Ministry of Environment, Forests and Physical Development
Higher Council for Environment and Natural Resources

The National Biodiversity Resource Mobilization Plan

2015 -2020

For Sudan

August 2014

Contributors
Dr. Sayeda Ali Ahmed Khalil
Dr. EL Khitma EL Awad Mohammed Ahmed
Dr. Abdelrahman Eltahir Ahmed Musa
Mrs. Sawsan Khair Elsied Abdel Rahim Mustafa
Mrs. Ekhlass Mohammed Ali
Mr. Jamal din Yousif Mohamed
Mr.Abdelhafiz Eljack Osman
Miss. Tayseer Ismail Idrees Mohamme

Table of Contents

List of tables

List of Figures

List of Abbreviations

ABS	Access and Benefit sharing
REDD+	Reducing emissions from deforestation and forest degradation
CBD	Contention on Biological Diversity
GDP	Gross Domestic Product
EIA	Environmental Impact Assessment
HCENR	Higher Council for Environment and Natural Resources
FRC	Forestry Research Centre
FNC	Forests National Corporation
NBSAP	National Biodiversity Strategy and Action Plan
NAPA	National Action Plan of Adaptation
MoLFR	Ministry of livestock Fisheries and Rangelands
MoFEP	Ministry of Finance and economic planning
M o E P P	Ministry of Environment and Physical Planning
MoAI	Ministry of Agriculture and Irrigation
ITPGRFA	International Treaty of the Plant Genetic Resources for Food and Agriculture
WCGA	Wildlife Conservation General Administration

Executive summary

Resource mobilization plan is prepared to assess the financial resource needs and to promote resource mobilization for implementing the NBSAP. It provided an opportunity to identify the most promising financing mechanisms for biodiversity conservation and NBSAP implementation.

Sudan' biodiversity is being subjected to a number of threats as a result of human activities. Desertification, deforestation & forest degradation, over consumption and overuse for fuel wood and timber, fire, overgrazing, hunting, overexploitation for agriculture, modern agriculture, petroleum explorations and mining activities were identified as key practices for biodiversity loss. On the other hand, the expansion of agricultural schemes at expense of forest and rangelands Wildlife Habitats and Protected Areas, Land tenure policy and land fragmentation, Lack of grazing management systems, lack of land use plan are among the key policies that drive biodiversity loss. The key actors include Ministry of livestock Fisheries and Rangelands(MoLFR), Forests National Corporation (FNC), Wildlife Conservation General Administration (WCGA), Ministry of Finance and economic planning ((MoFEP), Red Sea University, Fisheries Research Centre, farmers, Beekeepers; Pastoralists, charcoal traders and Poachers and private sector.

The public funding for environmental activities and biodiversity is limited. The donor funding for environmental activities has been significantly reduced in the last years.

The resources required to implement the NBSAP is estimated to be *61,406, 078* dollars from different sources including public and private sectors, regional and international organizations. The highest cost is for mainstreaming sub strategy followed by protection. However, the assessment of available resources reveals the existence of a finance gap which is estimated to be 29,921,997 dollars i.e. the available resources are not enough to cover the cost of NBSAP.

Various potential sources of funding exist from national sources including; the Government, the private sector and the NGOs. The key financial mechanisms to bridge the gap include; climate funding including (NAPA integration, REDD and REDD+), environmental fiscal reforms such as Park entrance fees, biodiversity offset (EIA), benefit sharing fund of the international treaty of the plant genetic resources for food and agriculture (ITPGRFA), private sector involvement and regional and international funding institutions. This is in addition to removal of harmful subsidies, Access and Benefit sharing (ABS) which can generate more funding for biodiversity conservation activities.

Integration of resource mobilization into national budget and the establishment and strengthening of partnership between private sector organizations and conservation groups to deliver real on-the-ground conservation outcomes are most important recommendations identified by the group.

1 Introduction

Biodiversity is important for sustainable development as it plays a significant role in sustaining human life. It supplies ecosystem services such as provisioning of food, wood, timber, fiber, bio-fuels, nutrient cycling, climate regulation, carbon sequestration, water purifications, gene harvesting, hunting, soil conservation, recreational and tourism, pest regulation... etc. These services are essential to support human well-being and economic growth. In spite of the important economic, social values of biodiversity and ecosystem services, biodiversity is being lost.

The loss of biodiversity is due to lack of awareness of its values for economic growth and for human well-being. However, a study on economic valuation of agro biodiversity was conducted as a part of NBSAP revision process; it established a good base for a useful framework for identifying the various values associated with the agro-biodiversity ecosystem. NBSAP development process will helps in minimizing the loss of biodiversity, but only if the NBSAP is fully resourced and implemented.

Stopping the loss of biodiversity requires a combination of improving existing financing mechanisms, developing new mechanisms with a view to diversify sources of funding for financing the conservation of biological diversity, and reviewing policies and practices that encourage the loss of biodiversity.

In the revising process of NBSAP target 20 of the Aichi Biodiversity Targets which calls for countries to assess the financial resource needs and to mobilize financial resources for effectively implementing the CBD Strategic Plan at a national level was identified as one of national targets of biodiversity strategy and action plan. The development of resource mobilization plan attempts to achieve the target and to promote resource mobilization for implementing the NBSAP by expanding the resource base and identifying other alternative sources of funding to ensure sustainable resource availability for implementing the NBSAP and bridging the finance gap.

The plan is composed of an introduction, background and overview which focus on pressure and status of biodiversity in the country. Reviewing biodiversity policies, institutions and expenditures presents policy and practice drivers of biodiversity and ecosystem change, actors and institutions currently responsible for the existing status, baseline and projected future expenditures. Costs of NBSAP related actions identifies the costs of implementing strategies and actions in the revised NBSAP and determines finance gap. Under mobilizing resources, potential biodiversity finance actors, opportunities, key financial mechanisms and the revenue derived from each mechanism were identified. The necessary steps towards their implementation and the timeframe and budget are also reflected under this part.

2 Background and Overview

2.1 Pressure and status of biodiversity-

Sudan enjoys diversified biological resources including agro-biodiversity, forest, rangeland, Livestock, wildlife, coastal and marine and fresh water biodiversity. Stocktaking report indicates the forestry and rangelands of Sudan support about 104 million heads of cattle, sheep, goats, and camels mostly raised under traditional pastoral system and a wide range of wildlife species.

Reference to Sudan Land Cover Classes (FAO, 2012). Rangelands covered an estimated area more than 48,214,047 hectare[1] (25.7% of total country area) , 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 (Badri, Suad. 2012).

The rangelands of importance to traditional livestock raising are confined to the semi–desert, low rainfall savannah, and the northern fringes of the high rainfall areas. In the semi- desert the plant cover is a mixture of grasses and herbaceous plants intermingled with Acacia *spp*, and shrubs representing the main grazing areas for camel and sheep. Two areas of pure grassland form a distinct feature of this rangeland type namely, the Butana plains (grassland on clay) and Baja area (grassland on sand). The Low rainfall savannah on clay and sand have a plant cover of a mixture of *Acacias spp*, shrubs and a number of herbaceous plants.

---

of Herbaceous plants +22,231,327 (trees and shrubs). 25,982,720 ha 1

Sudan possesses an immense and diversified wealth of domesticated livestock species, which include cattle, sheep, goats and camels. Other domesticated local types of animals include horses, donkeys, and poultry. There are 20 breeds of cattle, 17 breeds of sheep and 11 breeds of goats. Various species also have different production attributes and uses.

The country also is considered as part of the centers of origin and / or diversity for some of the cultivated crops.

These resources are being subjected to a number of threats as a result of human activities with their negative impact on the environment. Environmental changes, modern agriculture, new developmental constructions, biotic factors are common threats facing plant agro biodiversity, forestry, rangelands and livestock genetic resources.

The indigenous plant agro-biodiversity in Sudan is under pressure of threats of loss and extinction due to a number of factors including natural and human factors. On top of these threats some climate extremes (droughts, floods, heat stress) resulted from natural climate variability (rains fluctuations and temperatures variations. The modern agriculture which is characterized by the use of advanced improved cultivars in a mono-cropping system of agriculture at the expense of indigenous landraces or old cultivars is another threat to agro-biodiversity. This will have an adverse effect on the local genetic resources of crops. Loss of diversity of the Range Plants is being experienced at an alarming rate. Many of the valuable range plants species are endangered .Herbaceous Species which were reported as decreases in Semi Desert and low rainfall savannah Ecological Zones.

3 Reviewing biodiversity policies, institutions and expenditures

3.1 Policies and practices review: Drivers of change

The most important policy and practice drivers of biodiversity and ecosystem change are summarized in table (1).

Table (1) Drivers of changes of biodiversity and ecosystem

Key sector	Specific practices that drive biodiversity loss	Policies that drive biodiversity loss
Forestry	Deforestation & forest degradation Over consumption and overuse for fuel wood, timber etc Overexploitation for agriculture, Expansion of agricultural schemes at expense of forest, Overgrazing, Wildfires Mismanagement of national parks, and loss of buffer zones around it Lack of integrated management projects	Governances, policies and legislations Underestimation of the role of the forests roles for socio-economic development and environmental protection

Rangelands	Overgrazing is encountered in the vicinity and around areas of permanent water sources.	Land tenure legislation and policies
	Grazing selectivity ,Early grazing before the range vegetation is ready to be subjected to animal utilization	Communal use ,Lack of grazing management systems
	Recent agricultural investment efforts have forced smallholder farmers and agro-pastoralists groups into marginal lands which are mainly used for grazing thus increasing competition with pastoralists lead to over-grazing	agricultural investment lack of land use plan lack of comprehensive investment plan
	Agricultural expansion at expense of rangelands	Agricultural policies ,Agriculture investment Act
	Agricultural practices: weed control in the irrigated schemes and rain fed agricultural where many herbaceous fodder plant species controlled as weeds.	husbandry techniques (Weed control)
	Devastating Popular mining practices	Lack of land use plan and environmental impact assessment studies
	Spreads of treated water of Petroleum explorations and , traditional Mining are highly that contaminated may affect plants and causing death to livestock in some cases	Mining Act ,Weak enforcement of environmental act and Petroleum explorations Act
	Seed collection practices where local people practice range seeds collections from natural rangelands lead to seed loss (mostly collectors harvest the whole plant)	No regulation for range seed collection or production
	Burning of rangelands: practiced by many land users for different Purposes: Farmers burns to protect their crops (burning used as buffer zone), Beekeepers burns for apiary production. Pastoralists: Careless cooking; illegal charcoal production; and Poachers;	Lack of range law

Livestock	Animal movement: Herders simply moved south and as far south as the Northern border of of newly born South Sudan country. This movement brought the danger of exposing the zebu northern cattle types to crossing with the southern Sanja southern types. Desert sheep are also under the threat of crossing with the southern types	Communal use ,Lack of grazing management systems
Coastal zone Fisheries (Red Sea)	Increased marine activities, oily wastes discharged from ships	Weak adoption of National Oil Spill Contingency Plan for Sudan
Agriculture	Modern agriculture; using advanced improved cultivars at expense of indigenous ones. Farmers ' practices using outstanding strains of crops this result in the dominance of some genotypes, constructions, constructions mismanagement of natural resources, deforestation ,over cultivation of agricultural land .	Lack of Land use policy , land tenure policy and land fragmentation, , No detailed strategic action plan has been developed. Lack of policy & legislation
Wild life and protected areas	Overgrazing, poaching, hunting, mining	

3.2 Institutional review: key actors and institutions

Table (2) below reflects different institutions and actors and their impacts and dependencies on existing status and the new strategies related to the drivers of change.

Table (2) Key actors and institutions: Impacts and dependencies of key actors and institutions

Key drivers of change	Actors and institutions currently responsible for the existing status	New strategies related to the drivers of change	Actors and institutions likely to be responsible for the new strategies
Rangelands			
Loss of range plant genetic resources due to fire, over grazing, weed control, Agricultural expansion at expense of rangelands	Farmers, Beekeepers; Pastoralists; charcoal traders; and Poachers MoLFR, Ministry of Finance and economic planning ((MoFEP), FNC	New strategies is results-based framework strategies that create the necessary conditions at all levels of decision-making, in partnership with main stakeholders, to create an enabling environment that provides incentives for Rangelands sector and actors to join forces in their efforts to conserve genetic resource of range plants ,farm animals and fisheries .	Pastoralists, MoLFR; MoFEP; FNC;ARC; FNC; ITPGRFA;ARC; African Union (thematic program network on rationale use of rangelands and development fodder crop TPN3; NEPAD), gene bank of ARC , GEF, UNEP,FAO IFAD, WB and ;EU,
loss of Farm animal genetic resource due to Diseases	MoLFR, MoFEP		MoLFR; MoFEP; -
Loss of fisheries genetic resources	MoLFR,		Ministry of Environment and Physical Planning(MoEPP) MoFEP, Red Sea University , Fisheries Research Centre

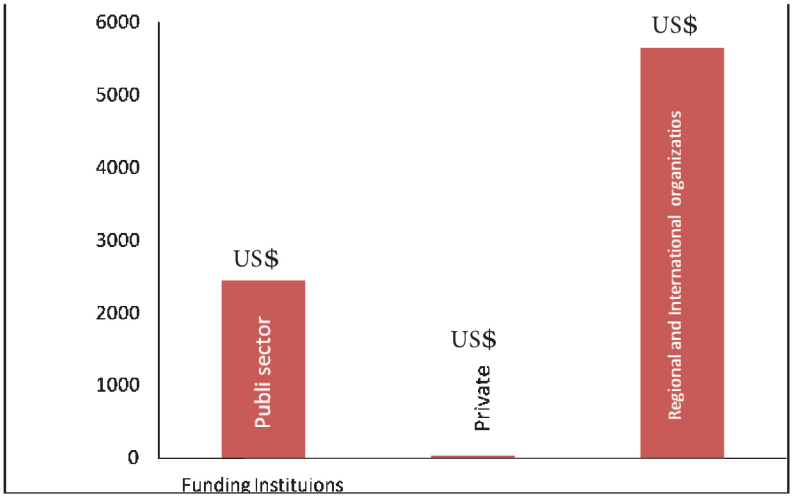
Key drivers of change	Actors and institutions currently responsible for the existing status	New strategies related to the drivers of change	Actors and institutions likely to be responsible for the new strategies
Forests		1-Sudan REDD+ strategy included the main drivers of forestry sector. There is more details on deforestation and forest degradation in relation to the biodiversity and local communities, and focused on the strategic options related to the drivers. 2-Ten years Forestry Sector strategic plan after separation; this strategy focused on the conservation of forestry sector in relation to other sectors related such as range and pasture, conservation of forest genetic resources & conservation and protection of forest ecosystem.	FNC, Related NGOs (SFS), Ministry of Agriculture and Irrigation (MoAI) and pasture, livestock and local people societies and associations.
Deforestation	MoEPP, MoFEP MoAI, Minerals, Energy, Electricity and Dams, , MoLFR ,Range and pasture, Farmers union, pastoralists union, Local people associations		
Degradation	MoFEP, , , FNC.		MoEPP, FNC, MoFEP
Endangered trees	FNC, Forestry Research Centre(FRC), MoEPP Faculties of Forestry		FNC, FRC and Academia
Loss of forest trees genetic resources	FNC, MoEPP, FRC		FNC, FRC and Academia
Agriculture			

Key drivers of change	Actors and institutions currently responsible for the existing status	New strategies related to the drivers of change	Actors and institutions likely to be responsible for the new strategies
Soil degradation	Natural resources, MoAI (Plant protection Department) MoFEP	5 Year National Strategy. National strategy for Desertification. Applied Nap of desertification. National strategy for natural resources. Land use system program . Soil conservation program.	Plant protection Department and ARC
Modern agriculture, Desertification and climate change	MoAI ,Desertification Unit,)MoEPP, HCENR, FNC		MoAI (Desertification Unit), MoEPP, HCENR, MoAI., FNC
Diseases & weeds	MoAI (Plant Protection Unit)		MoAI, natural resources department, Plant Protection Unit, ARC, MoAI. and Academia & research centers
Loss of crop genetic resource	MoAI , ARC		
Wild life and protected area			
Loss of wildlife species genetic resources	Wildlife Research Centre (WRC), wildlife Authority and Ministry of Tourism	Land use policy , no clear and written policy for wildlife , policies that favor rain fed agriculture , mining , and lack of capabilities to enforce the law, lack of awareness and knowledge of wildlife values.	WRC & Wildlife authority
Loss of habitat	Wildlife Authority, FNC		
Hunting & mining	Tourism, Wildlife Authority		
Diseases	WRC		
Marine biodiversity	WCGA	Need new strategy to achieve the goals. reform of Wildlife Act to include marine resources	
Increased marine activities,			
oily wastes discharged from ships			

3.3 Baseline expenditures

This part provides an overview of finance flows for biodiversity-related expenditures by examining the level of national expenditures, both public and private, on biodiversity-related issues**.** The key actors and institutions included in the review are Public agencies including Ministry of Agriculture and Irrigation, Ministry of livestock Fisheries and Rangelands, Ministry of Tourism and Wildlife, Ministry of environment, Private sector and international and regional organizations. The total expenditures for biodiversity-related activities for the period from 2010 to 2014 from different actors are presented in the graph below.

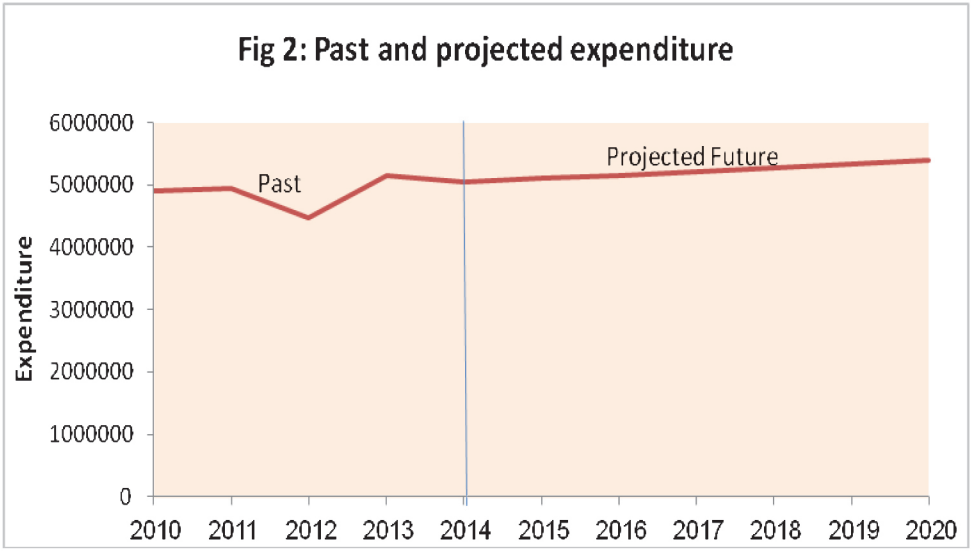
Fig. 1 Baseline expenditures by funding institutions



Generally government funding for environmental activities is limited. However, donor funding for environmental activities is higher than that of government but it has been significantly reduced in the last years. The private sector involvement in environmental funding is non existing indicating a weak understanding of the concept or serious shortage of data available.

3.4 Projected future expenditures

The expenditure on biodiversity related activities from public and private sources including government institutions private sectors bilateral and international organizations for the years 2010-2014 were calculated. The average for annual increase in expenditures is calculated and used as a baseline for projection of futures expenditures. The figure below shows past and projected expenditures on biodiversity related expenditures. It can be observed that annual expenditure is almost constant little projected increase.



4 Costs of NBSAP

4.1 Strategies, actions and costs

The revised NBSAP has 20 targets covering five categories including mainstreaming and sustainable use, restoration, protection, access and benefit sharing (ABS) and enhancing implementation. There are numbers of actions emerged from the revised NBSAP. The figure and table below shows the cost of specific strategies related actions.

Fig. 3 Cost of Sub-strategies

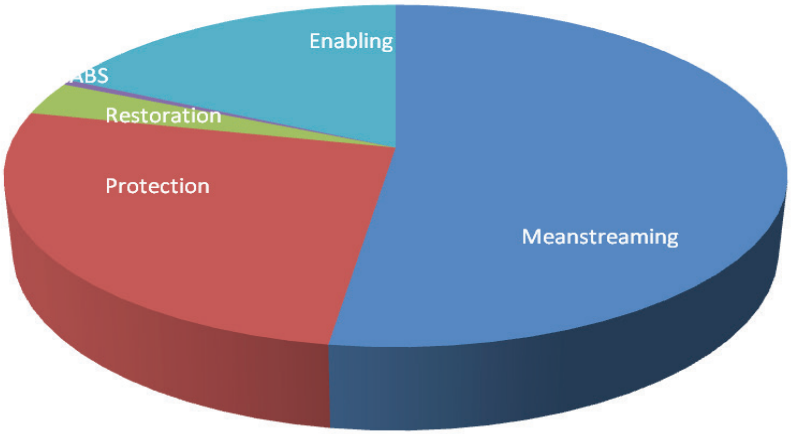
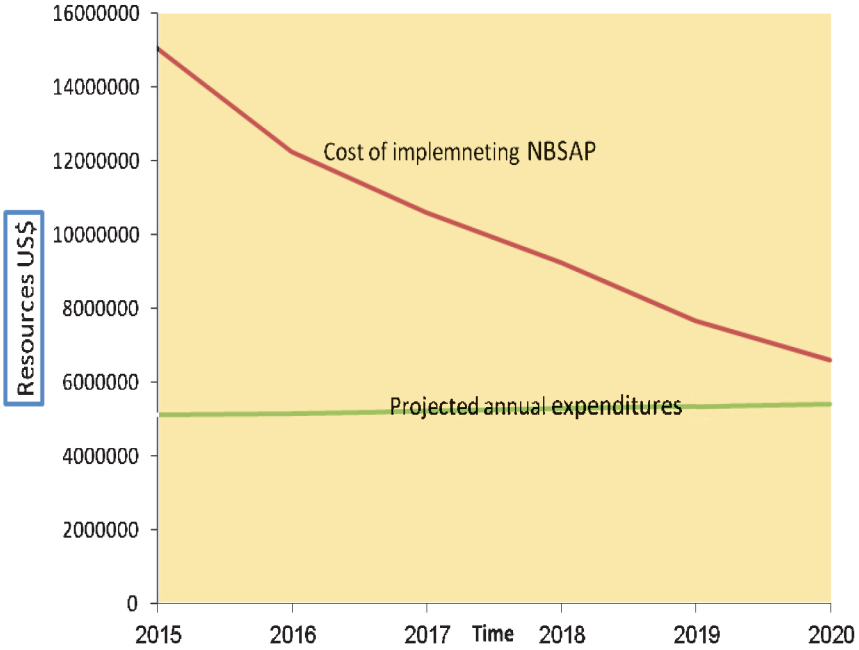


Table (3) Cost of Sub- strategies related actions in the NBSAP US$ across the years

Strategy/Years	2015	2016	2017	2018	2019	2020
Mainstreaming	8025474	6136403	4942959.12	5115676.1	4206315.79	3702499.12
Protection	3120298.246	3316326	3743070.2	2531754.4	1947062.5	1379666.66
Restoration	474035.088	332280.7	318771.9	275000	275000	275000
ABS	99520	200000	-	-	-	-
Enabling	3343105	2267772	1597544	1329211	1223439	1227895
Total	15062433	299520	10602345	9251641	7651817	6585061

4.2 Financial gap analysis

Fig4 Financial Gap



5 mobilizing resources

5.1 Key enabling policy factors for resource mobilization

The main enabling factors for resource mobilization, and the related challenges and opportunities are presented in the table below. However, making progress in four main areas including policies and legal frameworks, human and financial resources, governance and coordination mechanisms and evidence-based decision making is playing a significant role in mobilizing resources for implementation of NBSAP.

Table(4) key enabling policy factors for resource mobilization

Enabling factors	Key Challenges	Key Opportunities
Political will	Firm political commitment to mainstream rangeland biodiversity and ecosystem as high develop priorities	Proposed National Constitution Government should consider efforts to address rangeland biodiversity and ecosystem an integrated element of sustainable development policies (macroeconomic and agricultural policy and climate change). Management and conservation of rangeland biodiversity and ecosystem frameworks need to be integrated into sustainable development planning Establishment of policies to promote biodiversity conservation and sustainable use Policy and strategy analysis: Foster policy and strategy analysis and influencing in order to improve the ecosystem conservation.
Rangelands Legislations	Provision of political endorsement of proposed Rangeland Conservation and Fodders Resources Development Bill Contradictory definitions of "forests and rangelands"	Ratification of Rangeland Conservation and Fodders Resources Development Bill, 2013. Strengthening enforcement capacities of the Government passed a Forest and Renewable Natural Resources Act in 2002
Good governance	Appropriate range use policies and legislative frameworks Effective institutional support Strong coordination as a result of conflicting and overlapping mandates. Efficient decentralization system that has resulted in usefull communication and coordination between local levels (states) and national level(the Central Administration)	Mainstreaming and adoption of the Pastoral Strategic Action Plan (2014-2020) into economic frameworks and sectoral policies. One of its features is: control degradation of resources, conserve forage plants genetic resources, enhance livelihoods of pastoral and agro-pastoral groups, alleviate poverty at household and community levels and increase their resilience under an environment of climate change. Development of newly Agriculture Sector Investment Plan one of its main Strategic Objectives is Development and protection of natural resources sector to ensure its renewal and sustainability. Empowerment of Pastoralists and traditional farmers so that they can participate and contribute to formulation of appropriate policies and their implementation. Sudan has links with a number of international and regional frameworks that are related to agro biodiversity including conventions, organizations and networks. clarify land tenure and resource rights., Strengthening policy and legislation towards natural resources management and land use system

Enabling factors	Key Challenges	Key Opportunities
Information gap on rangeland biodiversity and ecosystem	Narrowing the gap of Information in the fields of rangeland biodiversity and ecosystem planning and development. Raise the awareness on the total value of rangeland biodiversity and ecosystem Strengthening institution capacities, continuity of survey, monitoring and renewal of baseline data which form regular activities of projects and programs, and loss or miss-location of important documents generated by comprehensive studies and situation analysis have intensified the information gap. Promotion of qualified technical staff in the fields, limited budgets and lack of appreciation by decision makers and those who control funds of the value and importance of monitoring and updating data, sometimes add to this gap Adequate training and promote raising awareness of targeted communities	Promotion of activities that bring about payment of ecosystem services or reward for environmental services from participatory conservation and restoration of degraded rangelands. Rangeland biodiversity and ecosystem conservation can only be sustained when public awareness is raised and policy makers have access to reliable information upon which sound policies and decisions are made. Actions to conserve forage plant genetic resources should be planned and implemented at a scale determined by ecological and social criteria. Information and knowledge systems Establish user friendly information and knowledge systems such as databases on rangelands and fodder crop development to enhance accessibility to end-users Capacity building: Foster the development of human, institutional and technical capacity building in the area of rangeland management and fodder crop production.

Enabling factors	Key Challenges	Key Opportunities
Roles of Partners	Access of knowledge between government, donors and other actors when allocating fund for existing initiatives. Sufficient understanding in interventions introduced by outsiders of the local socio-cultural situation and associated regulations, and with actually involving local communities to identify what they need and how it can be introduced.	Enhancing strategic investments and partnerships Cooperation between different parts of the community is essential to increase effective engagement in rangelands biodiversity conservation. More private expenditure on biodiversity conservation and partnerships between sectors are necessary for successful outcomes. Governments need to partner with other sectors and, importantly, with the primary industries sector The government, through its own resources and in collaboration with donor communities and organizations, should provide capital and infrastructure, introduce appropriate technology and enhance national staff abilities to formulate, implement and monitor relevant actions to mitigate climate change impacts and increase local communities' resilience. Government institutions, NGOs, CBOs and Native Administration should play a leading role in communicating information, sharing knowledge, lessons learned and experiences on dealing with impacts of climate change and environmental deterioration. They can mobilize community for joint actions and active participation in efforts to address the consequences of climate change.
Indigenous Knowledge(IK)	Constructive attitudes towards IK among national elites and foreigners who openly disparage the relevance, usefulness and credibility of IK for conservation of range and natural resources.	Integrating Indigenous Knowledge, and experience in dealing with rangeland biodiversity and ecosystem can provide valuable knowledge which can be useful in designing and implementing conservation The government should support local communities to plan and manage in their own capacities and according to their indigenous knowledge and experience. They are efficient managers of the range resources upon which their livelihoods depend.
Supporting Research and Technology Transfer	Research and Technology gap	Multidisciplinary research and participation of producers is required

Enabling factors	Key Challenges	Key Opportunities
Utilization of funding	Sufficient financial resources allocated directly related to management of Rangelands ecosystem. privileged prioritization and allocation of resources for rangeland sector and natural resources.	Availability and allocation criteria of financial resources The Roles of Partners The government, through its own resources and in collaboration with donor communities and organizations, should provide capital and infrastructure, Partnerships will also have to be established between the public financial sector and the private sector, thereby improving awareness and participation of the economic players involved

5.2 Finance mechanisms

Based on the analysis of baseline expenditures, the existing funding will not cover the identified financial needs for NBSAP and therefore, there is a need to seek for other mechanisms to fill out the gap.

There are different of potential sources of finance, therefore, finance mechanisms could be introduced for financing biodiversity conservations and sustainable use these include Public finance (annual budget) , Climate funding including (NAPA integration, REDD and REDD+), environmental fiscal reforms such as Park entrance fees, hunting fees park fees, removal of harmful subsidies , biodiversity offset (mining offset and compensation), private sector involvement, Access and Benefit sharing (ABS), regional and international funding institution.

5.2.1 Climate Change

REDD+ mechanism: Conserving the country's renewable natural resources particularly forests, woodlands, range resources and wildlife habitats, assessment of their present condition and subsequently subject them to sustainable management and maximizing their direct and indirect benefits in a participative, transparent and equitable manner, by the year 2020 REDD+ mechanism will provide fund about 15 million USD.

NAPA integration: Synergy between climate change and biodiversity projects for implementing. A climate change adaptation projects with 2.8 million Dollars will be implemented up to 2016**.** The project activities include rehabilitation of rangelands and forest**.**

The social implication of REDD+ mechanism is targeting work on the livelihood local people, conservation of the biodiversity, safeguards of the environmental & social issues, also it will strengthening the governances. Also the implication is mainly on the vulnerable people to increase their income generation. Environmental implications include the forest conservation, rehabilitation and sustainable management, and the encouragement of carbon stock for voluntary markets to support the forest environment. On the other hand REDD+ strengthening the policies of all the sectors which is counted as forests drivers, the support on the revision of policies and the links policies of all these sectors. Also allows to share the local people in the preparation and the implementation of REDDD**.** The Mechanism will not have any legal or administrative implications as long as well trained staff for the management of the projects is available.

5.2.2 Biodiversity offset: Environmental impact assessment (EIAs)

According to Environment Protection Act an environmental permit is required for any development project or activity that may have negative impact on environment; as it stated in article 17; with respect to permit, by the competent authority, for projects or programs, every person, who desires to enter into any such project, as may probably affect the environment and natural resources negatively, shall present an environmental feasibility study, signed, on the part of the evaluation and follow-up committee . Such projects or activities include industry, mining, oil, construction activities including roads, dams etc. The mechanism can help in mitigating any adverse impacts on environment in general and on biodiversity in particular. Therefore the mechanism is legally and environmentally feasible. However, the mechanism needs to assign an institution for monitoring process. Well trained staff is also needed which may have cost implications. The estimated amount of money to be generated by this mechanism for the next 5 years is **750,000$** to be paid by the project proponent or the investors.

5.2.3 Environment fiscal reform

Environmental fiscal reform includes Park entrance fees, hunting fees and other uses fees , which will be paid by the visitors, community, hunters or any other beneficiaries these are estimated to be 900,000$ in 5 years which will be used for biodiversity conservation. Only commitment from government is needed to allocate part of these fees to biodiversity conservations. Awareness raising of communities and other users and raising of the exiting administrative staff are also needed.

5.2.4 Private sector involvement

The private sector can play a central role in mobilizing resources for conserving biodiversity. It is therefore important to develop innovative financial mechanism to mobilize private finance for implementing NBSAP. This could be achieved through encouragement of private sector to invest and program a financial support over multi-year timeframes as well as make multi-year funding commitments. This can be achieved through Public-Private Partnerships (PPPs) which is considered as effective financing mechanisms, especially for biodiversity conservation projects due to the limited public resources to meet the biodiversity finance gap. One of the clear examples for Public-Private Partnerships is sugar industry and its direct role in biodiversity conservation through the development of forest projects on 5% of the total projects' areas. The estimated amount of expenditures in developing these forest projects is about 2,194,187$ in the past 25 years. It worth to mention that many of private sector organizations are dedicating decent amount of their annual revenues to the CSR activities that could be partially oriented to biodiversity conservation with the guidance of the resource mobilization committee or the relevant authorities.

5.2.5 Regional International funding institution

There are some projects and activities related to biodiversity including wetlands and coastal and marine biodiversity funded through the regional organizations such as Regional Organization for environment Protection of Red Sea and gulf of Aden PERSGA, AU, it is expected to generate funds up to $6000. Global Environment facilities (GEF) allocation is amounted to 4.5 million dollars for the period 2015-2020.

This in addition to other potential mechanism that can be introduced to support the funding the biodiversity conservation and sustainable use such as Economic incentives including the encouragement of farmers to grow indigenous varieties instead of improved one.

Access and Benefit sharing ABS: Sudan ratified Nagoya protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization on 7 July, 2014. ABS is regarded as suitable framework that provide the country with a good basis for developing and implementing related policies and plans for safeguarding the genetic resources and enhancing their sustainable utilization for the benefit of the people and providing access on the basis of fair and equitable benefit. ABS could generate different benefits which could be invested in conservation of biodiversity. Biodiversity and the environment can also be used to generate funds, through tourism and recreation activities this is beside Benefit sharing fund of the international treaty of the plant genetic resources for food and agriculture.

On the other hand; reducing the expenditures on pesticides that has negative impact on biodiversity can be considered as a one of key finance mechanism for biodiversity conservations. The annual expenditures on pesticides is estimated to be 40 million dollars, therefore, It is important to put these mechanisms in place to channel these funds back into activities, which support biodiversity conservation activities.

The following table summarizes the prioritized finance mechanisms with the responsible actors and the expected revenue which will generate.

Table (5) the prioritized financial mechanisms &revenues

Priority Finance mechanisms	Total expected revenue from prioritized finance mechanisms potential revenue generated or cost savings for each mechanism (USD)	responsible actors or institutions involved in deployment
Private sector	2,194,187$	Private sector companies
Climate funding NAPA integration	2.8 Million	Donors, Ministry of environment, HCENR, Forest corporation and physical development, Ministry of Agric. ministries at state level
REDD+	15 Million $	Forests
Biodiversity offset (EIA)	$750,000	Projects owners, relevant ministries
Park entrance and hunting fees	$ 900,000	Ministry of tourism and wildlife, Ministry of finace
Regional and International funding institutions	10,5 million	GEF, PERSGA, IGAD

5.3 Operational resource mobilization plan

In order to mobilize the identified financial resources for full implementation of the strategies and actions included in the NBSAP and achieving the Aichi Targets certain steps and actions are needed towards implementation of the identified key financial mechanisms

Table (6) Resource mobilization action plan

Priority Finance mechanisms	Necessary steps in implementing key financial mechanisms	Budget	Time for deployment
Private sector	Awareness raising	$100,000	2015
Climate funding NAPA integration	Development of project proposals	$100,000	functioning
REDD+	Implementation of the projects	-	2015
Biodiversity offset (EIA)	Approval of EIA regulation , awareness raising	50,000	2015
Park entrance and hunting fees	Building capacities of the management staff, awareness raising,	$100,000	2015
Regional and International funding institutions	Development of project proposals	$200,000	2015

Recommendations

- Integrating resource mobilization into national budget
- Establish and strengthen partnership between private sector organizations and conservation groups to deliver real on-the-ground conservation outcomes, this include assessments and conservation of unique flora and fauna, research and development, support for protected area site management programs and proactive community development programs to provide sustainable economic and social benefits... etc.
- Establish and strengthen key research institutions (biodiversity center, ecotourism center, biodiversity training and livelihood center, botanical gardens, gene banks, information centers .. etc).
- To encourage the establishment of private protected areas.
- Biodiversity Offsets, Similar to carbon offsets, in a biodiversity offset the polluter pays for damage they have done to biodiversity by creating or buying an offset/ credit.
- A natural capital tax can either impose a price on the extraction of natural resources (fee on timber extraction, mining) or activities that negatively impact the provision of biodiversity or ecosystem services (development tax).
- Encouragement of ecotourism activities which considered as a useful mechanism for generating money to support the conservation efforts.
- Environmental impact assessments (EIAs) are used widely to integrate environmental, economic and social concerns into decision-making processes. But they often address biodiversity issues in only a general way, without baseline surveys or consideration of possible indirect or cumulative impacts of a proposed

project on biodiversity in an area. Private sector can play an important role in improving the coverage of biodiversity concerns in EIAs.

- The regulatory bodies has to strengthening its monitoring and enforcement role to achieve the sustainable development goals
- Building capacities of the different stakeholders particularly in financial fields that are relevant to financing biodiversity ecosystem, hence NBSAP.
- Strengthen existing financial institutions and explore new and innovative financial mechanisms.
- Recognition of biodiversity plan projects finance into the national budget**.**
- Prepare studies and project proposals in the different fields regarding biodiversity conservation activities to submit to the Regional and International funding institutions.
- Improvement and provision of financial mechanism to decrease loss of biodiversity .
- Strengthening policies and legislations on natural recourses conservation

References

Annual Report, 2013. Wildlife General Administration. Khartoum –Sudan.

Agricultural Development Program Report 2008-2010. 2011. The Higher Council for Agricultural Development. Khartoum – Sudan.

Annual Budget for Ministry Agriculture for the years 2010-2013. Ministry of Agriculture and Irrigation.

Badri, Suad. 2012. Sudan Environmental Threats and Opportunities Assessment with Special Focus on Biological Diversity and Tropical Forest. USAID, Washington, DC.

FAO SIFSIA 2012: Land Cover Atlas of Sudan.

.Ministry of Finance and National Economy - International Cooperation General Directorate- Coordination Unit. Financial Data for Aid Information Report 2013 Khartoum – Sudan.

Government of Sudan, Five Years National Strategy 2012-2016 .

FNC Annual reports (2009- 2014

Global Forests Resource Assessment/Sudan 2010 (FAO/2010)

HCENR, 2013. Stocktaking and Assessment Report for National Biodiversity Targets Setting. Khartoum, Sudan.

Readiness Preparation Proposal of Sudan 2014 (FNC)

Ten Years Strategy Plan after Separation of Sudan 2011-2021 (Forests National Corporation)

UNDP (2014) Transforming Biodiversity Finance: The Biodiversity Finance (BIOFIN) Workbook for assessing and mobilizing resources to achieve the Aichi Biodiversity Targets and to implement National Biodiversity Strategies and Action Plans Version 8.0