forward, private sector finance is expected to play a crucial role in REDD+ implementation given the scale of finance likely to be required.

Key issues to be addressed when designing a fund include the fund's objectives, capitalization, governance structure, fiduciary management, implementation, conflict management, stakeholder participation, monitoring and reporting, and the basis upon which payments will be made. It is possible that existing fund structures could be utilized for the purposes of REDD+ implementation.

26. Monitoring for Benefit Sharing in Sudan

Transparent monitoring is an important tool for the distribution of benefit sharing. Monitoring is always linked to reporting. A costs and benefits monitoring system should be integrated with related REDD+ systems, including the national carbon accounting system and the safeguards information system. Sudan can implement REDD+ benefit sharing through the following possible steps:

- Continue learning from PFM, and CBNRM/PES to identify key lessons for REDD+ benefit sharing mechanism.
- Consult with stakeholders to understand what likely benefits and costs will be and how they will impact livelihoods, and what sharing mechanisms will work best at various levels and contexts in Sudan.
- Clarify the options for benefits distribution and sharing at various levels, including from the national to project level.
- Identify policy needs and revise or introduce new policies as needed to support REDD+ and the equitable sharing of its benefits.
- Identify resources, institutional arrangements, and capacity needs for ensuring that REDD+ benefit sharing mechanism go beyond policy and can be practically implemented
- Integrate REDD+ benefit sharing mechanism with broader REDD+ framework such as MRV, National safeguards system, and grievance and redress mechanism.
- Harmonize REDD+ benefit sharing mechanisms with the sharing in related sectors.

27. Benefit Sharing Options in Sudan

From the group discussion with the focal points at the five regions, two benefit sharing options emerged. The first is the Participatory Forest Management (PFM) (CFM and JFM) and PES. The second exists within the Gum Gardens (GAPAs) and establishment of greenbelts at agricultural schemes. The main roles of the GAPAs are: provision of credit services, facilitation of training and extension services, improving producers' prices through collective marketing. The other major role of GAPAs is improving the bargaining power of the producers and hence their benefits for the production and marketing of Gum Arabic. This is largely associated with the collective marketing arrangement that can reduce the transaction costs as well. The JFM is practiced in two sites in Sudan and gave fruitful results, while CFM started to gain momentum with the influx of NGOs in the mid of eighties. Now this approach has spread and is almost practiced across the whole country. The three policy approaches would likely be associated with different land and carbon ownership regimes under REDD+. First, the PES approach has been conceptualized largely as payments to landholders for conservation of their own land holdings and thus would work best with a tenure regime allowing for private ownership and control of land and carbon. Within that generality of private ownership, however, exceptions would exist for programs such as intergovernmental fiscal transfers made to local governments to maintain or enhance carbon stock on state-owned land. The PFM approach can be seen as incorporating instances of both property regimes. JFM retains land and likely also carbon ownership with the state, whereas CFM generally devolves ownership and control of land to communities, and thus most likely carbon as well.

This section reviews two leading forest sector policy approaches relevant to benefit-sharing for reducing emissions from deforestation and forest degradation (REDD+): PES and PFM. These forest management and conservation approaches are chosen due to their broad application across Sudan and their potentially

significant benefit sharing implications. None of the two approaches addressed here guarantees "better" or "more equitable" benefit sharing by design alone. Rather, an attempt is made to explore the differing benefit sharing mechanisms and their efficiency, effectiveness, sustainability and equity. Balancing equity with effectiveness and efficiency in benefit distribution will require active, strategic planning. Due to the high transaction costs in registering, monitoring, and distributing benefits to many small landholders; bundling, streamlining, and simplifying procedures and legal hurdles seem essential strategies for PES and PFM-based approaches. Similarly, increasing prices paid per hectare as landholding sizes decrease could help ensure payments are adequate to meet transaction and opportunity costs. Finally, elite capture/unequal benefit distribution may be avoided by prioritizing eligible benefit recipients.

27.1. Payments for Environmental Services

PES presents one of the most important developments for financing ecosystem conservation efforts in recent decades. Many implementing countries and observers have embraced direct PES deals with private landholders or communities as the preferred policy approach for REDD+ due to the stronger performance of financing incentives and service providers than traditional funded conservation programs. PES presents one of the most important developments for financing ecosystem conservation efforts. This approach can better be applicable across the Gum Arabic belt. Payments for GAPAs contribute to mitigation of emission through conservation of Hashab and Talih trees since the Gum Belt represent a frontier defence line against desertification. The approach of PES embraced direct PES deals with private landholders or communities as the preferred policy approach for REDD+ due to the stronger performance of financing incentives and service providers than traditional funded conservation programs. Socioeconomic equity with regard to participation of local and indigenous communities, exclusivity of land holding tenure, and conditionality of payments all can pose challenges for PES, but recent innovations in project design and implementation are also encouraging. A national PES policy approach, funded from more than one income source and combined with domestic finance, could likely present the overarching REDD+ approach with PFM revenue sharing. The result of PES commonly consists of payments to individuals or communities in exchange for either not performing land use practices expected to result in environmental or natural resource degradation, or for actively performing land use practices that are expected to create positive environmental benefits. PES is embraced as the preferred policy approach for REDD+ due to the stronger link between funders and service providers than traditional funded conservation programs, and the resulting conditionality creating incentives. PES likely will not work as a REDD+ policy model in all contexts, due to the need for a variety of threshold institutional preconditions. Although not the only relevant issues, exclusivity of land rights and equitable benefit-sharing arrangements are found to be essential for the PES model to function for REDD+.

27.1.1. Tenure and Exclusivity

Many PES and REDD+ pilot schemes developed to date have made payments to individuals with secure land tenure. To ensure the success of any policy approach, land tenure will need to be clarified especially where incentives are meant to target intended land owners and users. REDD+ presents a thorny dilemma of how to equitably, yet efficiently, resolve tenure at a wider scale, given the complexity of some of the underlying factors such as de jure ownership, conflicting web of de facto customary ownership, access, or use claims of local and indigenous forest dwellers or communities. Much of the PES and REDD+ policy discussion to date has favoured individual land ownership while ignoring the fact that land is still communally shared in many areas under consideration, especially where occupied by indigenous peoples. Although customary lands unrecognized by statutory authority may risk being lost to outsiders who can falsely claim titles on land, all attempts to convert these arrangements into individual title have resulted in considerably negative effects and generated opposition and confrontation based on cultural grounds. In addition to greater equity, recognizing communal property rights may have important advantages in terms of efficiency, effectiveness, and even sustainability, although, such recognition may raise issues of horizontal distribution if community elites capture most of the benefits. However, depending on local contexts, devolution of land to local communities and use of incentive-based

approaches alone may not be enough to adequately ensure conservation of some pristine areas or highly endangered biodiversity hotspots. In such cases, it may be important to legally delineate a limited number of priority areas where underlying, well enforced legal protections on forest lands may complement forest conservation incentives such as REDD+.

27.1.2. Equity

Many PES transactions take place on rural lands in developing countries. As a result, equity issues support targeting the sharing of benefits with poor and local populations and measures to prevent the wealthiest, best positioned, or most influential members of ecological economies. A purely efficiency driven PES system would allow transactions to be made by those supplying the environmental service at the lowest price per unit, and poverty alleviation would be seen strictly as a secondary benefit where possible to be enjoyed without extra efforts. Targeting poor participants is a more active version of equal opportunity based on the idea of relative need, whereby forest communities are ensured to have equal participation in REDD+ decision making and stake in the proceeds. Moreover, traditional access, ownership and use rights systems, present a challenge for PES payments where such rights are vested in entire communities rather than a single landowner. The conditionality element of PES requires payments upon performance, which have the effectiveness as a measure for rewarding environmental outcomes, and potentially efficiency advantages in more easily measurable outcomes. In order to maintain a balance of adequate conditionality and equity by covering participants' initial costs, PES proponents emphasize timing payments periodically, with sufficient payments or in-kind benefits upfront so as to facilitate poorer landholders' participation. One method to help ensure conditionality is to structure the PES contract as a conservation easement, such that immediate injunctive actions may be brought against landholders who violate easement terms.

27.1.3. Sustainability of PES

A national PES-based policy approach for REDD+ benefit sharing, most likely provides the greatest domestic sustainability compared to PFM-based policy approach. It can be strengthened through building self-funded national systems for environmental services. Developing all or partly self-financed PES/REDD+ systems at a national or regional level is an important step to consider implementing, to the extent possible, given the increased ability to cover opportunity costs if REDD+ is delayed in implementation or international funds are not enough alone. However, if properly designed and implemented, REDD+ could provide both the necessary increased capacity and institutional infrastructure for many lesser developed countries to develop their own autonomously financed PES systems to complement REDD+ international funding or carbon credit sales. To ensure sustainability of PES there is a need to address the challenges such as ownership, ensuring appropriate monetary valuations, incentives to landowners, bureaucracy and weak governance, transaction cost, MRV etc...

27.1.4. Efficiency of PES

It seems likely that the PES and PFM approaches discussed could face greater difficulties in scaling up quickly. Bundling landholders' in-group contracts and simplifying both verification and national recognition of customary or informal land title could help address such PES and PFM challenges

27.1.5. Effectiveness of PES

Among the different approaches considered, perhaps what is most clear is that the nationally uniform revenue sharing approach would likely have a low impact due to potential over and underpayments of participants, given potential differences in opportunity costs. This could be solved by devolving the decision of percentage payments to a provincial level and including district level quantitative and qualitative data concerning amounts and distribution of revenues. Additionally, within the PFM approach, CFM (and similar initiatives that devolve forest ownership, management responsibilities and benefits to local and indigenous communities) in most instances would be a highly preferred option to JFM.

27.2. Participatory Forestry Management

PFM offers strong promise as a decentralized management strategy to include small landholders in a future REDD+ delivery system. Decentralization and devolution of state power is inherent in most PFM approaches, whether democratic, or via non-state organizations. Participatory forestry as a concept is not new. It has been well established for centuries in many countries. Increasingly, PFM proponents are recognizing the importance of combining sustainable local forest management with avoided deforestation due to the high opportunity costs from strict avoided deforestation for forest-dependent communities. Vertical and horizontal benefit distribution is a real challenge for PFM. In order to achieve higher potential profits from sustainable timber and forest product sales, there is a need for better access to markets and increased capacity and start-up funding. Without clear legal protection for community rights and benefits from their involvement in both CFM and JFM forest operations, agreements can be rescinded.

27.2.1. Joint Forest Management in Sudan

In this approach the governments retain ownership of forest land and villagers are allowed to benefit from forest resources. Under the JFM, governments retain ownership of forest land and villagers are allowed to live in and benefit from forest resources. There are some examples for JFM in Sudan. JFM was practiced in Rewashda reserved forest (Gadarif State) and Elain forest reserves (North Kordofan State) with the attempt to create agreements between local communities or groups of resource users and conservation authorities for negotiated access to natural resources, which are usually under some form of statutory authority. FAO and ADS contributed significantly to the adoption of the intervention in Rawashda forest reserve. In this approach, villagers have access to agricultural land, grazing land and water points. The land use practice adopted was agro forestry system "*tungia*". This process was based on mutual benefits between the local community and FAO/ FNC project. The system was found economically sound in establishment of forest crop resulting in the lowest expenses in execution of a reforestation program. ADES/FNC project developed a collaborative system with the local villagers based on a contract between the two partners, for the use of the forestland property. Each individual farmer is granted a piece of land inside the forest and obliged to protect the young generation for a period of 4 years.

The SOS/FNC project in Elain natural forest reserve is another example of JFM, a forest conservation management system based on local community involvement. The management system adopted a system of organizing people in the management process in order to prevent destructive illegal felling and at the same time to satisfy people needs from the forest products. Elain forest has been put under forest management plan conducted as joint activities between the FNC and the SOS Sahel in collaboration with the local people. The system played facilitative role in assisting villages' entry to registered community forests and then establish a management plan. The objectives of management were decided and a simple zoning system was used to determine how different parts of the forest are to be utilized. For the implementation of the rules, patrolling is usually required, together with a system for recording offenses, collecting fines, etc. An added monitoring system would result in a forest management plan. For the formulation and implementation of the forest management plan, the village appoints a Village Forest Committee, elected by the full Village Assembly. What is being created on the ground through these efforts is in fact something, which becomes a village forest reserve, although no such concept exists in legal terms, yet.

27.2.2. Community Forestry Management

CFM generally occurs in forests with lower carbon and biodiversity levels but relatively higher initial deforestation and degradation levels. CFM generally performs better than JFM due to the higher degree of local control and benefits received, however it also entails risks and administrative difficulties for local communities involved. An architectural comparison of the two policy approaches (JFM and CFM)

profiled shows no 'one size fits all' solution and considerable potential for combinations of the two approaches. If mixed with sustainable forest management activities, it could potentially provide a high degree of sustainability to CFM activities under the PFM approach. Recent innovations in PES (or hybrid PES/ PFM) approaches could greatly improve both efficiency and equity. PFM originated generally in government led initiatives to increase efficiency of forest management by increasing local community control and reducing the poverty of those living in and around forests. PFM is not incompatible with PES approaches, and indeed many PFM proponents and programs are turning their attention to include it in their portfolio of work. It is recommended that decisions on structuring benefits be devolved to local governance levels to include community actors.

28. REDD+ Projects Boundaries

Generally, in Sudan, a mechanism for distributing carbon payments from the international or national level to the local level has not yet been established, which may necessitate the establishment of a National REDD+ Trust Fund. According to the findings of this assignment, there are three approaches that might be considered in Sudan. Each of these approaches would require careful design and good governance. These approaches are also not necessarily mutually exclusive. This is demonstrated by the nested approach which should be advocated. In all cases, the aim should be a reliable, transparent, and accountable system that ensures the local people contributing to and bearing the costs of REDD+ gain the greatest possible benefits. Table (13) shows the distribution model of the benefit sharing mechanism. The bulk of the focal points and local communities preferred the nest approach. This preference is supported by the notion that some activities will be conducted on an individual basis while others are communal. Accordingly, there is a need for different benefit sharing models.

PFM may not be the only option for implementing REDD+ in its framework. REDD+ benefit sharing should be designed, implemented and monitored in accordance with the national safeguard system which focus on the following relevant considerations: participation; free, prior and informed consent; representation; transparency; accountability; gender equality; respect for human rights; land, forest and carbon tenure; dispute resolution; monitoring; capacity; and sustainability. Benefit sharing should take account of REDD+'s broader governance context and political economy. Mechanisms should also be integrated with other livelihood strategies and harmonized with other natural resource strategies. This will require policy changes within and outside of the forestry sector. Next steps towards establishing equitable REDD+ benefit sharing in Sudan may include continued learning and consultation, clarifying options and policy needs, identifying resources, and integrating and harmonizing benefit sharing with broader REDD+ and forest governance initiatives. PFM will be a key anchor for REDD+ in Sudan. Likewise, REDD+ can help expand PFM by providing additional incentives and resources to meet costs and technical requirements. A particularly challenging component of PFM, from the perspective of ensuring equitable benefit sharing, is JFM. Establishing fair and mutually acceptable agreements for sharing JFM costs and benefits has been a major obstacle in the implementation of this program.

Nonetheless, REDD+ might provide a new impetus to get equitable JFM in place. Communities have legal rights to retain a high percentage of local natural resource revenues under joint agreements in many countries. During the course of data collection, local communities preferred community and individual distribution of benefit sharing, monetary benefits for individuals and non-monetary benefits for the communities. Since the carbon payments, distribution mechanism has not yet been created in Sudan; a National REDD+ Trust Fund should be established. Table (13) shows the different financial transfer options between the international/national and local level for Sudan. The focal points in the different regions highlight the following reasons for equitable benefit sharing: ensure that vulnerable people are not made worse off and that rights are respected; fulfil obligations to realize positive net benefits for forest communities and others contributing to REDD+, reduce risks for REDD+ investors and funders, enhance REDD+ effectiveness in reducing emissions by establishing clear incentives, enhance forest conservation and related environmental services, build legitimacy and support for REDD+ locally, nationally, and

internationally, enhance sustainability and people's capacity to reduce deforestation while meeting their livelihood needs, build trust and encourage active participation, and promote justice by reducing elite capture.

Table (13): Transferring between the international/national and local levels in Sudan

Options (approach)	Characteristics	Possible strengths
National	international payments collected by central body and distributed to local actors	A void governance problems, payment delays, and transaction costs
National	international payments collected centrally and distributed through the regional and local government system	May minimize some implementation cost by following established channels; best leverage support of District Government
Project	individual projects/actors directly access international market, investors, or donors	Contributing communities directly benefit
Nest	including elements of national and project approaches. Requires consistent emission accounting between project-based, subnational, and national levels	Allow substantial financial benefits for communities and incentives for deforestation (access to carbon markets).

29. Monitoring for Sudan's Benefit Sharing

Sudan can implement REDD+ benefit sharing through the following possible steps:

- Continue learning from PFM, and CBNRM/PES to identify key lessons for REDD+ benefit sharing mechanism.
- Consult with stakeholders to understand what likely benefits and costs will be and how they will impact livelihoods, and what sharing mechanisms will work best at various levels and contexts in Sudan.
- Clarify the options for benefits distribution and sharing at various levels, including from the national to project level.
- Identify policy needs and revise or introduce new policies as needed to support REDD+ and the equitable sharing of its benefits.
- Identify resources, institutional arrangements, and capacity needs for ensuring that REDD+ benefit sharing mechanism go beyond policy and can be practically implemented.
- Integrate REDD+ benefit sharing mechanism with broader REDD+ framework MRV, National safeguards system, and grievance and redress mechanism.
- Harmonize REDD+ benefit sharing mechanisms with the sharing in related sectors.

30. Sudan Law and REDD+ Benefit Sharing

Benefit sharing rules can be established through several mechanisms, including statutory law, customary law, and contracts between project partners. Complementary rules can make the system stronger. In Sudan, REDD+ benefit sharing rules have yet to be established. The forest policy of the country provides some guidance and relevant experience, but, benefit sharing is not fully operational, particularly with regard to JFM. Weak or poorly enforced laws can make those in a position of less power vulnerable to lose out their equitable share of benefits. Clear and fair benefit sharing laws can help actors hold one another accountable and help protect vulnerable people's rights and interests. At the same time, benefit-sharing laws that are too prescriptive may limit local actors' ability to adapt mechanisms to their circumstances. Pilot projects are demonstrating ways that communities can define their benefit sharing terms (Peskett et. al. 2008). Benefit sharing may also be best covered by new regulations, rather than formal policy, to allow for relatively greater flexibility and ease of implementation.

31. Pilot benefit sharing project for Sudan

For the implementation of a pilot project for benefit sharing, the prospective stakeholders were consulted and interviewed for formulating a pilot project. The general characteristics of the stakeholders were**;**

- **Age groups:** Different age groups were considered in this study to explore the ideas of different generations. Young people (less than 18 years) were represented by 3.6%, the youth (19 – 30 years) was represented by 19.7%. the mature people were represented by 20.3%, and the rest of the respondents (56.5%) are old people.
- **Educational level:** As far as the educational level is concerned, there are no illiterates in the selected sample and about quarter (26.9%) of the respondents enrolled to university level. The rest of the respondents followed their education to primary, secondary and khalwa level with 23.8, 25.9, and 23.3%, respectively.
- **Sources of income**: most of the respondents (65.3%) are farmers and 11.9% are gum producers. On the other hand, animal rearing is practice by 8.3% of the respondents. The rest of the respondents 14.5% their main source of income is drawn from private business.

31.1. Status of the vegetation cover as perceived by the respondents

As far as the vegetation cover in the Sudan is concerned, the respondents showed their assessment to the vegetation cover. The present status of vegetation cover: most of the respondents (89.1%) assessed the vegetation cover as deteriorating compare the past years due to several factors, while 3.6% asserted that there are no dramatic changes in the stocking density of the vegetation cover in the country. Few respondent (7.3%) stated that across the country there is an increase of the vegetation cover compared to the past years. This variation is attributed to differences in the geographic sites of the respondents. The negative impact of deforestation is trifold; 36.8% of the respondents believe that the deforestation has contributed to the displacement of many communities in rural areas, while 31.6% asserted that mortality of livestock is one of the impacts of deforestation because forests are considered as a natural rangeland for a wide spectrum of nomads. Moreover, 31.6% accentuated that the deforestation contributed to the diminish of forest products, particularly non-wood forest products which contribute to income generation and household consumption in the rural areas. Despite the high rate of deforestation in the country, due to several factors among which is climate change and variability, most of the respondents (97.9%) showed their willingness to participate in the afforestation and reforestation programs that contribute to the restoration of the vegetation cover in the country. The rest of the respondents (2.1%) indicated that afforestation and reforestation is not a top priority for their living.

31.2. Relationship between local communities and FNC

There is a relationship between local communities in the different parts of the country and the FNC which is responsible for the management of forest resources in the country. Historically, local people in Sudan believes that the forests are the gifts of the God and they have the right to enjoy the benefits rendered by the forests. In the other hand the staff of the FNC consider the local people resident around forest resources are offenders and responsible for the criminal acts associated with forests. The finding of this study revealed that 83.4% of the respondents confirmed there is a relationship between the local communities and the staff of the FNC, the other respondents have opposing opinion.

License for tree felling was mentioned by 40.4% as the main relationship between local communities and the FNC, while 39.4% asserted that their relationship with the FNC take the form of right and privileges through which they have the right to collect dead wood. Thirty-nine per cent of the interviewed sample stated that their relationship with the FNC takes the form of permissions for grazing.

31.3. Relationship between trees and temperature

Relationship between trees and amelioration of microclimate: the majority of the respondents (90.7%) believes that trees reduce the temperature through creation of shade area and enhancement of wind blow, while 9.3% asserted that there is no direct relationship between trees and microclimate. Warming of the country is evident as accentuated by 89.1% of the respondents who claimed that there are steadily increase in the temperature in the country, particularly during the last decade. The rest of the respondents showed that there is no any increase of the temperature. Most of the respondents (97.7%) attributed the

substantial increase in the temperature to eradication of trees, and they do believe that there is direct relationship between existence of trees and decline of average temperature.

31.4. Pilot project Organization

For Sudan since the mechanism for distributing carbon payments from the international or national level to the local level has not yet been established, this necessitates establishment of pilot projects defining benefit sharing focusing on PFM. This can be implemented through CFM, where the community takes the lead in managing land, or JFM, where the government retains ownership of land but allows villagers to live on and benefit from it. Pilot projects are demonstrating ways that communities can define their benefit sharing terms. The selection of these sites is due to the fact that the national safeguards system which focus on relevant considerations include participation of local communities; free, prior and informed consent; representation; transparency; accountability; gender equality; land, forest and carbon tenure; dispute resolution; monitoring; capacity; and sustainability can be assured.

It would be much better if either of Rawashda (Gedarif State) or Ain forest (North Kordofan State) is selected for this piloting since the two sites received considerable efforts under the JFM where FAO and SOS Sahel UK attempted to implement JFM and attain fruitful results. Another scenario is to select one of the community forests in Sennar State where the experience of community forestry is sound and managed on sustainable basis. It is very important in this stage to identify actors or organizations to be eligible to receive what kinds of benefits for what types of activities, and how those funds should be transferred. Within each of these vertical distribution levels, there is a need to consider how to horizontally distribute REDD+ benefits in order to ensure the correct individuals or groups receive payments or in-kind services. Local communities who are a short distance away from the specified forests should not be overlooked to avoid disputes. The time frame for the pilot projects should last 5 years. The suggested payment model depends on performance and should be result-based. Stakeholders should receive 30% of the payments when they plant 50% of the seedlings, another 30% of the payment will be distributed when all the seedlings are planted. After two years, according to the reporting of the monitoring unit, if the plantations are successful 20% of the payments should be distributed to stakeholders. After the 5 years, the last instalment (20%) will be distributed according to the reporting of the monitoring unit. The next step after determining benefit sharing is to formulate administrative or organizational structure of the projects. These pilot projects should be implemented by the federal FNC. The directors of the FNC at the states will be the coordinators for the projects. Moreover, at each state there should be a focal point, preferably an extensionist, to make the necessary communications with the centre and follow the implementation of the project. Figure (9) shows the managerial structure of the project. A steering (advisory) committee and technical committee should be formulated from the line ministries who are stakeholders in Sudan REDD+ initiatives.

31.4.1. The Project Avisory Committee (Steering Committee)

As a means of providing the project with high-level oversight, a Project Advisory Committee should be formed at the sites of the benefit sharing projects during the projects' inception phase. The roles, responsibilities and membership of the PAC should be put in place by State Decree. This will help ensure that the Governors of the represented states will have strong support for the projects. The Advisory Committee should meet on a biannual basis to review progress and achievements, and will be mandated to make recommendations concerning implementation strategy. In addition, alignment with government policy should be an important responsibility. The members of the steering committee should be from the line ministiries and the FNC.

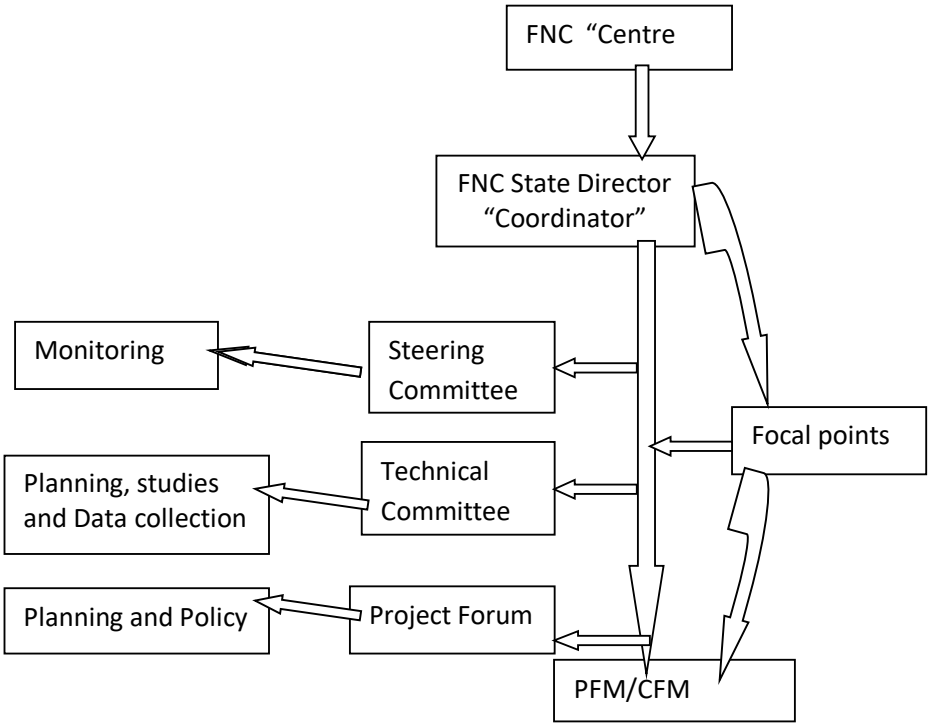

Figure (9): Organizational Structure of Pilot Project

31.4.2. The Project Technical Committee

The Technical committee should be established during the project inception phase at the selected sites. It should be convened and chaired by the States' level Mnistries of Agriculture where the projects will be implemented. The Technical Committee would be chaired by the Director General of the Ministry, and for overall performance against its work plan, the Technical Committee would be accountable to the Project Advisory Committee. The purpose of the Technical Committee is to ensure effective coordination between the centre and the various government instituions involved in the project implementation. It will also provide high quality technical guidance and oversight of the project's work. It may also address operational problems and obstacles facing the project during the course of its implementation. Moreover, the Technical Committee would be expected to become the vehicle that drives the technical aspects of the projects including defining key concepts and structuring the system for benefits sharing. Working with the Technical Committee, the projects shall commission a range of assessments, studies and surveys, which together will yield the hard data required for benefit sharing. In this scenario, the Technical Committee would be envisioned to have a higher level planning and coordination function, and would play a leading role in the creation and setting-up of the "forum". In consultation with the forum, the Technical Committee would be responsible for policy and technical aspects of benefit sharing at the selected sites. Such responsibilities would include medium to long term planning, recommending priority – payment modalities, monitoring of land use, leading disaster risk reduction initiatives, and environment protection.

31.4.3. Pilot Project Forum

The benefit sharing forum for the pilot projects is envisioned to operate within the planning and policy 'space' created by the Technical Committee, and would be responsible for problem solving and decision making around benefit sharing mechanism at the project sites. Such responsibilities should include setting of rules for payments to stakeholders, rules of access for forests and natural resource-based conflicts

prevention and mediation of disputes. It is possible to adopt the planning approaches for community actions to engage primary stakeholders such as local communities, households, individuals, traditional leadership and local-level government authorities in the project areas in consultations on what steps can be taken to improve implementation of benefit sharing mechanism. The consultations will result in heightened awareness of local challenges. The process will also bring together the different livelihoods groups at the local level. It will also help promote transparent dialogue and a shared understanding of the different needs, priorites and motivations of each of the livelihoods group.

The proposed project should have an Institutional Development Coordinator (IDC) for coordination and communication with the different government institutions. There should be regular and systematic meetings between the IDC and the Project Manager for monitoring and on-going evaluation of the project activities. Moreover, the project manager should have extensive experience of managing multi-sectoral interventions, and brings specific expertise in public sector natural resource management and policy development. The Project Manager, while providing overall supervision to all aspects of the project, will have a particular focus on the development of the proposed system of catchment management and the building of institutional capacities and policies needed to support, scale up and replicate that system in other states. Accordingly, the Project Manager will work closely with the Institutional Development Coordinator, and will receive significant support and guidance from the centre.

31.5. Benefit Sharing Arrangements for the Pilot Project

The best benefit sharing arrangement for these pilot projects is the nested approach which can be advocated since it gives the possibility of using the national input arrangements and sub-national benefit sharing arrangements. In this approach special consideration should be given to equitable benefit sharing to ensure that the local people are not made worse off and that rights are respected; Obligations to realize positive net benefits for forest communities and others contributing to REDD+ should be fulfilled, REDD+ effectiveness in reducing emissions should be enhanced through establishing clear incentives, Forest conservation and related environmental services should be enhanced and sustainability and people's capacity to reduce deforestation while meeting their livelihood needs, building trust and encouraging active participation should be promoted. This can only be made possible through consultation with stakeholders to understand what likely benefits and costs are foreseen and how they will impact their livelihoods, and what sharing mechanisms will work best at various levels and contexts in Sudan. For effective benefit sharing, there is a need for consultation with communities on the payment design, as a top priority. Additionally, evidence suggests that local communities could help inform decisions regarding the timing of payments, as continuous cash flow will be needed in order to reflect performance based aspects of PFM/REDD+. Further, applied research and pilot testing could be undertaken to ensure efficient methods for safeguarding local and indigenous community participation in the design and implementation of benefit sharing schemes.

The best arrangement for the distribution of the benefits as perceive by stakeholders where any type of arrangement has its own characteristics. The finding of this study revealed that 40.9% of the respondents prefer to deal directly with the donor or the carbon market. This preference can be verified by the fact that the levels of corruption in the country reached unbelievable level. Accordingly, farmer don't want to deal with the staff of the FNC or other Sudan's governmental institution. On the other hand, 35.2% of the respondents prefer to deal directly with the FNC at the state level, while only 2.1% suggested arrangements with the FNC at the federal level. The rest of the respondents (21.8%) suggested the long chain which start with the international carbon market to the FNC at the federal level followed by FNC at the state level and finally to the beneficiaries.

31.6. Legal aspects of benefit sharing

Although the program of REDD+ was started some years ago, but considerable proportion of the people of the Sudan are not familiar with the program. In this study 70.5% of the respondents asserted that they

are familiar and aware with the REDD+ program with respect to its objectives and activities. the rest of the respondents (29.5%) showed that they are ignorant about the program and they haven't heard about it. This clearly indicates that the level of consultations with local community is not to the point, or not all the geographical sites of the country were covered through consultations with local communities. Most of the respondents (98.4%) asserted that such program (benefit sharing mechanism) is of utmost importance and significance since it links development activities with relief and income generation. Few respondents are not optimistic about this program because in their memories the failure of the previous NGOs' projects. There is an urgent need for addressing the legal aspects of the benefit sharing, and this can take different forms. The key stakeholders of the program should build confidence and trust during the process of benefit sharing. In this study 28.5% of the respondents preferred contracts between the key stakeholders identifying the mandates and responsibilities of the two sides. Consultations as a legal instrument for the arrangement of the relationship between the key player in the benefit sharing mechanism was suggested by 11.4% of the respondents, while the rest of the respondents (60.1%) suggested the combination of the consultation and contracts.

31.7. Activities compatible with benefit sharing mechanism

Fields of participation: the respondents mentioned different options through which they contribute to rehabilitation of the vegetation cover at their areas. About 47.7% of the interviewed sample asserted that they can contribute to rehabilitation of forests at their areas through mitigation of illegal tree felling (rational exploitation of forest products), while 18.1% mentioned adoption of energy substitutes as a mean of reducing reliance on charcoal and firewood for energy. Twenty- eight per cent of the interviewed sample believe they can contribute to the rehabilitation of the forests in the country through reducing reliance on forest products particularly non-wood forest products. Some respondent (5.7%) declared the potentiality to contribute to restoration of the vegetation cover in the country through control of grazing and maintain the levels of carrying capacity acceptable. Some others mentioned other means for rehabilitation of the vegetation cover in the country.

Potential activities for engagement of local communities for restoration of the vegetation cover: the respondents in the study area mentioned different activities which can contribute to the restoration of the vegetation cover in the country. Community based natural resources management was mentioned by 36.8% of the respondents as a vital activity to be addressed for mitigation of deforestation trend in the country. The Taungya system was mentioned by 12.4% of the respondents as one of the activities that can be addressed in the benefit sharing program. The activity of shelterbelts, particularly in the rainfed mechanized areas, was suggested by 8.3% as reliable for the implementation of the activity through benefit sharing mechanism. Thirteen per cent of the interviewed sample mentioned agroforestry as one of the activities that maintain the biodiversity in the country, while 6.7% mentioned joint forest management as one of the alternatives for the rehabilitation of the vegetation cover in the country.

31.8. Revision of Forest Policy

For successful implementation of the pilot projects, there is a need to revise forest policies and introduce articles exploring the possible options of equitable benefit sharing. Moreover, there is a need to harmonize REDD+ benefit sharing mechanisms with other benefit sharing mechanisms in related sectors.

31.9. Funding

Income from an international REDD+ agreement - although important- could only be one of the sources of payment for Sudan's forests for delivering ecosystem services. Domestic financing should be included because it provides secure income with a financial source that is expected to be more controlled and predictable than international and market financing arrangements. In addition, there is a need to create a

strong domestic policy enabling PFM and CFM to function. Royalties collected by FNC should act as seed capital to the National Trust Fund or the Carbon Bank. Instead of a general tax-based system collecting funds into a general budget, the fund could operate by collecting money from the industrial sector, particularly industries that contribute to pollution.

There is controversy regarding the payment of the incentives. Forty-three per cent of the respondents preferred to receive 50% of the cash for the afforestation and reforestation of their farms or reserved forests at their areas. They justified this per cent by expressing their needs to cover other expenses or priorities. In other words, they consider this payment (50%) is for covering the cost to the time they are going to spare instead of being used for other activities for income generation. On the other hand, 34.7% suggested 30% of the total amount of money allocated for the afforestation and reforestation program. Some other respondents (22.3%) prefer to receive all the amount of the program before planting any seedlings. They verified this intension due to their mistrust of staff of the FNC whom they accused by corruption. The respondents discussed the payment schedule, but they haven't discussed the amount of money paid per acre or per feddan. This clearly shows that they just wand money irrespective of its amount.

About 52.3% of the respondents asserted that the incentive they received from the NGOs or the FNC takes the form of extension services (individual and group extension methods). Forestry extension focuses on awareness raising and capacity building of the local people in the rural areas. Another form of incentive provided by the FNC and NGOs is distribution of seedlings and seeds for afforestation and reforestation free of charge. Sometimes, the NGOs resort to village nurseries which also can be consider as an incentive for income generation. About 9.8% of the respondents mentioned the non-wood forest product for income generation and household consumption as an incentive. The forest policy encourage the local people to benefit from the non-wood forest products free of charge as privileges. Other incentives include collection of dry and dead branches and trees for domestic use. The FNC aim by offering such incentives to encourage the local people to conserve and protect the forest resources in the country.

NGOs worked in different parts of the Sudan addressed the agenda of incentive in the implementation of their activities. it worth mentioning that more than 30 NGOs were working in the country before the up rise of the present government. Incentives were justified by the NGOS for encouraging local people to participate in the development activities. although the adoption of the incentive, sometime associated with some drawbacks, still needed for the implementation of participatory forestry in the country. About 52.3% of the respondents asserted that the incentive they received from the NGOs or the FNC takes the form of extension services (individual and group extension methods). Forestry extension focuses on awareness raising and capacity building of the local people in the rural areas. Another form of incentive provided by the FNC and NGOs is distribution of seedlings and seeds for afforestation and reforestation free of charge. Sometimes, the NGOs resort to village nurseries which also can be consider as an incentive for income generation. About 9.8% of the respondents mentioned the non-wood forest product for income generation and household consumption as an incentive. The forest policy encourages the local people to benefit from the non-wood forest products free of charge as privileges. Other incentives include collection of dry and dead branches and trees for domestic use. The FNC aim by offering such incentives to encourage the local people to conserve and protect the forest resources in the country.

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31.10. Monitoring of Pilot Projects

Monitoring should be an ongoing process starting from the planning phase, and partners have to provide quarterly updates to the centre including reports from primary stakeholders. In addition, significant internal mid-term assessments have to be taken for all the projects. These assessments should comprise survey stakeholders and should be carried out by the Projects' Technical Committees to assess progress towards the projects' agreed outcome and output levels. The project focal points at the selected state have to supervise enumerators from the FNC for data collection. The aims of monitoring include: to check the level of progress and the rate of implementation, the quality of the project's governance, identify capacity building needs, improve the understanding among staff of the REDD+ program and its integration into natural resource management concepts. Moreover, monitoring aims to increase the contact time between extensionists and communities and increase confidence of government extension agents in engaging communities and providing extension support at community level (FNC).

31.11. Building institutional capacities and replicating project success

In order to ensure the lasting success and replication of the benefit sharing mechanism developed for the two sites, it is important to ensure that the institutional capacities needed for effective benefit sharing governance and technical support are in place. To ensure this, the projects will invest in selected institutional capacity building activities. This should start with training of government at both state and local level to strengthen service delivery capacities to stakeholders on one hand, and the technical capability required to carry out other mandated responsibilities on the other hand. Technical capacity building with locality and state level institutions will be complemented by efforts to strengthen coordination and collaboration between government line ministries and departments,. Moreover, the project will identify specific relationships that are known not to function well at the current time, but are required for effective support to benefit sharing at the project areas. Finally, to support technical capacity, coordination and relationships building, project visits and study tour should be arranged. Study tours can be used to promote learning on effective implementation of benefit sharing mechanism.

31.12. Stakeholder Analysis and Roles

The stakeholders for Sudan's REDD+ were already identified as mentioned above including local communities, line ministries and departments, private sector and others. The importance of the institutional stakeholders are instrumental for ensuring the long term sustainability and repricability of effective benefit sharing. The government institutions will benefit from the projects in two ways. Firstly, the project will directly contribute towards the institutions' realization of their own plans and mandates. Secondly, most will participate in the project's program of institutional capacity-building.

It was possible to list the different activities that are likely fit well to be covered by the benefit sharing program. Attempts were made to rank the different activities according to the preference of the respondents. Figure (10) shows the different activities suggested by the respondents for the implementation of benefit sharing mechanism in the Sudan. About half of the respondents (49.7%) asserted that GAPAs is the most relevant activity that fit well with the benefit sharing mechanism. At least, the GAPAs are more institutionally organized compared to other activities. CBNRM was suggested by 17.6% of the respondents and ranked as second to GAPA. This may be attributed to the experience gained from working with NGOs in the field of forestry extension and community forestry. This fact is supported by 53.9% of the respondents who clarified that they had the chance to work with some NGOs.

The members of this group highlighted that they were trained by NGOS for different activities of seedling production, selection of seeds from mother trees … etc. NGOs used to address the agenda of incentive in their activities for sake of encouraging local communities to pursue and adopt genuine participation in the implementation of the different activities. The third option for implementation of benefit sharing mechanism is shelterbelt intervention as suggested by 8.8% of the respondents. The other fields of activities include Taungia system and Private Forests as suggested by 8.3% for each of them.

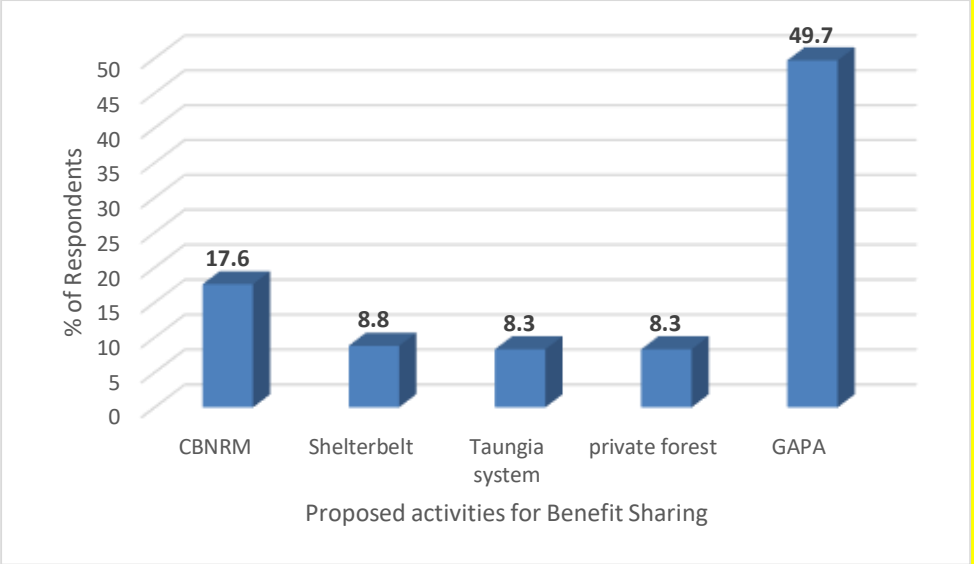

Figure (10); Suggested activities for the implementation of benefit sharing in Sudan

Conservation and protection of vegetation cover: protection and conservation need a continuous monitoring and ongoing evaluation of the status of the vegetation cover. The majority of the respondents (96.4%) showed the possibility of protection of the vegetation cover through mobilization and sensitization of local communities

31.13. Prospects of benefit sharing mechanisms

As far as the method of participation in the program of benefit sharing, 22.3% preferred communal work in which all the members of the communities are entitled to participate in the program and benefit from its outcome, while 17.1% prefer working on an individual basis. The member of this group verified their preference by the fact that communal work may lead to conflicts between the members of the communities. There are few examples of conflicts associated with working in groups. The rest of the respondents (60.6%) support the idea of adoption of the benefit sharing mechanism through individual basis and communal basis i.e there is no restriction for either or both.

According to the findings of this study, the majority of the respondents (98.4%) indicated that the level of participation will be very high if the program is punctual in terms of delivering payment in the right time as agreed upon in the contracts and through the consultation process. As far as the method of participation in the program of benefit sharing, 22.3% preferred communal work in which all the members of the communities are entitled to participate in the program and benefit from its outcome, while 17.1% prefer working on an individual basis. The member of this group verified their preference by the fact that communal work may lead to conflicts between the members of the communities. There are few examples of conflicts associated with working in groups. The rest of the respondents (60.6%) support the idea of

adoption of the benefit sharing mechanism through individual basis and communal basis i.e there is no restriction for either or both.

32. Main components of pilot project

32.1. Life span of the project

Regarding the life span of the program, three options appeared according to the finding of this study. Most of the respondents (46.1%) preferred the 3-years program for the afforestation and reforestation, while 29.5% preferred 4-years program. The third option (5-years program) was preferred by 24.4% of the respondents. There is no mere justification for the selection of the life span of the program, but it seems that the respondents focused on the shortest possible period of time for this program. No one of the respondents showed what will happen after the phase out of the program, and this remain as important question for the implementation of benefit sharing mechanism in the Sudan.

32.2. Entitlement to participate in benefit sharing mechanism

The issue of suitable area for implementation of benefit sharing mechanism is important to be identified starting from the beginning since some participants prefer participation on an individual basis. Figure (11) shows the perception of the respondents regarding the minimum area of landholding entitle to participate in the benefit sharing mechanism. About 31.1% of the respondents suggested that the minimum area of landholding for participation in the benefit sharing mechanism is 50 feddan, while 14.5% suggested ownership of 75 feddan to be qualified to join the benefit sharing mechanism.

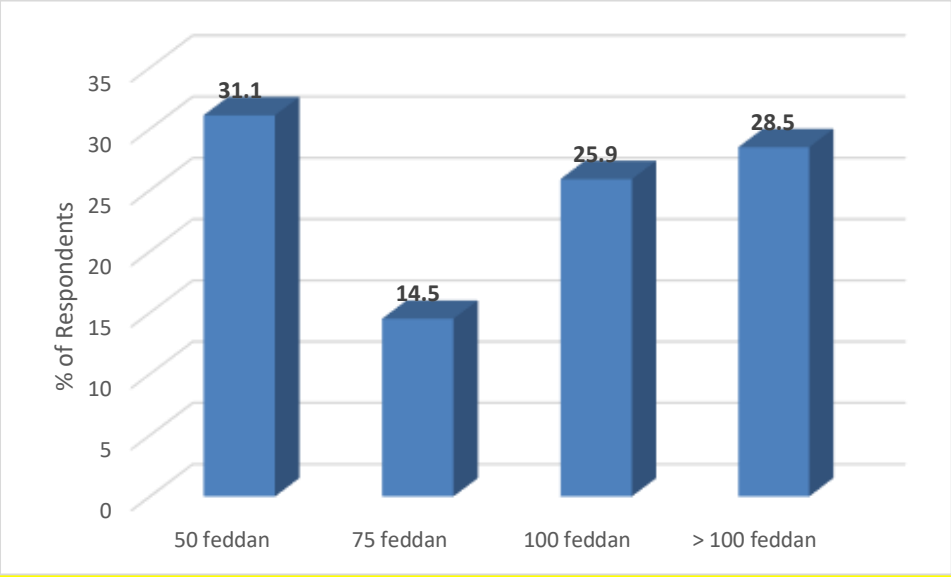

Figure (11): Minimum area of landholdings for participation in benefit sharing

A hundred feddan was suggested by 25.9% of the respondents to join the program, while 28.5% of the respondents suggested an area of more than 100 feddan to be consider for the implementation of the benefit sharing program.

32.3. Gender Analysis

Women in the project area constitute a considerable proportion of the population. Targeted efforts will therefore be needed to ensure that women meaningfully participate in consultations and project activities, as well as sharing the benefits arising from the proposed activities. The gender analysis will guide the

project in the development of its program activity, where attention will be paid to gender-sensitive planning, monitoring and data collection, to ensure equity in terms of both participation/decision-making and benefits enjoyed by men and women. Accordingly, women should be represented in both the Advisory and Technical Committees.

32.4. Capacity Building

Getting beyond policy and the readiness phase equitable benefit sharing is not just a matter of good policy. It requires resources and the capacity of individuals and institutions to effectively implement mechanisms. Training is essential for proper adoption of interventions. The respondents of this study are in urgent need for training in the different activities and processes of the benefit sharing mechanism. Intensive awareness raising is require highlighting the benefit sharing mechanism. In brief, training should focus on highlighting the approach and its principle before starting the actual activities of seedlings production. This fact is supported by 89.1% of the respondents accentuated the importance of training. The rest of the respondents (10.9%) believe that they are acquainted with the different activities of seedlings production, transplanting and different silvicultural operations due to the accumulated experience gained from working with NGOs in the past. The main fields of training suggested by the respondents were; 41.9% suggested training in monitoring and evaluation. This can be verified by the fact that the local people want to know the in and out of the activity with a minimum support from the staff of the benefit sharing program, while 27.5% of the respondent emphasized the importance of being aware about the legal aspects of the benefit sharing for sake of avoiding conflicts in the short or long run. Some respondents (11.9%) suggested training on financial issues, while 19.2% proposed training on file keeping.

32.5. Information needed for participation in benefit sharing mechanism

Respondents were asked about the information they need to know before starting the procedures for their engagement in the activities of benefit sharing program. Figure (12) shows the type of information needed before joining the benefit sharing program.

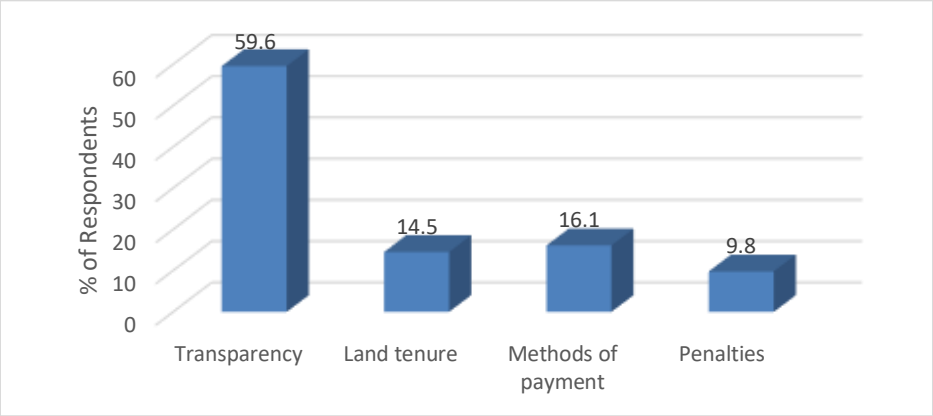

Figure (12): Needed information for implementation of benefit sharing mechanism

The most important thing needed for the implementation of the benefit sharing mechanism is transparency, as indicated by 56.9% of the respondents. Transparency in terms of how money will be transfer, the channel of deposit and distribution of cash, how to monitor and follow the payment chains, and who is responsible from the whole process. About 16.1% stated clearly the importance of methods of payments (instalments or all at a time). Information of distribution of benefits represent a corner stone for the success of the implementation of benefit sharing mechanism, according to which local people can

decide whether they will involve in the process or have a decision from the start about their participation or not. While 14.5% needs information about the land tenure, whether the customary land tenure will remain valid or will be substituted by alternative tenure system. Some people are suspicious about the intervention under the assumption that the ownership of the land will be under the control of the government. This assumption is supported by 36.3% of the respondents. Some farmers want to know if there are some penalties or punishment regarding lack of commitment to the contract with the benefit sharing program. However, most of the respondents (88.1%) believe that the international organizations are responsible for provision of finance for the program, while 10.4% mentioned the FNC as a source of fund. The rest of the respondents mentioned the national government

33. Measures of Risks and Constraints confronting Benefit Sharing in Sudan

The local people in the study area were happy that tree planting was linked with incentives. The majority of them stated that, without incentives they participated in the afforestation programs of the FNC. Moreover, they worked in close coordination with the NGOS in the past in the rehabilitation of the reserved forests. The entire interviewed sample showed their interest to participate in the benefit sharing program since it provides incentives in cash. The respondents are motivated to participate in the program since it contributes to enhancement of the aesthetic value of their sites, enjoying products of fruit trees, and income generation from the adoption of tree planting.

Implementation of benefit sharing in Sudan is confronted with many measures of risks and constraints. The focal points in the five regions mentioned the different factors behind deforestation and degradation of the tree cover at the different regions. The main factors responsible for the shrinkage of the vegetation cover are expansion of rain fed mechanized agriculture particularly in the eastern region; reliance on forests as a source for provision of fuelwood, almost in the five regions, overgrazing where nomads prevail; frequent drought cycles and fluctuation of rainfall which are determinant factor for the success of regeneration (artificial and natural); fire incidences which take place due to honey collection and as a technique practiced by pastoralists to have fresh sprouts from old grasses, trees and shrubs; spread of diseases and pests; reliance on forests for the provision of building materials at the rural areas of the five regions; expansion of shifting cultivation where trees have to provide vacant lots for farming; internally displaced persons encroachment, particularly at Darfur Region; prevalence of acute poverty which leads to reliance on forests as a source of income (firewood and charcoal), and settlements as the case of Siwailinga forest in Darfur Region. The situation is further aggravated by the conversion of reserved and natural forest to agricultural schemes (developmental schemes). This trend contributed significantly to the degradation of forest resources in the country, particularly in Darfur Region. Moreover, the irrational exploitation of forest resources by the military forces in different parts of the country is behind the deterioration of the vegetation cover.

34. Conclusions

Several conclusions were drawn from this study. The main conclusions were:

- The FNC estimates that, forests cover about 11.60% of the area of Sudan (after separation of South Sudan). The average annual increment of growing stock volume is estimated at 1.340 million cubic meters of which 5 % is removed per year. Between 1990 and 2005 the country lost 11.6 % of its forest cover.
- The potential effects of climate change in Sudan include reduction in ecosystem integrity and resilience, and a decline in biodiversity; decrease in forest and rangelands areas and areas under cultivation; decline in crop, biomass production and Gum Arabic yield, and frequent spells of drought. The effect of climate change is aggravated by the inadequate coordination and collaboration between different institutions dealing with natural resources and climate change. In view of this, there is need to develop a national climate change policy which will guide coherent, systemic responses to the challenges posed by climate change at all levels, sectors and scales.

- Sudan has prepared a CDM strategy to support carbon investment, strengthening CDM procedures, building capacity within the potential CDM actors in Sudan, assess the potential for CDM in the different sectors, develop capacity and awareness for the preparedness phase of REDD+ and prepare REDD+ Preparedness Proposal (RPP) in Sudan.
- Emission from forestry represent 75% of total CO^2 emitted in Sudan according to the Sudan's first inventory taking 1995 as the base year. The emissions are mainly attributed to deforestation and forest degradation brought about by high demand for fuel wood, charcoal production and transformation of forests into agricultural land. Sudan is lacking a comprehensive policy and legislative framework that deals with mitigation related policy in an integrated way. Rather, there are a number of individual sectorial policies that tend to be isolated from each other. However, the assessment of Sudanese sectors provides a huge set of opportunities for mitigating GHG emissions.
- Sudan is a party to a wide range of global and regional MEAs, and ratified several global environmental conventions with some through funding availed from GEF. This has largely enabled Sudan to identify national capacity constraints and priorities to meet the commitments included in the three Rio Conventions. Moreover, Sudan formulated and adopted several climate change-relevant strategies and action plans.
- The Environmental Protection Act focuses on the protection of the environment and conservation of natural resources through enhancing coordination between government and other national institutions including private sector and civil society organizations (CSO). Moreover, the 25–years strategy provides policy directions to all economic and social sectors, and incorporates the country's environmental strategy. It states clearly that environmental issues must be embedded in all development projects, which creates the enabling environment for mainstreaming climate change initiatives including REDD+ into development planning.
- Sudan is endowed with rich and diverse forest resources, which contribute significantly to the dominant traditional sector. Government plantation relies mainly on rain fed system and hence is highly vulnerable to climate change and reduced rainfall.
- Most of the country's forests are open or semi-open habitat, with 4% of Sudan's land area; mandated, as forest reserves that receive a special level of protection and management. So far, the forest reservation process was only able to settle and finally gazette about 1.7 ha (0.4% of the total area of the country). However, forestry is now receiving more consideration and commitment from the government as a potential safeguard for rural development and poverty alleviation.
- The annual afforestation and reforestation programmes ranged between 63000 – 84000 ha during the period 2000-2009. Plantations area constitutes small fraction compared to natural forest reserves and forests outside reserves. The rate of deforestation in Sudan is alarming, between 1990 and 2005, Sudan lost an estimated 12% of its forests (8.8 million ha). The steady degradation and loss of Sudan's forest is attributed to the population's reliance on wood to meet energy needs, drought and desertification, the expansion of mechanized agriculture, and the lack of effective forest governance. Deforestation and over utilization of the vegetation are the prime causes of desert encroachment.
- Forests in Sudan contribute significantly to the sustainable livelihood of local communities. This situation exerts extensive pressure on forests. The main tangible products obtained from forests include fodder, building poles, fuelwood and NWFPs. However, the forests provide huge environmental, social and economic benefits to local communities that are not budgeted in the national GDP.
- The UN-REDD Program supports nationally-led REDD+ processes and promotes the informed and meaningful involvement of all stakeholders, including Indigenous peoples and other forest-dependent communities. Although the mechanism has been formally recognized since the 15th COP (Copenhagen, 2009), many questions about the design and implementation of national REDD+ architectures remain unresolved. Nevertheless, Sudan considers the REDD+ mechanism

to be a priority area in the management of forest resources and rangeland in the country. The involvement of the GoS in REDD+ Process was made through two phases (development of Sudan's REDD+ Preparedness Strategy and formulation of Sudan's REDD+ RPP.

- Sudan has no national Forest Reference Emission Level and/or a Forest Reference Level because there is no national forest inventory conducted, even for the first and second national communications where Sudan used UNFCCC default figures of 1996 good practice guidance.
- The main activities of Sudan REDD+ are limited so far to the establishment of a national REDD+ Unit to develop the framework for a REDD+ strategic plan in collaboration with UNDP and HCENR and the organization of the inception workshop of REDD+. Other activities focused mainly on software activities such as the quick assessment of the forest resources, forest classification, awareness-raising, assessment of some plantations and activities around community forests, assess the degradation and deforestation rate and data related to local people and others dependent on forests in Sudan.
- Sudan used its GEF STAR allocation to finance a forestry mitigation project, which includes afforestation/reforestation, forest management and biomass energy saving components. This project also includes a pilot on REDD+ for the purpose of building national capacity and gaining experience through practical examples**.**
- There are already high expectations and challenges for REDD+, in terms of carbon, income and other benefits. However, making REDD+ genuinely work for local forest communities in a way that is empowering, sustainable and equitable, will be a challenging task.
- There are enabling factors for benefit sharing mechanism in Sudan, such as availability of land for afforestation, existence of reserved forests, policies and legislations that support afforestation and reforestation beside consistent and strong demand and markets for forestry products.
- The concept of benefit sharing is not new to Sudan, and has traditionally been practiced since for a long time. During the last decades the modern concept of benefit sharing in relation to the management of Gum Arabic belt was introduced by extension services and includes the provision of technical assistance, subsidized seedlings; survival incentives and subsidies to private nurseries.
- In order to develop REDD+ benefit sharing mechanism, UNFCC encourages national actions and insists on having membership in REDD+ initiatives to comply with the UNFCCC requirements
- The key elements of benefit sharing are defining benefits, determining beneficiaries, defining the benefit distribution models, constitutional benefit sharing, and contractual benefit sharing arrangements, and linking land rights to REDD**.**
- The time dimension of REDD+ payment schedule is hard to predict and will depend on the establishment and stability of carbon prices and other factors.
- While much is anticipated from REDD+, its real benefits and costs are not yet clear. It is important that mechanisms incorporate realistic estimations of benefits and costs, accounting for uncertainty.
- It is important that benefit sharing arrangements are consistent with their rules. Constitutions might contain general, aspirational principles about providing incentives for environmental protection and/or benefit sharing. Constitutions can also specify how the revenue from forestry resources should be divided between different beneficiaries.
- Contractual arrangements can be used to clarify the agreement between different stakeholders and allow parties to set aside issues in dispute particularly dispute settlement clauses.
- Public participation of local communities and indigenous people is a cornerstone for successful implementation of benefit sharing mechanisms. Moreover, capacity building for all the stakeholders is utmost priority for the implementation of benefit sharing mechanisms.
- Pilot project can be used as a trial for the implementation of benefit sharing mechanism since most of the requirements and other elements are not clear until now. It is wise to start with a small

project to learn lessons and identify the constraints and the drawbacks of the implementation of the benefit sharing system.

- Sudan is sufficiently qualified to address benefit-sharing mechanism of the REDD+. The constitution of the country, although it has not expressed the benefit sharing explicitly it has tackled environmental issues implicitly. The forest policies of the country encourage allocation of forest use right to owners and promote the establishment of community forests.
- For Sudan benefit sharing is defined as environmental, social and economic benefits which contribute to the resilience of local communities and local groups existing around forests. Local communities are aware about the most important environmental, economic and social benefits of REDD+ relevant to Sudan-specific circumstances.
- Sudan's REDD+ project was able to determine the beneficiaries of the benefit sharing both at the vertical and horizontal dimensions. The vertical represents in line ministries, NGOs and private sector, while the horizontal dimension represents the local communities, individuals, households and CSOs.
- Available models for forest management policies adopted in Sudan are based on PFM and PES schemes. The best distribution model for benefit sharing for Sudan is the by means of contracts to structure the combination of horizontal or vertical distribution.
- A nested approach is advocated for international/ national to local distribution of REDD+ benefits in Sudan, since it offers the greatest benefits for eligible local communities. This proposed benefit sharing mechanism offers an example of institutional and governance arrangement. Key considerations include the accountability and perceived legitimacy of local communities and targeted local groups.
- For Sudan the real benefits and costs are not yet clear, little information are available for calculating the opportunity cost, transaction cost and implementation cost. However, the legal aspects of benefit sharing exists as reflected in the country's constitution, polices and legislation system.
- The ambiguity and complexity of the land tenure system in Sudan creates confusion regarding the division of responsibility for forest conservation, the identification of beneficiaries and consequently the equitable distribution of benefits.
- Public participation in development activities in Sudan is an old story. *nafir* (reciprocal exchange of labors) is practiced traditionally to ensure the timely accomplishment of social works including reliefs and disaster management. Accordingly, the public participation in Sudan's REDD+ is highly guaranteed. However, there is an urgent need for capacity building in other aspects of REDD+-specific benefit-sharing for all the stakeholders (government officials of line ministries and local communities) in the different discipline of benefit sharing.
- There are limited choices for source of funding of Sudan's benefit sharing system. The source of finance could be through donor-funded capacity building initiatives such as (UN REDD, the FCPF). Other sources could be establishment of a National Trust Fund and establishment of Carbon Bank to be funded from different sources like the taxes and royalties.

There is a need for training on how to monitor report and verify benefit sharing, and this could be achieved through learning from PFM, and CBNRM/PES to identify key lessons for REDD+ benefit sharing mechanism.

34. Recommendations

- The Decree of the Council of Ministers No. 40 (1997) should be reactivated in order to finance a pilot project for benefit sharing using the 40% of the revenue retained by the FNC.
- The development of frameworks for coordination and exchanges between the different institutions working in areas related to climate change is essential. Governance and coordination lie at the heart of the Sudan Climate Change Policy.

- The development of frameworks for coordination and exchanges between the different institutions working in areas related to climate change is essential. Governance and coordination lie at the heart of the Sudan Climate Change Policy.
- A number of National development strategies and action plans have similar objectives to climate change adaptation plans, such as the interim poverty reduction strategy besides other sectoral policies and strategic plans. This provides room for creating synergy between adaptations to climate change and development objectives to achieve better livelihoods opportunities;
- The FNC should adopt the intervention of benefit sharing mechanism for the sake of enriching and reforesting the reserved forests since the potentiality of attaining fruitful results is high.
- The FNC should sensitize and mobilize local communities to participate in afforestation and reforestation programs through adoption of JFM and CF activities and addressing incentives as part of benefit sharing mechanism.
- Forest policy of 2015 should encompass the benefit sharing mechanism of Sudan's REDD+ initiatives explicitly to enhance the implementation of the benefit sharing on the ground.
- The FNC should demarcate all the reserved forests and manage to settle their land tenure issues in order to avoid conflicts with local communities.
- The FNC should rely on contractual arrangements to clarify the agreement between different stakeholders and allow parties to set aside issues in dispute particularly dispute settlement clause in the implementation of benefit sharing mechanism.
- To guarantee success, the FNC has to implement a trial pilot project for the implementation of benefit sharing mechanism since most of the requirements and other elements are not clear until now.
- Before launching the pilot project, the environmental, social and economic benefits which contribute to the resilience of local communities and local groups existing around forests should be clearly stated.
- The FNC should apply the nested approach since it offers the greatest benefits for eligible local communities.
- There is a need for training on how to monitor report and verify benefit sharing, and this could be achieved through learning from PFM, and CBNRM/PES to identify key lessons for REDD+ benefit sharing mechanism.

- It is necessary to develop a mechanism of Benefit Sharing with the legislative councils and thereafter submit it to the National assembly for approval.
- Some project proposals should be prepared, based on the evaluation of the accumulated experience, ready for implementation in the next phase of the program.
- Regarding the distribution of the benefits, local customs, traditions and cultural background of each community must be taken into consideration.
- Policies and legislations of Forests and other natural resources must be strengthened.
- International experience can be used to develop the Benefit Sharing mechanism (e.g. Indonesia and Brazil).
- There is a need to establish a Fund for developing the BS mechanism.
- Local communities and the government should be considered as the key partners in the BS mechanism.
- The possibility of making use of “Nagoya protocol" experiments related to sharing the biodiversity benefits should be explored
- Consider the involvement of the local communities sharing with their farms and investing in BS mechanism.
- It is important to quantify the intangible benefits of forests through the calculation of non-wood and pasture products.
- Lessons could be learnt from best practices, such as those between the FNC and the Blue Nile Government, which was financed by the Federal Ministry of Finance.
- Public and private sectors must collaborate and work together, since the climate change issue is the concern of all.
- Attention should be paid to forestry economics in high educational sectors concerned with forestry and/or natural resources to have graduates who are well equipped to play their role in the BS mechanism.
- Consider the "Riverine forests", protective forests and all the reserved forests in the BS mechanism and mobilize local communities to reduce emissions by planting fruit trees.

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FOREST CARBON PARTNERSHIP FACILITY

WBG

REDD+ SUDAN

Reducing Emissions from Deforestation and Forest Degradation (REDD+) Readiness Program