KENYA NATIONAL BIODIVERSITY STRATEGY & ACTION PLAN

2019 – 2030

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ACRONYMS

CBD - Convention on Biological Diversity
CGIAR – Consultative Group for International Agricultural Research
COP – Conference of Parties
DRSRS - Department of Resource Surveys and Remote Sensing
GEF - Global Environment Facility
GIS - Geographic Information Systems
IMCE - Inter-Ministerial Committee for Environment
IUCN – International Union for Conservation of Nature
KARI - Kenya Agricultural Research institute
KEPHIS - Kenya Plant Health Inspectorate and Services
KERI - Kenya Forest Research institute
KFS - Kenya Forest Service
KMFRI - Kenya Marine and Fisheries Research Institute
KWS - Kenya Wildlife Service
LNC - Lead National Consultant
MDGs - Millennium Development Goals
MENR - Ministry of Environment and Natural Resources
NBSAP – National Biodiversity Strategy & Action Plan
NEMA - National Environmental management Authority
NMK - National Museums of Kenya
NPC - National Project Coordinator
PSC - Project Steering Committee
SDGs – Sustainable Development Goals
TNC – The Nature Conservancy
UNEP - United Nations Environment Programme

Cabinet Secretary's Foreword

At least 40 per cent of the world's economy and 80 per cent of the needs of the poor are derived from biological resources. In addition, the richer the diversity of life, the greater the opportunity for medical discoveries, economic development, and adaptive responses to such new challenges as climate change.

The variety of life on Earth, its biological diversity is commonly referred to as biodiversity. The number of species of plants, animals, and microorganisms, the enormous diversity of genes in these species, the different ecosystems on the planet, such as deserts, rainforests and coral reefs are all part of a biologically diverse Earth.

By developing and ensuring implementation of the Kenya National Biodiversity Strategy & Action Plan (NBSAP) 2019-2030, we as a country, clearly demonstrate our commitment to taking appropriate actions for the biodiversity conservation and sustainable use. Indeed, all our diverse cultures have their roots in our biological diversity in some way or form.

Declining biodiversity and new emerging challenges to the implementation of the current NBSAP are the key reasons why the revised and updated Kenya NBSAP 2019-2030 has been prepared.

In Kenya, we are fortunate to be surrounded by an abundance of nature. It supports our livelihoods and enriches our lives, and there is a close and enduring cultural bond between the people of this nation and the wildlife and habitats we share it with. Though an increasing number of us now live in cities, towns and suburbs, nature is often still close by and many of us are lucky enough to have the opportunity to engage with it on a daily basis. That engagement takes many forms: it can be the farmer who depends on biodiversity to rear livestock or grow crops, fishermen navigating our coastal and inland waters, or families taking a stroll through urban green spaces where nature continues to adapt and live in the heart of our cities.

The revised NBSAP 2019-2030 demonstrates Kenya's continuing commitment to meeting and acting on its obligations to protect our biodiversity for the benefit of future generations through a series of targeted strategies and actions. It is a concrete effort on

the part of those at the forefront of protecting biodiversity in Kenya to clearly identify the challenges we face, to lay out the actions we will take and, moreover, to hold ourselves to a wide range of forward looking and ambitious commitments at local, regional and national level.

Biodiversity loss threatens our socio-economic and cultural sustainability, thus requiring both national and sub-national protection in order to guarantee the services for future generations. Current national governance regarding biodiversity conservation does not adequately provide protection, and the future post-2015 as defined by agenda 2030 (Sustainable Development Goals)) constitutes an opportunity to improve the conservation of biodiversity for the well-being of present and future generations in the country. In this vein, it is timely that Kenya's revised NBSAP 2019-2030, will be in tandem with the SDGs implementation timeframe.

We however, take cognizance that it is not an easy task to fully implement the new NBSAP, but we should not retreat from it because it is not easy. In the short term it compels us to focus on achievement and in the longer term drives us to find new ways to find a sustained and sustainable balance between our modern human existence and the natural world that allows that very existence.

The targets set in this plan are in the context of the six strategic goals. The selected goals have laid out a clear framework for our national approach to biodiversity conservation. Focusing on these pillars will ensure that we build on the efforts and achievements of the past years while looking ahead to what we can achieve over the next ten years.

In order to fully operationalize the new NBSAP 2019-2030, it has to be framed as call for action, with the active participation of different stakeholders. The scientific community shall be a key stakeholder in this process by providing the country with the best information available and by recognizing what it is still unknown.

It is my sincere belief that this revised NBSAP will strengthen and support our endeavors, and our resolve, to protect biodiversity and to bring it into the mainstream of our daily lives. I am optimistic that its implementation over the next ten years by the range of stakeholders, across the public, private and civil sectors of Kenyan society, and in cooperation with our colleagues across Africa and beyond the continent, will see us come

together in celebrating many success stories and achievements. Biodiversity benefits us all and to continue to enjoy those benefits we must continue to engage with each other, working together to secure, protect and conserve the vital building blocks of life that it provides.

Mr. Keriako Tobiko, CBS, SC.
The Cabinet Secretary, Ministry of Environment and Forestry.

Acknowledgement

It is credible to state that the boundary for biodiversity loss has already been transgressed in various parts of the country, and as a result, many ecosystems have lost the resilience conferred by diversity and are at heightened risk of collapse.

Often, the value of biodiversity becomes apparent only when it is lost. For example, with the global decline of honeybee populations, growers can now calculate the monetary value of pollination services that were once provided for free by nature.

Certainly, biodiversity conservation planning is complex, transcending disciplines cutting across several institutions and individuals. The development of this Updated National Biodiversity Strategy and Action Plan required contribution from a range of actors and contributors to ensure that a super bio-diverse country such as Kenya is able to sustainably conserve and protect its biodiversity. The contributors to the NBSAP 2019-2030 came from all levels of government, civil society, private sector, national and international actors and individuals and I would like to personally recognize and appreciate the concerted efforts of those who played their part.

My sincere appreciation goes to the Multi Sectoral Steering Committee, Lead National Consultant (Dr, Helida Oyieke) and NBSAP Consultants (Mr. Stephen Ndiboi and Ms. Jane Kahata) under the coordination of the Ministry of Environment and Forestry. The Multi Sectoral Steering Committee included experts from the National Museums of Kenya, Nature Kenya, National Treasury and Planning, National Commission for Science, Technology and Innovation (NACOSTI), Council of Governors (COGs), National Environment Management Authority (NEMA), Ministry of Agriculture, Livestock, Fisheries and Irrigation, Ministry of Water and Sanitation, Ministry of Transport, Infrastructure and Housing, Ministry of Devolution & ASALs, Ministry of Education, Science and Technology, Kenya Forest Service, Kenya Wildlife Service, Kenya Forest Research Institute (KEFRI) and Kenya Marine Research Institute (KMFRI) among others.

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I equally express my gratitude to the MEAs' Office Secretariat that synthesized and edited the NBSAP 2019-2030.

I would also sincerely thank and acknowledge the United Nations Environment Programme (UNEP) and Global Environment Facility (GEF) for the financial and technical support that facilitated the successful review of the NBSAP.

Dr. Ibrahim M. Mohamed, CBS.
The Principal Secretary, Ministry of Environment and Forestry.

EXECUTIVE SUMMARY

Kenya is a country of diverse and rich habitat. The humid broadleaf forests along the coast of the Indian Ocean give way to lush grasslands and savannas. The Kenya Lake System of the geologically dramatic Great Rift Valley is a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site, and, Mt. Kenya, the nation's namesake, is the second-tallest elevation on the continent.

A burgeoning service industry continues to grow in Kenya, and ecotourism plays a big part in one of the East Africa's large economies. Visitors flock to the country to see Africa's "Big Five." But, lions, elephants, rhinos, leopards, and buffalo are just a handful of the treasured species in the country. Baboons, zebras, giraffes, flamingoes, and more are enjoyed by tourists, thanks to a strong national park system and a network of wildlife reserves.

Beyond the service sector, agriculture accounts for almost a quarter of Kenya's gross domestic product (GDP). Rearing livestock is popular in the savannas, and the country's primary crop exports produce include coffee and tea. But, even with such fertile lands, rapid population growth and inadequate infrastructure contribute to frequent food insecurity in Kenya.

Given the importance of biodiversity to the national socio-economic and cultural sustainability, it is worth noting that without a proper balance between all life forms and ecosystem, there will be a loss of life forms and hence impacting to the nation's growth and development in all sectors.

Biodiversity conservation is essential for our existence and basically valuable in its own right. Biodiversity provides fundamental building blocks for many goods and services which a healthy environment provides. Other than the basic needs, it also provides us with recreational, cultural and spiritual nourishment.

Kenya ratified the Convention on Biological Diversity (CBD) and is committed to its implementation and promotion of all the three objectives. These are the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits arising from use of genetic resources.

In 2015, Kenya prepared the 5th National Report to the CBD which provides an overview of recent governmental and non-governmental activities on biodiversity management in Kenya. It shows that progress and achievements have not been fully realized as outlined in the Aichi Biodiversity Targets. There are many success stories and improvements in biodiversity protection and restoration much as there are also areas of concern. Further the report also indicates that significant progress has been made in the implementation of the convention, CBD strategic plan and the Aichi targets. However speedy implementation is heavily affected by the country's inadequate capacity with respect to its financial, human, scientific, technical and technological capability as well as inadequate mainstreaming of Aichi targets in sectoral strategic plans at county and national levels.

Kenya has ratified the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization. The country continues to review and enact statues and regulations and take up necessary measures to ensure that ecosystems' capacities are maintained in providing goods and services as well as support livelihoods of local populations.

The 5th CBD Kenya Report further highlights the progress made in the implementation of the convention, the ten year Biodiversity strategic plan (2011-2020) and Aichi Biodiversity targets which were adopted during COP 10. Kenya has made substantial progress in achievements of Millennium Development Goals (MDGs) and is gearing up for the post 2015 Development Agenda (SDGs).

According to the Ministry of Devolution and Planning's Millennium Development Goals Status Report 2013, Kenya made good progress on the MDGs. The report highlight some of the following achievements:

- Kenya made great strides in environmental sustainability as seen in articles 42, 69 and 70 of the Constitution of Kenya 2010, which stipulates the people's right for a clean and healthy environment. Article 43 gives the right to clean and safe drinking water for all in adequate quantities, accessible and adequate housing, and reasonable standards of sanitation. Article 69 further obligates the State to work to achieve and maintain a tree cover of at least ten per cent of the land area.

- In 2013, Kenya's area under forest cover is estimated at 6.99% (FAO classification) from 6.6% in 2011. Gazetted forests cover 1.24 million hectares (ha) out of which 141,000 ha are industrial exotic plantations which supply wood materials to the forest based industries.
- There was a significant reduction in the rate of loss of biodiversity as illustrated in table 1 below.

Table 1: Biodiversity Status and Trends

Indicator	1990	2000	2003	2005	2007	2009	2011	2013	2015 Target
7.5 Proportion of total water resources used	7.5	n/a	n/a	n/a	n/a	n/a	14.2	n/a	18
7.6 Proportion of terrestrial and marine areasprotected	7.696	8.244	8.244	8.244	8.244	8.244	8.255	8.255	8.255
7.7 Proportion of species threatened with extinction	Critically endangered – 5 Endangered – 9	Critically endangered – 5 Endangered – 9	Critically endangered – 5 Endangered – 9	Critically endangered – 5 Endangered – 9	Critically endangered – 5 Endangered – 9	Critically endangered – 4 Endangered – 9	Critically endangered – 5 Endangered – 8	Critically endangered – 5 Endangered – 9	

Source: National Water Master Plan 2030 (Ministry of Environment Water and Natural Resources)

- Intensification of conservation and sustainable management of natural resources: This has led to restoration of 123,179.9 ha degraded areas through protection of natural regeneration and deployment of a work force of 2,500 armed forest rangers to protect the natural forests through regular patrols. Six catchment management strategies within the catchment areas have also been formulated for the management, use, development, conservation, protection and control of water resources.
- Establishing the Kenya Forest Service to enforce all forestry rules and regulations: In addition, Community Forest Associations (CFAs) have been formed to allow communities to participate in the joint management of forests.

In relation to progress in the realization of newly launched global SDGs, Ministry Of Devolution and Planning Report on the Implementation of the Agenda 2030 for Sustainable Development in Kenya, June, 2017 indicates that lessons learnt from MDGs implementation have shown that strong partnerships and collaboration amongst

stakeholders are critical in the successful implementation of the SDGs. One important step that has been undertaken towards realization of SDGs is the mapping of all relevant stakeholders who will be involved in the implementation of the SDGs. This will involve renegotiation of the roles, responsibilities and relationships between the different stakeholders and ensure a strong collaboration and creation of synergies which are necessary in implementation of the SDGs. Other achievements highlighted in the report referred above, just to mention a few include:

- Kenya developed the National Disaster Reduction Strategy and Policy and National Disaster Preparedness and Response Strategies in 2016.
- Enactment of the National Drought Management Authority Act, 2016 and adoption of the 10 year Ending Drought Emergencies (EDE) Strategy covering the period, 2012-2022.
- The Climate Change Act 2016 establishes the Climate Change Council which comprises stakeholders from National Government, sub national Governments, the private sector, civil society, communities and academia.
- The Forest Conservation and Management Act, 2016 provides for the conservation and management of public, community and private forests and, areas of forest land that require special protection.
- In support of the East Africa Community (EAC) Polythene Materials Control Bill, 2016 which proposes a total ban of plastic bags in the EAC countries. Kenya has already placed a total BAN on plastic bags with effect from August 2017.
- The Government enacted Fisheries Management and Development Act 2016 and also continue to enforce controls for exploitation of fisheries resources.
- Since 2015, there has been natural forest conservation through rehabilitation of 600,000 ha of the five major water towers. Tree planting was carried out on 403,034 ha of farms and dry lands. In addition, 21,031.6 ha of industrial forest plantations and 40,987 ha of commercial forest woodlots were established during the period. Further, 150,000 ha of farm and private commercial forestry and 2,649 ha of nature based enterprises (non-wood forest products) were established to increase forest cover. The proportion of forest area in the total land area was 5.96 percent in 2015.
- Green Schools and Commercial Tree Growing for a Green Economy programme was established. The Bamboo Development and Commercialization Strategy

(2014-2017), Green Economy Assessment Report and Sustainable Environmental and Restoration Programme were launched.

- Review of regulations on EMCA Act, Forest conservation and Management 2016 and, Wildlife Conservation and Management 2016 sets good biodiversity management approaches. There has been development of eighteen wildlife regulations which forms a long term solution to biodiversity benefit sharing and corridors ownership.

In 2010, during COP 10, the Parties to the Conference adopted decision X/2 on the Global Strategic Plan for Biodiversity 2011-2020, which included the adoption of twenty biodiversity targets also known as Aichi Targets. This decision required parties to the Convention to develop NBSAPs to address the targets. Kenya has thus undertaken to review the NBSAP of 2000, in accordance with the guidance provided by the NBSAP forum and subject to review every ten years. The NBSAP 2019-2030 therefore aims at reducing loss of biodiversity, promoting the value of biodiversity and improving community livelihoods.

Further, the Updated NBSAP 2019-2030 is expected to assist the country with the ability to formulate and manage sectoral and cross-sectoral programmes to meet the objectives of the Convention on Biological Diversity through a cost effective approach within the context of national sustainable development efforts, and to report to the Convention on progress achieved in implementing agreed commitments.

This document covers Country Profile, Current Biodiversity Status and Trends; Analysis of Challenges; Policy, Legal and Institutional Framework; Threats to Biodiversity; Principles and Targets; Priority Actions and Implementation Plans.

BIODIVERSITY STATUS AND TRENDS IN KENYA

Kenya covers a land area of approximately 583,000 square kilometers and straddles the Equator between approximately 4.5° South and 4.5° North latitude. With a coastline of approximately 640 km, the total area of the Kenyan Marine Exclusive Economic Zone (EEZ) extending 200 nautical miles is about 230,000 square kilometers. Thus, by area, about 28% of Kenya's ecosystems are marine and 72% are terrestrial.

About two thirds of Kenya's land is less than 900 meters above sea level and one third is comprised of highlands. The highlands, mainly in south-western Kenya hosts five major Water Towers (Mount Kenya, Mount Elgon, the Aberdares Range, the Mau Escarpment, and the Cherangani Hills). The Great Rift Valley, stretching north- south across the country, splits the highlands into a western and eastern part. The Rift Valley contains numerous closed basin saline lakes and some freshwater lakes, including Lake Naivasha and Lake Baringo in the eastern branch of the Rift, and Lake Victoria, which lies between the two Rift branches. Freshwater and saline ecosystems cover about 8% of Kenya, including rivers, lakes and wetlands with Lake Victoria, Lake Turkana, Lake Naivasha, and Lake Baringo being the four largest inland water bodies.

The national biological resources are fundamental to national prosperity in the light of Kenya constitution 2010, Kenya Vision 2030 and Sustainable Development Goals (SDGs). They provide Kenyan population with food, medicines, energy, shelter, employment and foreign exchange. Further, to offering multiple opportunities for human prosperity, national biological resources are vital to national economic engines such as agriculture, energy, tourism, manufacturing, wholesale and retail trade, business process outsourcing (BPO) and financial services sectors, which largely depend on these resources in many aspects.

Kenya is endowed with diverse ecosystems and habitats that are home to unique and diverse flora and fauna. The country's rich biodiversity can be attributed to a number of factors, including a long evolutionary history, the country's varied and diverse habitat types and ecosystems, diversity of landscapes and variable climatic conditions. About 70% of national biodiversity resources are found outside protected areas, while the remaining 30% are protected within national parks, reserves, sanctuaries, gazetted forests, and heritage forests.

The country is rich in biological resources comprising of approximately 25,000 species of invertebrates and 7,000 species of plants, 2,000 fungi and bacteria recorded so far. An enormous species of plants and animals inhabit the country's varied habitats, ranging from its crowded and colorful coral reefs to icy alpine moorlands. What is however, clear is that Kenya's biodiversity is under threats from a variety of sources include natural and anthropogenic aspects, and without concerted efforts for research and focused

conservation actions, we are likely to lose unique species some of which are endemic to Kenya.

In addition to agricultural expansion and urban growth, biodiversity is threatened by a number of issues including: overexploitation; pollution; invasive alien species; exploration and extraction of oil and gas; climate change; genetic erosion; poverty; the need for economic growth; political and social instability in neighboring countries; culture and beliefs; inadequate awareness and knowledge; and inadequate policy, legal and institutional response.

While Kenya government recognizes the use of ecosystems approach as the best methods for conserving biodiversity, her main challenge is in the enforcement and compliance , and limited resources for implementation of the legislative, regulatory, policy frameworks. Further to enforcement challenge, there is need to harmonize laws, regulations and policies as well as mainstreaming biodiversity conservation in order to realize the objectives of the CBD convention.

PRINCIPLES, GOALS AND TARGETS (NBSAP 2019-2030)

The NBSAP 2019-2030 augments the national vision 2030 "*improving its economic performance and the lives of its citizens without undermining the environment upon which so much of its national earnings and individual people's livelihoods depend*" importance of biodiversity and hence, it is consistent with Kenya's development vision 2030 and the 2020 Aichi Biodiversity Targets. NBSAP 2019-2030 will be defined by the following vision, mission, principles, goals and targets:

Vision

"By 2030, Kenya will have a highly valued, conserved and sustainably utilized biodiversity contributing to socio-economic wellbeing of the people of Kenya."

Mission

"To enhance and foster partnerships for conservation and sustainable utilization of biodiversity for continued provision of ecosystem goods and

services for human wellbeing through mainstreaming into all sectors of the economy."

Guiding principles

- **Principle of preventive action**: Conservation of biodiversity is better achieved by preventing environmental harm than by endeavoring to remedy or compensate for such harm.

- **Precautionary principle**: Where there is a threat of significant reduction or loss of biodiversity, lack of complete scientific certainty should not be used as a reason for postponing cost-effective measures to avoid or minimize such a threat.

- **Polluter Pays principle**: Those who cause damage to biodiversity should bear the costs of preventing it, removing it or reducing it.

- **Public participation and public access to information and justice in environmental matters**: The public should have access to environmental information and the right to participate in the environmental decision-making process and to have that participation taken into account in the decision-making process.

- **Good governance**: Governance is the process of decision-making and the process by which decisions are implemented. Good governance is participatory, consensus-oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of law. It ensures that corruption is minimized, the views of minorities are taken into account and that the voices of the most vulnerable in society are heard in decision-making. It is also responsive to the present and future needs of society.

- **Sectoral integration**: Biodiversity conservation and sustainable use concerns are taken into account in relevant decision-making processes in sectoral or cross-sectoral development policies, including the legislative process, plans, programmes and individual decisions.

- **Ecosystem approach**: The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. An ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological

organisation, which encompass the essential structure, processes, functions and interaction between organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems. The ecosystem approach requires adaptive management.

Goals

The six defined strategic goals for intervention provide a clear guidance for the development of national targets and an action plan with priorities for biodiversity protection.

Goal1: Mainstream biodiversity conservation and sustainable use into decision-making processes across all sectors to address the underlying causes of biodiversity loss.

Strategic target 1: By 2030, at the latest, the people are made aware (including through participatory world/international days celebrations) of the values of biodiversity and sustainable land use and are taking necessary steps to conserve and use nature sustainably.

Strategic target 2: By 2030, at the latest, biodiversity values have been integrated into national and county development and poverty reduction strategies, planning processes, business strategies, budgeting frameworks and are being incorporated into national accounting and reporting systems.

Strategic target 3: By 2030, at the latest, positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent with national and international priorities and obligations.

Strategic target 4: By 2030, at the latest, Government agencies, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption of food, water, energy, minerals, oil and gas and infrastructure development and have kept the impacts of use of natural resources well within safe ecological limits and ensure biodiversity net-gain in the production process.

Strategic target 5: By 2030 harmonize policies, regulations and institutional frameworks to effectively support sustainable biodiversity management, use and consumption.

Goal 2: Reduce the Direct Pressures on Biodiversity and Maintain their Capacity to Provide Goods, Services and Support Livelihoods.

Strategic target 6: By 2030, the rate of loss of all natural habitats, including forests, is brought close to zero, and degradation and fragmentation is significantly reduced.

Strategic target 7: By 2030, Kenya's forest cover has increased to at least ten percent of the land area of the country.

Strategic target 8: By 2030 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches and ensuring that exploitation of the fisheries stocks and species are within safe ecological limits.

Strategic target 9: By 2030 areas under agriculture, aquaculture, river systems, wetlands, dry land, mountain and hill tops, and forestry are managed sustainably based on spatial land use plans and management plans, ensuring biodiversity conservation.

Strategic target 10: By 2030, the rift valley lakes and all areas that define the flyway for migratory birds and also serve as habitats for other species are conserved and monitored and measures for effective management of their catchments taken to ensure biodiversity is maintained for posterity.

Strategic target 11: By 2030, pollution, including excess nutrients, has been brought to levels that are not detrimental to ecosystem function, biodiversity and human well-being.

Strategic target 12: By 2030, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their re-introduction and establishment.

Strategic target 13: By 2030, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

Strategic Target 14: By 2030 increase by 50% the climate adaptation and mitigation activities awareness and actions across all sectors in the country.

Strategic target 15: By 2030, the impacts of climate change or ocean acidification on vulnerable coral reefs along the coast are minimized so as to maintain their integrity and functioning.

Goal 3: Safeguard Ecosystems, Species and Genetic Diversity Including, Agro-Biodiversity to Improve the Status of Biodiversity.

Strategic target 16: By 2030, at least 17% of terrestrial and inland water areas, and 10 % of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved including community conservation areas and conservancies, and are integrated into the national grid of protected areas, wider landscapes and seascapes.

Strategic target 17: By 2030, Kenya RED listing process for key taxa (if possible all) and Key Biodiversity Areas (KBAs) have been completed, documented and disseminated.

Strategic target 18: By 2030 the extinction of known threatened species have been prevented and status of degraded KBAs improved.

Strategic target 19: By 2030, the genetic diversity of cultivated plants and domesticated animals including wild relatives and other socio-economically as well as culturally valuable species are maintained.

Strategic target 20: By 2030, measures are put in place to halt trade on products from endangered animal and plant species including rhino horns and elephant tusks.

Strategic target 21: By 2030, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Strategic target 22: By 2030, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 30 per cent of degraded ecosystems, including 10% of tree/vegetal cover, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Goal 4: Promote and Enhance Fair and Equitable Sharing of Benefits Accruing from Utilization of Biodiversity and Ecosystem Services.

Strategic target 23: By 2030, local communities across all protected areas, Key Biodiversity Areas (KBAs), Important Bird Areas, Conservancies and wildlife rich community lands are involved in sustainable livelihoods improvement programmes and income generating activities and are actively engaging in biodiversity conservation, education, advocacy, monitoring and reporting.

Strategic target 24: By 2030, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is implemented consistent with national legislation.

Goal 5: Strengthen Participatory Planning, Knowledge Base and Capacity Building for Biodiversity Conservation.

Strategic target 25: By 2030 each government agency, county government, business sector, civil society and all entities operational in Kenya have developed and adopted policy instruments, and have implemented NBSAP in an effective and participatory manner and are reporting their efforts through established national monitoring, reporting, accounting and coordination frameworks.

Strategic target 26: By 2030, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the NBSAP at all relevant levels.

Strategic target 27: By 2030, local communities in / around key biodiversity areas (KBAs), protected areas, habitats of particular significance to biodiversity have governance frameworks to support and take action for biodiversity as they contribute to local development activities within gender differentiated roles and responsibilities.

Strategic target 28: By 2030, the science based knowledge and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss is strengthened, widely shared, transferred and applied. And GBIF (Global Biodiversity Information Facility) Kenya node will be operational with relevant and robust biodiversity management information.

Goal 6 - Mobilize Financial, Technological and Human Resources

Strategic target 29: By 2030, budgetary allocations to biodiversity related agencies and programmes have doubled.

Strategic target 30: By 2030, environmental tax reform policy and legislation is developed to assist in mobilizing funds for conservation.

Strategic target 31: By 2030, sustainable tourism and local market for sustainable rural products and services are enhanced and a percentage of the accrued financial gains used for conservation purposes.

Strategic target 32: By 2025, a policy and law for business sector is developed and applied to allow business tax rebates for their obligatory contribution to environment through national environment charities.

Strategic target 33: By 2025, Payment for Ecosystem Service (PES) schemes and frameworks are in place to facilitate restoration for water catchments, carbon stocks and biodiversity net-gain in the production/development process.

Strategic target 34: By 2025, voluntary and in-kind contributions by communities are recognized and accounting frameworks developed and applied to capture the full scale of domestic contribution to biodiversity conservation.

Strategic target 35: By 2019, mechanism for international cooperation, overseas development assistance for direct and indirect financing and technological cooperation negotiations developed and applied.

Strategic target 36: By 2020, the national coordination office for the current NBSAP will be in place for the purposes of monitoring, reporting, information sharing, mobilization of funds and facilitating the country to meet its CBD obligations.

Strategic target 37: Strengthen and equip institutions and relevant arms of government, including private sector, with the requisite financial, technological and human resources to effectively implement the Strategy.

THE ACTION PLAN

The NBSAP 2019-2030 is presented as a road map to achieving biodiversity conservation targets in the country while also fulfilling international and regional obligations. The action plan sets the time required to realize the action, performance and verifiable indicators and allocates responsibilities for implementation to different institutions that include Government Ministries, Departments and Agencies (MDAs), County Governments, Private sector, Research and Academic Institutions, NGOs and CBOs.

Effective and efficient implementation of NBSAP requires public participation and partnership with non-state actors, fostered through development and implementation of Sub-national (i.e. sector and local) action plans For successful implementation of NBSAP it has been imperative to build inclusive partnerships between State (relevant ministries, departments and agencies, county governments) and Non-State Actors (International and national NGOs, CSOs, Private Sector, etc.) during development and implementation of NBSAP.

Mainstreaming biodiversity conservation into sector policies, plans and programmes is a pre-requisite towards successful protection of biodiversity and achievement of the long-term vision of the country. Kenya has so far made various efforts to conserve biodiversity by integrating it into various national, sector and cross-sector policies, plans and programmes. More effort is however, required especially considering the deteriorating trends in biodiversity in the country. NBSAP 2019-2030, has considered this need, and it calls for formulation of new policies for emerging policy issues and review of some policies. It also stresses on the need to strengthen implementation of the existing policies, plans and strategies.

NATIONAL BIODIVERSITY MANAGEMENT ARRANGEMENT

The implementation plan of NBSAP 2019-2030 focuses on capacity development, communication and outreach, participatory planning and partnerships, resource mobilization, clearing house mechanism, monitoring and evaluation and implementation arrangement as important components of the implementation plan.

Capacity is required to implement the NBSAP and thus specific areas such as the clearinghouse mechanism, access and benefit sharing, economic valuation, genetic assessments, and development and implementation of sub-national BSAPs have been identified for enhancement. To mainstream and complement existing measures, the NEMA mechanism for communication and reporting will be used for issues related to NBSAP implementation. Public awareness will be done through educational platforms as well as through the use of mass media platforms. Effective implementation of NBSAP will largely depend on government allocations supported with contributions from the international community; private sector, individual contributions as well as revenue accrued from the payment of ecosystem services.

The implementation mechanism gives the coordination responsibility to the Ministry responsible for Environment and Forestry under the guidance of CBD Focal Point. This NBSAP proposes establishment of an administrative mechanism to support the focal point and ensure adequate coordination in decision-making and planning amongst ministries, government agencies, local authorities, non-state actors and the public at large. For this purpose two committees, National Biodiversity Conservation Steering Committee (NBCSC) and the National Biodiversity Conservation Technical Committee (NBCTC) are proposed.

In recognition of the value of information sharing for planning and decision-making purposes, and in fulfillment of its obligation as a party to CBD, enhancement of the already established national Clearing-House Mechanism has been identified as one of the priorities in this NBSAP. Regular monitoring and evaluation of the implementation of NBSAP will be conducted.

The monitoring and evaluation will ensure that national objectives and international obligations are met. Sectors will prepare and present periodic reports of their monitory activities to the central coordinating unit at the ME&F. Measuring progress on the implementation plan will be based on the various priority actions, performance indicators and verifiable indicators and timeframe for each target as per the Action Plan. It is expected that the monitoring process will generate progress reports, which will later feed into the evaluation process, which will ultimately establish a basis for further planning and revision of the NBSAP. The information generated through this process will also feed into the obligatory national reporting to the CBD.

PART 1: BACKGROUND

1.1 Kenya's Ecosystems and Biodiversity

1.1.1 Kenya's Ecosystems

Kenya owes it rich biodiversity and natural capital to a diversity of environments, fashioned by topography and episodic changes in climate and habitat. No less important are the evolution, migrations and growing impact of humans on the landscape. Kenya's environment today is an amalgam of natural, modified and manufactured landscapes. By unearthing the forces that shaped the habitats, plants, animals and cultures we gain a deeper understanding of the living realms that underpin the economy and society of modern Kenya.

The country's geological strata and topographical features of its physical landscape, provide the template on which the interplay of climate, soils and hydrology create distinctive eco-climatic zones. Each eco-climatic zone has a characteristic assemblage of plants and animals adapted to its geography and climate. Eco-climatic zones merge into each other along rainfall and altitudinal gradients. This notwithstanding, they are still useful in describing the range of Kenya's physical and biological environments, as well as the traditional livelihoods and land-use potential of each region.

Within each eco-climatic zone variations in topography, soils, hydrology and human activity create locally distinctive ecosystems. Rivers draining the highlands create riverine woodlands and wetlands in the eastern lowlands of Tsavo. Freshwater lakes such as Victoria collect in basins with outlets to the sea, while saline lakes such as Nakuru and Bogoria are formed in closed drainage systems in the Rift Valley. Mountains such as Marsabit rise above the surrounding eco-climatic zone into cooler atmospheres, capturing rainfall and creating wetter microclimates that attract and support plants, animals and land-uses typical of moister regions. Rivers such as the Tana discharge into the ocean, creating tidal estuaries. The volcanic alkaline soils of Amboseli create open grasslands in a sea of surrounding bushland. The plants, animals and peoples within eco-climatic zones interact to form distinctive human-modified ecosystems such as the coral-reef and fishing communities of the coast; the patchwork of small farms, forest and

woodland of the highlands; and the migratory wildlife populations and pastoral lifestyles of savannah ecosystems such as Maasai Mara and Samburu.

Kenya's modern landscape of farms, ranches, indigenous and plantation forests, natural and irrigated wetlands, national parks and rangelands, scattered villages and crowded towns cannot be understood without taking account of the growth and activity of Kenya's people in recent decades. Table 2 show the existing eco-climate zones / ecosystems in Kenya.

***Table 2**: The Eco-Climatic Zones / Ecosystems in Kenya "they are mainly shaped by rainfall, temperature and evapotranspiration, which affect vegetation, land-use and agricultural potential" Source: Sombroek et al 1982, Pratt et al 1966, Woodhead 1970, Pratt and Gwynne 1977, Jaetzold et.al. 2009.*

Biome /Ecosystem	Area (%)	Major geological structure	Major Soils	Landform	Average rainfall (mm)		Average temperature (° C)		Population density/ km2)
					Min.	Max.			
Forest	2.7	Pyroclastic and ultrabasic igneous	Eutricplanosols, molicandosols, and humicnitisols	High-gradient montane, plain and ridges	600	2 400	14	28	50
Woodland	3.2	Marine and ultrabasic igneous	Eutricplanosols	Plain, high-gradient hills and mountains	260	2 200	14	29	20
Shrubland	22.3	Marine and ultrabasic igneous, Gneiss, mignetite , pyroclastic, sandstone	Gleyicsolonetz, haplicsolonetz and rhodicferrasols, Calcaricregosols, ferralicsolonchaks	Plain, high-gradient hills and mountains, plateau, and medium gradient mountains	250-270	1 900	14-16	29-32	10-30
Grassland/ Savannah	47.1	Gneiss, magnetite and sandstone	Calcaricregosols, calcic solonetz and haplicsolonetz	Plain, plateau, and high gradient mountains	200	1 900	18	32	5
Desert/Dunes/ Bare	1.0	Basalt and clastic sediment	Calcaricregisols, calcic solonetz and ferralics-olonchaks	Plain	200	2 000	18	33	5
Water bodies/ Wetland	4.5	Pyroclastic and limestone other carbonate rocks-Sandstone, olian and fluvial	Haplicsolonetz, eutric-fluvials and eutricver-tisols	Plain; plain and ridges	200	1 600	14-17	29-33	10-30
Cropland	19.2	Gneiss, mignetite	Rhodicferralsols and humicnitisols	Plain, ridges, and medium-gradient hills	250	2 000	13	29	200
Urban	0.1	Basic Igneous and pyroclastic	Eutricvertisols and humicnitisols	Plain and ridges	600	1 600	13	28	5 500

1.1.2 Kenya's Biodiversity

Kenya covers a land area of approximately 583,000 square kilometres. The country straddles the Equator between approximately 4.5° South and 4.5° North latitude. With a coastline of approximately 640 km, the total area of the Kenyan Marine Exclusive Economic Zone (EEZ) extending 200 nautical miles is about 230,000 square kilometers. Thus, by area, about 28% of Kenya's ecosystems are marine and 72% are terrestrial. About two thirds of Kenya's land is less than 900 meters above sea level and one third is comprised of highlands. The highlands, mainly in south-western Kenya, surround five major areas of mountains or hill ranges (Mount Kenya, Mount Elgon, the Aberdares Range, the Mau Escarpment, and the Cherangani Hills). The Great Rift Valley, stretching north- south across the country, splits the highlands into a western and eastern part. The Rift Valley contains numerous closed basin saline lakes and some freshwater lakes, including Lake Naivasha and Lake Baringo in the eastern branch of the Rift, and Lake Victoria, which lies between the two Rift branches. Freshwater and saline ecosystems cover about 8% of Kenya, including rivers, lakes and wetlands with Lake Victoria, Lake Turkana, Lake Naivasha, and Lake Baringo being the four largest inland water bodies.

Kenya's known biodiversity assets include 7,000 plants, 25,000 invertebrates (21,575 of which are insects), 1133 birds, 315 mammals, 191 reptiles, 180 freshwater fish, 692 marine and brackish fish, 88 amphibians and about 2000 species of fungi and bacteria (NEMA 2009a). Kenya is ranked third in Africa in terms of mammalian species' richness with 14 of these species being endemic to the country (IGAD 2007). An enormous species of plants and animals inhabit the country's varied habitats, from its crowded and colourful coral reefs to icy alpine moorlands.

What is however clear is that Kenya's biodiversity is under threat from a variety of sources includingnatural and anthropogenic elements., Without concerted efforts through research and focused conservation actions, the country is likely to lose unique species some of which are endemic to Kenya.

A. Plants Diversity

Underpinning and providing the foundation for Kenya's biodiversity is the richness and abundance of its plant life. A total of 29,614 vascular plant species are known from Africa, including 706 ferns, 44 gymnosperms and 28,864 angiosperms. The East African region has a documented 12,317 species: this is the highest plant diversity per unit area across mainland tropical Africa. Of these at least 7,004 (57 per cent) are found in

Kenya, though this number is likely to change as new species are recorded, existing data is collated and taxonomy changes. There are, in addition, 766 species of bryophytes, 511 ferns and 2,071 species of fungi and lichens in Kenya.

i. Endemic Plants in Kenya

Of the 7,004 plant species found in Kenya, 577 (some 8 per cent) are endemic. Due to many uncertainties of definition and gaps in collection, the actual figure can be between 268 and 100. The families of Aloaceae, Verbenaceae, Vitaceae and Euphorbiaceae are particularly rich in endemic plants, indicating their relative geographic isolation and adaptation to Kenya's landscapes.

National centres of endemism for Kenya include the coastal centre of endemism, recognized globally as the Coastal Forests of Eastern Africa Hotspot, and the isolated mountain peaks of the afro-montane forests, recognized as the Eastern Afromontane Hotspot. The two centres account for over 80 per cent of endemic species

ii. *Endangered and Threatened Species in Kenya*

Threatened species in Kenya were collated from a combination of those classified by the International Union for Conservation of Nature (IUCN) as Vulnerable, Endangered or Critically Endangered, based on the IUCN Red List Categories and Criteria (IUCN, 2001), and a Plant Red-listing workshop held in Nairobi in 2013.

A total of 356 vascular plant taxa (species, subspecies and varieties) in Kenya have so far been classified as Threatened or Near Threatened. Of these, 24 taxa (21 species) are Critically Endangered, 111 are Endangered (83 species), 167 are Vulnerable (128species) and 67 are Near Threatened (56 species). Threatened species are particularly common in the Fabaceae, Euphorbiaceae and Rubiaceae families. The highest number of threatened species, 95 in all, is found in the Coastal Forests Hotspot, mainly because of habitat fragmentation and the extensive loss of the highly-diverse coastal forest ecosystems such as Arabuko Sokoke National Park and the *Kaya* forests.

The main threats to plants vary with taxa, as shown in Table 3. Overall habitat destruction and transformation closely followed by over-harvesting, pose the most universal threats to plants. Climate change will pose an ever growing threat in the coming decades.

Invasive species pose a more localized significant threat mostly commonly associated with human settlement such as the Prosopis juliflora in dry lands. Pollution, especially

eutrophication from fertilizers leached from farmlands, poses a significant threat to many freshwater ecosystems for instance, aquatic plants (e.g., algae) which form part of the food of certain fish, e.g., tilapia are known to accumulate heavy metals.

***Table 3**: Threats to Plant Species Vary According to Location and Family. Habitat Destruction and Over-Exploitation are the Most Pervasive Threats to Plant Species. Invasive Species and Climate Change Pose Growing Threats. Source: Kenya's Natural Capital: A Biodiversity Atlas, 2015*

Taxon	Habitat Destruction	Over-exploitation	Invasive Species	Pollutants	Climate change
Acacias (family Fabaceae)					
African violets (family Gesneriaceae)					
Aloes (family Xanthoraceae)					
Boabab (family Malvaceae)					
Bryophytes (mosses and liverworts)					
Giant senecio (family Asteraceae)					
Cycads (family Cycadaceae)					
Ocotea					
Orchids (family Orchidaceae)					
Prunus Africana (family Rosaceae)					
Pteridophytes (ferns)					
Wild coffee (family Rubiaceae)					

Low *Intermediate* *High*

iii. Plants Conservation Status and Threats

The maps of plant diversity, endemic and threatened species show that current protected areas give poor coverage, even before threats posed by climate and land-use change are considered. Large protected areas, such as Tsavo, fall in between the high-diversity plant areas. The coastal forest protected areas are especially important in plant conservation but better protection is needed.

B. Animal Diversity in Kenya

Kenya possesses a remarkable variety of globally important and valuable animal species. These include birds, mammals, reptiles, amphibians, fish and invertebrates. Table 4 shows the diversity of large mammals in Kenya, and Table 5 show the diversity of other vertebrate and invertebrate animals.

***Table 4**: Orders of Mammals, Source: Kenya's Natural Capital: A Biodiversity Atlas, 2015*

Order	No of Family	No of species
1. Primates(Non-human)	3	20
2. Chiroptera(Bats)	9	108
3. Afrosoriscida (Tenerecs, golden moles)	2	2
4. Macroscellidea(Sengis)	1	6
5. Tubulidentata(Aardvark)	1	1
6. Hyracoidea (Hyraxes)	1	3
7. Proboscidea (elephant)	1	1
8. Soricomorpha (shrews)	1	36
9. Erinaceomorpha (hedgehog)	1	1
10. Pholidonta(pangolins)	1	3
11. Sirenia(dugong, sea cows)	1	1
12. Perissodactyla (odd-toed Ungulates)	2	4
13. Artiodactyla(Even-toed Ungulates	4	43

Order	No of Family	No of species
14. Cetacea(whales, Dolphins)	5	23
15. Carnivora	7	34
16. Lagomorpha	2	4
17. Rodentia	11	109

***Table 5**: Diversity of other vertebrate and invertebrate animals "The list of animal species currently recorded in Kenya is still far from complete. Far more survey and taxonomic work is needed, especially on invertebrates"*

Category	Species
Vertebrate Animals	
Small Mammals	220
Birds	1 100
Reptiles	200
Amphibians	110
Fishes	898
Total Vertebrates	2 528
Invertebrate Animals	
Dragonflies	194
Butterflies	900
Bees	800
Molluscs	297
Crustaceans	343
Corals	183
Total Invertebrates	2 717
Total Animal Species	5 245

Source: Kenya's Natural Capital: A Biodiversity Atlas, 2015

The wealth of vertebrate species broadly relates to rainfall and topography, with the richest areas found in the highlands. The distribution does, however, vary among taxa. Large variety of herbivores and carnivores occupy all terrestrial ecosystems ranging desert to forest.

i. The Large Mammals

Large mammals are the ecologically dominant species in Kenya's terrestrial ecosystems. The sheer abundance, impact and mobility of large herbivores, including elephants, wildebeest and zebra, and carnivores including lion, leopard and hyenas, govern the structure and dynamics of all major habitats from forests to deserts. The savannahs are among the most productive grasslands on Earth due to the diversity of herbivores, their range of feeding habits and resilience to harsh droughts. The patchiness and diversity of habitats in eastern Africa is largely due to the interactions

between herbivores and carnivores shifting across the landscape in response to seasons.

The East African savannahs are among the last places on Earth where the large mammals that dominated the Pleistocene era until 10000 years ago still survive in abundance. Kenya's parks and reserves, including Mara, Tsavo, Amboseli, Samburu and Nakuru are world-famous wildlife attractions.

ii. The Smaller Mammals

Kenya has 250 small mammal species distributed in eight orders: Afrosoricida (2 spp.), Macroscelidea (5 spp.), Hyracoidea (4 spp.), Rodentia (95 spp.), Lagomorpha (3 spp.), Erinaceomorpha (1 spp.), Soricomorpha (37 spp.) and Chiroptera (103 spp).

iii. The Birds

Kenya has one of the richest avifauna diversities in Africa, with around 1,100 bird species recorded. Of these, 800 species are year-round residents, 60 species are afro-tropical migrants moving within the continent and 170 are Palaearctic migrants that journey from Eurasia each winter. The major migratory flyways in Kenya include the 550km long coastline with its associated creeks, reefs and beaches, and the chain of lakes stretching along the Rift Valley from Turkana in the north to Magadi in the south.

Some 170 palaearctic migrant bird species migrate south to Kenya from Eurasia for the northern hemisphere's winter. Eleven of these species have local breeding populations that are year-round residents. Around 60 species in Kenya migrate only within Africa, including Madagascar.

- **The endemic birds of Kenya**

Four globally recognized Endemic Bird Areas (EBAs) are represented in Kenya (Stattersfield *et al* 1998). One other EBA, the Jubba and Shabeelle valleys, is only marginally represented in Northern-eastern Kenya. EBAs are defined as places where two or more bird species with a world distribution of less than 50,000 km^2 occur together. Kenya has two globally recognized secondary areas of importance—Kakamega and Nandi forests, and the northern Kenya short-grass plains. Table 6 shows a list of endemic birds in Kenya.

***Table 6**: Endemic Birds of Kenya*

Common name		Scientific name
i	Williams Lark	*Mirafra williamsi*
ii	Sharpes Longclaw	*Macronyx sharpei*
iii	Hinde's Babbler	*Turdoides hindei*
iv	Taita thrush	*Turdus helleri*
v	Taita Apalis	*Apalis fuscigularis*
vi	Aberdare Cisticola	*Cisticola aberdare*
vii	Clarkes Weaver	*Ploceus golandi*
viii	Jackson's Francolin	*Francolinus Jacksoni*

Source: Kenya's Natural Capital: A Biodiversity Atlas, 2015

iv. *Reptiles and Amphibians*

The country has over 220 reptile species, including 100 snakes, 100 lizards, 5 marine turtles, 5 tortoises, 5 terrapins and 1 crocodile. The centre of reptile richness in Kenya runs in an arc of habitats ranging from the coastal forests, though the bushes and grassland savannahs of the Kenya–Tanzania borderlands, and into the Rift Valley.

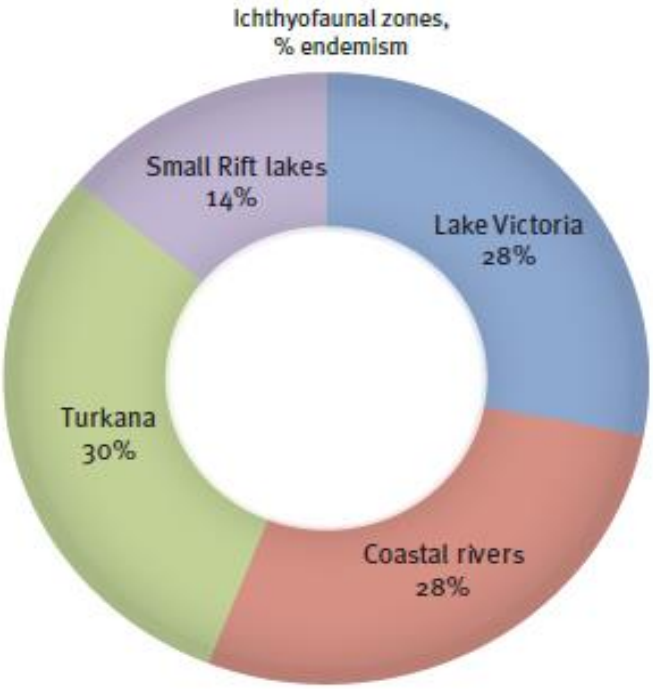
The distribution patterns of snakes and lizards are broadly similar, and point to the fact that the cold-blooded vertebrates prefer warmer lower altitudes but all latitudes on a global scale are suitable.

Amphibians are associated with wetter habitats and tree-frogs mostly with forest and mountain areas. Reptiles and amphibians in Kenya have not received as much taxonomic attention as other vertebrates, so large gaps still occur in specimen collection, mapping, and behavioural and ecological studies.

v. Fish

To date 206 species of fish have been catalogued from Kenyan fresh waters, and a further 18 have been introduced. The distribution of fish in Kenya's drainage systems is determined by the size of the aquatic basin, diversity of aquatic habitats, ability of fish to disperse, temperature, food availability, depth and water movement. Swamps and river habitats are also crucial dry land biodiversity conservation centres. Kenya is known for its high endemism of freshwater fishes, totaling 36 in all (see figure 1 that illustrate the prevalence of endemism in Kenya)

***Figure 1**: The percentage of endemism levels across drainage zones in Kenya*



Source: Kenya's Natural Capital: A Biodiversity Atlas, 2015

vi. Endangered and Threatened Vertebrate Species

The number of endangered and threatened species of vertebrates has been growing steadily with expanding human activity in the last few decades. Currently some 97 species are classified as critically endangered, endangered or vulnerable, as shown in table 7 below.

***Table 7**: Summary of Threatened Species of Vertebrates, Per Taxa*

Order	Critically Endangered	Endangered	Vulnerable	Total
Mammals	4	11	18	33
Birds	4	12	14	30
Reptiles	2	4	2	8
Fish	7	4	15	26
Total	**17**	**31**	**49**	**97**

Source: Kenya's Natural Capital: A Biodiversity Atlas, 2015

- **Vertebrate Conservation Status and Threats**

Similar to plants, a large proportion of Kenya's vertebrate species and many of the richest hotspots lie outside protected areas. The conservation coverage is relatively good for large mammals but poor for small mammals, birds, reptiles and amphibians. Habitat loss and exploitation are the most imminent threats. In the case of aquatic species, amphibians and fish are threatened by pollution (fertilizers, insecticides and, chemicals residues, as well as sediments). Birds face a significant threat from herbicides and pesticides in farming and ranching areas. Climate change is likely to pose a growing threat in the coming decades. Table 8 shows the main threats to vertebrates, per taxa.

***Table 8:** Summary of Main Threats to Vertebrates, Per Taxa.*

Taxon	Habitat loss	Over-exploitation	Invasive species	Pollutants	Climate change
Large mammals	●	●	●	●	●
Small mammals	●	●	●	●	●
Birds	●	●	●	●	●
Reptiles	●	●	●	●	●
Amphibians	●	●	●	●	●
Fish	●	●	●	●	●

Source: Kenya's Natural Capital: A Biodiversity Atlas, 2015

● *Low* ● *Intermediate* ● *High*

vii. Invertebrates Diversity

Kenya has over 25 000 invertebrates, many of them yet to be described.
Insects are the most diverse group of animals. Some of the major species listed for Kenya include 9 000 beetles, 900 butterflies, 500 bees, 650 ants, 60 thrips; but many of these groups have yet to be recorded or described. Insects include flies, wasps, bees, beetles, bugs, mantids, crickets, grasshoppers, ants, termites, lice, fleas, moths and butterflies.

Some 900 species of bees are estimated in Kenya. Most species are poorly understood by farmers with the exception of the honey-bee *Apis mellifera*. The richest bee habitats in Kenya include Kakamega Forest where over 240 species of bees have been documented, and the coastal forest and savannah ecosystems. Over 90 species of bees have been documented in Nairobi City Park. Table 9 shows a summary of some of invertebrates' species in Kenya**.**

Table 9*: Summary of Invertebrates' species in Kenya*

Invertebrate Animals	**Number of Species Present in Kenya**
Dragonflies	194
Bees	800
Butterflies	900
Molluscs	297
Crustaceans	343
Corals	183
Total Invertebrates	**2 717**

Source: Kenya's Natural Capital: A Biodiversity Atlas, 2015

Table 10 shows the main threats to invertebrates, per taxa.

Table 10: *Summary of Main Threats to Invertebrates, Per Taxa*

Taxon	Habitat loss	Over-exploitation	Invasive species	Pollutants	Climate change
Bees					
Butterflies					
Crustaceans					
Dragonflies					
Molluscs					

Source: Kenya's Natural Capital: A Biodiversity Atlas, 2015

Low *Intermediate* *High*

viii. Below-Ground Micro-Organisms

Biodiversity conservation has largely focused on above-ground species. Though the soil comprises a large proportion of the world's biodiversity, the below-ground ecosystems that play a central role in nutrient and water capture and recycling—on which plant production depends—have been poorly studied. The rich biota includes microbial fauna made up of fungi, bacteria and protozoans; mesofauna made up of taxa such as nematodes, mites, ants and collembolans; macrofauna made up of taxa such as arthropods and Earthworms; and megafauna made up of vertebrates such as rodents, moles and lagomorphs—rabbits and hares. Only in the past two decades has research focused on the richness and ecosystem services of below-ground biota.

- **Invertebrates and Micro-Organism Conservation Status and Threats**

The conservation status of most invertebrates and micro-organisms is poorly known due to the large number of species, and paucity of surveys.

1.2 Kenya Ecosystems and Biodiversity Threats, Consequences and Responses

The country's ecosystems and biodiversity threats, consequences and response are visualized within the DPSIR framework. This framework enables the identification of the main drivers [D] of change, the pressures [P] they create, current status [S], impacts [I] on ecosystems and species, and the responses [R] to these through the conservation measures in place. The drivers and pressure are taken as threats, and status and impacts as consequence, and responses are the formal and informal measures in place to contain and reverse losses.

In order to facilitate the design and development of Kenya NBSAP 2019 – 2030, a national stocktaking and assessment of Kenya's ecosystems and biodiversity was undertaken in 2018. It is worth noting that, in addition to the recently undertaken stocktaking and assessment, several government and public agencies have been regularly appraising the scale and scope of the threats, the status of biodiversity and the conservation measures being undertaken in the country. The following section briefly highlights key findings of the national biodiversity stocktaking and assessment that largely informed the selected strategic goals, targets and actions.

1.2.1 Threats to Biodiversity and Ecosystems

(i) Rapid human population growth

Kenya's population grew from about eight million people in 1960 to 10.9 million in 1969, 15.3 million 1979, 21.4 million in 1989, 28.7 million in 1999 and 38.6 million in 2009. The population now stands at 40 million, a fourfold increase from 50 years ago, with growth continuing at 2.9 per cent per year. Present projections put the population at 51 million by 2025 and 96.9 million by 2050 (UNDP, 2014). The rapid human population in the country is driving the need to exploit the ecosystems and biodiversity for sustenance and socioeconomic development.

(ii) Poverty

Kenya's population growth is compounded by poverty and inequality in access to and consumption of resources. With 46 per cent of its people below the official poverty line, according to the Kenya Integrated Household Budget Survey (Kenya National Bureau of Statistics, 2005–2006), nearly half of Kenya's population is too poor to meet

its daily nutritional needs. Most of the poor live in rural areas and depend on small farms and pastoralism. Population pressures and poverty combine to put large unsustainable demands on natural resources and the environment.

(iii) Expansion of agriculture and settlement

Crop production and pastoralism remain the main sources of livelihood for the majority of Kenyans. Most of the growth in agricultural production and trade between the 1960s and 1970s stemmed from expansion into marginal lands and from better market access of smallholders, rather than intensification. Irrigation is expanding in the dry lands, and water conservation and management are inadequate. Inappropriate crop production need large-scale land conversion to make up for low yields. The spread of farming follows the expansion of human settlement driven by population growth in the rural areas.

The upshot of population growth and agricultural spread has seen a steady decline in Kenya's per-capita land base. Population density in high-potential areas is six times the country's average. The average landholding of an agricultural household is less than one-fifth of a hectare. The dwindling size of landholdings and growing pressure on the land has led to higher wind and water erosion rates and declining soil fertility over much of Kenya, not to mention illegal forest settlement.

(iv) Resource Over-Exploitation

a) Production patterns

Kenya has a narrow economic base. Until 1980, the economy grew largely due to agricultural expansion, boosted by booming world prices for coffee and tea exports. Following years of economic downturn, the service sector, including banking, finance, tourism, transport and Information and Communications Technology (ICT), has expanded steadily over the last 10 years. Despite the upturn, the economy has yet to see a strong growth in industry and manufacturing, which currently accounts for 11 per cent of GDP. Agricultural output is still the mainstay of the economy and population growth and poverty are still putting heavy pressure on land and natural resources. Overuse and degradation is particularly widespread across the marginal arable and pastoral areas. Weak tenure and poor access to credit makes it hard for the poor to invest in the conservation and improvement of farms, herds, land and natural resources.

b) Consumption patterns

The emergence of the globally competitive Kenya projected by Vision 2030 depends on stabilizing population growth, the emergence of a prosperous society and a transition to an economy based on renewable energy and the sustainable use of its natural capital.

Changing lifestyle patterns based on a rapid growth in consumerism and weak conservation measures are outstripping the supply of most natural resources and causing extensive environmental degradation. Waste disposal and pollution are growing environmental hazards due to a rapidly expanding material culture, and construction and infrastructure. The threats will continue to grow as Kenya moves towards middle-income nation status by 2030.

(v) Climate change

Significant climatic changes have naturally shifted habitats and changed livelihoods in Kenya over the years. Plants, animals and people have shown considerable adaptability and resilience to these long-term, relatively gradual, changes. The rise in Greenhouse Gases (GHGs) and global warming due to human activity over the last century is, however, changing weather patterns at a quickening pace. Climate change is expected to significantly continue to alter Kenya biodiversity as species struggle to adapt to changing climatic conditions.

(vi) Institutional and Policy Obstacles

Responsibility for biodiversity is spread across many institutions, ranging from national and county governments to private landowners, local communities and NGOs. Several institutional and policy barriers impede the conservation of biodiversity. Foremost is the lack of a coherent integrated conservation policy that unifies dispersed and often conflicting legislation and policies in different sectors. Examples include the introduction of Nile Perch into L. Victoria for commercial purposes, which jeopardized one of the world's richest centres of fish evolution. Other institutional barriers and impediments include lack of technical expertise, planning and funding. Many of Kenya's wildlife and forest reserves lack the security and management capability to ensure protection.

Divergent value systems and cultural and religious beliefs also stall biodiversity conservation. Without the means to offset the losses from wildlife, the cost of conservation falls heavily on communities. Communities incur losses to livelihoods and risks to life and property, consequently, resentment for wildlife thwarts national aspirations and investment in conservation.

(vii) Habitat loss and fragmentation

Habitat loss and fragmentation, the largest threats to ecosystems and species, are driven largely by expanding human activity. Loss occurs from the spread and intensification of agriculture, settlement, infrastructure and industry. The risk of species loss and extinction rises steeply as habitats shrink and fragment. Kenya's forests are the most vulnerable to habitat loss. The Aberdares, Mt. Kenya, Mt. Elgon and the Mau have all suffered from human influx by subsistence and large-scale farmers, heavy extraction of water, and plant and animal wealth. The loss of species due to fragmentation often causes ecological disruption leading to a loss of productivity and resilience. A good example is the Aberdares National Park where the Tree Tops Lodge lost its prime tourist attractions, including the bongo and the giant forest hog, due to forest fragmentation and habitat degradation. The loss of migratory corridors on the Athi Plains south of Nairobi National Park led to a large reduction in the diversity and abundance of animals in the park and the collapse of wildebeest migration (Ogutu et al. 2013).

(viii) Degradation of land and aquatic resources

Even where habitat is relatively intact, degradation continues throughout much of Kenya. Examples include poor animal and farming husbandry practices leading to soil erosion, and loss of nutrients and productivity. Land and pasture degradation are particularly widespread in the marginal agricultural and pastoral areas where access to markets is poor and traditional husbandry practices have been abandoned. Human activity also has a large impact on terrestrial and aquatic ecosystems through fire and ecological disruption. Rivers, dams, lakes, and inshore marine waters are being polluted, while fertilizer and sediment deposits are leading to eutrophication.

(ix) Overharvesting

Overharvesting of species is a main cause of biodiversity loss. Overharvesting takes several forms, ranging from meat and trophy hunting to overgrazing, tree cutting and charcoaling. Overgrazing is the single biggest factor causing land degradation, loss of plant production and ecological changes in the rangelands. Tree cutting and charcoaling have a large impact on forests and woodlands.

Poaching, overfishing and uncontrolled harvesting of different plant and animal species are contributing to the decline of biodiversity. Some of the endangered animals species in Kenya are the African elephant, African lion, Black Rhino, Grevy's Zebra, Buffalo, Mangabey, Cheetah, Leopard, Hirola, Green sea turtle, Hawksbill turtle, Tana River Red Colobus, Sokoke scops Owl, Roan antelope and Gigasiphon (UNEP 2009). While biological diversity within the protected areas remains high, incidences of illegal extraction are common. Although the country's rhinos and elephants are kept under close surveillance, poaching remains a major threat to their survival. Thus, while Kenya was home to 20 000 black and white rhinos in the early 1970s, the number now stands at about 900. Elephant numbers also recorded an 85 percent decline over a 15-year period although these are now slowly recovering. Trends in the numbers of the black rhino and elephant are shown in Figures 2 and 3 respectively.

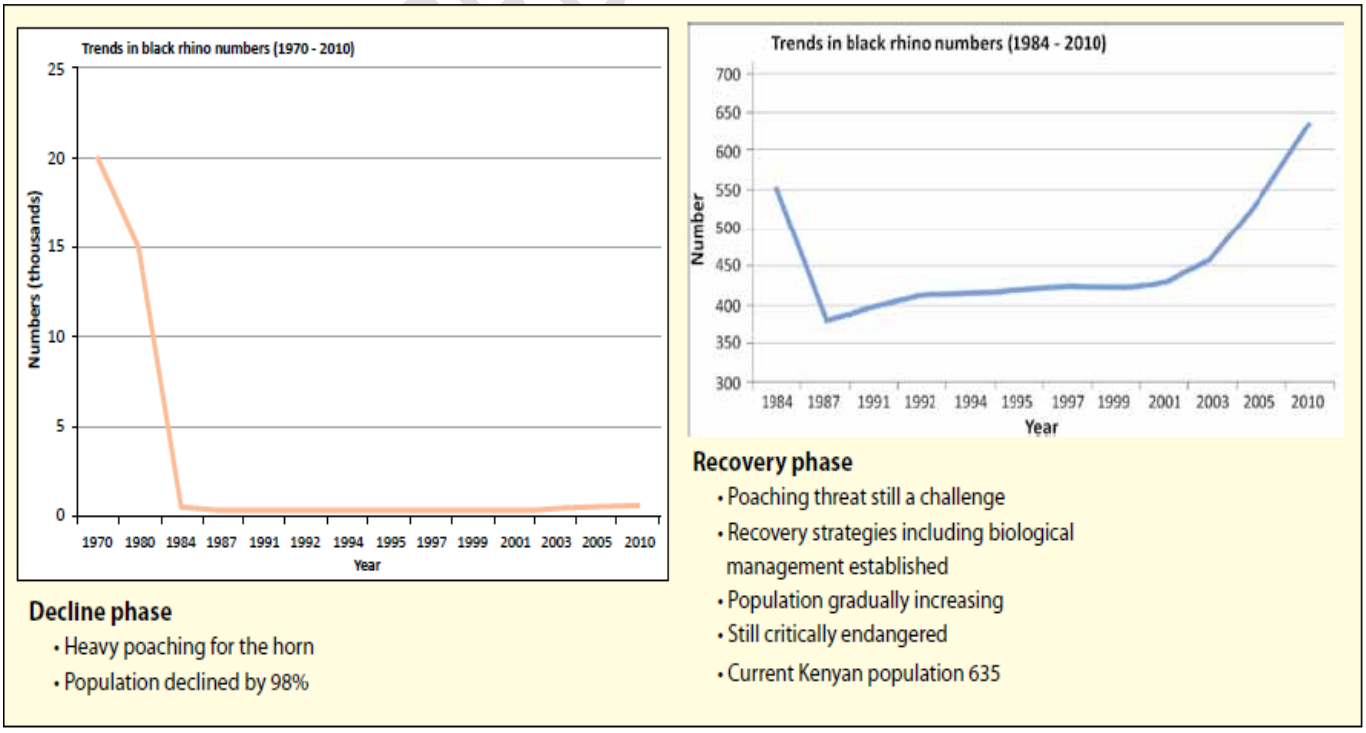


Figure 2: Trends in black rhino numbers, 1973-010 (Source: KWS 2010)

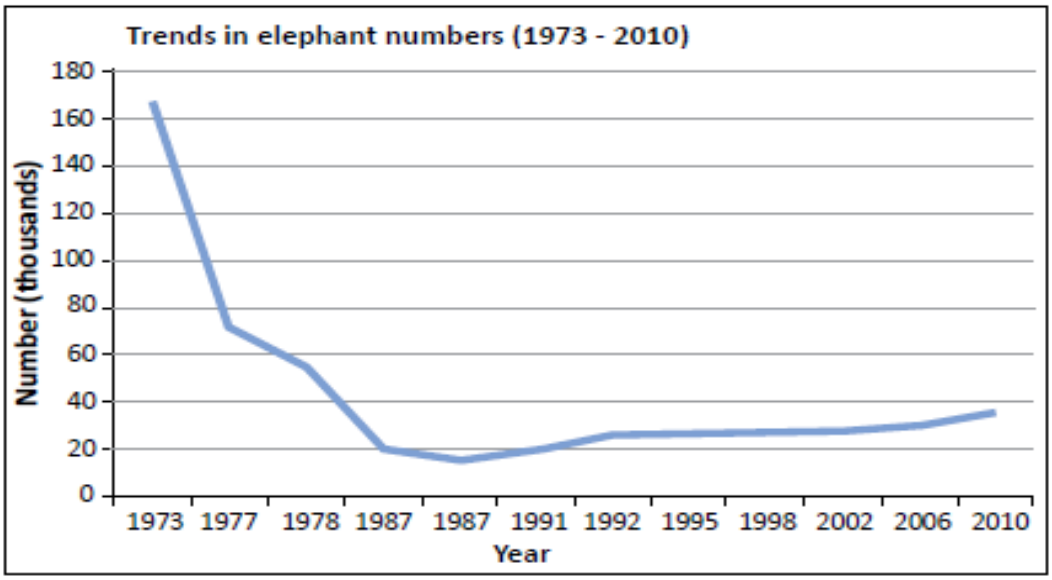


Figure 3: Trends in elephant numbers, 1973-2010 (Source: KWS 201)

(x) Invasive Species and Lethal Diseases

Invasive species have become a serious threat to native plants, animals and pastures. The water hyacinth *(Eichhornia crassipes)* has smothered large areas of inland lakes leading to a decline in fisheries production and livelihoods. The predatory Nile Perch, introduced into L. Victoria from the Nile basin, caused the extinction of many of the abundant chichlids species of fish. The tick-berry *(Lantana camara*) has invaded Nairobi and Oldonyo Sabuk National Parks, forming dense, bushy undergrowth that inhibits natural vegetation.

A number of naturally occurring pathogens and parasites also threaten native plants and animals. The pandemic epizootic virus, rinderpest, caused a continent-wide loss of wild ungulates when introduced by cattle in the late 1800s. Canine distemper virus, transmitted by dogs, killed a third of the lions in Mara-Serengeti in the 1990s. Tuberculosis and anthrax periodically kill many native animals, ranging from elephants to primates.

Invasive and infectious disease have become more pernicious and threatening to indigenous species because of expanded human activity. One example is Rift Valley fever, a lethal mosquito-borne virus associated with prolonged rainfall and flooding.

(xi) Other Causes of Biodiversity Loss

There are many other causes of biodiversity loss that vary widely among species. For example, cultural attitudes about nature and species differ and have a strong bearing on the status of species and biodiversity.

Aside from the many domestic factors in Kenya that bear on the state of biodiversity, international factors beyond its borders, and often outside its control, also pose a threat. The illegal trade in tusks and horns on the international market are two examples that have taken a heavy toll on Kenya's elephants and rhinos. Another is global warming, which will have a large impact on Kenya's biodiversity, economy and society yet lies largely outside its control.

1.2.2 Trends and Impacts on Biodiversity and Ecosystems

Table 11 represent a summary of causes of ecosystems and biodiversity degradation of specific biomes / eco-climatic zones in Kenya and the impacts caused.

***Table 11**: A Summary of Causes of Ecosystems and Biodiversity Degradation of Specific Biomes / Eco-Climatic Zones and their Effects.*

Eco-climatic zone	Threats	Effects
The rangelands: woodlands, shrub lands, grasslands and deserts	• Subdivision and fencing. • Urban expansion and settlement. • Heavy grazing and conversion to rain-fed and irrigated agriculture. • Resource conflicts. • Human–Wildlife conflict. • Poaching for trophies and bush-meat. • Loss of keystone species. • Blockage of dry season wildlife and livestock refuges. • Poor planning of water points. • Poor management of catchment areas and upstream water over-abstraction. • Climate change.	Competition over land and with wildlife. The conflict has become particularly intense where farms and permanent settlement invade wildlife ranges, leading to heightened crop and livestock depredations, and human and wildlife losses. Migratory wildlife herds are being curtailed by land subdivision, immigration, farming and settlement. Droughts have become more frequent and intense.
The forests: lowland, coastal, montane, mangrove and dry forests	• Smallholder and large-scale agricultural expansion. • Spread of commercial and technology-intense farming. • Water demand for agriculture and domestic uses. • Extraction of exotic timber species and plantations. • Illegal logging, charcoal production, and harvesting of forest products. • Biofuel production in dry and coastal forests. • Impact of fragmentation and elephant compression.	Overdependence on indigenous forests. Shrunk forests' biodiversity and ecosystem services.

Eco-climatic zone	Threats	Effects
Lakes, rivers and wetlands	• Water extraction for agriculture, industry and settlement. • Reduced outflows and inflows. • Reduced catchment recharge. • Conversion of wetlands to farming, settlement and pasture. • Loss of riparian vegetation. • Pollution. • Invasive species. • Overfishing.	Many perennial rivers and streams have become seasonal and ephemeral due to habitat destruction and water extraction. Many lakes such as Baringo and Turkana have fallen steeply in level and suffered siltation. Ecological disruption and, often, a loss of indigenous plants, such as water lilies and sedges, and animals such as otters and fish eagles.
Coastal and marine ecosystems	• Coastal development and beach erosion. • Illegal or unmanaged resource extraction. • Poor water and waste management and pollution. • Overfishing and destructive fishing practices. • Damage to the sea floor due to bottom trawling for shrimps and prawns. • Climate change, causing ocean warming and acidification.	Loss of important ecosystem services, particularly in protecting the coastline from storms, and in nutrient recycling. Proliferation of sea urchins and algal growth that reduce coral growth and the diversity of coral gardens. An estimated half of all mangrove forests have been lost over the past 50 years.
Moorland and Afro-alpine meadow ecosystem	• Global warming. • Tourism impact through erosion, fires, waste and pollution.	Due to climate change, a decline in the extremely cold-tolerant and high-altitude adapted plants and animals has been observed.

Source: Kenya's Natural Capital: A Biodiversity Atlas, 2015

Having briefly described the threats / causes of biodiversity loss across various eco-climatic zones, as well as corresponding effects, it is important to also have a snap outlook of the trends of Kenya biodiversity and ecosystems.

The supply and sustainability of renewable natural resources depends on the state of the ecosystems and biodiversity from which they are harvested.

According to Kenya's Natural Capital: A Biodiversity Atlas, 2015; wildlife trends in Kenya rangelands indicate large losses in the last 30 years. The period 1990s – 2000s registered heavy declines in Grevy's zebra (74%), Kongoni (68%), Topi (65%), Eland (62%), and Oryx (49%), Burchell's zebra (43%), Hunter's hartebeest (41%), Giraffe (39%)

and Impala (38%) populations, There were moderate declines in Grant's gazelle (29%), Warthog (28%) Waterbuck (16%), Lesser kudu (16%) and Buffalo (1%). There were positive increases in Elephant (2%), Gerenuk (3%), Wildebeest (16%) and Thompson's gazelle (38%) populations during the period (*Source: DRSRS)*. Table 12 depicts the trends of species that have experienced particularly extreme declines in their population.

Table 12: Species that have Experienced Particularly Extreme Declines in their Population

Species	1977 – 1980	2011 – 2013
Warthog	30,726	8,676
Lesser kudu	17,023	4,699
Thomsons gazelle	158,452	38,989
Eland	447,145	9,826
Oryx	64,313	13,726
Topi	126,330	22,239
Hartebeest	42,977	6,837
Impala	171,016	27,124
Grevy zebra	14,447	1,874
Waterbuck	15,619	1,906

Source: Ogutu, et al, 2016

On the other hand, Kenya's forest cover has been the subject of debate for many years. Where original closed-canopy forest covered around 12 per cent of Kenya's land surface, current estimates range from 1.7 to 3 per cent, depending on methodology. The Kenya Forest Service and Kenya National Bureau of Statistics for 2010 (KNBS, 2011) put indigenous closed canopy forest at 1140 000 ha, public forest plantations at 111 800 ha, private plantations at 90 000 ha, and mangrove forest at 80 000 ha. Tree plantations on farms are spreading and cover over 10 million ha. According to the Global Forest Resources Assessment of 2010 (FAO–FRA 2010), the overall woody biomass of Kenya's forest declined from 901 to 817 million tonnes dry weight over the two decades 1990 to 2010.

Table 13 shows a comparison of forests by type and cover undertaken by the Regional Centre for Mapping and Regional Development, and Kenya Forest Service, for the period 1990 to 2010 shows a continuing loss overall, but at a slowing rate, and gains in some categories.

***Table 13**: A Comparison of Forests by Type and Cover Undertaken by the Regional Centre for Mapping and Regional Development, and Kenya Forest Service, for the Period Between 1990 to 2010*

	Area In Hectares		
Forest Canopy Cover Per Forest Type	**1990**	**2010**	**% of Change**
Moderately Dense 40–65% CC	1 013 227	976 275	-4
Bamboo	20	8552	42 587
Mangrove	987	116	-88
Natural Forest	991 932	926 604	-7
Plantation Forest	20 288	41 003	102
Open 15–40 % CC	1 208 155	1 272 841	5
Bamboo	436	745	71
Mangrove	389	5 692	1 364
Natural Forest	1 191 054	1 247 614	5
Plantation Forest	16 277	18 790	15
Very Dense > 65 % CC	2 502 307	1 980 900	-21
Bamboo	55 548	76 396	38
Mangrove	60 442	42 720	-29
Natural Forest	2 259 184	1 728 180	-24
Plantation Forest	127 133	133 605	5
Grand Total	**4 723 689**	**4 230 017**	**-10**

Source: Regional Centre for Mapping and Regional Development, and Kenya Forest Service forest survey for the period 1990 to 2010.

The slowing trends suggest that forest conservation measures are beginning to take root. A 15 % increase in plantation forest indicates a steady growth in commercially grown forests in response to decreasing use of natural forests.

Having highlighted key threats and consequences to Kenya's biodiversity and ecosystems, the following sections will briefly illustrate some of the responses / initiatives by the government through policies, legislation and institutional reforms.

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1.2.3 Current Policies, Legislation and Institutional Framework

The Kenya government's current policies, legislation and institutional structure largely reflect the evolution of conservation awareness and responses since the creation of the modern state. The early focus on wildlife and natural resources began to expand in the 1970s, reflecting Kenya's strong participation in international efforts to combat global environmental threats. The government has established a robust national capability in terms of legislation of applicable laws and regulations, formulation of appropriate policies and designing effective institutions structure. The government has also shown commitment and adopted regional and international agreements and conventions relevant to biodiversity conservation.

i. Policies

In terms of policies which are relevant to biodiversity conservation, the country has formulated the following key policies, among others, since the inception of the first NBSAP:

- National Land Use Policy, 2018
- Wildlife Policy, 2012
- Forest Policy, 2005
- National Tourism Policy, 2006
- Environmental Policy, 2013
- Wetlands Conservation and Management Policy, 2015
- Climate Change Policy, 2016
- Aquaculture Policy, 2006
- Biotechnology Policy, 2006
- Agricultural Policy, 2015
- Livestock Policy, 2008
- Water Policy, 2012
- Food and Nutrition Policy, 2011
- Integrated Coastal Zone Management policy, 2013
- Science, Technology and Innovation Policy, 2013
- The National Policy on Traditional Knowledge, Genetic Resources and Traditional Cultural Expressions, 2009

ii. Legislations

To effectively implement conservation, sustainable use and development of biodiversity;
Kenya has developed the following legislations:

- The National Constitution of Kenya (COK 2010): Article. 69 of the Kenya Constitution 2010 cover biodiversity issues comprehensively. Other legislative instruments include;
- Environmental Management and Coordination Act (EMCA 1999)
- National Land Commission Act, 2012
- Wildlife management and conservation Act, 2013
- Land Registration Act, 2012
- Seed and Plant Variety Act, 2012

- National Museums and Heritage Act, 2006
- Noxious Weeds Act, 2012
- Land Act, 2012
- Forest Act, 2005
- Biosafety Act, 2009
- Kenya Agriculture and Livestock Research Act, 2013
- Water Act, 2002
- Climate Change Act, 2016
- Fisheries Management and Development Act, 2016
- Agriculture Act, 2012
- Physical Planning Act, 2012

iii. Strategies

Some of the strategies the country has developed and are being implemented include:

- National Biodiversity Strategy and Action Plan, 2000.
- Currently, the government is focusing on a 4 point agenda strategy for the next 5 years, dubbed "The Big Four Agenda", this will involve critical focus in improvement of access to affordable housing, food security and nutrition, universal healthcare and manufacturing. All the 4 focal point will significantly contribute to proper management of biodiversity and ecosystem services / goods.
- Vision 2030 strategic blueprint for Kenya – Framers of the Vision 2030 strategy did recognize that the growth of Kenya's economy rested heavily on the productivity of its natural resources and charted the path towards sustainability.
- LAPSSET Project - The LAPSSET Corridor Program is Eastern Africa's largest and most ambitious infrastructure project bringing together Kenya, Ethiopia and South Sudan. This project will significantly increase the capability of arid and semi-arid counties in Kenya to formulate and executive sustainable biodiversity management programs.
- The Northern Corridor Transit and Transport Initiative (NCTTI). The NCTTI involve implementation of member state agreements, monitoring performance and to transforming the Northern trade route into an economic development corridor and making the corridor a seamless, efficient, smart and green Corridor. This initiative will improve movement of goods and services and hence ease pressure on various natural resources.

- In 2015, Ministry of Environment Natural Resources and Regional Development Authorities, Kenya published a report titled "Kenya's Natural Capital: A Biodiversity Atlas", this report is intended to inform and re-invigorate stakeholders to act on the knowledge, institutional, policy, technological and economic development challenges highlighted in the atlas.
- Kenya has been reviewing biodiversity status and producing regular reports to CBD on status and trends on biodiversity and ecosystems in the country.
- National Climate Change Response Strategy (NCCRS), 2010 has been prepare and being implemented through NCCAP
- Kenya National Climate Change Action Plan (NCCAP) 2013-2017 has been implemented and a new NCCAP for the period 2018-22 is being prepared.
- Agricultural Sector Development Strategy (ASDS) 2010–2020
- Biotechnology policy 2006 under review to address other issues including IAS.
- National invasive alien species management strategy
- Strategic plan on management of invasive in protected areas (PAs)
- Kenya Coastal Development programme (KCDP), for sustainable management of Kenya's coastal and marine resources established
- Integrated Coastal Zone Management(ICZM) is in place and is being implemented
- In 2011 NEMA drew up *Integrated National Land Use Guidelines* and in 2013 Ministry of Water, Environment and Natural Resources drafted policy guidelines for collaborative natural resource management (CBNRM, 2013).
- To accelerate the implementation of various government strategies towards biodiversity conservation, the government has instructed all its semi-autonomous government agencies (SAGAs) to review their mandates and align then with sustainable natural resource management and where practical, take advantage of the various legal instruments at their disposal, to efficiently and effectively promote sustainable development.

iv. Institutional Arrangement

Although at present the national environment management matters cuts across various agencies, NEMA is the one charged with coordination and establishment of appropriate legal and institutional framework for management and conservation of biological diversity. Over the years the Kenya government has evolved various strategies in dealing with its environment and biological diversity. The country has a rich background in its attempt to implement the CBD targets, meet SDGs and set the stage for meeting its 2030 vision. Up to date the country has several ministries with

the portfolio of environmental conservation. The Ministries of Environment and Forestry, Lands, Finance, Special programs in the Office of the President, Agriculture, Fisheries and Agriculture have direct links with biodiversity conservation but in a rather uncoordinated manner. There are few linkages and even awareness on what each ministry should be doing and how synergy can be achieved. Further Kenya has also numerous research institutions, institutions of higher learning, parastatals and programs that handle different or even the same aspects of environment and even biodiversity related issues. Listed below are some of the national institutions where issues of the Kenya's biodiversity may be found and their roles examined:

i. National Environment Management Authority (NEMA).
ii. Kenya Forestry Research Institute (KEFRI)
iii. Kenya Agricultural and Livestock Research Organization (KALRO)
iv. Kenya National Bureau of Standard (KNBS)
v. Kenya Sugar Research Foundation (KESREF)
vi. Lake Victoria Environment Management Project
vii. Coast Development Authority
viii. Lake Basin Development Authority
ix. Uwaso Nyiro (N & S) Development Authorities
x. Tana River Development Authority
xi. Kerio Valley Development Authority
xii. National Universities with teaching and research activities at schools of Environment and Natural Resources Management (University of Nairobi, Kenyatta University, Moi University, Jomo Kenyatta University of Agriculture and Technology and Egerton University)
xiii. National Museums of Kenya
xiv. Kenya Forest Service
xv. Kenya Wildlife Services

In Kenya there are also several CGIAR centres such as ICIPE, ILRI, ICRISAT and IRRI as well as national and international NGOs who are working on biodiversity conservation. Suffice to state here that great efforts are being made in different sectors and by various national and international bodies whose efforts need to be well coordinated to make the country meet the targets of CBD.

v. Commitment to Regional Initiatives

The government of Kenya has been committed to various regional agreements and initiatives towards biodiversity management. Notable among these are the following:

- East African protocol on environment and natural resources of the East African Community(EAC)
- Biodiversity management programme (BMP) by Intergovernmental Authority on Development(IGAD)

vi. Commitment to International Agreements / Conventions

Kenya ratified the Convention on Biological Diversity (CBD) and has adopted the Aichi Goals and Targets. In its efforts to fulfill its obligations to the CBD, Kenya developed its first NBSAP 2000 which has guided biodiversity conservation to date. In addition, Kenya has adopted the related Nagoya Protocol on Biosafety and Nagoya Protocol on Access and Benefit-sharing into its biodiversity strategy and does ensure regular reporting on the progress of implementation. To enhance the taxonomic initiatives in Kenya, the country has also adopted the CBD Global Taxonomy Initiative (GTI) Programme of Work (PoW).

In addition to the CBD, Kenya is also a signatory to the following international biodiversity conservation conventions and agreements:

- The Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora;
- The Convention on the Conservation of Migratory Species of Wild Animals (Convention on Migratory Species);
- The Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR Convention);
- The Convention concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention);
- The International Treaty on Plant Genetic Resources for Food and Agriculture and,
- The International Plant Protection Convention.

Kenya has also ratified, adopted and is implementing other environment related instruments which augment biodiversity conservation, such as:

- Implementation of Nationally Appropriate Mitigation Actions (NAMAs) and
- National Adaptation Programmes of Actions (NAPAs) under UNFCCC
- NCCAP 2018 - 2022

1.3 Values of Biodiversity and Ecosystem Services in the Country and their Contribution to Human Well-Being

International and regional agreements and conventions do affirm that biodiversity forms the foundation of the Earth's life support systems and underpins the provision of ecosystem services, which are critical for sustainable livelihoods and human well-being.

People depend on biodiversity and healthy ecosystems as a source of food, income and insurance against various risks, such as external economic shocks, environmental disasters, impacts of climate change, or health risks arising from lack of access to clean drinking water and health-care services. The following paragraphs illustrate how biodiversity management has been articulated, and hence its value propositions by the CBD strategic plan, UN SDGs and the country's Vision 2030.

The Convention on Biological Diversity (CBD) has three main goals including: the conservation of biological diversity (or biodiversity); the sustainable use of its components; and the fair and equitable sharing of benefits arising from genetic resources. The specific / strategic goals include:

- Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society.
- Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use.
- Strategic Goal C: Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity.
- Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services
- Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building

Biodiversity and the ecosystem services do provide essentials for sustainable development (SD) and hence a major enabler in achieving the UN Sustainable Development Goals (SDGs). It is for this reason that maintaining healthy ecosystems

and biodiversity is included in SDG 14 (Ocean, Seas, Marine resources), and SDG 15 (Terrestrial Ecosystems), as well as in many other UN SDGs and targets.

Further, national biological resources are fundamental to national prosperity in the light of Kenya Vision 2030. They provide Kenyan population with food, medicines, energy, shelter, employment and foreign exchange. Further, to offering multiple opportunities for human prosperity. Vital national economic engines such as agriculture, energy, tourism, manufacturing, wholesale and retail trade, business process outsourcing (BPO) and financial services sectors, all largely depend on the country's biodiversity in many aspects. The following section shall outline in brief some of the specific benefits that biodiversity and ecosystem offer to the society and economy. In deed many of the biodiversity benefits are obvious however, several benefits are intrinsic and other have not been researched or discovered. **Table 14** below briefly highlights some of the biodiversity benefits to Kenyan.

***Table 14**: Biodiversity Benefits to Kenyan*

Biodiversity and Ecosystems	Benefits
Plants	Plants are the primary source of human food worldwide, mainly cereal crops, vegetables, fruits and nuts from over 7,000 species. They also provide construction and furnishing materials, pulp, and fibre. Plants have provided the main source of traditional medicines and a quarter of all drugs in the pharmaceutical industry, whether to cure cancer, lower the risk of heart disease or analgesics such as aspirin. Plants feature centrally in all cultures, as objects of spiritual reverence, beauty, adornments, aesthetics, romance, literature and art. Natural habitats, humanized landscapes, gardens, parks and arboretums play an ever-growing role in urban societies by providing areas of outdoor recreation and enjoyment.
Large Mammals	- Kenya's diversity and abundance of large mammals is world renown and the main pull behind the $1.3 billion tourist industry.
Small Mammals	Small mammals play crucial ecological roles in the ecosystem and are of economic importance to humans in many ways. Bats pollinate over 300 plant species, including culturally important indigenous species such as the baobab and commercially important agricultural species such as mangoes, guavas and bananas. Bats and small mammals feeding on fruits and nuts, disperse seeds and promote the regeneration and spread of forests, woodlands and shrub-lands. Rodents are important in spreading grass seeds and diversifying the composition of grasslands. Small mammals are also important in rural economies and traditional cultures. Small carnivores are particularly numerous in Kenya and keep rodent pests in check. They feature prominently in traditional folklore: hares are clever and used to council wisdom, the tortoise patience, and zebras the curbing of greed. Small mammals are also omens— bats of bad times and storks of coming

	rains. Because of their fast growth and short lifespans, small mammals are also early-warning indicators of environmental hazards such pesticides and toxins.
Biodiversity and Ecosystems	**Benefits**
Birds	Birds play a major role in the functioning of all Kenya's ecosystems as pollinators, seed dispersers, carnivores, scavengers, and seed, fruit and nut-eaters. Birds transport seeds over large distances and play a vital role in plant colonization. Many seed- and fruit-eating species are considered agricultural pests but also are an important source of food for subsistence societies. Kenya's rich and colourful variety of birds is a prime attraction of visiting and domestic tourists.
Reptiles and amphibians	Reptiles and amphibians are important second- and third-level consumers in the food-chain, regulating populations of small mammals, birds and invertebrates. This regulatory function has economic importance in controlling rodent and bird pests of crops and granaries. Aquatic amphibians control malaria by feeding on mosquito larvae. Crocodile farms provide sustainably harvested meat to restaurants and leather for goods such as handbags, belts and shoes. Large turtles are important marine herbivores along the Kenyan coast. Poisonous snakes are a threat to human life and may account for more deaths than any other wildlife, but are also a major attraction at snake parks. Snake venom is the subject of immunological and biomedical research. Amphibians are widely used in teaching anatomy and physiology in secondary and tertiary education, and are a sensitive biological indicator of agrochemical pollutants that damage ecosystems and people.
Fish	Fish play a fundamental role in the productivity and ecology of freshwater and marine ecosystems. They make up a large portion of the herbivore and carnivore sections of the food-web, supported by primary producers: plants. Fish have been a mainstay of many traditional fishing communities along the coast and around Kenya's major lakes and rivers. In recent decades commercial fisheries and fish farms have supplied both the domestic and export markets. The fish industry produces some 150 000 metric tonnes annually and accounts for 5 per cent of Kenya's GDP. Fish-oil is increasingly marketed as a heath supplement because of its high Omega-3 content. Economically important freshwater fish include tilapia, nile perch and catfish. Economically important marine species include demersals, pelagic bony fish, sharks and rays.
Marine invertebrates	- Crabs play many important roles including being a source of food for many marine animals and humans, nutrient recycling, turning over soils and playing a keystone role in food-webs. - The reef-forming corals create a barrier buffering the ocean from the tidal flats and beaches along most of Kenya's coastline. - Coral reefs and corals are important in ecosystem functioning, including nutrient recycling, and as the substrate on which other reef-dwelling animals and plants build up one of the most diverse and complex ecosystems on Earth. They also support other critical habitats such as sea-grasses and mangroves. Coral reefs provide an estimated US$ 30 000 million worth of goods and services each year to world economies, including, tourism, fisheries and coastal protection.

Biodiversity and Ecosystems	Benefits
Insects	- Insects are especially important in the pollination of both wild and cultivated plants ranging from coconuts, mangoes and pawpaws to oil palm. Insects are used as food by indigenous people and have played an important role in the history of human nutrition. Some insects are crops pests and vectors of diseases, however others play a key role in the biological control of pests. - Bees pollinate over three-quarters of flowering plants in Kenya.
Below-Ground Micro-Organisms	- Rhizobial bacteria forms nodules on leguminous plants and convert inert nitrogen gas in the atmosphere into nitrogen-containing organic compounds essential for plant growth. - Bacterium "*Bacillus thuringiensis*" produces proteinaceous spores with insecticidal properties, widely used in controlling pests of agricultural crops. - Some fungi decay wood and recycle vegetable matter. Others colonize roots and parasitize other harmful fungi. - Extremophile microbes could provide breakthroughs in bioengineering and hence bring great socioeconomic benefits to Kenyan. A case in point is the prospect of discovering extremophile microbes in Lake Bogoria that could contain robust industrial enzymes.

1.4 Barriers and Lessons Learnt in implementation of the First NBSAP

a) **Political/societal issues**

- There have been diversified political interests which have posed a significant challenge to the implementation of the NBSAP. Thus ecological degradation continues in many biodiversity rich ecosystems in Kenya. Essentially, actions are taken only where there are clear political gains.
- Limited public participation and stakeholder involvement. Even as some government departments and NGOs have been creating awareness on the need to combat biodiversity loss in many parts of the country, community engagement and participation still remain a major challenge.
- Lack of mainstreaming and integration of biodiversity issues into other sectors, including use of tools such as environmental impact assessments. In Kenya many development programs are in conflict with the desired biodiversity conservation activities. For example the land allocation and adjudication processes has encroached into many biodiversity rich areas in Kenya e.g. ASALs, Wetlands – the Dominion Farm in Yala Swamp, Marine and Coastal areas - hotels near marine parks and the developments in Chale Island.
- Political instability – political tensions and upheavals in the country create visible biodiversity conservation obstacles- i.e. status of insecurity for displaced

people; some of whom are experts who work in the field of biodiversity conservation. Biodiversity degradation is also rampant in refugee camps and resettlement areas.

- Lack of precautionary and proactive measures, causing reactive policies- for example the government decision to remove people from Mau Forest without providing clear alternatives.

b) **Institutional, technical and capacity-related obstacles**

- Institutional weaknesses have led to inadequate capacity to act. The various national institutions such as KALRO, KFS, Department of Fisheries, KWS, NMK, etc. especially their outreach programmes are not adequately equipped to handle biodiversity conservation activities.
- Lack of human resources – only a few university-trained environmental graduates find their way to biodiversity conservation activities in the respective institutions. The ones deployed to these institutions are also ill prepared since they do not have professional biodiversity background and hardly find opportunities to attend related short courses to improve their knowledge and skills.
- Biodiversity interventions in Kenya has not benefited from new and innovative transfer of technology and expertise as various institutions consider it as a side activity of their priority concerns.
- Biodiversity conservation practices lack up to date relevant data from well-designed scientific research. A survey of the several local organizations engaged in biodiversity work indicates that research capacity is lacking. Some well-trained people are in KARLO, NEMA, NMK, KEFRI and KMFRI but their institutional tasks may not be related to biodiversity research. Further, there is high mobility amongst professional staff, either transferred to irrelevant departments or resigning to join NGOs and international organizations for greener pastures as they are not well remunerated by the National Institutions.

c) **Lack of accessible knowledge/information**

- Through National Environment Management Authority (NEMA), Kenya established a National Biodiversity Data Base, but information hardly gets updated and rarely accessed by professionals and other stakeholders. This is a weakness caused by lack of proper coordination mechanisms.

- Although the NBSAP is clear about the need to promote better knowledge and information on consequences of loss of biodiversity and the corresponding goods and services this has not been well understood, demonstrated and documented by many practitioners and stakeholders to educate and create awareness to the communities who are also the beneficiaries and burden bearers. Further, insufficient efforts and resources have so far been targeting public education and awareness at all levels.
- In Kenya biodiversity conservation practitioners have neither integrated nor fully utilized existing scientific and traditional knowledge in their activities.

d) **Socio-economic factors, economic policy and financial resources**

- There has not been adequate financial and human resources for the implementation of NBSAP and hence CBD strategies. The available financial and human resources are scanty and fragmented.
- Efforts to conserve national biodiversity and hence realize the goals of NBSAP and CBD in Kenya have lacked economic incentive measures and benefit-sharing policies and framework. Therefore people are not inspired to participate in activities that conserve biodiversity. Rather they prefer to concentrate on economic activities even as they impact negatively on biodiversity.
- The majority of Kenyan population (> 60%) are poor and live in or near the fragile and biodiversity rich rural areas. This high population pressure on the local over-dependence and unsustainably consume biological resources and their rudimentary technology impact negatively on the local ecosystems and their biodiversity. Further the local communities' lack of capacities to handle the complex biodiversity conservation issues to enable them to effectively contribute to the implementation of NBSAP and the CBD strategies.

e) **Standards and criteria for selecting indicators**

This is major challenge that has emerged from the implementation of the NBSAP. Although several international indicators have been identified, Kenya is yet to develop its own derived from the CBD. This will ensure consistency between various agencies and working groups that wish through their projects to contribute positively to the realization of NBSAP and CBD objectives.

f) **Collaboration/cooperation**

In Kenya there are several actors in the environmental field that also deal in one way or another with biodiversity conservation and contribute to NBSAP. However, there are inadequate collaboration arrangements amongst partners even those that work in the same ecosystem. This situation does not spur synergism at the local, national and international levels since there is lack of horizontal cooperation and ineffective partnerships among stakeholders. Further, many ongoing programs hardly engage the scientific community. There is also a need to find out which stakeholders / organizations were left out in the implementation of the first NBSAP and incorporate them in the implementation of the revised NBSAP.

g) **Legal/juridical impediments**

Although Kenya is in the process of putting in place various sectoral policies and laws that deal with environment and biodiversity issues many of them are inadequate, not well harmonized and sometimes conflicting.

h) **Natural phenomena and environmental change**

The eminent effects of climate change, floods, prolonged droughts, wildfire and other natural disasters posed serious challenge to implementation of the first NBSAP in many parts of the country.

1.5 Justification of Developing a Revised and Updated NBSAP (2019 – 2030)

Despite various government and other institutions efforts to implement the first NBSAP and hence conserve the country's biodiversity, it is still declining with unrestrained speed. During the recent national biodiversity stocktaking and assessment study, it became apparent that the first NBSAP targets to halt biodiversity loss had not been fully achieved. The barriers / obstacles to realizing the current NBSAP targets can be attributed to systemic inadequacies, misalignment of policies, legislations, strategies, plans, projects, technical capacities and lack of institutions astuteness as well as coordination.

The national stocktaking also found out that since the development of the first NBSAP, many new challenges have cropped up. In this regard, this situation calls for revisiting and updating the contents of the initial NBSAP to make it more adequate in addressing the increasing trend of biodiversity threats and losses. There is a great potential for improving the current NBSAP, through a wide stakeholders consultations and taking into account the new policy frameworks developed since its development. It is necessary to assess the current weaknesses and opportunities provided by the NBSAP to provide the necessary information for a new NBSAP.

Indeed, a properly revised and articulated NBSAP will significantly increase the capability of integrating and mainstreaming biodiversity conservation into government and business decision making processes.

PART 2: STRATEGY

The National Biodiversity Strategy and Action plan (NBSAP) is developed to guide Kenya to take effective and urgent action to halt the loss of biodiversity in order to ensure that by 2030 ecosystems are resilient and continue to provide essential services, thereby securing Kenya's variety of life, and contributing to human well-being, and poverty eradication. To ensure this, pressures on biodiversity will be reduced, ecosystems will be restored, biological resources will be sustainably used and benefits arising out of utilization of genetic resources will be shared in a fair and equitable manner. To deliver these aims, adequate financial resources will be provided, capacities will be enhanced, biodiversity issues and values will be mainstreamed into relevant sectors of the economy, appropriate policies will be effectively implemented, and decision-making will be based on sound science and the precautionary approach. Local communities, indigenous peoples, civil society, private sector, government agencies and ministries and other relevant agencies, the general public and individual men and women will be mobilized to take action. International cooperation with all sovereign states/countries of the world, including United Nations' treaties and agreements will be invoked to support the implementation of this NBSAP.

2.1 Vision

Highly valued, conserved and sustainably utilized biodiversity contributing to socio-economic wellbeing of the people of Kenya by 2030.

2.2 Mission

To enhance and foster partnerships for conservation and sustainable utilization of biodiversity for continued provision of ecosystem goods and services for human wellbeing through mainstreaming into all sectors of the economy.

2.3 Principles Governing the Strategy

- **Principle of preventive action**: Conservation of biodiversity is better achieved by preventing environmental harm than by endeavoring to remedy or compensate for such harm.

- **Precautionary principle**: Where there is a threat of significant reduction or loss of biodiversity, lack of complete scientific certainty should not be used as a reason for postponing cost-effective measures to avoid or minimize such a threat.

- **Polluter Pays principle**: Those who cause damage to biodiversity should bear the costs of preventing it, removing it or reducing it.

- **Public participation and public access to information and justice in environmental matters**: The public should have access to environmental information and the right to participate in the environmental decision-making process and to have that participation taken into account in the decision-making process.

- **Good governance**: Governance is the process of decision-making and the process by which decisions are implemented. Good governance is participatory, consensus-oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of law. It ensures that corruption is minimised, the views of minorities are taken into account and that the voices of the most vulnerable in society are heard in decision-making. It is also responsive to the present and future needs of society.

- **Sectoral integration**: Biodiversity conservation and sustainable use concerns are taken into account in relevant decision-making processes in sectoral or cross-sectoral development policies, including the legislative process, plans, programmes and individual decisions.

- **Ecosystem approach**: The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. An ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological organisation, which encompass the essential structure, processes, functions and interaction between organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of many ecosystems. The ecosystem approach requires adaptive management.

2.4 The Scope of the NBSAP 2019-2030

This NBSAP shifts from the traditional focus on cure to prevention. Away from concentration on wildlife preservation towards concern for the wider pressures affecting biodiversity and ecosystems in the country. The NBSAP shall greatly address underlying drivers and direct pressures on biodiversity and ecosystems. There will be promotion of sustainable development and adoption of environmentally sound technologies, advocacy for equitable sharing of limited resources, and sustainable use of renewable resources. Like development, conservation is for people. This NBSAP will promote the maintenance of essential ecological processes and life-support systems,

the preservation of genetic diversity and the sustainable utilization of species and ecosystems.

The preservation of genetic diversity will lead to prevention of species extinctions, preservation of many varieties of crops, forage plants, timber trees, livestock, animals for agriculture and aquaculture, microbes and other domesticated organisms and their wild relatives. On site preservation programs will protect the wild relatives of economically valuable and other useful plants and animals and their habitats; the habitats of threatened and unique species; unique ecosystems; and representative samples of ecosystem types. Protected areas will be representative and will be managed on the basis of the needs of the ecosystems and the plant and animal communities they are intended to protect.

Biodiversity and ecosystems will be utilised sustainably within the productive capacities of exploited species and ecosystems and ensuring that utilization does not exceed sustainable yields set up in species exploitation management and action plans. To this end producer communities will be equipped with skills and knowledge to utilize resources sustainably. Trade on allowed wild animals and plants will be coordinated within international treaties and national priorities.

Adaptation and mitigation of climate change will be integrated in biodiversity management based on the understanding that traditional approaches to biodiversity conservation have been focusing on the three main causes of biodiversity and ecosystem services deterioration: land use change, overexploitation and pollution. Climate change adaptation and mitigation measures will be mainstreamed into the biodiversity conservation action plans. Climate change threat is projected to overtake the other direct pressures to biodiversity in the coming years, or to a great extent exacerbate the destructive potency of the other threats to biodiversity.

The implementation of the plan shall be guided/informed not only by scientific knowledge and research, but also by the attitudes and knowledge of local people allied with the target of devising new forms of development that are sensitive to ecological and social diversity.

The NBSAP has six strategic goals and for each goal strategic targets are identified. Each strategic target will have a suit of strategic actions/tactics that will be a growing list to guide implementation.

2.5 NBSAP 2019-2030 Goals

Global scientific consensus indicates that continuing loss of habitats and high rates of extinctions will have severe consequences to humans as several thresholds or "tipping points" are crossed. Unless urgent action is taken to reverse current trends, a wide range of services derived from ecosystems, underpinned by biodiversity, could rapidly be lost. While the harshest impacts will fall on the poor, thereby undermining efforts to achieve the Sustainable Development Goals, no-one will be immune from the impacts of the loss of biodiversity.

The NBSAP includes six goals:

Goal 1: Mainstream biodiversity conservation and sustainable use into decision-making processes across all sectors to address the underlying causes of biodiversity loss.

Goal 2: Reduce the direct pressures on biodiversity and maintain their capacity to provide goods, services and support livelihoods.

Goal 3: Safeguard ecosystems, species and genetic diversity including, agro-biodiversity to improve the status of biodiversity.

Goal 4: Promote and enhance fair and equitable sharing of benefits accruing from utilization of biodiversity and ecosystem services.

Goal 5: Strengthen participatory planning, knowledge base and capacity building for biodiversity conservation.

Goal 6: Mobilize financial, technological and human resources

Goal 1: Mainstream biodiversity conservation and sustainable use into decision-making processes across all sectors to address the underlying causes of biodiversity loss.

Wider societal ownership and support for biodiversity is critical. Action to address the underlying causes of biodiversity loss, including production and consumption patterns will be initiated by ensuring that biodiversity concerns are mainstreamed throughout government, private sector and the general public, through communication, education and awareness, appropriate incentive measures, legislative and institutional change.

Goal 2: Reduce the direct pressures on biodiversity and maintain their capacity to provide goods, services and support livelihoods.

Action to protect biodiversity is not a choice but an obligation. Engagement of the agricultural, forest, fisheries, tourism, energy, infrastructure and other sectors will be essential to biodiversity conservation success. Spatial planning approaches will be explored to reduce habitat loss systemic within the agriculture sectors. The biodiversity net gain approach will be promoted in all development ventures.

Goal 3: Safeguard ecosystems, species and genetic diversity including, agro-biodiversity to improve the status of biodiversity.

Ecosystems will be protected and degraded habitats and biodiversity and ecosystem services restored by means of setting a side protected areas, engaging people in direct habitat restoration and species recovery programmes and other targeted conservation interventions.

Goal 4: Promote and enhance fair and equitable sharing of benefits accruing from utilization of biodiversity and ecosystem services.

Initiatives will be implemented to ensure the continued provision of ecosystem services (e.g. water from water catchments, clean air from carbon sequestration, food from fertile unpolluted soils) and to ensure access to these services, especially for the poor who most directly depend on them. Efforts will be made to ensure fair and equitable access to benefits resulting from utilization of biological resources at all levels.

Goal 5: Strengthen Participatory Planning, Knowledge Base and Capacity Building for Biodiversity Conservation.

In keeping with the Kenya Constitution of 2010, the NBSAP will require active participation and collaboration of partners/stakeholders within government, civil society, private sector and the general public. As such enhanced support mechanisms for capacity-building, the generation, use and sharing of knowledge will be critical. National planning processes will need to become more effective in mainstreaming biodiversity and in highlighting its relevance for social and economic agendas.

Goal 6: Mobilize Financial, Technological and Human Resource

The financial resources available for biodiversity in Kenya are provided through three main channels: the public sector (public budgets for government departments and agencies at all levels), the private (for-profit) sector mediated through markets) and NGOs, foundations and academia (the nonprofit sector). In kind support from local communities who incur most of the biodiversity based opportunity costs are minimally recognized. There are a variety of enabling activities which will be implemented to facilitate access to and efficient use of financial resources. These initiatives include assessments of biodiversity, the identification and reporting of funding needs, gaps and priorities, the development of national/departmental financial plans for biodiversity, and the integration of biodiversity and ecosystem services considerations into national/county budgets and development plans and strategies.

2.6 Strategic Goals and the NBSAP 2019 - 2030 Strategic Targets

Goal1: Mainstream biodiversity conservation and sustainable use into decision-making processes across all sectors to address the underlying causes of biodiversity loss.

Strategic target 1: By 2030, at the latest, the people are made aware (including through participatory world/international days celebrations) of the values of biodiversity and sustainable land use and are taking necessary steps to conserve and use nature sustainably.

Strategic target 2: By 2030, at the latest, biodiversity values have been integrated into national and county development and poverty reduction strategies, planning processes, business strategies, budgeting frameworks and are being incorporated into national accounting and reporting systems.

Strategic target 3: By 2030, at the latest, positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent with national and international priorities and obligations.

Strategic target 4: By 2030, at the latest, Government agencies, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption of food, water, energy, minerals, oil and gas and infrastructure development and have kept the impacts of use of natural resources well within safe ecological limits and ensure biodiversity net-gain in the production process.

Strategic target 5: By 2030 harmonize policies, regulations and institutional frameworks to effectively support sustainable biodiversity management, use and consumption.

Goal 2: Reduce the Direct Pressures on Biodiversity and Maintain their Capacity to Provide Goods, Services and Support Livelihoods.

Strategic target 6: By 2030, the rate of loss of all natural habitats, including forests, is brought close to zero, and degradation and fragmentation is significantly reduced.

Strategic target 7: By 2030, Kenya's forest cover has increased to at least ten percent of the land area of the country.

Strategic target 8: By 2030 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches and ensuring that exploitation of the fisheries stocks and species are within safe ecological limits.

Strategic target 9: By 2030 areas under agriculture, aquaculture, river systems, wetlands, dry land, mountain and hill tops, and forestry are managed sustainably based on spatial land use plans and management plans, ensuring biodiversity conservation.

Strategic target 10: By 2030, the rift valley lakes and all areas that define the flyway for migratory birds and also serve as habitats for other species are conserved and monitored and measures for effective management of their catchments taken to ensure biodiversity is maintained for posterity.

Strategic target 11: By 2030, pollution, including excess nutrients, has been brought to levels that are not detrimental to ecosystem function, biodiversity and human well-being.

Strategic target 12: By 2030, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their re-introduction and establishment.

Strategic target 13: By 2030, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

Strategic Target 14: By 2030 increase by 50% the climate adaptation and mitigation activities awareness and actions across all sectors in the country.

Strategic target 15: By 2030, the impacts of climate change or ocean acidification on vulnerable coral reefs along the coast are minimized so as to maintain their integrity and functioning.

Goal 3: Safeguard ecosystems, species and genetic diversity including, agro-biodiversity to improve the status of biodiversity.

Strategic target 16: By 2030, at least 17% of terrestrial and inland water areas, and 10 % of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved including community conservation areas and conservancies, and are integrated into the national grid of protected areas, wider landscapes and seascapes.

Strategic target 17: By 2030, Kenya RED listing process for key taxa (if possible all) and Key Biodiversity Areas (KBAs) have been completed, documented and disseminated.

Strategic target 18: By 2030 the extinction of known threatened species have been prevented and status of degraded KBAs improved.

Strategic target 19: By 2030, the genetic diversity of cultivated plants and domesticated animals including wild relatives and other socio-economically as well as culturally valuable species are maintained.

Strategic target 20: By 2030, measures are put in place to halt trade on products from endangered animal and plant species including rhino horns and elephant tusks.

Strategic target 21: By 2030, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being,

are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Strategic target 22: By 2030, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 30 per cent of degraded ecosystems, including 10% of tree/vegetal cover, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Goal 4: Promote and enhance fair and equitable sharing of benefits accruing from utilization of biodiversity and ecosystem services.

Strategic target 23: By 2030, local communities across all protected areas, Key Biodiversity Areas (KBAs), Important Bird Areas, Conservancies and wildlife rich community lands are involved in sustainable livelihoods improvement programmes and income generating activities and are actively engaging in biodiversity conservation, education, advocacy, monitoring and reporting.

Strategic target 24: By 2030, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is implemented consistent with national legislation.

Goal 5: Strengthen participatory planning, knowledge base and capacity building for biodiversity conservation.

Strategic target 25: By 2030 each government agency, county government, business sector, civil society and all entities operational in Kenya have developed and adopted policy instruments, and have implemented NBSAP in an effective and participatory manner and are reporting their efforts through established national monitoring, reporting, accounting and coordination frameworks.

Strategic target 26: By 2030, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the NBSAP at all relevant levels.

Strategic target 27: By 2030, local communities in / around key biodiversity areas (KBAs), protected areas, habitats of particular significance to biodiversity have governance frameworks to support and take action for biodiversity as they contribute to local development activities within gender differentiated roles and responsibilities.

Strategic target 28: By 2030, the science based knowledge and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss is strengthened, widely shared, transferred and applied. And GBIF (Global Biodiversity Information Facility) Kenya node will be operational with relevant and robust biodiversity management information.

Goal 6 - Mobilize Financial, Technological and Human Resources

Strategic target 29: By 2030, budgetary allocations to biodiversity related agencies and programmes have doubled.

Strategic target 30: By 2030, environmental tax reform policy and legislation is developed to assist in mobilizing funds for conservation.

Strategic target 31: By 2030, sustainable tourism and local market for sustainable rural products and services are enhanced and a percentage of the accrued financial gains used for conservation purposes.

Strategic target 32: By 2025, a policy and law for business sector is developed and applied to allow business tax rebates for their obligatory contribution to environment through national environment charities.

Strategic target 33: By 2025, Payment for Ecosystem Service (PES) schemes and frameworks are in place to facilitate restoration for water catchments, carbon stocks and biodiversity net-gain in the production/development process.

Strategic target 34: By 2025, voluntary and in-kind contributions by communities are recognized and accounting frameworks developed and applied to capture the full scale of domestic contribution to biodiversity conservation.

Strategic target 35: By 2019, mechanism for international cooperation, overseas development assistance for direct and indirect financing and technological cooperation negotiations developed and applied.

Strategic target 36: By 2020, the national coordination office for the current NBSAP will be in place for the purposes of monitoring, reporting, information sharing, mobilization of funds and facilitating the country to meet its CBD obligations.

Strategic target 37: Strengthen and equip institutions and relevant arms of government, including private sector, with the requisite financial, technological and human resources to effectively implement the Strategy.

2.7 Strategic Approaches

The NBSAP 2019 - 2030 will utilize the following guidelines / approaches or techniques in order to realize the outlined goals and targets:

i. Utilization of World Conservation Strategy (WCS) Provisions.
ii. Using Eco-climatic Zones / Ecosystem Approach.
iii. Using economic instruments in order to achieve conservation targets.
iv. Using Eco-Agriculture approach.
v. Mainstreaming climate change adaptation and mitigation into biodiversity conservation.
vi. Designing, Development and Implementation of a National Biodiversity and Ecosystems Management System (NBEMS)
vii. Implementing the NBSAP within the framework of relevant International Treaties and Conventions

The guidelines / approaches above, are briefly described in the following section.

2.7.1 Utilization of World Conservation Strategy (WCS) Provisions

Conservation, like development, is for people, while development aims to achieve human goals largely through use of the biosphere. Conservation aims to achieve them by ensuring that such use can continue. Conservation's concern for maintenance and sustainability is a rational response to the nature of living things (renewability + destructibility) and also an ethical imperative, expressed in the belief that "we have not inherited the earth from our parents, we have borrowed it from our children".

The broad goals of the WCS are: the maintenance of essential ecological processes and life-support systems, the preservation of genetic diversity and the sustainable utilization of species and ecosystems. The implementation of the NBSAP 2019 - 2030 shall then be based on the WCS priority requirements as provided for each area in the form of checklists such as the following, for maintenance of essential ecological processes and life-support systems:

- Reserve good cropland for crops;
- Manage cropland to high ecological standards;
- Ensure that the principal management goal for watershed forest and pastures is protection of the watershed;
- Ensure that the principal goal for estuaries, mangrove swamps and other coastal wetlands and shallows critical for fisheries is the maintenance of the processes on which the fisheries depend; and control the discharge of pollutants.

For preservation of genetic diversity, the priority requirements are:

- Prevent the extinction of species.
- Reserve as many varieties as possible of crop plants, forage plants, timber trees, livestock, animals for agriculture and aquaculture, microbes and other domesticated organisms and their wild relatives.
- Ensure that on site preservation programs protect: the wild relatives of economically valuable and other useful plants and animals and their habitats; the habitats of threatened and unique species; unique ecosystems; and representative samples of ecosystem types.
- Determine the size, distribution and management of protected areas on the basis of the needs of the ecosystems and the plant and animal communities they are intended to protect.
- Co-ordinate national protected area programs with international ones.

For sustainable utilization, the priority requirements are:

- Determine the productive capacities of exploited species and ecosystems and ensure that utilization does not exceed these capacities.
- Adopt conservative management objectives for the utilization of species and ecosystems.
- Ensure that access to a resource does not exceed the resource's capacity to sustain exploitation.
- Reduce excessive yields to sustainable levels.
- Reduce incidental take as much as possible.
- Equip subsistence communities to utilize resources sustainably.
- Maintain the habitats of resource species.
- Regulate international trade in wild animals and plants.
- Allocate timber concessions with care and manage them to high standards.
- Limit firewood consumption to sustainable levels.
- Regulate the stocking of grazing lands so that the long-term productivity of plants and animals can be maintained.
- Utilize indigenous wild herbivores, alone or in combination with livestock, where the use of domestic stock alone will degrade the land.

The NBSAP 2019-2030 shall also promote the World Conservation Strategy's 7 priorities for national action, these are.

i. The development of a framework for national and subnational conservation strategies.
ii. The integration of conservation and development.
iii. Environmental planning and rational use allocation.
iv. Legislation and organization to improve the capacity to manage.
v. Training and research to improve the capacity to manage.
vi. Build support for conservation through participation and education.

vii. Develop a framework for conservation-based rural development.

2.7.2 Using Eco-climatic Zones / Ecosystem Approach

The ecosystem approach shall enable execution of the NBSAP 2019-2030 by way of simplifying a state of biodiversity account in two ways: first by highlighting biodiversity and species of greatest economic and social importance to people; and second, by grouping them according to similarity of threats and solutions.

Because Kenya's major ecosystems reflect eco-climates that shape land-use potential and prevailing land-uses, an ecosystems framework will lead itself to a cross-sector policy and land-planning framework. Another advantage of using the ecosystem approach is that an ecosystem approach offers an integrated framework for evaluating biodiversity, assessing its ecological services and so fully valuing the natural capital underpinning Kenya's sustainable development (SD).

2.7.3 The Use of Economic Instruments in NBSAP Implementation

This strategic approach will be based on the understanding that economic forces underlie and explain much biodiversity degradation and loss, and economic instruments provide a useful set of tools for strengthening biodiversity conservation, sustainable use and equitable benefit sharing. If the National Biodiversity Strategy and Action Plan 2019 – 2030 is to be effective it must be justifiable in economic terms.

2.7.4 Using Eco-Agriculture approach

Kenya's socioeconomic foundation is highly anchored on agricultural sector. In this regard, implementation of the NBSAP will have to largely be concerned with identification and implementation of sustainable agricultural practices – and these practices are generally referred as eco-agriculture approach. This approach will enable policy implementers of the NBSAP to define, develop and implement plausible technologies that will provide enough and nutritional food to Kenyans while at the same time conserving and restoring the country's Biodiversity.

Although food-production systems for the Kenya's rural poor typically have had devastating effects on the country's wealth of genes, species, and ecosystems, that need not be the case in the near future. By using eco-agriculture methodologies, agricultural landscapes can be designed more creatively to take the needs of human populations into account while also protecting, or even enhancing biodiversity.

2.7.5 Mainstreaming climate change adaptation and mitigation into biodiversity conservation.

Many countries have national conservation plans for threatened species, but such plans have generally been developed without taking into account the potential impacts of climate change. In this regard, as a strategic approach, the NBSAP shall put prominence on the application of a decision framework, specifically developed to identify and prioritize climate change adaptation actions and demonstrate its use for various species endangered and threatened in Kenya. The NBSAP aim shall be to ensure that government's conservation measures remain appropriate under a changing climate. It is expected that the strategy of mainstreaming climate change in biodiversity conservation will bring about a large differences in the spatial prioritization of actions when explicitly considering projected climate change impacts. This shall include recommendations for actions to be carried out in areas where species do not currently occur, in order to allow experts to track movement of suitable conditions for their survival. Uncertainties in climate change projections shall not be a reason to ignore strategic conservation of species and biodiversity in the country.

In brief, the strategic approach of integrating climate change in biodiversity management is based on the understanding that traditional approaches to biodiversity conservation have been focusing on the three main causes of biodiversity and ecosystem services deterioration, these are: land use change, overexploitation and pollution. One of the strategies of ensuring that the NBSAP becomes a living document or alive with the current and emerging threats to biodiversity, shall be to integrate climate change adaptation and mitigation measures within the biodiversity conservation action plans. Climate change threat, is projected to overtake the other direct pressures to biodiversity in the coming years, or to great extent exacerbate the destructive potency of the other threats to biodiversity.

2.7.6 Design, Development and Implementation of a National Biodiversity and Ecosystems Management System (NBEMS)

From the national stocktaking and assessment study, it was apparent that one of the major barriers to effective biodiversity and ecosystem management was poorly structured / formulated institutions, legislation and policy frameworks. To address these systemic hindrances, the NBSAP will constitute in-built capabilities / means of establishing a national biodiversity and ecosystems management system (NBEMS). The NBEMS will be formulated through a public participation process. Through public / community engagement process, specific counties biodiversity and ecosystems management outcomes will be defined. Counties Biodiversity and Ecosystems outcomes will define what these counties will look like over the next 10 years. They will reflect outcomes to achieve national conservation goals as well as local ones. Counties to mainstream NBSAP strategies in the County Integrated Development Plans (CIDPs).

In essence, NBEMS shall be about how the Ministry of Environment and Forestry (MEF) accomplishes biodiversity and ecosystems management process —in particular, how MEF integrates its various functions at specific levels in the country. The NBEMS shall be a key biodiversity and ecosystems management tool, acting as a conduit through which MEF shall implements legal, policy and strategic goals.

The NBEMS will ensure the following:

- Nationally consistent information
- Nationally consistent approach
- Nationally consistent process

2.7.7 The Revised NBSAP will be Guided by Relevant International Treaties and Conventions

In the 1970s – 1990s, a variety of treaties and conventions were developed to promote national and international action on ecosystems and biodiversity management. Among these, were the:

- Convention on Biodiversity (CBD)
- UN Convention on the Law of the Sea,
- UN Conference on Desertification,
- The UNESCO/UNEP Intergovernmental Conference on Environmental Education,
- The Convention on International Trade in Endangered Species (CITES) of Wild Fauna and Flora;
- The Convention on the Conservation of Migratory Species of Wild Animals (Convention on Migratory Species);
- The Convention on Wetlands of International Importance especially as Waterfowl Habitat (RAMSAR Convention);
- The Convention concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention);
- The International Treaty on Plant Genetic Resources for Food and Agriculture and
- The International Plant Protection Convention.

To ensure comprehensive coverage of relevant conservation issues / aspects, the implementation of the NBSAP will be guided by the provisions of the aforementioned international treaties and conventions, among others.

In addition to the above strategic approaches and consideration in the implementation of the revised NBSAP, it is important to note that the implementation of the plan shall

be guided / informed not only by scientific knowledge and research (science –policy interface) but also by taking into account the needs, attitudes and knowledge of local people allied with the goal of "*devising (new) forms of development that are sensitive to ecological and social diversity*". In other words "*The NBSAP Implementation will largely be guided by values more than with science*".

Scientific inventions and technology will be expected to serve the people of Kenya based on their realistic needs, attitudes and enduring knowledge.

The NBSAP implementation shall hence not only be firmly based in realism but also it will be moved ahead with vision that shall guide change in the direction of increasing the well-being of Kenyan people (not only the standard of living but the attainment of good life), this is because increased well-being of Kenyan citizens should be done in such a way that it doesn't diminish the potential of the biosphere to support the attained of the said good life.

PART 3: ACTION PLAN

As shown in table 15, each of the six goals has a number of targets which group a set of related actions. For each action there is a specified timeframe, lead agencies (in bold) and partners who have responsibility for the implementation, and key performance indicators so that achievement of the targets can be measured and tracked.

TABLE 15: ACTION PLAN

Strategic Goal	National Targets	Action	Performance Indicators	Lead Agencies / Partners	Timeframe
Goal1: Mainstream biodiversity conservation and sustainable use into decision-making processes across all sectors to address the underlying causes of biodiversity loss.	**Strategic target 1**: By 2030, at the latest, the people are made aware (including through participatory world/international days celebrations) of the values of biodiversity and sustainable land use and are taking necessary steps to conserve and use nature sustainably.	Support radio, TV, web-based and other media products that emphasize or are centered on showcasing biodiversity, its importance, conservation knowledge, and current or future challenges.	Number of media products developed and disseminated	**NEMA** **ME&F** **NMK** **KWS** Other relevant government bodies, Academia, NGOs and the Media houses	2019-2030
		Raise awareness in private sector organizations of impacts and dependencies on biodiversity and ecosystem services.	Biodiversity issues reported in nonfinancial Reporting. Guidelines and support tools are available to inform private sector Action.	**NEMA** **ME&F** Private sector organizations	2019-2025
		Conduct serious promotional campaigns on sustainable use of natural resources targeting the consumers.	Number of promotion campaigns targeting improvement of consumers	**NEMA** **ME&F** Private sector	2019-2025

			sustainable consumption behavior. Other UNCSD sustainable consumption indicators.	organizations	

		Enhance training, communication, cooperation and concerted action between relevant sectors in support of biodiversity conservation by 2025	Develop Biodiversity Training Manuals for all levels of government) Mainstreamed Biodiversity in Education system Curriculum in Partnership with Ministry of Education (MoE) Establishment and delivery of courses at various national levels of qualifications accessible across the country. Number of visits to natural heritage attractions. Number of biodiversity-related day events and number of people involved. Number of people surveyed and	**NEMA** **ME&F** **MoE** Relevant government departments and agencies, NGOs and community groups	2019-2025

			understand the term 'biodiversity'. Number of local community groups involved in conservation projects. Number of training courses offered.		
	Strategic target 2: By 2030, at the latest, biodiversity values have been integrated into	County Governments will review and update their CEAPs in order to integrate biodiversity conservation.	Number of CEAPs updated.	**County Governments** **COG**	2019-2023

	national and county development and poverty reduction strategies, planning processes, business strategies, budgeting frameworks and are being incorporated into national accounting and reporting systems.		Percentage of biodiversity actions implemented.		
		Undertake a comprehensive economic valuation of biodiversity resources and the ecosystem services.	Number of biodiversity and ecosystems services valuation carried in the country.	**ME&F** **NEMA** **KRA** **Ministry of Finance & Planning** Academia and Research Institutions, NGOs, Government Departments & Agencies	2019-2021
		Integrate National Biodiversity financial expenditure tracking into Government Programmes internal paying agency management procedures including linkage to the Prioritized Action Framework and this NBSAP.	Number of Government Programmes which quantify biodiversity Expenditure. Number of Published National financial expenditure reports.	**Relevant Government Ministries, Departments and Agencies**	2020-2025
		Develop a Natural Capital Asset Register and National Natural Capital Accounts by 2025, and integrate these accounts into economic policy and decision-making.	Natural Capital Asset Register developed. National natural capital accounts developed.	**KNBS** **Relevant Government Ministries,**	2020-2025

			Natural capital integrated into economic policy.	**Departments and Agencies**	
		Initiate natural capital accounting through sectoral and small scale pilot studies, including the integration of environmental and economic statistics using the framework of the UN System of Experimental-Ecosystem Accounting (SEEA).	Number of pilot studies initiated. Number of national accounts completed.	**KNBS** **NEMA** **ME&F**	2020-2025
		Establish a national Business and Biodiversity Platform under the CBD's Global Business Partnership.	Platform established	**KNBS** **NEMA** **ME&F**	2020-2022
		Develop and implement a National Biodiversity Finance Plan (NBFP) to set out in detail how the actions and targets of this NBSAP will be delivered from 2019 and beyond.	National Biodiversity Finance Plan produced	**NEMA & ME&F** **Ministry of Finance & Planning**	2019-2020
		Monitor the implementation of this NBSAP Plan 2019-2030	Number of meetings of Biodiversity Working Group. Attendance of representatives of departments and agencies.	Biodiversity Working Group, NEMA ME&F	2019 -2030

			Track status of National Biodiversity Indicators. Interim report produced.		
		Establish and implement mechanisms for the payments of ecosystem services (PES) including carbon stocks, to generate increased revenue for biodiversity conservation and restoration.	Number of mechanisms established for payments for ecosystem services.	**ME&F** **NEMA** **KRA** **Ministry of Finance & Planning** Academia and Research Institutions, NGOs, Government Departments & Agencies	2020-2030
	Strategic target 3: By 2030, at the latest, positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent with national and international priorities and obligations.	Ensure Green Economy Strategy & Implementation Plan (GESIP 2016-2030) produces tangible benefits for biodiversity with increased emphasis on conservation and restoration of biodiversity.	An assessment report on how GESIP has benefited and impacted biodiversity conservation. Level of support for development of local biodiversity management plans.	**ME&F** **NEMA** **Ministry of Finance & Planning**	2020-2030

			Development of a scientifically-based methodology to assess national and local biodiversity. Development and monitoring of biodiversity indicators in the country.		
	Strategic target 4: By 2030, at the latest, Government agencies, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption of food, water, energy, minerals, oil and gas and infrastructure development and have kept the impacts of use of natural resources well within safe ecological limits and ensure biodiversity net-gain in the production process.	Ensure implementation of various policy and legislative frameworks such as the Agricultural Sector Development Strategy (ASDS), Kenya Comprehensive African Agricultural Programme (CAADP) compact, KALR Act 2013 and establishment of the Genetic Resources Research Institute.	Level / percentage of implementation of measures / provisions outlined in various policy and legislative frameworks	**ME&F** **NEMA** Other Government Departments & Agencies NGOs, Academia and Research Institutions	2020-2030
	Strategic target 5: By 2030 harmonize policies, regulations and institutional	Identify and take measures to minimize the impact of incentives and subsidies on	Policies, regulations and practices that	**ME&F** **NEMA**	2020-2030

	frameworks to effectively support sustainable biodiversity management, use and consumption.	biodiversity loss, and develop positive incentive measures, where necessary, to assist the conservation of biodiversity.	generate perverse incentives identified. Number of appropriate reform policies designed and implemented.	Other Government Departments & Agencies County Governments, local community Groups and NGOs	
		Enforce environment based regulations.	Level of enforcement of environment based regulations.	**ME&F** **NEMA** **Other Government Departments & Agencies**	2019 - 2025
		Develop and implement environmental tax reform policy and legislation to mainstream environment and biodiversity in every sector and lifestyle budgeting and expenditure.	Level of development and implement of environmental tax reform policy and legislations.	**ME&F** **NEMA** **Ministry of Finance & Planning** Other Government Departments & Agencies	2019 – 2025
		International agreements (e.g. CBD, CITES and Ramsar, among others) will be serviced to ensure that Kenya plays a role in the future of international biodiversity policy, particularly in	Number of participants at meetings. Reporting obligations fulfilled.	**NEMA** **ME&F** Relevant Government Ministries,	2019-2030

		the area of mainstreaming biodiversity and ecosystem services across all sectors.		Departments and Agencies Academia and Research Organizations	
		Continue to contribute data and information to regional and international networks (including Global Biodiversity Information Facility, and Global Environment Facility) to support conservation research and policy.	Number of networks provided with data from Kenya.	**NEMA** **ME&F** Relevant Government Ministries, Departments and Agencies Academia and Research Organizations	2020-2030
		Further cooperation on and co-ordination of All-East Africa and Kenya Species Protection Plans and Red List assessments.	Number of new plans developed. Number of actions undertaken for existing plans. Number of Kenya Red List Assessments undertaken.	**NEMA** **ME&F** **East African Governments** Relevant Government Ministries, Departments and Agencies Academia and Research Organizations	2020-2030

		Cooperation and coordination (where possible and relevant) on Species and Habitat surveillance initiatives in East Africa.	Number of long-term East Africa Species monitoring schemes.	**NEMA** **ME&F** **East African Governments** Relevant Government Ministries, Departments and Agencies Academia and Research Organizations	2020-2030
		Continue communication and harmonized action at an East African level on issues of common concern including for the implementation of international legislation and tackling wildlife crime.	Number of joint East African region initiatives.	**NEMA** **ME&F** **East African Governments** Relevant Government Ministries, Departments and Agencies Academia and Research Organizations	2020-2030

Strategic Goal	National Targets	Action	Performance Indicators	Lead / Partners	Timeframe
Goal 2: Reduce the Direct Pressures on Biodiversity and Maintain their Capacity to Provide Goods, Services and Support Livelihoods.	**Strategic target 6**: By 2030, the rate of loss of all natural habitats, including forests, is brought close to zero, and degradation and fragmentation is significantly reduced.	Halting all ecologically sensitive habitat encroachment, reducing degradation, increasing restoration and enhancing sustainable production across all sectors of the economy.	Number of habitat encroachments and degradation that have been halted in the country. Size in hectares and number of restored / rehabilitated habitats.	**ME&F** **Ministry of Agriculture, Livestock & Fisheries** **KFS** Relevant Government Ministries, Departments and Agencies	2019-2028
		Support the implementation of on farm agro-ecological practices and techniques by small scale farmers through rural development programs. Development and implementation of agri-environment schemes (AES) under the Rural Development Programs (i.e. Green, Low Carbon, Agri-environment Schemes (GLAS) and locally led AES (LLAES). Ensure AES achieve a quantifiable net gain for biodiversity and ecosystem services including significant	Length/area of habitats under AES measures. Number of farmers practicing on farm agro-ecological techniques. Allocate 10% of county and national government budget to agriculture. Procurement policies to buy from best agro-ecologically produced produce.	**ME&F** **Ministry of Agriculture, Livestock & Fisheries** **KFS** Relevant Government Ministries, Departments and Agencies Academia and Research Institutions	2019-2023

		habitat maintenance and restoration measures. Eliminate subsidies on environmentally harmful agro-chemicals, and subsidies re-directed to supporting agro-ecological initiatives.	Ecological monitoring tools implemented which allow for quantifying real ecological benefits of AES. Area of semi-natural/natural habitat maintained/restored. Amount of financial support into promotion of agro-ecological practices.		
	Strategic target 7: By 2030, Kenya's forest cover has increased to at least ten percent of the land area of the country.	Implementing Recommendations in the 2018 Report on Forest Resources Management and Logging Activities in Kenya, ensuring maximized positive outcomes for biodiversity and ecosystem services and restoration of areas impacted by inappropriate forestry. Enhancing agribusiness practices in arid lands that increase vegetation cover by growing such plants like aloe vera and gum Arabic.	Achievement of 50% target for forest cover increase based on 2010 as a base year. Rate of growth of the native woodland Number of newly established native woodlands. Established clear policy linkage of forest and food security (e.g. baobab	**ME&F** **Ministry of Agriculture, Livestock & Fisheries** **KARI** **KALRO** Relevant Government Ministries, Departments and Agencies	2019-2029

			and honey for food, among other trees for fruit, fodder and medicinal products). A good policy framework that link food and forestry management in Kenya should be in place. Number of newly established forest conservation schemes. New environmental afforestation requirements in place. Area of forestry under restoration measures.		
		Harmonize and implement relevant policy and legislative and institutional framework and public participation including fully functioning community forest associations (CFAs) that promote public, private and community participation and	Established enabling legislative and institutional framework and public participation processes that enable forest management.	**ME&F** **KFS** **KWS** **County Government** Relevant	2019-2022

		partnership in forest sector development. Strengthen functioning of Water Resources Users Associations (WRUAs), Riparian Land and Beach Management Units (BMUs) e.g. one dealing on propagation and management of mangroves. Enhance management of community wildlife conservancies.	Fully functioning CFAs. Number of conservancies, sizes and management plans.	Government Ministries, Departments and Agenci**es**	
		Promote sustainable charcoal production practices and technologies for example usage of portable metal kiln etc. Develop and support alternative renewable energy sources in the country.	% of sustainable charcoal in the country.	**ME&F** **KFS** Relevant Government Ministries, Departments and Agencies, as well as communities and private sector	2020-2030

		Promote forest and forest produce certification framework.	An established and working forest and forest produce certification framework.	**ME&F** **KFS** Relevant Government Ministries, Departments and Agencies, as well as communities and private sector	2020-2030
	Strategic target 8: By 2030 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches and ensuring that exploitation of the fisheries stocks and species are within safe ecological limits.	Put in place recovery plans and measures for all depleted / threatened fish, invertebrate and aquatic plants species.	% of increase of development and implementation of recovery plans and measures for all depleted / threatened fish, invertebrate and aquatic plants species.	**ME&F** **NEMA** **County Governments** Other Relevant Government Departments and Agencies	2020 - 2023
		Implement measures to achieve good ecological and environmental status of freshwater, marine and coastal habitats as required by the regulations and various plans.	Progress on measures outlined in relevant plans. Number of River Basin Management Plans (RBMP) completed. Number of Blue Flag beaches.	**KWS** **ME&F** **NEMA** **County Governments** Other Relevant Government Departments and Agencies	2019-2025

			Number of Green Coast Awards. Number of sites where untreated sewage is discharged.		
		Continue promoting aquaculture to ease pressure on inland fisheries.	Rate of growth of aquaculture in the country.	**ME&F** **KEMFRI** Relevant Government Ministries, Departments and Agencies, as well as communities and private sector	**2020-2030**
		Enhance monitoring, surveillance and control (MCS) in all the inland waters where fishing is done.	Rate of increase of monitoring, surveillance and control (MCS) in all the inland waters where fishing is done.	**ME&F** **KEMFRI** Relevant Government Ministries, Departments and Agencies.	**2020-2030**
	Strategic target 9: By 2030 areas under agriculture, aquaculture, river systems, wetlands, dry land, mountain and hill tops, and forestry are managed	Develop and Publish detailed site-specific conservation strategies	Number/proportion of specific sites for which conservation strategies have been developed, published and implemented.	**ME&F** **NEMA** **KWS** **KEMFRI** **KFS**	2020-2021

	sustainably based on spatial land use plans and management plans, ensuring biodiversity conservation.			**Local communities and private sector actors.** **County Governments** Other Relevant Government Departments and Agencies	
		Promote swamps and wetlands conservation.	Rate of growth for the area under mangroves conservation.	**ME&F** **NEMA** **KWS** **KEMFRI** **KFS** **Local communities and private sector actors.** **County Governments** Other Relevant Government Departments and Agencies	2020-2025
		Development of spatial land use plans and management plans.	Developed spatial land use plans and	**ME&F** **NEMA**	2020-2025

		Linking land use plans and management plans to relevant policies.	management plans which clearly integrate resettlement development and biodiversity conservation	**KWS** **KEMFRI** **KFS** **County Governments** Other Relevant Government Departments and Agencies	
		Promote agro-ecological practices which emphasizes soil and water conservation.	Rate of adoption of agro-ecological practices which emphasizes soil and water conservation in the country.	**ME&F** **Ministry of Agriculture, Livestock & Fisheries** **KARI** **KALRO** Relevant Government Ministries, Departments and Agencies, as well as communities and private sector	**2019-2029**
		Promote Integrated Pest Management (IPM) through awareness creation, training on IPM and the risks associated with misuse of pesticides.	Rate of adoption of Integrated Pest Management (IPM) in the country.	**ME&F** **Ministry of Agriculture, Livestock & Fisheries** **KARI** **KALRO**	2019-2029

		Awareness creation on use of IPM and better health trends / indicators.		Relevant Government Ministries, Departments and Agencies, as well as communities and private sector	
	Strategic target 10: By 2030, the rift valley lakes and all areas that define the flyway for migratory birds and also serve as habitats for other species are conserved and monitored and measures for effective management of their catchments taken to ensure biodiversity is maintained for posterity.	Develop and implement integrated conservation and development projects such as Imarisha in Naivasha.	Percentage of number of newly designed and implemented integrated conservation and development projects in the country's inland water ecosystems.	**ME&F** **KWS** **KEMFRI** **County Governments** Other Relevant Government Departments and Agencies, and NGOs	2019-2030
	Strategic target 11: By 2030, pollution, including excess nutrients, has been brought to levels that are not detrimental to ecosystem function, biodiversity and human well-being.	Improve/construct sewerage systems in major urban centres, including ones in the coast. Promote use of biological wastewater treatment technology for household, agricultural and industrial waste water treatment. Integrate land use planning with effluent management.	Percentage of number of newly improved / constructed sewerage systems in major urban centres in order to reduce pollution of inland water bodies.	**County Governments** Other Relevant Government Departments and Agencies	2019-2030

		Promote treatment and recycling of waste water in irrigating vegetation in dry lands and other areas. Develop integrated water resource management plans that include waste water considerations. Enhance use of solid waste (organic) to produce bio-fertilizers for biodiversity production. Promote rainwater harvesting in urban and rural areas in order to reduce surface run-off and hence pollution. The requirements for installation of rainwater harvesting system in buildings should be made mandatory in the development project approval. Implement polluters pay principle. Regular monitoring, reporting and remediation of point source pollution.			

		Ensure implementation of improved waste management systems planned for several cities in the Vision 2030.	Number of developed and implemented waste management systems plans (WMSP) for several cities as defined in Vision 2030.	**County Governments** Other Relevant Government Departments and Agencies	2019-2030
		Developing and implementing strategies for protecting wildlife including birds, pollinators among other species from poisonous chemicals and actions that threaten their existence.	Number of developed and implemented strategies for protecting specific wildlife including birds from poisonous chemicals and actions that threaten their existence.	**ME&F** **KWS** **KEMFRI** **County Governments** Other Relevant Government Departments and Agencies, and NGOs	2019-2030
	Strategic target 12: By 2030, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.	Develop a harmonized national action plan to implement developed Invasive Alien Species (IAS) Regulations and Policies; including: development and adoption of bio-security plans in relevant state bodies; a Rapid Response Protocol for the country; coordination and collation of invasive species surveillance and monitoring data; and work with the region	Developed harmonized national action plan to implement Invasive Alien Species (IAS) policies, regulations and international protocols etc. Developed national integrated bio-security plan.	**ME&F** **NEMA** Other Government Departments & Agencies County Governments, local community Groups and NGOs	2020-2030

		on invasive species of mutual concern. Mapping of Invasive species location using GIS technology. Monitoring of hotspots of the Alien Spp. Maintain catalogue/database for monitoring of the alien species.	Rapid Response protocol for Kenya developed Number of new IAS recorded and established		
		Encourage production of seeds and seedlings for native species, varieties and landraces from appropriate native sources for public and private sector plantings. Public bodies will endeavor to plant native species in order to reduce importation of non-native species, varieties and landraces. Promote native production system by propagation of native seeds for native species.	Number of new plantings that exclusively use native plants for landscaping. Quantities of nurseries supplying traceable documentation of Kenyan provenance plant material.	**ME&F** **NEMA** **KEFRI** **KEPHIS** Other Government Departments & Agencies County Governments, local community Groups and NGOs	2019-2023
		Ratify the International Convention for the Control and Management of Ships' Ballast Water and Sediments.	Ratification of the Convention.	**ME&F** **NEMA** Other Government	2019

				Departments & Agencies	
	Strategic target 13: By 2030, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.	Develop Management Strategies for the Protection of High Status Water bodies - including, amongst other measures: prioritization for protection measures; planning/licensing control; assessment of cumulative impacts; and integrated monitoring and protection.	Developed Management Strategies for the Protection of High Status Water bodies High status catchment delineation and prioritization for protection measures Establishment of a monitoring system Centralized GIS database or activities database Numbers of Status & Trends Reports	**ME&F** **NEMA** **County Governments**	2019 - 2022
	Strategic Target 14: By 2030 increase by 50% the climate adaptation and mitigation activities awareness and actions across all sectors in the country.	Create awareness on climate mitigation and adaptation activities in the various sectors in the country. Support to develop simplified Knowledge products for	Level of awareness on the various climate change adaptation and mitigation activities in the country across all sectors.	**ME&F** **Ministry of Agriculture, Livestock & Fisheries** **KFS**	2019-2027

		Biodiversity conservation-Adaptation-Mitigation of Climate change		**Relevant Government Ministries, Departments and Agencies**	
		Implement actions from Kenya's updated National Climate Change Action Plan related to biodiversity conservation and harnessing.	Percentage of the number of actions implemented.	**ME&F** **NEMA** Other Government Departments & Agencies	2019-2025
		Prioritize needs for research arising from the Kenya's updated National Climate Change Action Plan related to biodiversity conservation objectives.	Prioritized and undertaken researches related to biodiversity conservation and climate change management.	**ME&F** **NEMA** **KMFRI** **KFS** **KEFRI** **KWS** Other Government Departments & Agencies NGOs, Academia and Research Institutions	2019-2030
	Strategic target 15: By 2030, the impacts of climate change or ocean acidification on vulnerable coral reefs along the coast are minimized so as to	Improve on coastal zone management focused more on rehabilitation and conservation of important coastal ecosystems through the implementation of ICZM.	Level of development and implementation of ICZM plans /programs.	**ME&F** **NEMA** **CDA** **KEMFRI** **County Governments**	2019 - 2025

	maintain their integrity and functioning.	Implement respective management plans for the MPAs including the National Mangrove Conservation and Management Plan 2018 -2028.	Level of implementation of management plans for the MPAs including the National Mangrove Conservation and Management Plan 2018 -2028.	**ME&F NEMA KWS KEMFRI CDA County Governments and the communities**	2019 - 2025
		Enhance marine and coastal resources protection through community participatory efforts.	Level of community participation in marine and coastal resources protection and management.	**ME&F NEMA KWS KEMFRI CDA County Governments and the communities**	2019 - 2025
		Identify vulnerable coral reefs (hot spots) for protection and creation conservation plan.	Number of new coral reefs hot spots identified and protected. Number of new conservation plans for specific threatened coral reefs.	**ME&F NEMA KEMFRI KWS CDA County Governments and the communities**	2019 - 2025

Strategic Goal	National Targets	Action	Performance Indicators	Lead / Partners	Timeframe
Goal 3. Safeguard ecosystems, species and genetic diversity including, agro-biodiversity to improve the status of biodiversity.	**Strategic target 16**: By 2030, at least 17% of terrestrial and inland water areas, and 10 % of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved including community conservation areas and conservancies, and are integrated into the national grid of protected areas, wider landscapes and seascapes.	Develop and implement inland waters and Marine Spatial Plans for Kenya. -Develop framework / regulations for access to protected biodiversity, including private conservancies and conservation under counties, resources should mapped and access plan developed.	Reports on implementation of the Inland Waters and Marine Integrated Plans Level of compliance with International Best Practices of Maritime Spatial Planning Developed framework / regulations for access to protected biodiversity.	**KMFRI** **DRSRS** **KWS** **ME&F** **NEMA** Other Relevant Government Departments and Agencies	2019-2025
	Strategic target 17: By 2030, Kenya RED listing process for key taxa (if possible all) and Key Biodiversity Areas (KBAs) have been completed, documented and disseminated.	Undertake Red List assessments for taxonomic groups (for which sufficient data can be gathered) and repeat existing Red List assessments at appropriate intervals.	Number of Red Lists completed.	**ME&F** **NEMA** **KWS** Academia and Research Institutions	2019-2025
	Strategic target 18: By 2030 the extinction of known threatened	Build upon Red List assessments to identify conservation priority	Number of completed Red Lists processed to	**NEMA** **ME&F** **KWS**	2019-2025

	species have been prevented and status of degraded KBAs improved.	species and identify knowledge gaps for those prioritized species	identify conservation priority species.	Academia and Research Institutions	
		Land/habitat identified as critical for conservation purchased and conserved.	Size of new land / habitats identified and purchased for conservation purposes.	**KMFRI** **DRSRS** **KWS** **ME&F** **NEMA** Other Relevant Government Departments and Agencies	2020-2025
	Strategic target 19: By 2030, the genetic diversity of cultivated plants and domesticated animals including wild relatives and other socio-economically as well as culturally valuable species are maintained.	Develop catalogue of national domestic and wild genetic resources. Develop and implement strategies for minimizing genetic erosion and safeguarding their genetic diversity.	Developed data base of domestic and wild genetic resources. Number of new strategies / plans developed in order to minimize genetic erosion and safeguarding genetic diversity.	**MALF** **KEPHIS** **KEFRI** **KALRO/GERRI** **NMK** **KWS** **County Governments** Other Relevant Government Departments and Agencies, NGOs, and Research Institutions	2020-2025
		Develop and publicize National Traditional Crops and Animals	Developed National Traditional Crop and	**ME&F** **Ministry of Agriculture,**	2020-2022

		Restoration, Management and Conservation Strategy & Action Plan	animals Strategy & Action Plan. Number of targets achieved.	**Livestock & Fisheries** **National Museums of Kenya, Botanic Gardens and concerned communities.** Relevant Government Ministries, Departments and Agencies Academia and Research Institutions	
		Implement the National Genetic Conservation Strategies (revamp, finalize and implement existing draft policy) for animals and plants biodiversity. Develop gene bank, including microbes.	Number of species, varieties, or landraces for which conservation measures are being undertaken.	**ME&F** **Ministry of Agriculture, Livestock & Fisheries.** **Genetic Resources Research Institute.** **Seed Trade Association of Kenya (STAK),**	2019-2030

				community and farmers seed savers. Relevant Government Ministries, Departments and Agencies Academia and Research Institutions (e.g. ILRI, KARLO)	
		Develop and implement the All-Kenya Pollinator Plan including: ways of making the Kenya countryside more pollinator friendly; how to raise awareness of pollinators; how to support beekeepers and growers; as well as how to expand knowledge of pollinators; and collecting evidence to track changes.	Developed All-Kenya Pollinator Strategy & Action Plan. Number of actions implemented. Status of pollinator populations. Percentage of delivery of pollinator actions into county / regional agri-environmental plans. Area of land under organic production.	**Ministry of Agriculture, Livestock & Fisheries National** **ME&F** **KWS** **Seeds Trade Association of Kenya and other actors listed in the plan.** Relevant Government Ministries, Departments and Agencies	2020-2030

				Academia and Research Institutions	
		Conduct more research and development, while ensuring enhanced conservation of genetic resources e.g. community seed banks, in situ and ex situ conservation. Develop seed policy and regulations that recognizes farmer managed seed systems and farmer rights to genetic biodiversity.	Percentage of new research and development initiatives in agricultural biodiversity. Number of newly conserved genetic resources. Number of community seed saving initiatives that vary in type of mechanism and technology used.	**MALF** **KEPHIS** **KEFRI** **KALRO** **KWS** **Concerned communities** **County Governments** Other Relevant Government Departments and Agencies, NGOs, and Research Institutions	2020-2025
	Strategic target 20: By 2030, measures are put in place to halt trade on products from endangered animal and plant species including rhino horns and elephant tusks	Develop and publish national CITES enforcement plan.	CITES enforcement plan developed and published.	**KWS** **NEMA** **ME&F** **NMK** **Ministry of Interior & National Coordination** Other Relevant	2019- 2020

				Government Departments and Agencies	
	Strategic target 21: By 2030, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.	Conserve and rehabilitate key ecosystem in the country. Enhance and expand land under agro-ecological - practices in the country. Involve local communities in ecosystem services management, especially the vulnerable. County government should invest in rainwater harvesting. Introduce mechanism for Payment for Ecosystem Services (PES) across the country.	Number of habitats rehabilitated and percentage of increase in wildlife range/population. Number of rangeland livestock farmers provided with alternative fodder and water sources during periods of droughts in order to reduce livestock incursions into wildlife habitats.	**ME&F** **NEMA** **KWS** **KFS** **NMK** **County Governments** Other Relevant Government Departments and Agencies, and NGOs	2019-2030
	Strategic target 22: By 2030, ecosystem	Increase connectivity of the protected areas	Number/extent of features established to	**NEMA** **KMFRI**	2020-2030

	resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 30 per cent of degraded ecosystems, including 10% of tree/vegetal cover, thereby contributing to climate change mitigation and adaptation and to combating desertification.	network using appropriate buffer zones, corridors, stepping stones and/or flyways. Implement climate smart agriculture (CSA) strategy at the counties within the framework of agro-ecological practices. Develop and implement strategy for below ground micro-organisms (BGMO) conservation.	improve connectivity and resilience of protected areas Management activities in place for increasing connectivity where Appropriate Number of County Development Plans with policies on connectivity	**KEFRI** **KFS** **KWS** **MALFI** **NMK** **County Governments** Other Relevant Government Departments and Agencies, and NGOs	

Goal 4: Promote and enhance fair and equitable sharing of benefits accruing from utilization of biodiversity and ecosystem services	**Strategic target 23:** By 2030, local communities across all protected areas, Key Biodiversity Areas (KBAs), Important Bird Areas, Conservancies and wildlife rich community lands are involved in sustainable livelihoods improvement programmes and income generating activities and are actively engaging in biodiversity conservation, education, advocacy, monitoring and reporting.	Implement recommendation for the recent study on securing Wildlife Corridors and Dispersal Areas in Kenya.	Number of specific recommendations that have been implemented	**MEF** **KWS** **KFS** County Governments Other Relevant Government Departments and Agencies, and NGOs	2019-2025
	Strategic target 24: By 2030, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is implemented consistent with national legislation.	Fully implement the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization. Clear actions as well as resource / finance allocation should be put in place. Social-economic considerations as defined in the Cartagena Protocol on Biosafety to the Convention on Biological Diversity should be properly integrated in the biosafety law and regulations.	Percentage of the Protocol implemented. (level of implementation)	**MEF** **NEMA** **KWS** **Ministry of Finance & Planning** **National Biosafety Authority (NBA)** Other Government Departments & Agencies	2019-2025

				County Governments, local community Groups and NGOs	
		Review biodiversity access and benefit sharing regulations by NEMA.	Reviewed Biodiversity Access and Benefit Sharing Regulations.	**MEF** **NEMA** **Ministry of Finance & Planning** **KWS** Other Government Departments & Agencies County Governments, local community Groups and NGOs	2019-2025

Strategic Goal	National Targets	Action	Performance Indicators	Lead / Partners	Timeframe
Goal 5: Strengthen Participatory Planning, Knowledge Base and Capacity Building for Biodiversity Conservation.	**Strategic target 25**: By 2030 each government agency, county government, business sector, civil society and all entities operational in Kenya have developed and adopted policy instruments, and have implemented NBSAP in an effective and participatory manner and are reporting their efforts through established national monitoring, reporting, accounting and coordination frameworks.	National and County Governments to review and update their Development Plans and policies to include policies and objectives for the protection and restoration of biodiversity.	Number of explicit policies and objectives for biodiversity and ecosystem services in County and National Development Plans.	**National Government Ministries** **County Governments** **Council of Governors (COG)**	2019-2022
	Strategic target 26: By 2030, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity are respected, subject to national legislation and	Engage with local communities and stakeholders to help achieve the objectives of this NBSAP.	Level of consultation with community groups in the implementation of the revised NBSAP.	**NEMA** **ME&F** **County Governments** Relevant government departments and agencies, NGOs and community groups	2019-2030

	relevant international obligations, and fully integrated and reflected in the implementation of the NBSAP at all relevant levels.				
	Strategic target 27: By 2030, local communities in / around key biodiversity areas (KBAs), protected areas, habitats of particular significance to biodiversity have governance frameworks to support and take action for biodiversity as they contribute to local development activities within gender differentiated roles and responsibilities.	Design and implement local community (sub-county level) governance frameworks to support and take action for biodiversity as they contribute to local development.	Level of development and implementation of local community (sub-county level) biodiversity governance frameworks in the country.	**NEMA** **ME&F** **KWS** **County Governments** Relevant government departments and agencies, NGOs and community groups	2019-2024
		Establish a national wide Biodiversity Awards initiative where local, sectoral and educational projects or groups with a "biodiversity enhancement" focus compete for innovative prizes that will support their ongoing work and provide a springboard for public awareness and participation.	Biodiversity awards initiative established	**NEMA/NEFUND** **ME&F** **KWS** Relevant government departments and agencies, NGOs and community groups	2019-2022
	Strategic target 28: By 2030, the science based knowledge and	Include biodiversity and ecosystem services in relevant courses in	Level of inclusion of biodiversity and ecosystem services in	**Ministry of Education** **ME&F**	2020-2025

	technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss is strengthened, widely shared, transferred and applied.	primary, secondary and tertiary level education.	primary and secondary curriculum. Number of students taking science or biology at Junior and Senior Cycle levels respectively. Number of students studying biodiversity related topics at the tertiary level.	**Kenya Institute of Curriculum Development (KICD)** Academia and Research Institutions, Relevant government departments and agencies	

Strategic Goal	National Targets	Action	Performance Indicators	Lead / Partners	Timeframe
Goal 6 - Mobilize Financial, Technological and Human Resources.	**Strategic target 29**: By 2030, budgetary allocations to biodiversity related agencies and programmes have doubled.	Biodiversity conservation and protection support will be made a major component of Kenya's development partnership programmes.	Percentage of increase in amount of grants, donations and loans secured for biodiversity protection and conservation.	**NEMA** **ME&F** **Ministry of Finance and Planning**	2019-2030
	Strategic target 30: By 2030, environmental tax reform policy and legislation is developed and used in mobilizing funds for conservation.	Identify areas/instruments and tax enablers that could be developed to incentivize biodiversity/conservation project funding by the private sector.	Number of instruments / tax enablers identified. Amount of funds raised through these instruments.	**NEMA** **ME&F** **Ministry of Finance and Planning** Relevant public bodies, NGOs, Academia and Research Institutions	2019-2022
	Strategic target 31: By 2030, sustainable tourism and local market for sustainable rural products and services are enhanced and a percentage of the accrued financial gains used for conservation purposes.	Establishment of more tourism facilities and related enterprises in conservancies through partnerships with the private sector.	Rate (percentage) of development of new tourism facilities in private or community conservancies.	**Ministry of Tourism** **KWS** **County Governments** **Private Sector** **Communities** Other Relevant Government	**2019-2030**

				Departments and Agencies, and NGOs	
	Strategic target 32: By 2025, a policy and law for business sector is developed and applied to allow business tax rebates for their obligatory contribution to environment through national environment charities.	Explore biodiversity offsets as a means to achieve no net loss of biodiversity under this NBSAP and as a source of revenue for biodiversity conservation and restoration.	Number of identified and feasible biodiversity offsets for businesses.	**NEMA** **ME&F** **Ministry of Finance and Planning** NGOs, Academia and Research Institutions	2019 -2021
	Strategic target 33: By 2025, Payment for Ecosystem Service (PES) schemes and frameworks are in place to facilitate restoration for water catchments, carbon stocks and biodiversity net-gain in the production/development process.	Establish and implement mechanisms for the payments of ecosystem services (PES) including carbon stocks, to generate increased revenue for biodiversity conservation and restoration.	Number of mechanisms established for payments for ecosystem services.	**ME&F** **NEMA** **KRA** **Ministry of Finance & Planning** **Private Sector** **CBOs/NGOs** **KNBS** **KWS** Academia and Research Institutions, Other relevant Government Departments & Agencies	2019-2025

	Strategic target 34: By 2025, voluntary and in-kind contributions by communities, public and private sectors are recognized and accounting frameworks developed and applied to capture the full scale of their contribution to biodiversity conservation.	Development of appropriate strategies plans and mitigation measures towards achieving no net loss of biodiversity by communities, public and private sectors. Development of a framework for documenting and recognizing in-kind contribution towards biodiversity conservation .	Numbers of strategies, plans and mitigation measures in place towards achieving" no net loss" of biodiversity Number of community based organizations, public and private entities applying their " no net loss" to biodiversity instruments A framework is in place for managing private, civil society and public in-kind resource contribution towards biodiversity conservation.	**County and National Governments** **Private Sector Players**	2020-2025
	Strategic target 35: By 2019, mechanism for international cooperation, overseas development assistance for direct and indirect financing and technological cooperation negotiations developed and applied.	Ensure that international collaborative funding opportunities are effectively targeted to assist implementation of this NBSAP through consultation between funders, researchers and users of research, and a framework for	Number of international cooperative funding programmes in which Kenya is a beneficiary.	**NEMA** **ME&F** **Ministry of Finance and Planning** NGOs, Academia and Research	2019-2022

		managing the above is established.	Number and value of grants won. An established framework / mechanism for international cooperation on biodiversity conservation in place.	Institutions	
	Strategic target 36: By 2020, the national coordination office for the current NBSAP will be in place for the purposes of monitoring, reporting, information sharing, mobilization of funds and facilitating the country to meet its CBD obligations.	Establishing the national coordination office for the current NBSAP.	An established national office / secretariat for the coordination of the implementation of the current NBSAP.	**ME&F** **Ministry of Finance and Planning** **NEMA**	2019-2020
		Funding the coordination office	Level of funding for the national office / secretariat for the coordination of the implementation of the current NBSAP.	**ME&F** **Ministry of Finance and Planning** **NEMA**	2020-2030
		Developing and Implementing a Monitoring, Evaluation and Reporting Mechanism for the revised NBSAP.	A robust and effective NBSAP Reporting Mechanism in place.	**ME&F** **Biodiversity Working Group** **NEMA**	2019 - 2030

			Number of meetings of Biodiversity Working Group. Attendance of representatives of departments and agencies. Track status of National Biodiversity Indicators. Interim reports produced.	**Ministry of Finance and Planning**	
		Strengthening CHM.	A robust and effective CHM in place.	**ME&F** **Ministry of Finance and Planning** **NEMA**	2019 - 2030
	Strategic target 37: Strengthen and equip institutions and relevant arms of government, including private sector, with the requisite financial, technological and human resources to effectively implement the Strategy.	Provide relevant arms of government, including private sector, with the requisite financial, technological and human resources to effectively implement the Strategy, including strengthening of ecological expertise in Counties and relevant Government	Rate of increase in terms of financial, technological and human resources into public, private and civil society geared towards implementation of the revised NBSAP.	**ME&F** **Ministry of Finance and Planning** **County Governments** **NEMA** Academia	2019-2030

		Ministries, Departments and Agencies (MDAs).	Number of full-time biodiversity officers in place in County Governments, Ministries, Departments & Agencies. Number of appropriately skilled staff in public bodies.	and Research Institutions, NGOs, Government Departments & Agencies, including private sector.	

PART 4: IMPLEMENTATION MECHANISM, MONITORING, EVALUATION AND REPORTING

The NBSAP 2019 – 2030 is the national strategy and plan for the conservation and sustainable use of biological diversity that integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies. In this regard, to implement the NBSAP, the following shall be essential:

- Implementation Arrangement
- Application of the NBSAP to Sub—National Entities
- Developing Implementation Capacity
- Communication and Outreach
- Resource Mobilization for Implementation
- Clearing House Mechanism (CHM)
- Monitoring and Evaluation

The following section, is description of the above requirement for NBSAP implementation.

4.1 Implementation Arrangement

Implementation arrangements for biodiversity related issues in Kenya including NBSAP is guided by the Environmental Management & Coordination Act (EMCA), 1999. NBSAP implementation will also benefit from environmental sections present in each sector ministry.

At the national level, the Ministries and Departments are responsible for the general implementation of the strategies through facilitating participatory formulation, development and implementation of sector policies and legislation. The MDAs will also be responsible for interpretation of NBSAP into their sectors (and formulate sector BSAPs) and the preparation of projects, programmes, strategies and budget for the strategic interventions relevant to their respective sectors based on the strategic interventions identified in the strategy. The Ministry of Environment & Forestry, as well as the National Treasury & Planning and Devolution and ASAL Areas will work closely with County Governments (CGs) through their various county ministries and departments in collaboration with lined sector national ministries to implement the strategic interventions at local level.

Successful implementation of NBSAP also requires enhanced engagement with NGOs, CSOs, Private Sector, and Academic and Research institutions. Implementation of NBSAP will also benefit from the existing committees within sub-counties, wards, constituencies, towns, cities, villages and sub-village that coordinate environment management.

National Administrative Mechanism

The administration of the NBSAP (2019-2030) can benefit from the utilization of existing administrative mechanisms for biodiversity conservation and sustainable use such as National Environment Action Plan Committee (NEAPC), National Environment Council (NEC), Kenya Climate Change Working Group (KCCWG) and Kenya Forests Working Group that serve in advisory and technical roles.

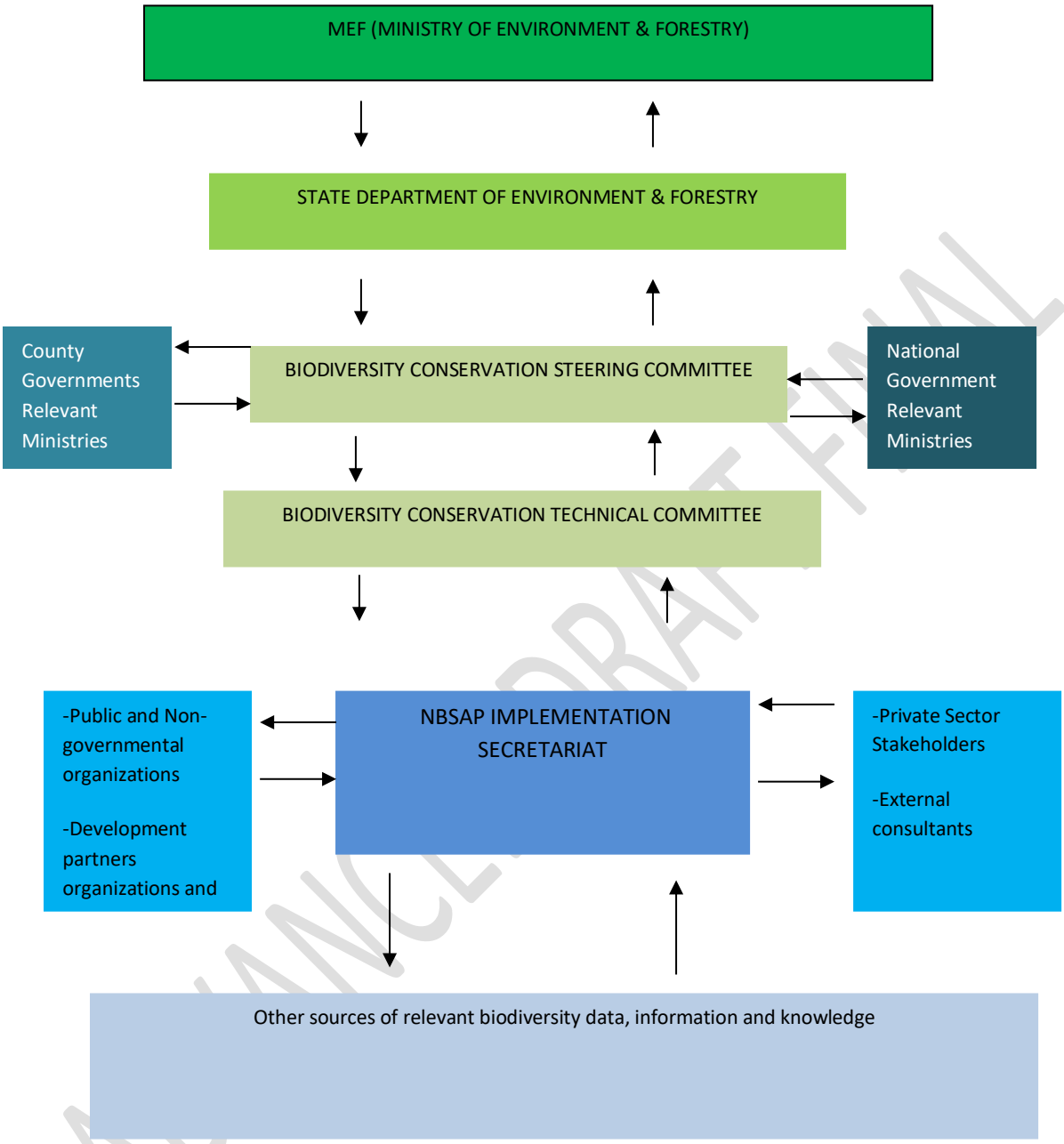
However, for effective administration, a mechanism to support the CBD focal point and ensure adequate coordination in decision-making and planning amongst ministries, government agencies, county governments, non-state actors and the public at large need to be established. Two committees, i.e. a National Biodiversity Conservation Steering Committee (NBCSC) and a National Biodiversity Conservation Technical Committee (NBCTC) are to guide the coordination and implementation of NBSAP.

National Biodiversity Conservation Steering Committee (NBCSC): The NBCSC shall provide policy guidance to the CBD Focal Point and ensure coordination of actions as well as cross-sectoral participation. The NBCSC will be an inter-ministerial committee with the following composition: Principal Secretaries (PS) from sector ministries responsible for Energy, Finance, Industry, Natural Resources, Justice and Constitutional Affairs, Land, Agriculture, Livestock Development, Foreign Affairs and International Cooperation.

The Biodiversity Conservation Technical Committee (NBCTC): The NBCTC shall provide technical advice to the CBD Focal Point and will be charged with overseeing all technical issues related to biodiversity conservation including the implementation of NBSAP. Its composition will include Directors of various ministries.

The two committees shall also have representation from the Private Sector, NGOs and other relevant statutory bodies. Figure 3 illustrates the NBSAP implementation structure.

***Figure 3**: NBSAP Implementation Structure.*



4.2 Adoption of the NBSAP at Sub—National Entities

A sub-national (county-based) BSAP shall be a supplement to the NBSAP in order to ensure the national aspirations are locally achieved. Broader issues identified as national priorities will be taken as the thematic in sub-national (county) plans. Similarly, thematic issues such as sustainable livelihoods perhaps addressed more theoretically

at national level, shall be further defined and explored on the sub-national level, and in this vein mismatches between both plans shall not be necessarily contradictory.

Several countries acknowledge that NBSAP implementation places a heavy burden on national resources. The demand places an unrealistic expectation on the national budget allocations, which are already rationed. Based on this, the county-based / sub-national plans can reduce this national budget burden once they are developed in consultation and coordination through relevant national and county authorities on the premise that implementation will be decentralized. The national and subnational conservation burden sharing will be made effective by way of ensuring that the broad national concerns are translated into focused local action and where the broader concerns seem locally irrelevant, sub-national plans shall highlight the best or more appropriate alternatives.

4.3 Developing Implementation Capacity

Effective implementation of the NBSAP and associated sub-national action plans require adequate professional staff, infrastructure and continuous financial and technical support. Existing capacity is inadequate to facilitate effective and efficient implementation of NBSAP. The inadequacies include human, financial, infrastructural and other material resources. Therefore, capacity building for the broad range of actors will take a central focus particularly in the following areas:

a) Coordination institution for biodiversity related issues,
b) Development and implementation of sub-national action plans,
c) Clearing House Mechanism (CHM), Access and Benefit Sharing (ABS) and ecosystem and biodiversity valuation;
d) Development, promotion, commercialization and management of emerging technologies, and
e) Management of aquatic resources, protected areas, genetic diversity and pollution.

A National Capacity Self-Assessment (NCSA) is key to the establishment of a robust capacity building implementation programme for human resource, infrastructure, technology transfer, business and social processes at all levels of administration.

4.4 Communication and Outreach

Communication and outreach is key for implementation of the NBSAP. Public awareness is to be addressed through educational platforms such as, workshops, seminars, public meetings, conferences, "seeing is believing" tours, and participation in national and international days with themes related to biodiversity. Mass Media platforms like radio, television, newspapers, sectoral websites, social media, email complement the educational platforms and enable broader audience access repackaged information on the NBSAP.

In order to guide the communication and outreach, utilization of the basic principles from the National Environmental Communication Strategy will benefit the NBSAP (2019-2030).

4.5 Resource Mobilization for Implementation

Resources for effective implementation of NBSAP in Kenya will depend on various sources; including government allocations, bilateral and multilateral agreements, grants, private sector and individual contributions.

Existing and Potential Sources of Funds

The potential sources of internal funds include revenue collected by the Government through taxes and charges from various investments associated with biodiversity and ecosystem utilization. Such funds are allocated to various MDAs and County Governments through their Medium Term Expenditure Framework that will be reflected in their budgets.

Implementation of sectoral action plans can be supported under this arrangement. Other sources of domestic funds include established funds such as National Environmental Trust Fund, Forest Trust Fund, Wildlife Fund Payments for Environmental Services (for example, Payment for Ecosystem Services-PES); funds obtained through Public Private Partnership and funds from local NGOs.

Potential sources of funds for NBSAP implementation from the international community include GEF, the World Bank, EU, USAID, CIDA, Sida, DANIDA, among others. GEF serves as financial mechanism for a number of conventions including Convention on Biological Diversity (CBD). In undertaking its activities, GEF operates

with its agencies that include: the United Nations Development Programme (UNDP); United Nations Environment Programme (UNEP); Food and Agricultural Organization of United Nations (FAO), United Nations Industrial Development Organizations (UNIDO), International Fund for Agricultural Development (IFAD), Global International Water Association Fund (GIWA), the European Bank for Reconstruction and Development and the Inter-American Development Bank. Other potential sources of funds include Bilateral Funds and General Budget Support (GBS). NBSAP implementation can also benefit from financial support directed at specific themes such as climate change.

4.6 Clearing House Mechanism (CHM)

Kenya has an evolving national Clearing-House Mechanism (CHM) under the Ministry responsible for Environment and is being hosted by NEMA. To ensure effective implementation of NBSAP 2019-2030, the current CHM will be enhanced through additional financial, technical and human resources. The enhanced CHM will support implementation of the NBSAP in various ways, including the following:

a) Strengthening coordination and collaboration among key stakeholders;
b) Increase public awareness on the status of biodiversity and NBSAP implementation;
c) The revised and updated NBSAP could be uploaded to the CHM website with means of measuring the progress of implementation of the national action plans; and
d) Provision of reliable and accurate biodiversity information relevant to sound decision-making on the sustainable utilization of Kenya's biodiversity.

There is a need to establish more biodiversity information centres in different institutions and to strengthen the existing information centres and databases in the country. A mechanism should be put in place for these information centres and databases to feed into the national database and website.

4.7 Monitoring and Evaluation

Regular monitoring and evaluation of the implementation of the NBSAP is essential, as it will ensure that the national objectives and international obligations are met. The monitoring and evaluation will be carried out in a participatory manner and on a continuous basis. Sectors will prepare and present periodic reports of their monitory

activities to the national focal point. It is expected that the monitoring process will generate progress reports, which will later feed into the evaluation process. Measuring progress on the implementation plan will be based on the various criteria, indicators and verifiers (Table 13) for each target as shown in the Action Plan.

Evaluation of NBSAP implementation will be done in two phases. Phase one will be the midterm review to be undertaken on the fifth year of the implementation process thus to allow for possible amendments and/or actions necessary to improve performance before end of the process. Phase two will be final evaluation to be undertaken at the end of the tenth year where the action plan of NBSAP will be gauged in terms of its relevance, effectiveness, efficiency, impact and sustainability. It is important to note that the evaluation process is very much banking on the availability of information from monitoring. The evaluation report will establish a basis for further planning and revision of NBSAP.

This NBSAP shall be revised after every ten years. Revision should take into account strategy and programmes evaluation reports.

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APPENDICES

APPENDIX 1: STRATEGIC PLAN FOR BIODIVERSITY 2011–2020 AND THE AICHI TARGETS