POLICY AND INSTITUTIONAL REVIEW FOR BIODIVERSITY FINANCING IN ZAMBIA

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FOREWORD

The conservation of biodiversity is of critical importance to Zambia as it provides our natural resources capital. While Zambia is endowed with a rich biodiversity in form of both fauna and flora, these are coming under threat and therefore Government has taken conservation measure very seriously. Biodiversity does not just facilitate our socio-economic development but also provides important ecological functions on which our lives depend. To facilitate the conservation of our biodiversity, financial resources are critical. This is supported by existing policy and institutional arrangements that are in place.

Government has endeavoured over the years to finance the conservation of our biodiversity through various Departments. This has also been augmented by support that the country receives from our all-weather development partners; however, the reality is that these resources have not been sufficient to meet the requirements for effective conservation of our biodiversity. Our vast forest, wildlife and fisheries resources, among other biodiversity components are seriously threated. It is from this background that Government is looking at improving financing of our biodiversity by assessing our past and current expenditure on biodiversity, determine our resource envelop to identify the financing gaps and develop necessary resource mobilisation plan to bridge the gap. In order to undertake this exercise, understanding the policy and institutional framework that underpins our biodiversity financing is critical. This will provide a firm basis for the implementation of the National Biodiversity Strategy and Action Plan (NBSAP), which is running from 2015 to 2025 and help the country contribute to the achievement of the global Aichi Biodiversity Targets under the Strategic Plan for Biodiversity 2011-2020.

This report presents the Policy and Institutional Review (PIR) of financing biodiversity in the country. It also provides a range of finance solutions which may be explored to supplement Government budgetary allocation to biodiversity. The report also provides sector-specific recommendations on opportunities for financing biodiversity in the agriculture, environment, fisheries, forestry, water and wildlife sectors. This is in line with Seventh National Development Plan (7NDP) which is promoting an integrated approach to development. Government will continue exploring innovative ways to enhance its support to the conservation of biodiversity and also promote efficient use of resources for this purpose. It is also Government's hope that the cooperation that the country has enjoyed in this sector over the years with our development partners will continue to help us conserve our natural resource capital for current and future generations.

Jean Kapata, MP
MINISTER OF LANDS AND NATURAL RESOURCES

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Trevor Kaunda
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ACRONYMS AND ABBREVIATIONS

7NDP	Seventh National Development Plan (still under preparation)
ADMADE	Administrative Design for Game Management Areas
AfDB	African Development Bank
AIA	Appropriation in Aid
ALERT	African Lion Education and Research Trust
ASIP	Agricultural Sector Investment Programme
AWF	African Wildlife Fund
BAZ	Bankers Association of Zambia
CBD	Convention on Biological Diversity
CBNRM	Community Based Natural Resource Management
CBO	Community Based Organisation
CBU	Copperbelt University
CC	Climate Change
CCA	Community Conservation Area
CFC	Copperbelt Forestry Company
CFU	Conservation Farming Unit
CIFOR	Center for International Forest Research
CITES	Convention on International Trade in Endangered Species
CLZ	Conservation Lower Zambezi
COMACO	Community Markets for Conservation
COMESA	Common Market for Eastern and Southern Africa
CoP	Conference of the Parties
CPs	Cooperating Partners
CPUE	Catch Per Unit Effort
CRB	Community Resource Boards
CSO	Civil Society Organisation
CVM	Contingent Valuation Methods
DANIDA	Danish International Development Agency
DFID	Department for International Development (UK)
DL	Decision Letter
DNPW	Department of National Parks and Wildlife
DoF	Department of Fisheries
DR Congo	Democratic Republic of Congo
DSCF	David Shepherd Conservation Fund
DTF	Devolution Trust Fund (water sector)
EFR	Environmental Fiscal Reform
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
EMP	Environmental Management Plan
Enso	El Niño-Southern Oscillation
EOP	Effect on Production

EPB	Environmental Project Brief
EPF	Environmental Protection Fund
ESP	Environmental Support Programme
EU	European Union
FAO	Food and Agriculture Organisation
FBO	Faith Based Organisation
FD	Forestry Department
FDF	Forestry Development Fund
FINNIDA	Finnish International Development Agency
FISP	Farmer Input Support Programme
FNB	First National Bank
FQM	First Quantum Mines
FQM	First Quantum Mining Company
FZS	Frankfurt Zoological Society
GBS	General Budget Support
GDP	Gross Domestic Product
GEF	Global Environmental Fund
GF	General Fund
GHG	Greenhouse Gas Emissions
GIZ/KfW	Deutsche Gesellschaft für Internationale Zusammenarbeit / German Development Bank
GMA	Game Management Area
GVA	Gross Value Added
IAPRI	International Agriculture Policy Research Institute
IDA	International Development Agency
IFAD	International Fund for Agriculture Development
ILUA	Integrated Land Use Assessment
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organisation for Standardisation – ISO international standards ensure that products and services are safe, reliable and of good quality
IUCN	The World Conservation Union
IWRM	Integrated Water Resources Management
KCM	Konkola Copper Mines
KML	Kalumbila Mines Limited
KNP	Kafue National Park
KWS	Kalumbila Wildlife Sanctuary
KZF	Keeper Zambia Foundation
LCM	Lumwana Copper Mines
Lusaka CC	Lusaka City Council
MAE	MAE: Mitigative and Avertive Expenditures
MCDSW	Ministry of Community Development and Social Welfare
MCM	Mopani Copper Mines
MCTA	Ministry of Chiefs and Traditional Affairs

MFL	Ministry of Fisheries and Livestock
MHA	Ministry of Home Affairs
MLG	Ministry of Local Government
MLNR	Ministry of Lands and Natural Resources
MNDP	Ministry of National Development Planning
MoA	Ministry of Agriculture
MoF	Ministry of Finance
MoI	Ministry of Information
MP	Market Prices
MPSA	Ministries, Provinces and Spending Agencies
MTA	Ministry of Tourism and Arts
MTEF	Medium Term Expenditure Framework
MU	Mulungushi University
MWDSEP	Ministry of Water Development, Sanitation & Environmental Protection
NAIP	National Agriculture Investment Plan
NAPA	National Adaptation Programme of Action
NBF	National Biodiversity Framework
NBSAP	National Biodiversity Strategy and Action Plan
NCCR	National Climate Change Response Strategy
NCR	National Conservation Strategy
NDC	Intended Nationally Determined Contribution
NDPs	National Development Plans
NEAP	National Environmental Action Plan
NGO	Non-Governmental Organisation
NHCC	National Heritage Conservation Commission
NISIR	National Institute for Scientific and Industrial Research
NM-CVM	Non-market CVM
NORAD	Norwegian Agency for Development Cooperation
NPE	National Policy on Environment
NPs	National Parks
NRDC	Natural Resources Development College
NRFA	National Road Fund Agency
NTFP	Non-Timber Forest Product
NTP	National Tourism Policy
NWASCO	National Water and Sanitation Council
OC	Opportunity Costs
ODA	Overseas Development Assistance
PA	Protected Area
PEF	Performance Enhancement Fund
PES	Payment for Ecosystem Services
PFAP	Provincial Forestry Action Programme
PFAs	Protected Forest Areas
PGRC	SADC Plant Genetic Resource Center

PIR	Policy and Institutional Review
PPP	Private Public Partnerships
RCM	Replacement Cost Methods
RDA	Road Development Agency
REDD+	Reducing Emissions from Deforestation and Forest Degradation in developing countries, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries.
REMNPAS	Reclassification and Effective Management of the National Protected Area System
R-SNDP	Revised Sixth National Development Plan
RTSA	Road Transport and Safety Agency
SAP	Structural Adjustment Programme
SARB	Southern African Regional Biosafety Programme
SBS	groups Sector Budget Support
SDG	Sustainable Development Goals
SI	Statutory Instrument
SNDP	Seventh National Development Plan
SNV	Netherlands Development Organisation
TCA	Tourism Concession Agreement
TCM	TCM: Travel Cost Methods
TFCA	Trans Frontier Conservation Area
TNC	The Nature Conservancy
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNEP	United Nations Environment Fund
UNFCCC	United Nations Framework Convention on Climate Change
UNICEF	United Nations Children's Fund
UNILUS	University of Lusaka
UNWTO	United Nations World Tourism Organisation
UNZA	University of Zambia
USAID	United States International Development
VAT	Value Added Tax
VFMC	Village Forestry/Fisheries Management Committee
WARMA	Water Resources Management Authority
WDTF	Water Development Trust Fund
WECSZ	Wildlife and Environmental Conservation Society of Zambia
WRM	Water Resources Management
WSS	Water Supply and Sanitation
WWF	World Wide Fund for Nature
ZAFFICO	Zambia Forestry and Forest Industries Corporation
ZAMRA	Zambia Medicines Regulatory Authority
ZANACO	Zambia National Commercial Bank

ZARI	Zambia Agriculture Research Institute
ZAWA	Zambia Wildlife Authority
ZCCN	Zambia Climate Change Network
ZDA	Zambia Development Agency
ZEMA	Zambia Environmental Management Agency
ZESCO	Zambia Electricity Supply Corporation
ZFC	Zambia Forestry College
ZLA	Zambia Land Alliance
ZMK	Zambian Kwacha (unrebased)
ZMW	Zambian Kwacha (rebased)
ZNFU	Zambia National Farmers Union
ZRA	Zambia Revenue Authority

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF BOXES

EXECUTIVE SUMMARY

National Biodiversity Setting

The development of national targets and their incorporation into updated National Biodiversity Strategies and Action Plans (NBSAPs) is a key process in fulfilling the commitments set out in the Strategic Plan for Biodiversity 2011-20120 adopted by CBD's 2010 Parties reflecting how a country intends to fulfil the objectives of the CBD and the concrete actions it intended to take. Zambia adopted the five (5) strategic goals of the CBD strategic plan as they were highly relevant to Zambia and also reduced the 20 Aichi Biodiversity Targets to 18 national targets as Zambia's priorities. The Strategic Goals and Targets for Zambia as outlined in the NBSAP 2 (2015-2025) are:

1. *Strategic Goal A:* Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society. The goal has 4 targets and 8 strategic interventions.
2. *Strategic Goal B:* Reduce the direct pressures on biodiversity and promote sustainable use. The goal has 5 targets and 19 strategic interventions.
3. *Strategic Goal C:* Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity. The goal has 3 targets and 10 strategic interventions.
4. *Strategic Goal D:* Enhance the benefits to all from biodiversity and ecosystem services. The goal has 6 targets and 13 strategic interventions.
5. *Strategic Goal E:* Enhance implementation of NBSAP2 through participatory planning, knowledge management and capacity building.

National visions on Biodiversity status and trends and link to Biodiversity Goals and Strategies

Despite the fact that the NBSAP 2 was formulated much later than most of the strategic plans, every strategic plan anchorsa number of Strategic Goals in NBSAP 2:

1. National REDD+ Strategy (2015) - *Strategic goals B & C*
2. National Climate Change Response Strategy (2011) - *Strategic goals A-D*
3. National Adaptation Programme of Action on Climate Change (2007) - *Strategic goals A-D*
4. National Conservation Strategy (1985) - *Strategic goals A-C*
5. Integrated Water Resources Management and Water Efficiency Implementation Plan (2008) - *Strategic goals A-D*
6. Nationally Determined Contributions (NDC) - *Strategic goals A-D*
7. National Environmental Action Plan (1994) - Strategic goals A.

Zambia's Biodiversity and Water Resources

According to National Biodiversity Strategy and Action Plan II (NBSAP 2), there are at least 12,505 species of organisms in Zambia: 242 are mammal species, 757 bird species, 6,135 species of invertebrates, 156 reptile species with 45 considered to be rare, 490 fish species and 74 amphibian species. Wild flowering plants are estimated at 3,543 species, 107 cultivated plant species and 567 wild relatives of crops. Domesticated animals total 16 species. Zambia receives an average of 1,020mm per year of annual precipitation with the total renewable water resources of 105.2 Km^3 per year, with 25 Km^3 per year coming from external water resources. This is equivalent to a 23% dependency ratio for renewable water resources. Total renewable water resources per capita is 7,474 m^3 per year which is relatively high. The dam capacity of the country totals 101 Km^3.

Objectives of the Policy and Institutional Review

The specific objectives of the Biodiversity Finance Policy and Institutional Review were to:

i. describe how the management of biodiversity and ecosystem services supports national sustainable development goals and visions,
ii. assess the economic and fiscal drivers of biodiversity change,
iii. Identify existing biodiversity finance mechanisms, incentives, subsidies and other instruments, including an assessment of sources of biodiversity revenues,
iv. identify of barriers to improved or expanded biodiversity finance solutions including legal, policy, institutional and operational aspects,
v. identify biodiversity finance capacity development needs and opportunities,
vi. develop specific policy recommendations to initiate, improve and scale up effective biodiversity finance solutions.

The preparatory phase of the PIR involved a preliminary understanding of the landscape of policies and institutions in the biodiversity which were categorised into key biodiversity and related sectors. The key sectors were identified to be environment, fisheries and aquaculture, forestry, policy and planning, water resources, wildlife and civil society. A purposive analysis was carried out and included (a) a review of relevant literature (policies, legislation, strategies and annual reports) on biodiversity and related institutions; (b) stakeholder analysis (roles and responsibilities), (c) limited and selective key informant interviews. This was used to clarify aspects of institutional, policy and finance that required clarity. NBSAP2 informed this process with respect to institutional arrangements through institutional coordination, policy implementation and resource mobilization. Institutions were divided into agriculture, civil society, cooperating partners, environment/biodiversity management/land/water, financial organisations, insurance entities, mining entities, revenue collection and administration.

National Development Plans, Green Growth and Ecosystem Services

Zambia's development vision is stipulated in the Vision 2030 whose vision statement is *"A prosperous middle income nation by 2030"*. Other key NDPs are

1. Seventh National Development Plan (7SNDP, 2017-2021): The 7NDP is aimed at achieving the objectives set out in the Vision 2030.
2. Inclusive Green Growth in Zambia: Scoping the needs and potential: green growth is taken to be '*inclusive development that makes sustainable and equitable use of Zambia's natural resources within ecological limits"*. Zambia's high economic growth rates are heavily dependent on its environment-based sectors and it is the natural resources that support the generation of much of the contribution to GDP.

The policies that support the NDPs in the agriculture, biodiversity and water sector are

1. National Policy on Environment (2007) - Natural resources & environment
2. National Forestry Policy (2014) - Forestry & forest based livelihoods
3. National Agriculture Policy (2012 – 2020) - Agriculture
4. National Tourism Policy (2015) - Tourism & tourism related sectors
5. National Energy Policy (2007) - Energy
6. Minerals Development Policy (2013) - Mining & mineral development
7. Fisheries Policy (2011) - Fisheries
8. National Water Policy (1994) - Water
9. National Parks and Wildlife Policy (1998) - Wildlife

Agriculture, fisheries, forestry and hunting recorded positive growth rates over the 2001 to 2014 period, with the sector's contribution to GDP at 24% in 2000 declining to 9% in 2014. There has been an insignificant growth in this sector between 2014 and 2016, averaging 9.3% contribution to GDP. The services sector led real economic growth at an estimated 60.8% share of GDP in 2015, while the industrial sector contributed an estimated 29.9% to GDP in 2015.

Biodiversity Trends

Threats to Zambia's environment include uncontrolled wild fires, habitat fragmentation, unsustainable utilisation/illegal offtake, pollution, diseases and pests, charcoal production, poor governance, agricultural practices, mining operations and expansion, invasive species, and encroachment. Factors leading to negative biodiversity trends are described below.

1. Agriculture

   Natural assets: 107 cultivated crops with 567 crop wild varieties; 7,278 germplasm *ex-situ* accessions; livestock: 6 bird & 10 animal species.

   Underlying factor leading to negative trend: Wild fires; promotion of "high yielding and profitable crops and crop varieties; pollution; conversion of small holder/subsistence/traditional farming systems to commercial farming; land use change;

   Percent, size of area affected: impact data not available.

2. Fisheries

   Natural assets: 40,305Km^2 Ramsar sites; 490 species in 24 families; 299 species are endemic.

   Underlying factor leading to negative trend: Unsustainable utilisation/illegal offtake during the fish ban period & in fish breeding areas; population increase; CC & variability; invasive species; pollution; poor governance.

   Percent, size of area affected: CPUE decline to 9.62Kg/100m net in 1994 then 2.3Kg/100m net (2007) in Lake Bangweulu.

3. Forestry

   Natural assets: 3,774 higher plant species; 147 algae, 129 mosses, 142 ferns.

   Underlying factor leading to negative trend: Unsustainable utilisation/illegal offtake; mining & infrastructure development; agriculture expansion; encroachment; wildfires; poor governance.

   Percent, size of area affected: 1.5% forest cover loss per annum; -0.81% (1965-2005); estimated 276,021 ha loss annually averaging 0.6% per annum.

4. Wildlife

   Natural assets: 224 mammalian species; 733 bird species: 76 rare & 100 endemic; 2,032 invertebrate species: 27 endemic grasshoppers; 598 micro-organism species.

   Underlying factor leading to negative trend: Unsustainable utilization/illegal offtake; encroachment; habitat fragmentation; agriculture expansion.

   Percent, size of area affected: 28 species & subspecies vulnerable /endangered; 25% National Parks & 48% GMAs degraded; 75% elephant loss from 1972 to mid-1980s due to poaching in South Luangwa NP.

Economic and Financial Drivers of Biodiversity Change

Subsector economic and financial drivers of biodiversity change are causative factors, driven by economic or financial interaction between society and biodiversity, that positively or negatively impacts biodiversity.

a. Agriculture: *financial* = currency fluctuation and subsidy (FISP) (financial)

b. Fisheries: *economic*=unsustainable consumption; lack of incentive for aquaculture development; *Financial* = Inadequate finances (budgetary allocation ≈ 29% of requirements)

c. Forestry: *economic* = Increasing consumption of NTFPs & timber; Lack of incentive for private sector or farm forest plantations; Inadequate investment in value addition; lack of private sector investment in plantations.
Financial = Inadequate finances (budgetary allocation ≈30% of requirements)

d. Wildlife and Tourism: *economic* = Illegal offtake Rhino, elephants & other animals; Inadequate investment in tourism & park infrastructure; Private sector investment in park management & tourism; Land allocation for economic development.
Financial = Inadequate finances (budgetary allocation ≈30% of requirements)

e. Water Resources: *economic* = Illegal abstraction

f. Mineral resources*: economic* = Mining exploration, green site development & mining operations

Economic Valuation Evidence for Biodiversity

Economic valuations of biodiversity have indicated the following values for each natural asset:

a. *Fisheries* - $51-$135 million (2002-2007)

b. *Forests* - Wood production: $396m/a; Non-wood forest products: $135.8m/a; Carbon: $15m/a ($6/ton); Saving in soil erosion: $247m/a; Pollination services: $74m/a; Forest-based tourism: $110-$179m/a; g. GDP 4.7% or $957.5m (2010

c. *Mineral resources* - $17 billion/a by 2017

d. *Tourism* - Nature tourism (2005): $194m (3.1% of direct GDP)[e]

e. *Wildlife, tourism, wetland resources & Protected Areas (Zambezi wetland)*: Livestock: $3.3m; Per cropped ha: $117/a; Fish: $4m ($3.6/ha); Wildlife: $10.97 (gross home value); Wild plants: $473,499 (gross home value); Tourism: $12m (gross use value); Total direct consumptive use value of Barotse wetland: $9.5m

Major Government Subsidies with potential Negative Impact on Biodiversity

The Farmer Input Support Programme is a major agriculture subsidy in Zambia. It is intended to support small scale farmers to access farm inputs particularly fertilisers. In 2017, 4.4% (K2,856 million) of the budget has been allocated to FISP. In comparison, environmental protection has been allocated 1% (K616 million). The potential impact, which has not been measured, is that it has the potential to overload croplands and result in pollution from synthetic fertilisers and pesticides. Additionally, it can lead to the expansion of agriculture into forested lands.

Biodiversity Dependent Revenues

1. Fisheries and Livestock Sector

Fisheries: Revenue sources include importation of fishing gear, fish export permit, fishing licence, special fishing licence, registration of boats, aquaculture licence, interference with aquaculture facility, use of chemicals in aquaculture and general offences.

Livestock: council fees, veterinary permit, police form, stock movement, police anti-theft stock clearance report.

2. Wildlife Sector

Revenue sources are Fixed Lease Fees and Variable, Park Entry Fees, Hunting quotas, Tourism Enterprise License Fees, Game Management Area Land-user-rights Fees and Penalties and Court Fines.

3. Water Resources

Revenues generated from raw water user charges.

4. Environmental Management

Revenues are generated from Environmental Impact Assessment Fees and Charges; Discharge of effluents fees and charges.

5. Forest Sector

Biodiversity based revenues generated from *Timber Licenses, fees and levies;*

Other potential sources are Conservation Trusts through a combination of endowment funds and other donors who wish to support projects.

The private sector has investments in biodiversity that generated in excess of K1.9 million in 2015. These investments have the potential to either support biodiversity management or contribute to factors that erode biodiversity. NBSAP 2 indicates that Zambia has cultivated plants and livestock some of which are not indigenous to Zambia. Some private sector investments are in cultivated plants as well as livestock. Additional biodiversity public finances originate from bilateral and multilateral partners who provide grants as well as conservation civil society organisations.

Gap Analysis of Legal Framework for Finance Solutions

1. *Financial (Control and Management Act, Cap. 347:* No provision for moneys generated from forfeited assets to be channeled to sector from which forfeited product originated.
2. *Fisheries Act:* Cross border trading not provided for in levy regulations.
3. *Environmental Management Act:* There is a lack of an enabling legal and policy framework for the implementation of budget tracking of Carbon Taxes. One of the reforms is to allow ZEMA collect Carbon Tax currently collected by the Road Transport and Safety Agency (RTSA) as inland tax revenue while the Zambia Revenue Authority (ZRA) collects it at importation or entry point.
4. *Forestry and Fisheries:* % share of revenue in co-management not specified.
5. *Water sector:* no definition of water sector activities that include biodiversity management. This weakens the sector from participating in biodiversity management and thus does not receive finance for the same.
6. *Wildlife sector:* No robust and specific incentive system designed for wildlife and tourism sectors including preferential "taxation" systems that gives Zambia a competitive advantage over other countries; Definition of "resources" and responsible organisation for resource exploitation in wildlife policy and legislation is weak.
7. *Mining:* provisions stipulating guidelines for corporate social responsibility.

Summary of Biodiversity Finance Solutions

1. Payments for ecosystem services;
2. Carbon Tax / Green Tax;
3. Green Treasury Bill;
4. Green markets through agricultural trade and value chains;
5. Climate finance;
6. Environmental Protection Fund;
7. Issuance of Tenders for Private Sector Investments in Tourism Facilities and protected areas.

Key Biodiversity Finance Recommendations

1. *Agriculture:* Ensuring that agriculture sector is compelled to collaborate with other biodiversity sectors such as forestry and wildlife. Extensive use of wood in tobacco curing in Eastern Province require collaborative engagements between tobacco producers and the forestry sector over sustainable utilisation of wood.

2. *Environment:* Establish a biodiversity levy for every developer whose operations lead to the degradation of biodiversity. The developer either funds restoration works to the extent of the damaged area or provides financing equivalent to the economic value of degraded or damaged biodiversity.
3. *Fisheries:* Law to authorise officers to apportion at least forty percent (40%) of the collected revenue into a local account upon receipt and for use at local level.
4. *Forestry:* legislation to facilitate retaining moneys generated from forfeited assets at the source of where the forfeited assets originated.
5. *Water:* Budgetary allocation meant for water management should also carry a theme of biodiversity management as the two are interdependent.
6. *Wildlife:* Re-Introduction of VAT on Tourist Packages; Retention of Court Fines; Introduction of Fees for Culling of animals in support of registered Traditional and Cultural Ceremonies; Introduction of Wildlife Product Permits and Export/Import Permits from Private Ranches, Farms and Zoos.

1.0 INTRODUCTION

Zambia's rich biodiversity is scattered in customary or traditionally managed areas, protected areas, *in-situ* conservation areas and agricultural landscapes. According to National Biodiversity Strategy and Action Plan II (NBSAP2), there are at least 12,505 species of organisms in Zambia: 242 are mammal species, 757 bird species, 6,135 species of invertebrates, 156 reptiles species with 45 considered to be rare, 490 fish species and 74 amphibian species. Wild flowering plants are estimated at 3,543 species, 107 cultivated plant species and 567 wild relatives of crops. Domesticated animals total 16 species. The value of biodiversity can be classified into anthropocentric (economic or utilitarian values) and intrinsic or ethical values. The anthropocentric value has direct and indirect economic benefits to society. Biodiversity has an intrinsic value as it performs various ecosystem services through inherent ecological processes in the conservation of species, genetic resources and ecosystems. Biodiversity provides the anthropocentric values comprised of a diverse basketful of goods and services that include medicines, foods (i.e. wild vegetables, mushrooms, tubers, bulbs, and animals), fibre, non-medical industrial products (i.e. chemicals and resins) and energy sources (fuelwood, charcoal). With such goods, making up the consumptive and productive values of biodiversity, a direct economic cost and value can be assigned that contributes to both the household and national economy.

Zambia has several institutions in the biodiversity and related sectors that the National Biodiversity Strategy and Action Plan 2 (NBSAP 2) categorises under government agencies, civil society organisations and research institutions[1]. NBSAP 2 has also indicated the constitutive aspects, or institutional roles in biodiversity governance and management, for each of the institutions under the three categories. NBSAP 2 has additionally assigned "responsibilities" to institutions in the biodiversity sector in terms of expected biodiversity targets for 2025. Government agencies (government departments and statutory bodies) and public research institutions in Zambia are established by legislation and have specific roles that are outlined in the government policies. Some of the roles are tied to the domestication of international conventions such as the Convention on Biological Diversity (CBD).

Policies made by governments, termed *public policies,* have existed from the time that the *institution of government* started to exist. Because they are a result or part of government, policies are therefore a part of a political action. Public policies are therefore purposive courses of action by a government in dealing with a problem to reach a goal. Therefore, policies focus on the public and its problems. A policy can also define constraints with proposed courses of action designed to overcome them. This understanding therefore means that public policies include whatever instrument government decides to formulate to solve a problem. There are various types of policies such as capitalization, distributive, redistributive, regulatory and substantive. The importance of public policy is therefore that it helps define the role that the state adopts for itself in society – i.e. socio-economic development and its attendant tenets. Society then, through an understanding of the actions of government, can rationally hold the political establishment accountable. To do this, society must ascertain the actual impact of public policy through public policy analysis and evaluation. Policy analysis in this case defines the problem and goals related to biodiversity finance through existing and future policies, examination of arguments of whether existing systems are robust or not, and analysis of the implementation of such policy through an institutional review.

Institutional analysis can be viewed from the context of the evolution/emergence and function of institutions and how these influence people, other institutions and the institution itself. The reverse impact can stem from positive or negative influences that the institution creates in the management of biodiversity and benefits thereof. While an understanding of institutions is important, this discourse views institutions from two

[1] Table 1. Key stakeholders involved in the NBSAP 2 development process. NBSAP 2. Pg. 2.

fundamental pillars: as incentives systems in the context of revenue flows to financing biodiversity and as cultures even though the differences between the two understandings of institutions cannot be clearly defined. Institutional analysis is particularly important at the *ex ante* pre-activity phase of a project where it can be used to identify key partners, networks and information flows. Institutional analysis at this stage can also provide a baseline which can be used to monitor, review, and evaluate rationale for change throughout a project life cycle. In this case, it can be used to plan an activity, evaluate impact and for adapting to unexpected changes post-implementation. Institutional analysis (IA) can be viewed as a stakeholder analysis of institutions that carry out policy reforms, implementation and M&E including their characteristics.

The specific objectives of the PIR were;

i. Description of how the management of biodiversity and ecosystem services supports national sustainable development goals and visions.
ii. Assessment of economic and fiscal drivers of biodiversity change.
iii. Identification of existing biodiversity finance mechanisms, incentives, subsidies and other instruments, including an assessment of sources of biodiversity revenues.
iv. Identification of barriers to improved or expanded biodiversity finance solutions including legal, policy, institutional and operational aspects.
v. Identification of biodiversity finance capacity development needs and opportunities.
vi. Development of specific policy recommendations to initiate, improve and scale up effective biodiversity finance solutions.

The preparatory phase of the PIR involved a preliminary understanding of the landscape of policies and institutions in the biodiversity which were categorised into key biodiversity sectors and related sectors. The key sectors were identified to be environment, fisheries and aquaculture, forestry, policy and planning, water resources, wildlife and civil society. This categorisation resulted in selecting individuals who constituted the PIR team: Frank Nyoni (Water resources management), Cliff Ngwata (Environment & corporate environmental and social responsibility), Chris Kaoma (wildlife), Bornwell Seemani (fisheries and aquaculture), David Mapiza (policy, planning and finance), Mwape Sichilongo (civil society; environment and natural resources management); and Carol Mwape (international conventions). These were supported by enumerators: Alice Muyanga (corporate social & environmental responsibility, corporate entities, municipalities in Copperbelt & Northwestern Provinces), Nang'ombe Nkamu (MTA, Energy, NBA, NHCC, ZEMA & corporate entities – Lusaka & Southern Provinces), Justin Mwansa (insurance companies, financial institutions, embassies, civil society – Lusaka), Abigail Luchembe & Pemiwa Zimba (insurance companies, MoF, embassies, civil society – Lusaka). The report was edited by Philemon Ng'andwe.

An in-depth purposive analysis was carried out and included (a) a review of relevant literature (policies, legislation, strategies and annual reports) on biodiversity and related institutions; (b) stakeholder analysis (roles and responsibilities), (c) limited and selective key informant interviews. This will be used to clarify aspects of institutional, policy and finance that require clarity. NBSAP2 informed this process with respect to institutional arrangements through institutional coordination, policy implementation and resource mobilization. Institutions were divided into agriculture, civil society, cooperating partners, environment/biodiversity management/land/water, financial organisations, insurance entities, mining entities, revenue collection and administration.

The report is divided in two broad sections: the core section composed of 7 subsections (i.e. executive summary; introduction; biodiversity visions, strategies and trends; economic drivers and sectoral linkages; biodiversity finance landscape; institutional analysis; summary of key recommendations) and the appendices containing the biodiversity finance review, glossary of terms and references.

2.0 BIODIVERSITY VISION, STRATEGIES AND TRENDS

This section summarizes visions and strategies from NBSAP 2 and the National Report; key national visions of biodiversity status and trends, and their links to national biodiversity goals and strategies; the National Development Plans, green growth plans; and synthesizes the contribution of biodiversity/ecosystem services towards sustainable development. Biodiversity trends are also illustrated.

2.1 Visions and Strategies from NBSAP and the National Report

In 2010, Parties to the UN Convention on Biological Diversity (CBD) adopted the Strategic Plan for Biodiversity 2011–2020, a ten-year framework for action by all states and stakeholders to safeguard biodiversity and the benefits it provides to people. The Strategic Plan for Biodiversity 2011-2020 states that "*by 2050, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people"*, and as such 20 ambitious but realistic targets also known as the Aichi Biodiversity Targets were adopted. Following the adoption of the Strategic Plan the Zambian Government, like other states signatory to the framework, needed to establish national targets in support of the Aichi Biodiversity Targets. The development of national targets and their incorporation into updated National Biodiversity Strategies and Action Plans (NBSAPs) is a key process in fulfilling the commitments set out in the Strategic Plan reflecting how a country intends to fulfil the objectives of the CBD and the concrete actions it intended to take.

Zambia therefore aligned its NBSAP of 1999 to the Strategic Plan on Biodiversity 2011-2020 and its Aichi Targets as well as the Post-2015 Sustainable Development Goals (SDGs) as of 2015 whose vision is *"by 2025, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy environment and delivering benefits essential for all Zambians and the Zambian economy"*. As such, Zambia adopted the five (5) strategic goals of the CBD strategic plan as they were highly relevant to Zambia and also reduced the 20 Aichi Biodiversity Targets to 18 national targets as Zambia's priorities. The Strategic Goals and Targets for Zambia as outlined in the NBSAP 2 (2015-2025) are:

1. *Strategic Goal A:* Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society. The goal has 4 targets and 8 strategic interventions.
2. *Strategic Goal B:* Reduce the direct pressures on biodiversity and promote sustainable use. The goal has 5 targets and 19 strategic interventions.
3. *Strategic Goal C:* Improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity. The goal has 3 targets and 10 strategic interventions.
4. *Strategic Goal D:* Enhance the benefits to all from biodiversity and ecosystem services. The goal has 6 targets and 13 strategic interventions.
5. *Strategic Goal E:* Enhance implementation of NBSAP2 through participatory planning, knowledge management and capacity building.

Integrating biodiversity in sectoral, provincial and district development planning and budgeting frameworks will help address and improve coordination and collaboration among biodiversity conservation sectors and related institutions. Key to achieving these goals is ensuring that the incentives are identified for sustainable use of biodiversity and the gradual phasing out of identified subsidies that are not supportive to biodiversity conservation. While Zambia has been working towards biodiversity conservation, it has been recognized that information is either scanty or missing thus making it a challenge to establish reliable baselines that could be monitored periodically.

Apart from articulating clear targets for each strategic goal, NBSAP 2 also provides performance indicators for each intervention and assigns responsibilities to sector government departments and statutory bodies.

Table 1 below shows Zambia's NBSAP 2 link to most of the strategic plans.).

Table 1. Key national biodiversity strategic plans

National Strategy	Main Aim	Link to main NBSAP 2 Strategic Goal
Nationally Determined Contributions (NDC)(2015)	Sustainable forest management & sustainable agriculture practice, biodiversity considered one of the major co-benefits from the interventions aimed at enhancing adaptation & reducing GHG emissions	Strategic goals A-D
National Conservation Strategy (1985)	Ensure sustainable use of Zambia's renewable natural resources; maintain Zambia's biological diversity; maintain essential ecological processes & life-support systems	Strategic goals A-C
National Environmental Action Plan (1994)	Review and integrate environmental concerns into the social & economic development processes of the country, consistent with the country's new market economic orientation	Strategic goals A
National Adaptation Programme of Action on Climate Change (2007)	Improve the conservation of biodiversity to mitigate the impacts of climate change and promote resilience among local communities and businesses	Strategic goals A-D
Integrated Water Resources Management and Water Efficiency Implementation Plan (2008)	Integrated management of all the resources in the catchment areas; improved water resources planning & management involving mapping; Improved water use & allocation efficiency; provision of adequate, safe and cost effective water supply & sanitation; monitoring & evaluation of performance of the programmes and projects	Strategic goals A-D
National Climate Change Response Strategy (2011)	Develop sustainable land use systems; ensure sustainable management & resiliency of water resources under the changing climate; develop a less carbon-intensive & CC-resilient energy infrastructure & growth; develop a less carbon-intensive & CC-resilient mining industry	Strategic goals A-D
National REDD+ Strategy (2015)	Effective management of protected and open areas; Regulated production & improved utilization of wood fuel; promotion of alternative energy sources; protection of ecologically sensitive areas; establishment of forest plantations; integrated land-use planning	Strategic goals B & C

Strategic Goal E (*Enhance implementation of NBSAP2 through participatory planning, knowledge management and capacity building*) is cross-cutting and relates to all the strategic plans.

The broader vision for Zambia's biodiversity is articulated by

Zambia's Vision 2030

Zambia's Vision statement, i.e. *"A prosperous middle income nation by 2030"*. Zambians, by 2030, aspire to live in a strong and dynamic middle-income industrial nation that provides opportunities for improving the wellbeing of all, and embodying values of socio-economic justice. To achieve this, Zambia should have an economy that is competitive, dynamic and resilient to any external shocks, supports stability and protection of biological and physical systems and is free from donor dependence, developing policies that are consistent with sustainable environment and natural resources management principles. The Vision 2030 acknowledges that Zambia's biodiversity is protected in 20 national parks, 35 Game Management Areas (GMAs) and 488 national and local

forest reserves, covering 8%, 22% and 9.6% of the country's land area, respectively and which are either declining or degraded in status due to poaching especially in GMAs and encroachment.

The focus on "*prosperous middle income nation by 2030*" is anchored on values of socioeconomic justice, underpinned by the principles of: (i) gender responsive sustainable development; (ii) democracy; (iii) respect for human rights; (iv) good traditional and family values; (v) positive attitude towards work; (vi) peaceful coexistence and; (vii) private-public partnerships. Values (i)-(iv) and (vi) which drive the sector targets or goals. In turn the sector targets/goals contained in the Vision 2030 are in synergy with the 15 Sustainable Development Goals. The strategic long-term focus for Zambia in the context of sustainable development is to address high levels of unemployment, invest in the development of rural areas, and to reduce widening economic inequalities. Zambia has adopted and localised 15 of the 17 SDGs to reflect its own context and priorities[2]. In line with this, Table 2 reflects the localised SDGs.

Table 2. Adopted and localised SDGs for Zambia[3]

1. End poverty in all its forms everywhere	2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture	3. Ensure healthy lives and promote well-being for all at all ages	4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	5. Achieve gender equality and empower all women and girls
6. Ensure availability and sustainable management of water and sanitation	7. Ensure access to affordable, sustainable and modern energy for all	8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	9. Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation	10. Reduce inequality within and among countries
11. Make cities and human settlements inclusive, safe, resilient and sustainable	12. Ensure sustainable consumption and production patterns	15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	17. Strengthen the means of implementation and revitalise the Global Partnership for Sustainable Development

Each of the goals has specific targets with timeframes that are anchored on the 2030 timeline for the Zambia Vision 2030. Localised SDG 15 address the halting and reversal of land degradation and biodiversity loss.

Seventh National Development Plan (7SNDP, 2017-2021)

The 7SNDP is aimed at achieving the objectives set out in the Vision 2030 of becoming a "*prosperous middle-income country by 2030*". The 7SNDP recognises climate change as a challenge which if not addressed could lead

[2] Zambia-United Nations Sustainable Development Partnership Framework (2016-2021).
[3] http://zambia.opendataforafrica.org/ZMSDG2016/sustainable-development-goals-of-zambia

to losses of 0.9% of GDP growth over the next decade from rainfall variability. Additionally, "*Other adverse effects have led to increased costs of treating climate-related diseases such as malaria and the loss of natural environments, damage to infrastructure and disruption of biodiversity".* The NDP is also a departure from previous development plans as it recognises biodiversity as a cross cutting aspect under the strategic focus of *Enhancing Human Development,* in particular under *Enhancing Human Development* which states to….."*In view of this, the NDP will under this strategic area prioritise simultaneous investments in health and education to enhance the quality of human capital, accelerate economic growth and job creation. Furthermore, the availability and utilisation of safe and clean water and provision of sanitation services, which impacts on the health and productivity of the people will be prioritised by promoting investments in water resources development in order to improve access in both rural and urban areas. Emerging and crosscutting issues such as gender, disability, biodiversity, climate change and disaster risk reduction which have significant impact on human development, will also need to be addressed"*.

Key biodiversity sectors that are identified as *Strategic Areas of the NDP* area

1. Development outcome 1: A diversified and export orientated agriculture sector. One of the strategic interventions under this development outcome is to *increase investment in fish farming technologies, sustainable management of capture fisheries and strengthening fisheries training and research*; *increased investment in water management and aquaculture-related infrastructure; increasing the area under cultivation, and the number of farmers participating in production; Agro and forestry-based processing and manufacturing promotion; Crop, forestry, fisheries and livestock product diversification.*
2. Development outcome 3: A diversified tourism sector. Strategic interventions allude to promotion of investments in tourism facilities of international standards using innovative financing mechanisms such as PPPs arrangements, venture capital and carbon financing. Development and expansion of non-traditional modes of tourism such as eco- and agro-tourism, cultural and community-based, mine tourism and other areas of interest will be prioritised. The Government will also strengthen the capacity of the DNPW and partner with the private sector and communities to protect wildlife through wildlife law enforcement enhancement, national parks restocking; and PPP in wildlife protection enhancement.
3. Development outcome 4: Improved energy production and distribution for sustainable development. This accounts appreciates the fact that…"*Zambia is endowed with a range of energy resources, particularly woodlands and forests, water, coal and renewable sources such as geothermal, wind and solar energy*". Strategy 3, which is about Promoting Renewable and Alternative Energy *aims at promoting the development and use of renewable and alternative energy sources such as solar, wind, biomass, geothermal and nuclear as a way of diversifying the energy mix and improving supply.* In addition, in this NDP*, efforts will be made to develop a comprehensive national energy strategy and energy efficiency strategy including a master plan for sustainable alternatives to charcoal and household cooking energy needs*. Two programmes that of key importance are the *wood fuel sub-sector management* and *energy efficiency and conservation promotion.*
4. Development outcome 5: Improved water resources development and management. Forestry and agriculture related sectors (coffee, tea and cashew nut) are identified as quick-wins for accelerated job creation. Zambia has abundant water resources with the renewable water resources per capita estimated at 8,700m^3. Government will ensure that water resources are properly harnessed, developed and managed so that it plays its key role as an engine and catalyst for socio-economic development. Under Strategy 1, Zambia will Enhance Rain Water Harvesting and Catchment Protection. Government will promote protection and improvement of catchment areas in order to protect recharge zones and river sources. One key programme under this strategy is *catchment delineation and protection.* The programme on *basin and catchment water potential assessment* falls under Strategy 3 involving the Promotion of inter-basin/catchment water transfer schemes. This plans also strategises on promoting local and trans-boundary aquifer management. Government will also promote innovative ways of financing the development of water resources, through promotion of public-private partnerships (PPPs) and private sector participation to increase investment in the water sector. This will be achieved under Strategy 4 for Promoting Alternative Financing for Water Resources Development.

Inclusive Green Growth in Zambia: Scoping the needs and potential

The Zambian definition of Inclusive Green Growth is '*inclusive development that makes sustainable and equitable use of Zambia's natural resources within ecological limits through reinforcing the three cornerstones of sustainable development, specifically which are the economy, social welfare and the environment, basically the development processes that do not surpass the resources that the earth can provide"* (Phiri, 2016). Zambia's high economic growth rates are heavily dependent on its environment-based sectors and it is the natural resources that contribute significantly to GDP. Environmental assets therefore drive green growth whose value is best realized through diversification and value chain development of natural assets. Green growth aspirations consider environmental assets as an economic driver to the extent that natural resources can generate 90% of the GDP of the poor particularly in rural areas (UNDP/GEF, n.d.). Green economy has potential in wildlife hunting and tourism which can bring returns estimated at US$75 per ha of a National Park and GMA. Avoided deforestation can contribute to a green economy, use of improved technology in carbon assessment, integrated land use planning, controlled wild fires and intensification of agriculture with the potential to generate US$5 per ton of carbon dioxide (CO_2). Initial indications show that priority development sectors including crop production, commerce and trade, livestock and dairy production, fisheries, manufacturing, mining and tourism have potential for green growth if enabling institutional and policy conditions are created.

The expanse of environmental and natural resources provide ecosystem services to rural and urban communities are critical to development as they sustain livelihoods, hydro power generation creates employment and tax revenues, timber is used in industrial process, medicinal herbs from the wild support lives in rural areas, wild foods contribute to household incomes while industrial sector is also supported by the supply of construction materials. Sector specific national development plans are listed in Table 3.

Table 3. National development plans in the agriculture, biodiversity and water sectors

National Development Plan	Main Strategic Aim	Sector
National Agriculture Policy (2012 – 2020)	Sustainable utilization of the natural resources & the environment; promotion of environmentally friendly farming systems	Agriculture
Fisheries Policy (2011)	Sustainable fisheries management, & stakeholder participation (especially the participation of local communities) in capture fishery & aquaculture	Fisheries
National Tourism Policy (2015)	Facilitate the establishment, control & management of national parks & GMAs for the conservation & enhancement of wildlife & biodiversity; promotion of a "green" environmentally responsible tourism sector that enhances the country's natural & cultural resources & addresses environmental threat	Tourism and tourism related sectors
National Forestry Policy (2014)	Sustainable & collaborative forest management; establish incentives & *equitable benefit sharing* mechanisms for all stakeholders	Forestry and forest based livelihoods
National Parks and Wildlife Policy (1998)	Conservation & enhancement of wildlife eco-systems, biological diversity & objects of aesthetic, pre-historic, historical, geological, archaeological & scientific interest in National Parks	Wildlife
Minerals Development Policy (2013)	Minimize & mitigate negative impacts in line with environmental regulations, support gazetting of NPs, GMAs, PFAs, bird sanctuaries & other ecologically sensitive & significant areas.	Mining and mineral development
National Water Policy (2010)	Protection of headwaters, wetlands & forests by addressing drivers of water depletion including land use change & deforestation	Water
National Energy Policy (2007)	Utilise other sources of energy through sound development to reduce negative effects on natural resources, the environment & biodiversity; encourage tree planting & establishment of forest plantations/woodlots	Energy
National Policy on Environment (2007)	Creating a comprehensive framework for effective natural resource utilization and environmental conservation	Natural resources & environment
Biotechnology & Biosafety Policy (2003)	Support the development of research and industrial capacity to safely apply biotechnology techniques for the enhancement of Zambia's socio-economic and environmental well being	Agriculture, fisheries, forestry, wildlife, environment & energy

2.2 Contribution of ecosystem services to sustainable development

The expanse of environmental and natural resources provides ecosystem services to rural and urban communities that include environmental flows, water for hydro power production, timber, medicines, wild foods, construction materials, carbon sequestration and other non-consumptive services. These are critical to human development as they sustain livelihoods, hydro power generation, creates employment and tax revenues, timber is used in industrial processes, medicinal herbs from the wild support lives in rural areas, wild foods contribute to household food and incomes while the industrial sector is also supported by the supply of construction materials.

2.3 Biodiversity trends

Threats to Zambia's environment include uncontrolled wild fires, habitat fragmentation, unsustainable utilisation/illegal offtake, pollution, diseases and pests, charcoal production, poor governance, agricultural practices, mining operations and expansion, invasive species, and encroachment. Effects of climate change interact with these factors to cause damage to the environment. Causes of negative trends in Zambia's biodiversity are presented in Table 4.

Table 4. Underlying causes of negative biodiversity trends in Zambia

Sector	Natural Asset Description[a]	Underlying Cause of Negative Trend[b]	%, number or hectares affected
Agriculture	107 cultivated crops with 567 crop wild relatives; 7,278 germplasm *ex-situ* accessions; livestock: 6 bird & 10 animal species	Wild fires; promotion of "high yielding and profitable crops and crop varieties; pollution; conversion of small holder/subsistence/traditional farming systems to commercial farming; land use change	Impact data not available on species losses
Fisheries	40,305Km^2 Ramsar sites; 490 species in 24 families; 299 species are endemic	Unsustainable utilisation/illegal offtake during the fish ban period & in fish breeding areas; population increase; CC & variability; invasive species; pollution; poor governance	CPUE decline to 9.62Kg/100m net in 1994 then 2.3Kg/100m net (2007) L.Bangweulu
Forestry	3,774 higher plant species; 147 algae, 129 mosses, 142 ferns	Unsustainable utilisation/illegal offtake; mining & infrastructure development; agriculture expansion; encroachment; wildfires; poor governance	1.5% forest cover loss per annum; -0.81% (1965-2005); est. 276,021 ha loss annually averaging 0.6% per annum (ILUA II estimates – GRZ/FAO, 2017)
Wildlife	224 mammalian species; 733 bird species: 76 rare & 100 endemic; 2,032 invertebrate species: 27 endemic grasshoppers; 598 micro-organism species	Unsustainable utilization/illegal offtake; encroachment; habitat fragmentation; agriculture expansion	28 species & subspecies vulnerable /endangered; 25% National Parks & 48% GMAs degraded; 75% elephant loss from 1972 to mid-1980s due to poaching in South Luangwa NP

a/: From NBSAP I and NBSAP II
b/: From NBSAP II; Campbell *et al*. (2010)

3.0 ECONOMIC DRIVERS AND SECTORAL LINKAGES IN ZAMBIA

This section takes an economic approach to understanding the drivers of the positive and negative biodiversity change. It describes sectoral dependencies, impacts, risks and opportunities. A description of the specific sectoral practices impacting biodiversity trends and uncover the economic and financial drivers for sector specific and general practices are presented. It also cites existing economic, fiscal policy, and other studies and how nature contributes to current GDP (and green GDP when available). A summary of the availability of economic valuation evidence for the country, subdivided by sectors, ecosystems and households/communities/businesses whose value are affected is presented.

3.1 Sectoral Dependencies, Impacts, Risks and Opportunities

The biodiversity sector in Zambia i.e. environment, fisheries, forestry, heritage, water and wildlife depend on government support for its governance and management. Government support is in terms of budgetary support, centrally determined capacity development and human resource development, fiscal and other facets of institutional support. In turn, the sectors are mandated to generate revenues for which they are accountable to the treasury. The impact of this dependency is a lack of autonomy in governance and management stemming from pervasive political interests that may occur either from the center or in the political periphery. Examples include de-regulation of protection status of land due to encroachment which can be motivated by local politics. Additionally, governments have a myriad of national needs that require financial support together with government's economic priorities enshrined in the national development plan (NDP). Budgeting and budgetary support, which usually does not favour biodiversity, is prioritized to the economic sectors that have been identified in the NDP. ***However, the biodiversity sector in Zambia has huge opportunities for attracting financing amongst which are high levels of livelihood dependencies on biodiversity, available markets of wild or value added products from biodiversity, close to pristine wildlife protected areas and waterfall suitable for high value tourism, relative political and economic stability, good rainfall and abundant arable land, and potential for green development particularly in areas outside Lusaka and Copperbelt Provinces***. Despite this potential, risks exist in terms of climate change and variability impacts, illegal offtake of forest resources and wildlife including fisheries, institutional reforms such as changing ZAWA from a statutory body (semi-autonomous) to a government department (DNPW), regular incidences of pollution of the Kafue River from mining operations, inadequate financing and management capacities.

3.2 Sectoral Practices Impacting Biodiversity Trends

This section provides a short analysis of some of the sector practices that impact biodiversity trends.

3.2.1 Agrobiodiversity

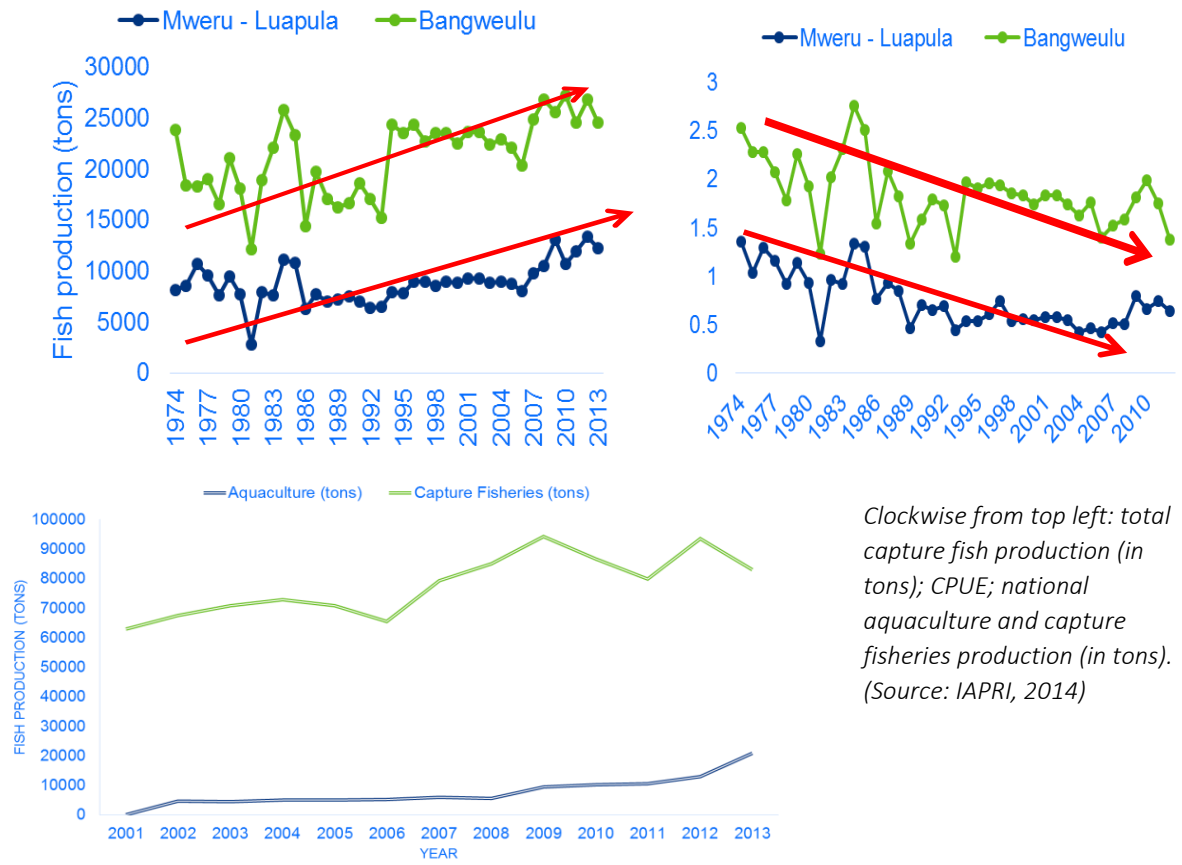
Agrobiodiversity is comprised of livestock and indigenous and naturalized cultivated plant species numbering about 100. Crops indigenous to Zambia are those that have wild relatives to crops that have been domesticated in Africa. Crops that were introduced early, have become adapted and evolved genetic diversity can largely be classified as naturalized agricultural crops. Main food crops produced in Zambia include maize, sorghum, cassava, sweet potatoes and groundnuts. Agrobiodiversity is found within subsistence (small scale) and commercial farming landscapes with the highest crop diversity found within subsistence farming systems compared to commercial farming areas. Non-institutional practices that negatively impact agrobiodiversity are promotion of "high yielding and profitable crops and crop varieties", inappropriate farming practices, pollution from mining operations and other industrial activities including pollution of surface and ground water and

climate change impacts such as drought, erratic localized flooding, rainfall and rising temperature affects agriculture in various ways. Institutional factors include promotion of the conversion of small holder/subsistence/traditional farming systems to commercial farming, marginalization of small scale and farmers in rural communities from extension services, inadequate human capacity for extension, inadequate research capacity and lack of integrated land use system resulting in changes from grazing, cropping to infrastructure development.

3.2.2 Fisheries Sector

Nationally, normal fish production (Figure 1) increased from 40,000 metric tons per year in the 1960s to over 70,000 metric tons per year in 2000 declining to between 65,000-70,000 metric tons per year (Musumali *et al.*, n.d.). Over the years there has been an increase in fishing activities on Lake Bangweulu, just as in all major fisheries, while the catches per capita have continued to fall from 11.4Kg in 1970s to 6.4Kg in 2003. The 1994 frame survey of the fishery recorded 5,134 fishers with 6, 154 fishing crafts while the 2007 survey recorded 15,113 fishers involved in fishing. Most of the fishers are found in the swamps as compared to the open lakes. Catch records have shown that the fishery has undergone drastic changes shown by a decrease in production output from an average of 12,000 metric tonnes in 1970 to 6,000 metric tonnes in 2007. Due to a decrease in CpUE, fishers have resorted to the use of nets with small mesh sizes and adoption of unsustainable fishing methods. Some of the contributing factors to the decline in CpUE are population increase, encroachment into fish breeding areas, inadequate enforcement of legislation, invasive species, pollution from industrial effluent and mining waste and decline in rainfall due to Climate change and variability.

Figure 1. Fish production (nationally and Luapula Province) and consumption (Lakes Mweru & Bangweulu)



Clockwise from top left: total capture fish production (in tons); CPUE; national aquaculture and capture fisheries production (in tons). (Source: IAPRI, 2014)

3.2.3 Forestry Sector

Zambia has one of the highest rates of deforestation estimated at an average of 0.6% (GRZ/FAO (2017). It is also estimated that forest cover declined by 1.99% (or -826,554 ha) in the 1996-2005 period compared to -0.66% (or -307,900 ha) decline for 1995-1996. Copperbelt Province is expected to record the worst deforestation rate over 2000-2030 -on the basis of trend analysis where 1,358,200 ha will be lost by 2020 whilst the forest cover loss between 2020 and 2030 will decline from 1,358,200 ha in 2020 to 1,238,800 in 2030. GRZ/FAO (2017), under the second Integrated Land Use Assessment (ILUA II), estimated deforestation rates of 250,003 ha per year in the period 2000-2010 and 341,067 ha per year in the period 2010-2014 with a final estimate of 276,021 ha per year or 0.6% per annum. Agriculture contributes 20% to deforestation and probably much higher in terms of forest degradation. Changes in forest cover and tree species are caused by non-institutional factors that include agriculture expansion, mining and infrastructure development, wood extraction (timber, fuelwood, charcoal) including inefficient waste in the forest and along the value chain, and failure to detect and suppress wild or forest fires. Institutional factors include inappropriate policy and regulatory framework; inadequate trained personnel and wage systems, insecure land and resource tenure, and high opportunity costs of maintaining forests.

3.2.4 Wildlife and Tourism Sectors

Despite the high levels of biodiversity and close to 40% of the habitat being protected in Forest Reserves, National Parks, GMAs and Bird Sanctuaries, threats from non-institutional and institutional factors have negatively affected NP, GMAs and bird sanctuaries. Settlements and agriculture in GMAs such as Mumbwa have resulted in 25% of National Parks and 48% of GMAs habitats being degraded (UNDP/GEF, n.d). Encroachment into GMAs has resulted in the loss of 164,000 Km^2 or 45% of the wildlife estate. Examples of degraded National Parks include Lukusuzi, Lusenga Plain, Mweru-Wantipa, Isangano, and Lavushi Manda. The degradation of these habitats and loss of wildlife stem from non-institutional factors that include agriculture expansion into wildlife habitats, habitat fragmentation, illegal offtake primarily driven by international trafficking and subsistence consumption, human settlements are accompanied by road construction and in some cases mining, and climate change resulting in droughts that impact wetlands and associated wildlife populations. Institutional factors include lack of management capacity to establish local level governance and improve PAs capacity to create sufficient revenues, inadequate participatory and integrated land use planning, inadequate tourism marketing, lack of tourism infrastructure in National Parks, no incentive system in place for tourism and park investment, inadequate governance and management capacity in DNPW, insecure land resource tenure, and lack of autonomy of biodiversity management entities such as DNPW.

3.2.5 Water Resources

WARMA has taken over the role of the former Water Board. This regulatory body is responsible for managing and regulating all water resources in the country through a Catchment based decentralized system, allocating water permits for surface and groundwater uses, management of the country's hydrological system, control and monitoring of the resource quality of all water resources, setting of environmental flow requirements and presiding over water conflicts. The Authority is also mandated to identify and protect potential sources of freshwater supply as well as conserve, preserve and protect the environment.particularly in wetlands, quarries, dambos, marshlands and headwaters and also takes into account the challenges posed by climate change.

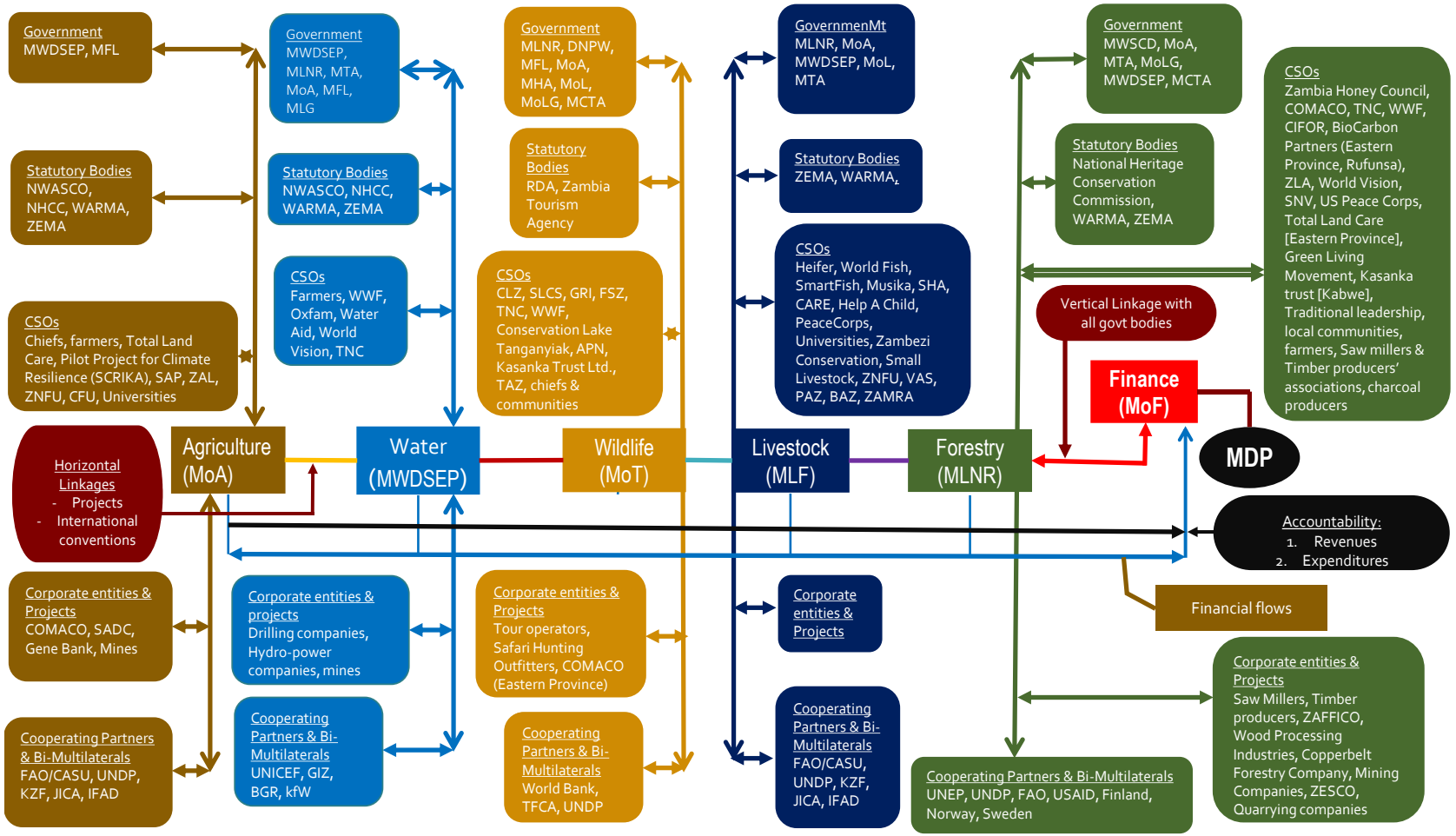
3.3 Sectoral Linkages in Zambia's Biodiversity Sector

Linkages amongst key biodiversity management institutions and between key institutions and stakeholders are primarily based on interdependence, trust and resource management which occur mainly amongst government

departments and statutory bodies. However, the linkages are also between government departments and statutory bodies on one hand and both the formal and informal sectors (such as women's clubs and other community based groups) on the other hand which are based on resources, relationships/networks, rules, and roles and responsibilities. The linkages can be identified by the exchange of data, information and services. Services include network linked capacity collaboration such as capacity building and, financing of projects such as policy and legal reviews. Key biodiversity institutions are primarily government departments that are in two categories of the policy infrastructure context: policy making and monitoring, and those that formulate policies and implement them. Examples for the first category is the Department of Agriculture that formulates the agricultural policy but is not involved in implementing it in totality. The second category includes the Department of Fisheries and Forestry Department. These formulate policies, manage the resources for which they are responsible and report to their respective ministries annually over their performance. The other category of key organisations in the biodiversity sector are statutory bodies such as the Water Resources Management Authority (WARMA), National Biosafety Authority (NBA) and the Zambia Environmental Management Agency (ZEMA). There is also a stakeholder category not directly involved in policy formulation and biodiversity management such as the Ministry of Finance that provides the financing of the budget and the Ministry of National Development Planning that coordinates all development plans. In addition to these, there is also the Ministry of Housing and Infrastructure responsible for all physical infrastructure.

Non-governmental stakeholders involve civil society (including traditional leadership structures), local communities, corporate entities, bi- and multilateral organisations, and academic and research institutions. This category is active only in instances where the key institutions facilitates involvement. The complexity of the sectoral linkages is depicted in Figure 2.

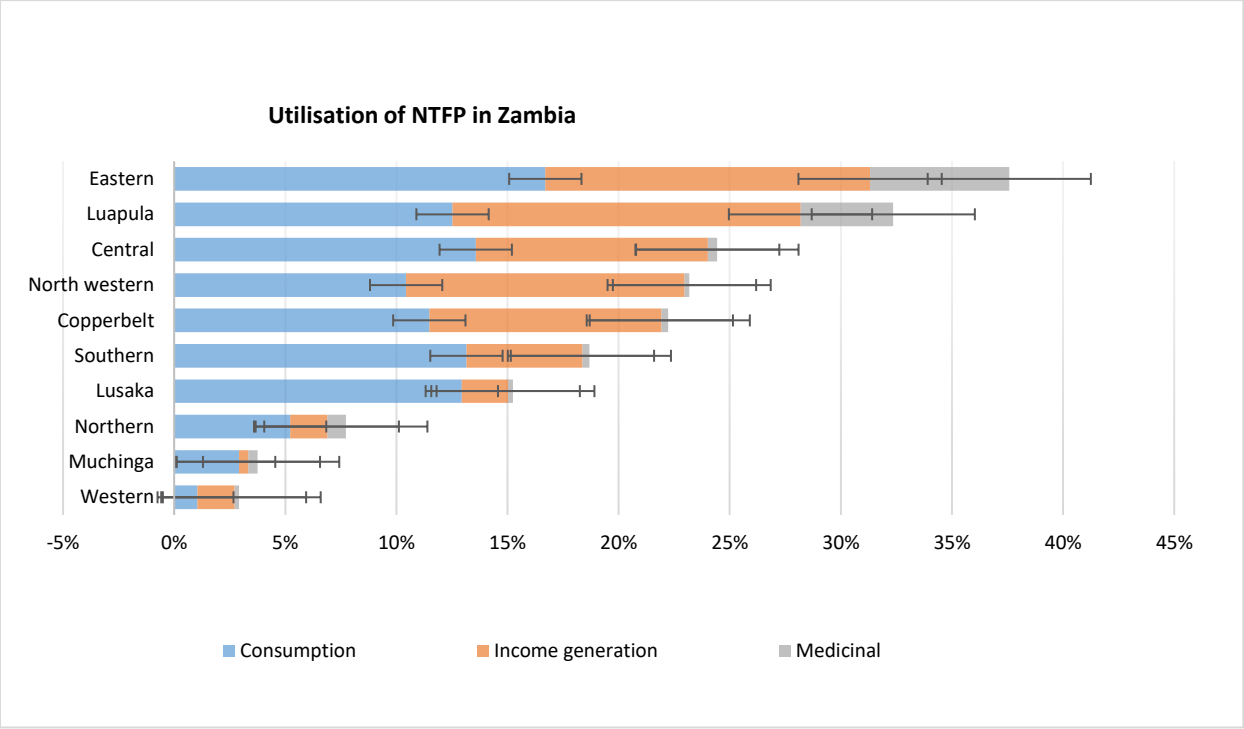
Figure 2. Sectoral linkages in Zambia's biodiversity sector



3.4 Economic and Financial Drivers of Biodiversity Change

The relationship between economic growth and environmental and biodiversity wellbeing has been established to the extent that economic growth utilizes the natural resource capital which, if not well managed, leads to environmental degradation and biodiversity change. Poor management of natural resources, especially forests, constrains wood-based development processes, agricultural activities, water supply and tourism, to name a few, as short-term benefits become depleted. In the same manner, a poor environment with a lean natural resource base is not supportive of economic activities. The forest ecosystems, wetlands and water bodies remain the primary hosts of biodiversity in Zambia and their management determines their resilience to support economic activities. Deforestation and land degradation have often been the result of mismanagement for economic gains. Triggers of land use change are influenced by human activities tied to economic factors such as encroachment in search land for economic exploitation, timber production, agriculture expansion and mining. With improved economic wellbeing of the country, land (including wetlands) that holds significant biodiversity is increasingly being converted to other uses for farming, settlements, mining, and other commercial developments including road networks. A significant portion of Zambia's population depends on natural resources to derive economic gains such as income, a medicinal and food source particularly in rural areas (Figure 3).

Figure 3. Trends in the utilisation of NTFPs in different provinces of Zambia



(Source: Ng'andwe et al., 2015)

Overly, the linkages between human activities and environmental degradation can be grouped in three broad categories:

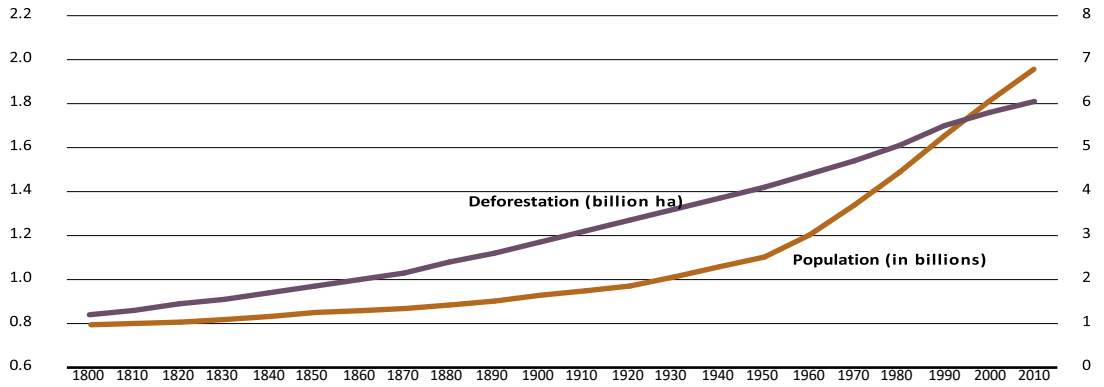
1. Human factors: population size, demographically induced consumption, poverty, settlements/encroachments, land conversion.
2. Per capital rate of consumption of energy and other materials that contribute to affluence and
3. Environmental impacts stemming from technology.

Ehrlich and Holden (1971) explain the above relationship in an equation

Environmental Impact *= Population * Affluence * Technologies* (EI=PAT)

This "IPAT equation" is a useful reminder that population, affluence and technology play a role in determining environmental impacts. A component of this relationship relates to the Malthusian (1826) theory of the relationship between uncontrolled natural population growth and the limited ability of nature to support the increase in population. In the variables of the IPAT equation, it is *human population growth* and its impact on the *consumption of natural resources* that has major relevance to Zambia, concurrent with Malthus (1826). Zambia's population has been steadily increasing from 7,383,097 in 1990 to 9,885,591 in 2000 then to 13,092,666 in 2010. This represents a percentage increase of 33.9% in the 1990-2000 inter-censal period and 32.4% in the 2000-2010 inter-censal period. The population density increased from 7.5 persons per square kilometer from 1980 to 9.8 in 1990, 13.1 in 2000 and 17.3 in 2010. Out of this national population, an estimated 61% of Zambia's population lives in rural areas compared to 39% who reside in urban areas. Over 60% of Zambia's rural population lives in poverty (7NDP 2017-2021). Rural poverty has been estimated at 80% while that in urban areas is estimated at 34%. The poverty count and intensity increased between 2006 and 2010, largely attributed to the drop in copper prices of 2008 due to the global financial crisis. The urban poor live in unplanned settlements, shanty compounds, on the peripheral of cities, with no legal status, limited access to electricity, with service provision constraining their productivity. The shrinking formal sector has forced the majority of the urban poor to occupy themselves with informal sector activities such as increased dependence on natural resources (for medicines, food), energy (charcoal and fuel wood production) and peri-urban agriculture (Ng'andwe *et al.,* 2015). Comparisons of population growth and deforestation has been made (Figure 4) which show increasing global population with an increase in deforestation.

Figure 4. Global population (1800-2010) and cumulative deforestation



(Source: FAO, 2012)

Rural-urban migration within mining areas coupled with in-migration of people in search of work places pressure on biodiversity proximal to the mining operations. The key biodiversity that have been reported to decline are caterpillars, mushrooms, medicinal plants that have declined rapidly compared to wild fruits (Ng'andwe *et al.*, 2015). Mushrooms, which are symbionts of most woodland tree species from which they obtain the necessary carbohydrates, have declined relative to the decline for vegetation cover. Caterpillars are similarly affected as the decline in species that harbor them such as *Brachystegia* spp., *Isoberlinia* spp and *Julbernadia* species.

A description of the economic and financial potential drivers of positive and negative trends in biodiversity are in Table 5.

Table 5. Qualitative Analysis of Economic and Financial Drivers of Biodiversity trends

Sector	Driver		Biodiversity trend	
	Economic	Financial	Positive trends *(cause & effect)*	Negative trends *(cause & effect)*
Agriculture	Trade and food security		Predictable revenues for farmers for investments.	Increased livestock & crop commodity prices potential to lead to expansion of agricultural land
		Currency fluctuations		Commodity prices decline resulting in resource poor farmers expanding farmlands to produce more
		FISP (subsidy)		Increased access to low cost input leads to expansion of agriculture, inefficient land husbandry practices, poor groundwater quality due to increased chemical use
Fisheries	Unsustainable fishing methods			Decline in fish population; reduced breeding
	Lack of incentive for aquaculture development		Reduces environmental degradation & water capture/abstraction	Dependencies high on natural fisheries
		Inadequate finances (budgetary allocation ≈ 29% of requirements)		Lowered management capacities; inadequate human capacity & resources; inadequate research output
Tourism		Inadequate finances (budgetary allocation ≈30% of requirements)		
	Inadequate investment in tourism infrastructure; Private sector investment in tourism		NPs & GMAs retain naturalness	Depressed revenue in state tourism sector allows for failure to invest in tourism infrastructure development & support to DPNW PA resource monitoring; access to tourist resources limited
	Land allocation for economic development			Increases encroachment & habitat fragmentation
Forestry	Increasing consumption of NTFPs & timber		Compels government to release finances for timber trafficking control by law enforcement	Commercialisation of NTFPs & timber results in overharvesting, illegal entries, forest degradation; charcoal production results in creaming, forest degradation & opening land for agriculture
	Lack of incentive for private sector or farm forest plantations		Reduced clearing of natural forests; protection of forests & NTFPs for local people	Timber supply pressure increase on indigenous forests
		Inadequate finances (budgetary allocation ≈30% of requirements)		Lowered management capacities; inadequate human capacity & resources; inadequate research output
	Inadequate investment in value addition		Reduces consumption as markets are limited for raw products	Increased consumption due to loss through waste
	Low private sector investment in plantations		Reduced clearing of forests; protection of forests & NTFPs	Timber consumption puts pressure on natural forests

Table 5 (continued

Sector	Driver		Biodiversity trend	
	Economic	Financial	Positive trends *(cause & effect)*	Negative trends *(cause & effect)*
Wildlife	Illegal offtake of Rhino, elephants & other animals			
		Inadequate finances (budgetary allocation ≈30% of requirements)		
	Inadequate investment in park infrastructure; private sector investment in park management		NPs & GMAs retain naturalness	Depressed revenue in DNPW allows for failure to invest in monitoring of resources; access to park is limited & investment in management systems is low & resource is vulnerable
	Land allocation for economic development			Increases encroachment & habitat fragmentation
		1. Increasing demand for bush meat in rural areas 2. Increasing demand for bush meat in urban areas 3. Lack of alternative food sources		Increased illegal offtake threatening wildlife populations; 24 out of 36 game management areas (which collectively cover 170,000 km^2)(Lindsey *et al.,* 2013) are 'under-stocked' or 'depleted', due primarily to illegal bushmeat hunting
	Inadequate benefits from wildlife		May lead to community participation in governance & management of protected areas	Can compel individuals to derive individual benefit from wildlife through illegal offtake
Mineral resources	Mining exploration, green site development & mining operations		*Fisheries:* KCM, Lumwana & others have invested in restocking & distribution of fingerings for aquaculture	*Environment:* pollution of air & soil environment *Fisheries:* Pollution contaminates water & affects aquatic life forms
			KCM & other mines invest in tree planting	*Forests:* Pollution affects plants; increases consumption of wood & NTFPs due to population increase
			Lumwana & Kalumbila Copper Mines have invested more than $1 m in wildlife management	*Wildlife:* Terrestrial wildlife affected by air pollution & chemical released into environment; greenfields fragment habitats *Water:* Introduced chemicals affects aquatic fauna & flora; contaminates underground water systems with heavy metals *Agriculture:* Pollution of agricultural land & crops

Table 5 (continued

Sector	Driver		Biodiversity trend	
	Economic	Financial	Positive trends *(cause & effect)*	Negative trends *(cause & effect)*
Water resources	Excessive abstraction		Potential to increase revenues as this indicative of water demand	Depresses revenue in WARMA to improve management systems; can reduce environmental flows & affect aquatic life
Energy	Excessive production & consumption of charcoal & fire wood		Potential for investment in affordable renewable energy sources as demand is high	Opens up forested areas to settlements & small scale agriculture; leads to creaming in some cases as species of high calorific value are preferred.

3.5 Fiscal Policy and Contribution of Biodiversity to Current GDP

3.5.1 Fiscal Policy affecting Biodiversity Finances

The fiscal policies in Zambia related to biodiversity revenues are effected through the Finance Control and Management, Act Cap. 347 (repealed in November 2004) and the Public Finance Act No. 15 of 2004. These pieces of legislation vest the management, supervision, control and direction of all matters relating to finances, in the Minister of Finance. This entails that all monies collected and deposited in the requisite government account, Government consolidated account, are forthwith under the Minister's jurisdiction. The Minister can activate the stipulations of the Appropriation Act (Section 109(2)) to allow a spending unit to appropriate finances as part of government expenditure. Such funds must be accounted for and balances returned to the treasury. Generally, all revenues collected by a government entity is transferred to the dedicated government account, in the central treasury, and a process of budgeting and approvals (according to public finance management regulations) has to be adhered to prior to funding being made available. It is not always that financial disbursements to a revenue generating entity are equivalent to the revenues generated in the preceding year.

3.5.2 Contribution of Biodiversity Subsectors to GDP

Agriculture, fisheries, forestry and hunting recorded positive growth rates over the 2001 to 2014 period, with the sector's contribution to GDP at 24% in 2000 declining to 9% in 2014. There has been an insignificant growth in this sector between 2014 and 2016, averaging 9.3% contribution to GDP. Agriculture and industry have been upstaged by the growth in the services sector as the primary lead to real economic growth at an estimated 60.8% share of GDP in 2015, while the industrial sector contributed an estimated 29.9% to GDP in 2015. The industrial sector is dominated by copper mining operations and downstream-related activities. However, the agricultural sector contributed an estimated 9.3% of GDP in 2015 declining to an estimated 9.2% whilst the services and industrial sectors grew to 29.2% and 61.7%, respectively.

The insignificant growth, and sometimes decline, in the contribution of agriculture to GDP is attributed to a devastating drought arising from the El Niño-Southern Oscillation (ENSO) weather phenomenon in 2015. This resulted in reduced crop yields. The other three subsectors in this category contributed insignificantly to buttress the sector effects of the drought.

3.6 Summary of Availability of Economic Valuation Evidence for Zambia

There have been fewer economic valuation studies on Zambia's biodiversity for each sector, ecosystems and households, communities or businesses whose value are affected. Table 6 summaries studies that are known to have been conducted.

Table 6. Summary of economic valuation evidence on Zambia's biodiversity

Sector	Evidence	Estimated value	Valuation Method Employed[f]	Basis
Agriculture	Unknown	Unknown		
Fisheries	Musumali *et al.* (n.d.)	$51-$135 million (2002-2007)	unknown	Estimated 3% sector contribution to GDP
Forests	UNEP(2015)	a. Wood production: $396m/a b. Non-wood forest products: $135.8m/a c. Carbon: $15m/a ($6/tonne) d. Saving in soil erosion: $247m/a e. Pollination services: $74m/a f. Forest-based tourism: $110-$179m/a g. GDP 4.7% or $957.5m (2010)	invest	-
Mineral resources	ZDA (2013)	$17 billion/a by 2017	Unknown	Projected growth
Tourism	World Tourism Organization (2014)	Nature tourism (2005): $194m (3.1% of direct GDP)	unknown	Reviewed of literature & survey
Water resources	Qualitatively: WWF (2016); World Bank (2009)	Kafue Flats: Livelihoods; fisheries; small holder agriculture; livestock; tourism; production & financial efficiency of commercial utilities in Zambia produce 316.3 Mm3 water valued at K319,161 m	Surveys	Qualitative assessment on non-quantitative use values
Wildlife, tourism, wetland resources & PAs	Turpie *et al.*(1999); Siachoono (1995)	(Turpie *et al.* 1999 – Zambezi wetland) a. Livestock: $3.3m b. Per cropped ha: $117 c. Fish: $4m ($3.6/ha) d. Wildlife: $10.97 (gross home value) e. Wild plants: $473,499 (gross home value) f. Tourism: $12m (gross use value) Total direct consumptive use value of Barotse wetland: $9.5m	CVM, MP, EOP, MAE, RCM, OC	

[NB]/: CVM: Contingent Valuation Methods; EOP: Effect on Production; MAE: Mitigative and Avertive Expenditures; MP: Market Prices; NM-CVM: Non-market CVM; OC: Opportunity Costs; RCM: Replacement Cost Methods; TCM: Travel Cost Methods; [g]/: ZDA (2013).

4.0 BIODIVERSITY FINANCE LANDSCAPE

The National and State Budget Process and any major government subsidy that could be having or has potential harmful impacts on biodiversity are reviewed. The focus on these two finance solutions is based on their importance on improving government expenditure on biodiversity. The presentation identifies biodiversity-dependent revenues, at least within the public sector and qualitatively estimated for the private sector. A brief gap analysis of the legal framework for finance solutions (national legislation, national development plans and, specific policies and regulations) is presented. A description of key national entry points, including a rationale for their selection, and the associated agencies and organizations for each entry point is made. Finally, this section provides a summary of potential biodiversity finance solutions identified in Zambia.

4.1 National and State Budget Process

A National Budget, a requirement under Article 255 of Zambia's constitution, is a forecast of governmental expenditures and revenues for the ensuing fiscal year. It is a key instrument for the execution of government economic policies. Since government budgets may promote or retard economic growth in certain areas of the economy, views about priorities in government spending differ widely and government budgets are the focus of competing interests.

4.1.1 Legal Backing

In Zambia, the National Budget is provided for under Article 201 (1) of the Constitution of Zambia (amended in 2016) which mandates the Minister responsible for finance to prepare and lay before the National Assembly, not later than 90 days before the commencement of the next financial year, estimates of revenue and expenditure for the Republic except in an election year in which the Budget will be presented 90 days after the swearing in of the President. Article 202 further states that the Minister responsible for finance shall specify the maximum limits that the Government intends to borrow or lend.

4.1.2 Resource Allocation

The Government uses the National Development Plan as the principal driver in resource allocation. It is in this regard, that the plan should capture the development agenda of the country comprehensively. In any given year, the review of a programme's past performance provides an insight as to the needs required in the ensuing year.

4.1.3 Operating/Capital Expenditure Option

Zambia operates a unified budget planning system with current and capital spending combined within a common set of budget estimates. This reflects international good practice and may be contrasted with many Sub Saharan African countries that maintain separate budgeting processes for current and development expenditure.

4.1.4 The Budget Process

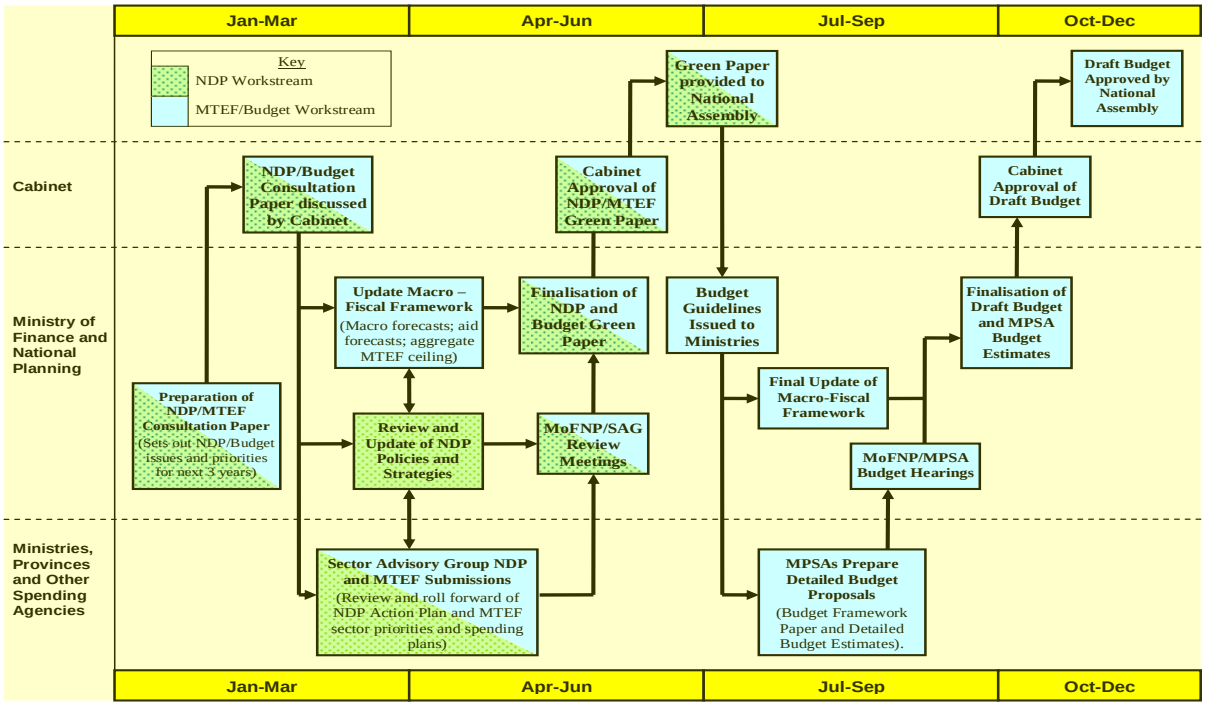
In summary, the budget could be broken down in the following stages and illustrated in Figure 5 below:

1. Preparation of Consultation Paper and submission to Cabinet
   The Concept paper seeks guidance from Cabinet approval on developmental issues that require attention and budget principles that are to be followed in the medium term.
2. Update of Macro-Fiscal Framework for a three year horizon
3. Cabinet approval of Green Paper
   The Green Paper is a consultative document drawn from the macroeconomic and fiscal frameworks, outlining Government's developmental objectives in a three year horizon
4. Budget Guidelines (Call Circular) issued to Ministries, Provinces and Spending Agencies (MPSAs)
   This gives guidance to MPSAs on how to prepare their budgets as well as give an indicative ceiling in which a budget for an MPSA should be prepared.

5. Budget Hearings
   Provides a fora under which the Treasury and MPSAs meet to discuss budget estimates.
6. Cabinet Approval of Draft Budget
7. Approval of Budget by National Assembly

It is incumbent upon MPSAs to integrate biodiversity in the process additional to ensuring that government funding to biodiversity sector is spent on activities that lead to achievement of biodiversity targets.

Figure 5. Budget preparation cycle / main stages in the MTEF



(*Source*: Ministry of Finance)

4.2 Major Government Subsidies with Potential Harmful Impacts on Biodiversity

Governments provide financial support through subsidies to various economic sectors, including agriculture, mining, fisheries, forestry, energy, and water. Zambia has one subsidy the Farmer Input Support Programme (FISP) (BOX1) that has potential negative effects on biodiversity. The agriculture subsidy, has the potential to contribute to negative changes in biodiversity such as destruction of forests under agriculture expansion. The subsidy is expensive for government as it leads to inefficiencies in production and the misuse and over-use of resources.

BOX 1. Potential negative impact of FISP on biodiversity

Type of Subsidy	Purpose of Subsidy	Description (% of budget)	Likely impact
Farmer Input Support Programme (FISP)	Facilitate access to inputs particularly fertilisers by small scale producers so that they gradually graduate from FISP. In 2017, 480,000 are projected to access inputs through the E-voucher system out of a million beneficiaries (GRZ, 2016).	In 2017, 4.4% (K2,856 million) of the national budget has been allocated to FISP. Environmental protection has been allocated 1% (K616 million).	Overloading of croplands & pollution from synthetic fertilisers & pesticides; expansion of agriculture into forested lands

Subsidy reforms to reduce impact on biodiversity include limiting land extensification for beneficiaries of FISP. Even though there may not be substitutes to FISP, limiting the length of time a farmer is able to access

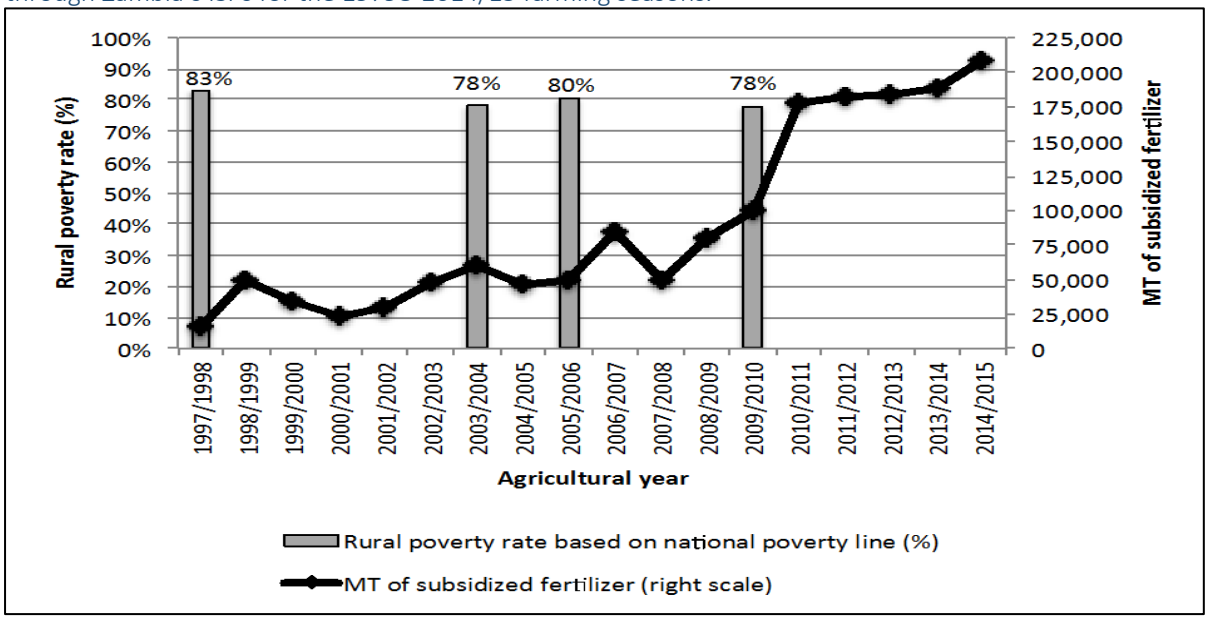
inputs under FISP could lead to farmers being weaned off the FISP. Agriculture and land policy reforms targeting limiting land available to recipients of FISP inputs are needed. However, this requires consultations with a range of stakeholders including the Zambia National Farmers Union, Zambia Land Alliance, farmers and traditional leaders among others. Piloting the limiting of land is key to the success of this program so that land available to farmers is annually ascertained. Appropriate implementation of reforms to FISP will have a win-win situation for farmers and the government. Gradual implementation of reforms and practices has the potential to minimise losses for those that are weaned off FISP inputs.

The Public Service Micro-Finance is a new subsidy whose present and future impact on biodiversity is not clear. However, it is an example of a subsidy that encourages use of equipment and can lead to the acquisitions of efficient means of clearing land, such as tractors, as loans. This initiative is potentially harmful because it can lead to farmers to be efficient in clearing large tracts of land for agriculture and may accelerate the loss of biodiversity.

4.2.1 Farmer Input Support Programme (FISP)

This is a government policy to support resource poor farmers to increase household incomes from farming, access farming inputs and ensure food security. Subsequently the plan is to wean small producers off so that they can afford inputs in future. From the perspective of the small scale producer, FISP is more of an economic consideration. It is also an economic subsidy on the basis that government intention is to increase agricultural output which can translate into a reduction in poverty, increased rural incomes and increased financial capacity that makes farmers afford agricultural inputs in future. Despite seemingly good intentions behind FISP, its overall impact on poverty has not been significant (Figure 6).

Figure 6. Comparison of the official rural poverty and the quantity of subsidized fertilisers distributed through Zambia's ISPs for the 19798-2014/15 farming seasons.



(Source: IAPRI, 2015).

In terms of the impact of FISP in reducing poverty among small scale farmers, the programme has not resulted in reduced rural poverty which has remained high (78% in 2015) despite FISP disbursements of about K4.7 million in over 13 years. One of the ways that FISP can contribute to reductions in agricultural expansion is by government capping the maximum area cultivated at 2 ha instead of 5 ha, and improving extension service delivery on best agronomic and soil fertility management practices to increase productivity. Additional impacts of agricultural inputs through subsidies include:

1. incentive for unsustainable agricultural practices detrimental to biodiversity integrity,
2. conversion of forests and wetlands to agricultural production through agricultural extensification.

Even though the removal of subsidies will not arrest negative anthropogenic impacts on the environment in totality, it can realign the incentive structure towards less intensive agro-practices and reduce expansion of agriculture into biodiversity rich areas.

The Zambian Government over a period of fourteen years from 2002/2003 agricultural season to 2015/2016 agricultural season has been funding and running the fertilizer and seed subsidies to support maize production among the small scale farmers through the farmer input support programme (FISP). This subsidy programme has had its *perverse* effects on wildlife resources and wildlife habitats. Such kind of subsidies can also be termed *implicit* subsidies that arise when a negative externality results from the production of a good. When farmers are given free fertilizer and seed, the demand for land is likely to increase due to inefficient production practices thereby destroying the wildlife habitats especially in GMAs. Agriculture is the main household economic activity (Shakacite, 2016) and at the same time it is the main habitat-displacing activity in Zambia were both cultivation and grazing play a major role in converting forests to agriculture land. Increased use of chemical fertilizers is a danger to biodiversity conservation as it has a harmful impact on the food chain and water quality in the long term. For instance, when inputs such as pesticides are used excessively they may cause some forest or crop invading pests to become resistant to pesticides hence making it difficult to control them once their population grows.

4.3 Biodiversity Dependent Revenues

4.3.1 Biodiversity Revenues in Public Sector

Sector departments i.e. environment (Zambia Environmental Management Agency - ZEMA), fisheries (Dept. of Fisheries), forestry (Forestry Department), heritage (National Heritage Conservation Commission – NHCC), livestock (Department of Livestock), tourism (Tourism Board), water (Water Resources Management Authority-WARMA), wildlife and tourism (Department of National Parks and Wildlife – DNPW) generate significant amounts of revenues each year. The National Biosafety Authority (NBA) is likely to generate revenues in application, import and research permits. However, only an average of about 30% of the revenues from these instruments are directed to biodiversity management. The revenues are not retained at source as these constitute part of government revenue generation to finance the annual government plans. As of the 2015 central government directive, all revenue generating government agencies have to deposit generated revenues in the consolidated government account, or central treasury, with claims of future budgetary allocations made through the legal budgeting process. However, DNPW retains a portion of the generated revenue at source. Traditional financing for biodiversity conservation revolves around the use of national budgetary allocations and overseas development assistance (ODA) or budget support for biodiversity conservation. Budget tracking conducted by the Zambia CBNRM Forum estimated that less than 5% of the national budget was allocated to biodiversity management. Although the budget share for the sector is comparable to allocations to the social sectors, it was considered insufficient to address all of the country's biodiversity management concerns. Government financial support for biodiversity conservation-related activities may fluctuate from time to time although a detailed budgetary and expenditure review is required to establish performance over time. Similar, ODA support may fluctuate over time and Zambia may have been affected by withdraw from the country's ODA financing system of some of the major ODA support countries such as the Royal Norwegian Embassy. *This study was unable to obtain comprehensive expenditure and revenue statistics from the public sector primarily due to unwillingness to make the information available or the information was not in a form that could easily be disseminated.* Some revenue data is in the Technical Appendices of this report.

1 *Fisheries and Livestock Sector* (all Kwacha estimates reported as rebased)

The Fisheries Act No. 22 (2011), stipulates the existing fisheries revenue sources. These include importation of fishing gear 17(1-2), fish export permit 25 (1); fishing licence 27; special fishing licence 35(1)(a-d); registration of boats 37(1-2), aquaculture licence 40(1-3); interference with aquaculture facility 47(2); use

of chemicals in aquaculture 48(1-2); Fisheries & Aquaculture Development Fund 53(1)(2)(a-c); general offences 60(a-k) & 61. Levies and fees on fish are in Table 7.

Table 7: Levies and/or fees charged on fish

Category	Name of levy or fee	Cost/Unit (2011 Kwacha)[4]
Council levies/fees	Council fees	a. K0.25-K0.45/Kg; b. K0.25 on exported fresh fish; c. K360 on exported dry fish
Dept. of Fisheries	Levy	a. K0.18/Kg fresh fish; b. K0.36/Kg dry fish; c. K3 Kapenta levy per 20kgs on dry kapenta d. K0.04/kg of fresh fish charged on each fish company
	Fees	a. K100 annual charge for health permit b. K15 food handling certificate c. K0.38/kg charge on fresh fish for certificate of origin; d. K0.72/kg charge on dry fish for certificate of origin e. K0.38/kg zonal charge

Government however suspended customs duty on all aqauaculture equipment in the 2016 budget.

Public Health Act Cap 295, Council Bylaws, Market Levies under the Market Act Cap 290, Urban and Regional Planning Act govern issues related to livestock health, movement and slaughter. Examples of fees and levies from Central, Lusaka, and Southern Province are in Table 8.

Table 8: Levies and/or fees charged on livestock

Livestock	Council levies	Fees	
		Fees Category	Cost / Unit (2011 Kwacha)
Goats & sheep		Council fee veterinary permit police form	K5-K11 K3.60-K10 K20
Poultry		Council fees veterinary permit police form	K5-K11 K1-K3 K20
	egg levy chick levy broiler levy		K0.10/tray K0.03/chick K0.15-K0.50
Pigs		council fees veterinary permit police form	K5-K11 K0.30-K5 K20
Cattle		veterinary permit stock movement; police anti-theft stock clearance report	K2-K5/cow K20-K50

[4] 2017 exchange rate: US$1 approximately equivalent to ZMW 9.50.

2 *Tourism*

Government charges Tourism Levy of 1.5% on all accommodation charges.

3 *Forest Management*

The legislated sources of revenue are:

(a). *Concession Licenses, fees and levies*
Licences (Section 52), Permits (Section 53), Enforcement of Permits and Licenses (Part IX, Section 78-83) and Fines and Penalties (Part X, Sections 85-100). Revenues from the forest sector are presented in the Technical Appendices.

(b). *Forestry Development Fund (Part VIII, Section 70-71)*
One of the key provisions of the Forestry Act No. 4 of 2015 Part VIII, Section 70, establishes the Forest Development Fund (FDF) to be administered by the Minister responsible for Forest Management. FDF will be a key financing solution to biodiversity as forest management forms a greater part of sustaining the environment and protecting biodiversity. However, the Act has not been operationalised as the Department has not received funding. The Act specifies the sources of the funds and its administration. The sources of the fund shall consist of disbursements from the government, voluntary contributions to FDF from any person, grants from any source within or outside Zambia, with the approval of the Minister; and interest arising out of any investment of the Fund. The Act further specifies what the Fund can be used for. The monies of the Fund shall be used for the development and management of forests and trees to achieve a sound ecological balance; promotion of community-based forestry management practices; research in the forestry sector and any other matter connected with forest management and development as may be prescribed.

4 *Wildlife Resources Dependent Revenues*

The Zambia Wildlife Act No. 14 (2015) and related regulations provide sources of revenue that include

(a). *Fixed Lease Fees and Variable Fees*: DNPW enters into a Tourism Concession Agreement (TCA) with a photographic tour operator. The concessionaire pays fixed lease fees as well as bed night levy (variable fees). Current variable fees, such as bed-night levy and game viewing, are an average rate of US$30 per person per night.

(b). *Park Entry Fees:* Park entry fee are statutory and forms part of the revenue for the wildlife sector. Park entry fees are US$10 per person as is the case in Mosi-Oa-Tunya National Park, which had the second highest (23,083) recorded visitor levels after South Luangwa National Park (43,653) even though the Victoria Falls had the highest tourist numbers (141,929) in 2015 (MTA, 2016).

(c). *Animal Fees: R*evenue earned from hunting in GMAs constitute about 59% of all the revenue earned from wildlife. Animal fees were last adjusted in 2007 through a Statutory Instrument (SI). The fees have remained static since then.

(d). Tourism Enterprise License Fees: Currently, license fees for tourist enterprises conducting businesses in Game Management Areas (GMAs) and National Parks are collected by the Tourism Department of the Ministry of Tourism and Arts as stipulated under the Tourism and Hospitality Act of 2009. However, this is in conflict with the wildlife policy and Act No. 14 of 2015, which gives the mandate of managing GMAs and National Parks to the Department of National Parks and Wildlife.

(e). *Game Management Area Land-user-rights Fees*: "Land user-rights fee" means the fee paid by an investor for the use of land in a Game Management Area. The Ministry of Tourism and Arts (MTA) grants concession

agreements within a GMA and collects land user-right fees which are shared between the ministry and the community on such terms as shall be prescribed. DNPW has in the past not been consistent in the introduction of land-user-right fees in all GMAs and in uniquely situated National Parks, as in the case of Mosi-Oa-Tunya, which incorporates the Victoria Falls and therefore, at times, local authorities have intervened to fill this vacuum, to DNPWS's disadvantage.

(f). *Penalties and Court Fines:* Fines paid by individuals as prescribed by courts of law when such an individual has committed a crime or failed to follow regulations. These include poaching (possession of government trophies), illegal fishing, indiscriminate cutting of trees and other minor offences.

5 *Water Resources Management*

The Water Resources Management Act No. 21 of 2011 has outlined revenue sources which could provide financing to biodiversity management.

(a). *Raw water user charges*

The uses of public water (surface water) for secondary, irrigation or aquaculture and tertiary purposes, industrial, mechanical and hydroelectricity which are commercial uses of water (beneficial), require a water permit from WARMA as provided by the Water Resources Management Act. Water permits are granted for a renewable period of five 5 years and up to 25 years for huge investment projects such as hydropower uses. The water permits attract charges prescribed under Statutory Instrument No. 20 of 1993 as follows:

- K5, 000 is charged for water abstracted up to 500m^3/day
- K1/m^3 is charged for the temporary use of water (minimum 1 year) for every excess cubic metre of water abstracted above 500m^3/day
- K2/m^3 is charged for a new water permit for water abstracted for every excess cubic metre of water above 500m^3/day
- K3/m^3 is charged for a renewed water permit to abstract water for every excess cubic meter of water above 500m^3/day.

The collected revenue has been generally low when compared with the potential [for example, in 2010 the then Water Board collected K2.87 billion which was only about 8% of the potential revenue due from valid water right (now called water permits) holders on its database]. Statutory Instrument No. 83 of 2011, The Water (Generation of Hydropower) (Fees and Charges) Regulations 2011 provides the basis of water charges for hydropower companies shown in Table 9.

Table 9. Revised charges for hydropower generation (2011)

Types of fees and charges	Fee units	Charges (kwacha)	Charges (US$)
New application & applications to renew water rights fees			
1MW of below	5,556	1,000,080	200
Up to 10MW	27,778	5,000,040	1,000
Up to 100MW	277,778	50,000,040	10,000
Above 100MW	555,556	100,000,080	20,000
Water right charges for new holders (per kWh)	0.00139	0.25	0.00005
Water right charges for renewed water right holders (per kWh)	0.00278	0.50	0.00010
Price for each fee units (kwacha)	180		
Exchange rate as at July 2011	0.0002		

Source: WRAP, 2011.

The low revenue collection partly ascribed to inadequate monitoring capacity.

Section 71 of the WRM Act prescribes that investments in the sectors listed require permits and are subject to user charges and fees i.e. environmental, training and research, municipal, agricultural, industrial, hydro-

electric power, mining, navigational, supply of water in bulk and any other purposes as may be specified by the WARMA Board. The WRM Act has declared groundwater resources a public good, thus amenable to regulation. Permits for commercial use of groundwater and licencing of drilling companies and constructors of water works are provided for in the WRM Act. WARMA is in the process of working out direct costs of administering the following permits and licences, and charge the applicants appropriately: permit for borehole drilling, registration of drilling company, abstraction of water for all purposes, and constructing dams and other waterworks.

(b). Devolution Trust Fund under the Water Supply and Sanitation Act No. 28 of 1997

This Act provides for the establishment of the Devolution Trust Fund aimed at improving access to water and sanitation services (WSS) to the urban poor. One of the key policy measures with respect to financing urban water supply and sanitation outlined in the 1994 Water Policy was "establishing a Water Sector Devolution Trust Fund." DTF is operationalized by a Statutory Instruments and has been operational as a basket fund since 2006. The DTF has two components: The General Fund (GF) and the Performance Enhancement Fund (PEF). Government and cooperating partners (CPs) GIZ/KfW, DANIDA, USAID and the EU provide grants to support the DTF, a basket fund arrangement that supports the extension of services by commercial utilities to underserved areas. The DTF is an example of implementation of a water policy measure providing a basket funding mechanism involving government and cooperating partners. It has been important in financing and implementation of projects for improved access to WSS service for many of the urban poor in Zambia. Even if it does not directly contribute to biodiversity finance, it is however a vital element instrument in the management of water resources and potentially may impact on the aquatic biodiversity.

The merger which is now envisaged between DTF and WDTF could be considered a financing solution for management of biodiversity because water resources management and environmental sustainability will become part of the programmes to be considered for implementation. This Fund will sit at MWDSEP and could attract more funding from CPs because of where it will sit as compared to the DTF which more or less sat at NWASCO. The WDTF is expected to be financed through moneys as may be appropriated by Parliament for the purposes of the Fund; such moneys as may be received by the Fund from donations, grants, and bequests from whatever source; and moneys as may, by or under any law, be payable to the Fund.

6 *Environmental Management*

The Environmental Management Act No. 12 of 2011 established the Zambia Environmental Management Agency (ZEMA) as the regulatory authority responsible for determining conditions for the discharge of effluents into the aquatic environment and enforcement of environmental impact assessment procedures.

(a). *Environmental Impact Assessment Fees and Charges*

Fees and charges collected by ZEMA from Environmental Impact Assessments (EIAs) which are required to be done prior to the implementation of any project is a financing solution to management of biodiversity because the focus of such fees and charges are intended to manage environmental impacts and degradations on the environment. Section 26 of the EMA of 2011 recognises the importance of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilization of biological resources.

(b). *Discharge of effluents fees and charges*

Fees and charges collected by ZEMA from issuance of effluent discharge permits to entities intending to discharge effluents in the aquatic environment provide a financing solution to biodiversity because such fees and charges are focussed on managing the aquatic environment in which such discharges are being made. ZEMA does not retain these fees and charges at source but are rather centrally controlled from Government consolidated account. ZEMA has also articulated fines and penalties for entities guilty of offences outlined

in the Act. These fines and penalties are intended for restoring of the aquatic environment to either its original state or to at least an acceptable state. But these fines and penalties are also remitted to Government consolidated account. What ZEMA has embarked on is the "polluter pays" principle where when a pollution incidence occurs, either ZEMA hires a contractor who undertakes remediation of the polluted environment and the full cost of the undertaking invoiced to the polluter or the polluter undertakes the restoration process of the polluted environment at their own cost.

(c). *Environmental Management Fund*

Part VIII, Section 95 of the Environmental Management Act (EMA), 2011 establishes the Environment Management Fund to be administered by the ZEMA Board and accordingly any decisions regarding expenditures from the Fund are taken by the Board. The fund has not yet been established although a 2017 grant from the World Bank is intended to go towards the setting up of the fund and an earlier grant from the Finnish and Danish Governments under the Environment and Natural Resources Mainstreaming Programme intended to capitalize the fund ended prematurely before any disbursements were made.

7 *Environmental Protection Fund* (EPF)

The Mines and Minerals Development Act of 2015 and the Petroleum Act of 2008 both provide for the establishment of an Environmental Protection Fund, a kind of performance bond type of fund subscribed to by industry within these sectors. The funds are intended to cover environmental rehabilitation and post closure costs for facilities and companies in mining and petroleum sectors.

The case of the fund under the Mines and Minerals Act is worth noting. The fund has grown significantly since its inception but its main contributors are the handful of largescale mining companies. The thousands of small scale mining companies with a potentially bigger environmental impact over the broader landscape do not contribute and are generally unregulated. Another important consideration is that these funds are designed to be applied only after a mine closes and the owners have no capacity to address the environmental liabilities. In the event that a mine closes and addresses its liabilities, these funds are supposed to be refunded. Ultimately, these are restricted funds which are unavailable to address any immediate negative impacts of mining unless the funds are invested in trusts and bonds after which the earnings can be channelled to biodiversity conservation.

4.3.2 Financing Through Conservation Trusts

A number of conservation projects and programmes have been established through trusts and external partnerships that include the following

1. Kasanka Trust for the development and management of the Kasanka National Pak and the Kamfinda Game Management Area in Serenje District
2. Chimfunshi Chimpanzee Orphange, Chingola District focussed on rehabilitation of Chimpanzees.
3. Bangweulu and Liuwa Plains National Parks Management Boards operated as private public community partnerships with the African Parks Limited being the managing partner.
4. Simalaha Conservancy in Kazungula District which is a partnership between the Barotse Royal Establishment and the Peace Parks Foundation;
5. Sekute Conservancy also in Kazungula District established as a partnership between the Sekute Chiefdom and African Wildlife Foundation;
6. Kaindu Conservancy in Mumbwa, established under the DANIDA funded Mumbwa CBNRM project, is owned by the Kaindu Trust and managed by a local private sector partner and now adopted by The Nature Conservancy.

Primary funding for these programmes are a combination of endowment funds and other donors who wish to support projects of their own interest that help in the promotion of the vision and mission of these conservancies. It is significant that most of the initiatives mentioned above are based on a partnerships approach, involve a wide variety of funding sources including multilateral, private foundations, international

NGOs and income from tourism. For example, the Kasanka Trust's main source of operational funds is tourism income from the annual bat migration but benefited from a three year grant from the World Bank which enabled them to expand their operations to Lavushi Manda National Park. This partnership approach, first piloted by the Kasanka Trust-GRZ partnership for the management of Kasanka National Park in the late 1990s, was expanded by the UNDP/GEF Reclassification and Effective Management of the National Protected Area System (REMNPAS) Project which recommended among other new categories of protected area, a Community Partnership Park, where the land remains customary as is the case in Bangweulu while the governance structure shifts from a single Government institution to a multiple stakeholder decentralised governance structure. The devolved management and fiscal authority is registered as a company limited by guarantee. The Bangweulu and Liuwa model benefits from hunting and photographic tourism, multilateral funding (UNDP and WWF for Bangweulu) and support from African Parks Limited.

4.4 Biodiversity Financial Inflows through Public Financing and the Private Sector

4.4.1 Cooperating Partners or Public Financing

Cooperating partner (bi- and multi-lateral donors) funding plays a critical role in biodiversity financing either as budget support to the Zambian government, gap filling funding to cover shortfalls in government allocations, as a means of mobilizing large financial resources, or as support to specific programme areas. Cooperating Partners financing in Zambia includes loan facilities, multilateral and bilateral grants as well as project financing from foundations and individuals. Most of the cooperating partner support to Zambia has traditionally been sector specific and although there has been a shift towards focal hotspots in recent financing. Some of the key donors to biodiversity in Zambia (Table 10) include the government of Finland (Forestry); Norway/ NORAD (Wildlife); Netherlands (Mixed); USA/ USAID (Mixed); Denmark (Wildlife); the Global Environmental Facility (GEF); European Union (mixed); World Bank (Mixed); and the African Development Bank (AfDB).

Table 10. Budget support disbursements by donor
(in US$ million)(*Source: de Kemp et al., 2011*)

	2002	2003	2004	2005	2006	2007	2008	2009	2010
Grants:									
Total GBS[a]/SBS[b] grants (by other donors)	65.4	32.8	52.1	100.3	131.4	155.7	213.2	215.6	152.5
AfDB				9.0	8.8		30.6	23.0	48.9
World Bank								9.6	19.5
Total Budget Support	**65.4**	**32.8**	**52.1**	**109.3**	**140.2**	**155.7**	**243.8**	**248.2**	**220.9**

[a]/: GBS is General Budget Support; [b]/: groups Specific Budget Support

Project support, as part of the bi- and multi-lateral support to the budget, saw a steady rise from 2002 estimated at an increase of 86.3%, part of this was for support to agriculture, the environment and water. One of the largest and longest external source of biodiversity finance is the Government of Finland. In 2017, an estimated €3.1 million will be spent on environment and natural resources out of which €2 million will be spent on *Decentralised Innovative Program on Forests and other Natural Resources.* The United Nations

Development Programme's (UNDP) support rose from a low of $3.38 million in 2007 to $5.61 million[5]. UNDP support to the wildlife sector has also been historically strong and some of the major project support have been in the *reclassification project* (€1.9 million contribution from government of Germany, 2009-2010) and the current *GEF V Project* (PIMS: July 2013-July 2018) which has a budget of $22.69 million from Global Environment Fund (GEF), Norway, The Nature Conservancy (TNC), World Wide Fund for Nature (WWF) and UNDP.

Other support to the biodiversity sector is channeled through international and civil society organisations such as African Wildlife Fund (AWF), WWF, TNC, World Conservation Union (IUCN), Center for International Forestry Research (CIFOR), World Agroforestry Centre (ICRAF), World Fish, African Lion Education and Research Trust (ALERT) while local civil society in biodiversity sector include Zambia Climate Change Network (ZCCN), Conservation Farming Unit (CFU), Wildlife and Environmental Conservation Society of Zambia (WECSZ), BirdLife Zambia, Community Markets for Conservation (COMACO), Zambia CBNRM Forum. External financing for projects is scattered across government departments, academia [University of Zambia (UNZA), Copperbelt University (CBU), Mulungushi University (MU)], research institutes and civil society. Annual inflows are likely above US$1.0 million to the environment and biodiversity sector.

4.4.2 Biodiversity Financing from Corporate Environmental and Social Responsibility

Corporate Environmental and Social Responsibility (CESR) policies and practices refers to voluntary actions undertaken by companies to either improve the living conditions (economic, social, environmental) of local communities or to reduce the negative impacts of projects on the environment, society and livelihoods. This section focusses on selected mining companies as they are the ones that provided information on CESR. CESR programmes of mining companies tend to focus on community initiatives as their impact in economic, social and environmental terms is felt greatest at the local level. The contribution of First Quantum Mining Limited, Mopani Copper Mines, Konkola Copper Mines, Lumwana Copper Mines and Kalumbila Copper Mines includes

1. *First Quantum Mines:* 1400 ha nature reserve; game fence $1 million, stocking $50,000 and supplemental feeding $60,000 per annum; plus financing a 9 person anti-poaching unit.

2. *Mopani Copper Mines (MCM):* restocking exercises for birds and fish species (over 6,000 tilapia fingerlings; over 3,000 yellow belly breams introduced into the Mufulira boat club environment since 2004; since 2014 MCM restocking over 12,000 fish fingerlings into the Kafue River; MCM fenced off 706.58 hectares for introduction of wildlife in Kitwe; finance a 2 person wildlife security unit.

3. *Konkola Copper Mines (KCM):* Livestock and livelihoods project involves 1,539 houses with a total of 732 dairy and draft cattle, and 4,196 goats; planting over 30,000 trees for reforestation and raising awareness in communities and 62,879 within KCM operations; 259,500 fingerlings (primarily *Oreochromis andersonii, Oreochromis macrochir*, and *Tilapia rendalli*) distributed for restocking on the Copperbelt Province since 2009 costing K103,200.

4. *Lumwana Copper Mines (LCM):* 2010 Biodiversity Study costed US$ 33,000 for biodiversity management; $50,000 fish farming project where two dams will be stocked with fish estimated at US$ 1,700,000.

[5] UNDP. 2010. Assessment of Development Results. Evaluation of UNDP Contribution: Zambia. Evaluation Office, February 2010.

5. *Kalumbila Mines (KML):* spent US$ 1.3 million 2014 and 2016 on wildlife and biodiversity funding through collaborative programmes with government departments and institutions in the *Planting 2 Trees for 1 Cut* programme, a joint forest management programme with the Forestry Department to manage the 1,396.13 hectares of forests in the Lwalaba and Bushingwe National Forests in North-western Province; and financed the 2016 invasive species study in which *Tithonia diversifolia* was found in the area; recruitment of village scouts to assist in policing wildlife thus in 2016 spent $ 807,397 on Kalumbila Wildlife Sanctuary for law enforcement, and ecological and habitat management; KML funded 60,000 fingerlings for restocking in the water bodies surrounding the mine site.

There are firms in Zambia that have invested extensively in forest and agrobiodiversity[6] that include

1. Production of mixed (dried) beans, barley, jatropha, maize, soybeans, wheat and rice on the Copperbelt Province – investment in excess of $45 million.
2. Sugar cane including out-grower schemes, primarily in Central Province, exceeds US$80 million with the out-grower scheme earning an estimated ZMW 332 million in 2014. In 2015, the company earned about ZMW 1.9 billion[7].
3. Oil palm plantations with a total investment of about US$41.5 million[8].
4. Industrial and farm forest plantations with Zambia Forestry and Forest Industries Corporation (ZAFFICO) as the largest estimated value of Pine and Eucalyptus plantations is in excess of $20 million.

There other investments in lodges and other hospitality facilities which contribute to biodiversity management through support to security of wildlife and other resources. Other investments are those in the livestock sector. Even though a lot of these private sector investments are single or a two species (plant and animal), the private biodiversity investment landscape provides a range of species in terms of livestock (i.e. cattle, sheep, goats, pigs, chickens) and plants (coffee, tea, wheat, sugar cane, oil palm, timber tree species and other food crops).

4.5 Landscape of Prospective Finance Solutions

Gap analysis on sectoral policies, macro-economic policies and innovative solutions are presented in this section, providing a list of opportunities to implement a broad swathe of biodiversity finance solutions.

4.5.1. Fisheries and Forestry

Gaps and proposed legal solutions are in Table 11 for the fisheries, forestry and environment sector.

[6] Cultivated crops are classified under agrobiodiversity based on NBSAP 11 (Pg. 18; Section 3.3.3 Biodiversity, & 3.3.3.1 Crop Genetic Resources) which refers to "*There are at least 107 cultivated plant species in Zambia and out of these 52% are exotic species, 33% are naturalised and 15% are indigenous".* It is assumed here therefore that sugar cane, palms and other introduced plant species constitute "cultivated species" out of which "52% are exotic species".

[7] Zambia Sugar. 2015 Annual Report

[8] https://zambeefplc.com/zampalm-transforms-chief-kopas-area/

Table 11. Gap analysis of legal framework in the fisheries, forestry and environment sectors

Legislation	Gaps in Legal Framework	Proposed Revisions
Financial (Control and Management Act) Cap. 347	1. No provision for % revenue retention at revenue source 2. Forfeited monies not channeled to sector from which product originated	1. 40% retention (Appropriations) of generated revenues 2. Revise the forfeiture legislation to channel finances to biodiversity management
Fisheries Act	Statutory revenue generation provisions from cross border trading not provided for	SI to specifically address cross-border fish trading to capture all the required revenue
Environmental Management Act	Sector targeted for investment not legally permitted to collect portion of EIA/EPB revenue	40%[9] of EIA/EPB funds retained at collection points where investment takes place
Fisheries Act; Forestry Act	% share of revenue in co-management not specified	1. Provide % shares & fund Forestry & Fisheries & Aquaculture Development Funds 2. Decentralise collection of timber conveyance & fish levies to VFMCs

Specific gaps in the biodiversity sector can take advantage of envisaged policy reviews in the NDP which include list in BOX 2.

BOX 2: Intended Policy and Legislative Reviews 2017-2021

1. Tourism Sector
Strategy 4: Promote domestic tourism;
Programme: two-tier tourism product pricing system development

2. Energy Sector
Strategy 1: Enhance generation, transmission and distribution of electricity;
Programme: policy and regulatory framework review and enhancement

Strategy 3: Promote renewable and alternative energy
Programme: policy and legal framework review and enhancement.

3. Employment Sector
Strategy 1: Facilitate micro, small and medium enterprise development;
Programme: Policy and regulatory framework review and enhancement.

Strategy 2: Promote cooperatives development
Programme: Institutional and regulatory framework review and enhancement.

Strategy 3: Increase employment opportunities in rural area.;
Programmes: labour intensive industries promotion and rural employment guarantee scheme development.

4.5.2. Water Resources Management

Gap in policy: no firmer recognition of biodiversity management as part of water management and thus weakens the implementation of legislation in the water sector.

Legislative reform: revise the legal definition water related activities and financing to include disaster and biodiversity management

[9] 40% revenue retention from EIA and EPB recommended by ZEMA.

4.5.3. Wildlife Management

Gaps in legislation and proposed revisions to facilitate increased revenues and improved capacity in DNPW are:

(a). Gap in legislation: Under current legislation, DNPW still retains significant authority over GMAs'

Proposed revisions: Devolve management of Game Management Areas (GMAs) to Community Resource Boards (CRBs) in areas where revenue earnings have been consistent and management capacity has been built. The model proposed under the *Reclassification Project (REMNPAS Project)* of Community Conservation Areas (CCA), as a PPP, can be revised to include guaranteed tenure or proprietary rights.

(b). Gap in legislation: Definition of "resources" and responsible organisation for resource exploitation in wildlife policy and legislation is still under The Forestry Department through the Forest Act even if it originates from a GMA.

Proposed revisions: Broaden the scope of the meaning of "resources" in CRBs to focus on all natural resources additional to wildlife and provide for rights to extract, transport outside the GMA and sale of all natural resources including wildlife products to broaden community revenue base for biodiversity management.

(c). *Weakness of legislation:* DNPW was transformed into a government department from the semi-autonomous Zambia Wildlife Authority (ZAWA); is policy making organ and implementation agency. No oversight organisation and not anchored on a sound business model.

Proposed revision: Transform DNPW into a research and policy formulation and monitoring unit with management of PAs placed under a private public partnership (PPP). Models exist in Liuwa National Park which can be improved.

(d). *Gap in legislation:* No robust and specific incentive system designed for wildlife and tourism sectors including preferential "taxation" systems that gives Zambia a competitive advantage over other countries.

Proposed revision: Reforms in wildlife/PA management and tourism investment and taxation to investment in infrastructure and tourism investments in 5 PAs with potential to break even in medium term (5 years). Reforms to reduce the number of licenses or permits related to the investments that an investor has to obtain in order to have the investment approved.

4.5.4. Gap Analysis of Mining Corporate Social Responsibilities Policies

Gap in legislation: Absence of legislative provisions stipulating guidelines for corporate environmental and social responsibility based on the extent of mining concession and environmental impact created; CESR practices in synergy with biodiversity plans of sector entity.

Proposed revision: Stand-alone biodiversity financing policy initiative among the mining companies; comply with specific local biodiversity need as stipulated by mandated sector entity; obligations to enter into MoUs with mandated sector entity such as a government department.

4.6 Key National Entry Points

4.6.1 Appropriation in aid

The fact that this is provided for in the Public Finance Act under the Ministry of Finance, this legal provision is an important entry point for revenue generating entities to have access to finances for biodiversity management as long as this facility is made available to an entity by government.

4.6.2 Revenue Retention under the *National Decentralization Policy* (2002)

This is aimed at achieving a fully decentralized, devolved and democratically elected system of local governance, giving communities an opportunity to make their own priorities on development. Full decentralization would have meant government institutions involved in water, sanitation and biodiversity management at levels retaining fees and charges, levies, fines and penalties and other non-tax revenues collected.

4.6.3 Community Participation in Biodiversity Management under Wildlife Legislation

There is currently inadequate vertical (training/skills/education) and horizontal (geographic/spatial spread/coverage) capacity. Communities resident in areas targeted for biodiversity provide supplemental personnel that can have skills for biodiversity management upgraded cheaply. DNPW has demonstrated this in Community Based Natural Resources Management (CBNRM) framework. It has successfully reduced poaching by using Village Scouts in its monitoring systems, such as in Mufunta GMA. This provide a sound basis for replication to fisheries, forestry and water. Additionally, DPNW has serious challenges of number of personnel where supplemental local level monitoring capacity can greatly enhance its work.

4.7 Summary of Biodiversity Finance Solutions

4.7.1 Payments for ecosystem services

A study by the Ministry of Environment and Natural Resources (now MLNR) undertaken by WWF identified three mechanisms for possible piloting in Zambia: payments for ecosystem services, certification and conservation concessions. The implementation of these mechanisms does not require any changes in the legislation (PES, certification). Certification has been tested before and, hunting, tourism and timber concessions are already in use by DNPW, MTA and Forestry Department.

4.7.2 Carbon Tax / Green Tax

There is a lack of an enabling legal and policy framework for the implementation of budget tracking of Carbon Taxes. One of the reforms is to allow ZEMA collect Carbon Tax currently collected by the Road Transport and Safety Agency (RTSA) as inland tax revenue while the Zambia Revenue Authority (ZRA) collects at importation or at entry point. This may enable its application towards biodiversity management. Alternatively, it can be classified as a *conservation tax* for it to be more specific and applied to conservation endeavors.

4.7.3 Green Treasury Bill

Establishment of a *Green Treasury Bill* intended specifically to raise financing for biodiversity. The bill can be structured in such a way that it is a more attractive investment with good returns for the investor.

4.7.4 Green markets through agricultural trade and value chains

Green markets have the potential to generate funds for biodiversity conservation through the promotion of certification and providing a premium price for produce from stakeholders engaged in biodiversity conservation. COMACO is an example of Green markets while organic farming is another potential area.

4.7.5 Climate finance

Zambia is about to complete the REDD+ readiness programme once the design of a safeguards information system (SIS) – is met. Climate financing is therefore a critical source of funding for biodiversity conservation as it is one of the key components under REDD+.

4.7.6 Environmental Protection Fund

Environmental Protection Fund (EPF) under the Mines and Minerals Act of 2015 can raise up to $50 m from a single mine per year. No expenditures are made from accrued funds. This instrument can be effected if the Investment Act is revised to allow for the investment of these funds in trusts and bonds, with earnings channelled to biodiversity management.

4.7.7 Issuance of Tenders for Private Sector Investments in Tourism Facilities

There are currently speculative private sector investments estimated at more than $20 million earmarked for the Kafue National Park and other PAs. Investments in PAs are largely dependent on government identifying and tendering tourism investments in the key national parks (South Luangwa and Kafue NP).

4.7.8 Financing of Development Strategies in the NDP Synergistic with Biodiversity Financing

The NDP indicates that financial mobilisation will annually realise efficiency gains in the areas of withholding tax initiatives, VAT, payment as well as enhanced monitoring and enforcement in the other tax types. Additional to this is the expected improvement of non-tax revenue collections through complete rollout of electronic payment systems*, revision of laws* and computerisation of collection systems prioritised over the Plan period. Revisions in policies and legislation will provide clarity on *how financing mechanisms will work in an integrated manner and within the principles of decentralisation*. Two key and important elements to biodiversity financing, in this NDP resource mobilisation strategy, are *revision of laws* and *how financing mechanisms will work in an integrated manner and within the principles of decentralisation*. Strategies for financing of biodiversity as per NBSAP 2 strategic interventions can take advantage of the revisions of legislation to provide fiscal mechanisms for financing biodiversity as these are included in the important development outcomes of the NDP. The second element of *integrated financing mechanisms* also provides a window of opportunity in integrating biodiversity financing mechanisms within the broader national financing framework. These two elements can only be realised by government entities who are at the forefront of fiscal reforms as well as responsible institutions as per NBSAP 2 interventions.

5.0 INSTITUTIONAL ANALYSIS

Institutional roles and responsibilities, including a graphical presentation and description of institutional arrangements between and among the institutions responsible for biodiversity related finance is made. The section also enumerates biodiversity finance-related capacities and needs per priority organization.

5.1 Legislation, Institutions and their Roles in the Biodiversity Sector in Zambia

NBSAP 2 has articulated the institution and legislative background in Zambia and does not ascribe biodiversity management to a single institution but assigns different roles to several government ministries as these are all under the control of government. The strategy however indicates the fact that local and international organisations and, other partners will play a supportive role in ensuring sustainable biodiversity management.

5.1.1 Legislation and Biodiversity Sector Stakeholders

Line Ministries and Departments implementing components of the NBSAP 2 for which they have been recognised to have comparative advantage, though with inadequate institutional capacity, are backed by relevant legislation which establishes them. The key legal instruments driving management of biodiversity include Agricultural Lands Act (1994); Agriculture (Seeds) Act Chapter 352; Biosafety Act (2007); Disaster Management Act (2010); Energy Regulation Act. Cap 436; Environmental Management Act No. 12 of 2011; Fisheries Act Cap 200; Forestry Act No. 4 of 2015; Lands Act (1995); Mines and Minerals Development Act (2015); National Heritage Conservation Act (1989); Plant and Variety of Seed Act (1995); Plant Pests and Diseases Act (1994); Tourism Act Cap 155; Urban and Regional Planning Act No. 3 (2015); Water Resources Management Act No 21 (2011); Water Supply and Sanitation Act No. 28 (1997); Zambezi River Authority Act Cap 467; Zambia Wildlife Act No.14 (2015). The main stakeholders in biodiversity governance and management are Table 12.

Table 12. Institutional and organisational stakeholders in biodiversity sector

Government Ministries, Departments and Statutory Bodies	Non-Governmental Organisations (NGOs), Projects and Community Based Organisations (CBOs	Corporate entities and interest groups
Ministry of Lands and Natural Resources (MLNR), Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP), Ministry of Agriculture (MoA), Ministry of National Development Planning (MNDP), Ministry of Science and Technology, Ministry of Tourism and Arts (MTA), Ministry of Local Government (MLG), Department of National Parks and Wildlife (DNPW), Department of Energy (DoE); Zambia Environmental Management Agency (ZEMA), National Heritage Conservation Commission (NHCC), Water Resources Management Authority (WARMA), the National Biosafety Authority (NBA) and National Institute for Science and Industrial Research (NISIR) and the Ministry of Finance.	The Nature Conservancy (TNC) Worldwide Fund for Nature (WWF) African Wildlife Foundation (AWF) David Shepherd Conservation Foundation (DSCF) Frankfurt Zoological Society (FZS) Conservation Lower Zambezi (CLZ) Conservation South Luangwa (CSL) Wildlife and Environmental Conservation Society of Zambia (WECSZ) BioCaron Partners (BCP) Centre for International Forestry Research(CIFOR) World Agroforestry Centre (ICRAF) Green Living Movement (GLM) Zambia Climate Change Network World Fish Lower Zambezi REDD+ Project.	Tour Operators Photographic Tourism Operators Timber Producers Association Fisher folk Associations Mining Companies Zambia Electricity Supply Corporation (ZESCO) Safari Hunting Sawmillers Agri-businesses (Zambia Sugar, Zampalm, ZAFFICO, CFC, farmers) Insurance companies and financial institutions (including banking institutions).

Other stakeholders are *Local Communities, e*specially those residing inside or adjacent to PAs, fishing camps, forests, wetlands and water resources; cooperating partners, bilateral and multilateral donors; and research and higher education institutions such as Copperbelt University (CBU), Mulungushi University (MU), University of Lusaka (UniLus), University of Zambia (UNZA), Natural Resources Development College (NRDC), Zambia Forestry College (ZFC) and Zambia College of Agriculture at Monze and Mpika, SADC Genetic Resources Centre, National Science and Industrial Research (NISIR), Zambia Agricultural Research Institute (ZARI).

The consultations between and amongst stakeholders are critical to ensuring that coordination progresses smoothly. In order to achieve this, various biodiversity management sub sectors introduced management structures for the implementation of sector programmes. The management structures include Steering Committees (i.e. National Wetlands Steering Committee, National UNCCD Coordinating Committee, Biosafety Committee), Forums, Supervisory Boards and Project Technical Management and Advisory Committees or Boards.

5.1.2 International Cooperation and Collaboration

Several multilateral, bi-lateral and other international organisations have supported the conservation and management of biodiversity in the country, as national provisions for biodiversity continue to be inadequate and capacities for their generation having been low. In this regard several cooperating partners have contributed to the implementation of programmes under the CBD including UNDP, World Bank and NORAD facilitated preparation of the NEAP and ESP (1993 and 1996) which provided the overall framework for the NBSAP process; GEF\UNDP, UNCCD and IUCN facilitated preparation of NBSAP (1997 and 1998); UNDP and The Netherlands Government for the ZFAP (1999); FAO supported NFP (2005/2006); FINNIDA for PFAP in 2001; several donors with World Bank\IDA for ASIP (1995) management plans in PAs by JICA; others are European Union (EU), NORAD, USAID, Frankfurt Zoological Society, WWF, AWF, David Shepherd Foundation, DFID, FINNIDA, British ODA, DANIDA, IDA, IFAD, CIDA, AfDB, NORAD, NORDIC Development Fund.

At the egional level, Zambia cooperates with other countries on matters affecting biodiversity management through the Lusaka Agreement on Management of Elephants and other endangered species, Southern African Regional Biosafety (SARB) Programme, the AfricaBio, Southern and East African Consultation on Biotechnology and Biosafety and joint permanent commissions with Zimbabwe, Angola, D.R Congo, Tanzania, Mozambique, Namibia and Malawi. Zambia has continued to support regional programmes such as the SADC Plant Genetic Resource Centre (SADC-PGRC) the SADC Agriculture Food Security and Livestock Sector, the Fisheries and Marine Resources Sector, Inland Fisheries Sector and SADC Environment and Land Management Sector. Zambia has continued to be an active collaborator with FAO and IFAD. The country has participated in all Conferences of the Parties (COP) Meetings to the CBD. There are also three regional Biosafety initiatives to which Zambia is affiliated and these are the.

5.1.3 Stakeholder Institutions in Biodiversity Management in Zambia

Several stakeholders were identified in the biodiversity management sector in Zambia. These were identified through a stakeholder consultative process/workshop and are listed in Table 13.

Table 13. Stakeholder Institutions in Biodiversity Management in Zambia

Sub-Sector	Key Role of Sector in Biodiversity Management	Institutions/Organisations				
		Government Ministries & Departments	Statutory Bodies	Civil Society (NGOs, CBO, FBOs)	Corporate Entities & Projects	Bi- and Multilateral Organisations / Cooperating Partners
Agriculture	Finance, manage & regulate agro- biodiversity in agro-landscapes	MoA, MWDSEP, MFL, MLNR	NWASCO, National Heritage Conservation Commission, WARMA, ZEMA	Traditional Leadership, Farmers, Total Land Care (Luapula, Northern, Eastern, Etc), Pilot Project for Climate Resilience (SCRIKA), SAP, ZLA, ZNFU, CFU, Universities	COMACO, SADC Gene Bank, National Gene Bank, Mines,	FAO/CASU, UNDP, Keeper Zambia Foundation (KZF), JICA, IFAD
Fisheries and Livestock	Finance, manage & regulate aquatic biodiversity; finance, regulate & manage livestock biodiversity	MFL, MLNR, MoA, MWDSEP, MoL, MTA		Heifer, Worldfish, SmartFish, Musika, SHA, CARE, Help A Child, PeaceCorps, Universities, Zambezi Conservation, Small Livestock, ZNFU, VAS, PAZ, BAZ, ZAMRA		
Forestry	Manage catchments protect environmental flows; finance, manage & regulate overall management of biodiversity within protected, customary & private forests	MCDSW, MoA, DNPW, MLG, MWSEP, MoF, MTA, , MCTA	National Heritage Conservation Commission, WARMA, ZEMA	Zambia Honey Council, COMACO, TNC, WWF, CIFOR, BioCarbon Partners, ZLA, World Vision, SNV, US Peace Corps, Total Land Care, Green Living Movement, Kasanka trust [Kabwe], Traditional leadership, local communities, farmers, Saw millers & Timber producers' associations, charcoal producers	Saw Millers, Timber producers, ZAFFICO, Wood Processing Industries, CFC, Mining Companies, ZESCO, Quarrying companies	UNEP, UNDP, FAO, USAID, Finland, Norway, Sweden
Wildlife	Finance, manage & regulate overall management of biodiversity within protected, customary & private wildlife sanctuaries	MLNR, DNPW, MFL, MoA, MHA, MoJ, MLG	RDA, Zambia Tourism Agency	Conservation Lower Zambezi (CLZ), South Luangwa Conservation Society (SLCS) GRI, Frankfort Zoological Society (FSZ), TNC, WWF, Conservation Lake Tanganyika, African Parks Network, Kasanka Trust Limited, Tourism Association of Zambia, Community members, Traditional authorities,	Tour Operators, Safari Hunting Outfitters, COMACO (Eastern Province)	World Bank/TFCA, UNDP
Water	Manage catchments, regulate water extractions	MWDSEP, MLG, MTA, MoA, MFL, MLNR	NWASCO, NHCC, WARMA, ZEMA	Farmers, WWF, Oxfarm, WATER AID, World Vision, TNC	Drilling Companies, ZESCO, CEC	UNICEF, GIZ, BGR, kfW

Table 13 (continued)

Sub-Sector	Key Role of Sector in Biodiversity Management	Institutions (and Organisations)				
		Government Ministries & Departments	Statutory Bodies	Civil Society (NGOs, CBO, FBOs)	Corporate Entities & Projects	Bi- and Multilateral Organisations / Cooperating Partners
Energy	Sustainable use of energy sources including renewable ones	MCDSW, MoA, DNPW, MLG, MWSEP, MoF, MTA, , MCTA, MLNR	NWASCO, NHCC, WARMA, ZEMA	Community members, Traditional authorities, conservation & livelihoods NGOs	ZESCO, CEC	Bi- & multi-lateral partners
Biosafety	Ensure that all organisms & other germplasm are safe & not genetically modified	MFL, MLNR, MoA, MWDSEP, MoL, MTA	NHCC, WARMA, ZEMA	SAP, ZLA, ZNFU, CFU, Universities, Research organisations, Traditional Leadership, Farmers, conservation organisations, NGOs in biodiversity & livelihoods	Mining companies, Tour Operators, Safari Hunting Outfitters, COMACO	World Bank/TFCA, UNDP
Meteorology	Provide information on rainfall & temperature	MCT, MoA, MLNR, MWDSEP	National Civil Aviation, DMMU	National Construction Council, Universities, Farmers	Media	UNDP, GDC, kfW
Planning and Finance	Provide regulatory oversight on biodiversity finance & budgets; negotiate with CPs for support.	MoF, MNDP, MLNR, MWDSEP, MLG	RTSA, ZRA, Pensions and Insurance Authority, WARMA, FD, DoF	Bankers Association of Zambia	Bank of Zambia	All partners to sector financing

The roles of key institutions involved in the management of biodiversity in Zambia are outlined in Table 14. The key ones are government ministries, departments and statutory bodies such as Ministry of Lands and Natural Resources (MLNR), Ministry of Water Development, Sanitation and Environmental Protection (MWDSEP), Ministry of Agriculture (MoA), Ministry of National Development Planning (MNDP), Ministry of Science and Technology, Department of National Parks and Wildlife (DNPW), Zambia Environmental Management Agency (ZEMA), National Heritage Conservation Commission (NHCC), Water Resources Management Authority (WARMA) and National Water Supply and Sanitation Council (NWASCO).

Table 14. Summary of roles of key institutions in biodiversity management

Responsible	Sector	Description of key roles	Key Supporting Legislation
MoA	Agriculture	Working at creating an enabling environment for increased private sector participation in the agricultural sector; implements Agriculture Sector Investment Programme (ASIP).	Agricultural Lands Act 1994; Plant & Variety Seed Act 1995; Plant Pests & Diseases Act; Lands Act 1995; Urban and Regional Planning 2015; Lands Act 1995
Dept. of Fisheries	Fisheries	Conservation and protection of aquatic biodiversity; ensure equitable sharing of benefits arising from the exploitation of fisheries resources with local communities; promote the sustainable development of fisheries and a precautionary approach in fisheries management & conservation.	Fisheries Act Cap 200; Urban and Regional Planning No. 3, 2015; Lands Act 1995; Agricultural Lands Act 1994; Environmental Management Act of 2011; Water Resources Management of 2011
Forestry Department	Forestry	Formulate and implement appropriate forest policies and programmes for sustainable management and use of forest resources and biodiversity. Promote participation of local communities, traditional institutions, NGOs & other stakeholders in forest management.	Forestry Act 2015; Urban and Regional Planning 2015; Lands Act 1995
MLNR	Land & Natural Resources	Through the Zambia Environmental Management Agency is responsible for establishing environmental standards and management of the environment and its ecosystems.	Environmental Management Act 2011; Urban and Regional Planning 2015; Lands Act 1995
DNPW	Wildlife	Ensure controlling, managing, conserving, protecting and administering National Parks, GMAs, bird and wildlife sanctuaries. Adopting methods ensuring sustainability, conservation & preservation in natural state of ecosystems & biodiversity & ensure proper balance between sustainable use of wildlife & management of ecosystems.	Wildlife Act 2015; Urban and Regional Planning 2015; Lands Act (1995
MWDSEP/ WARMA	Water	Provides for the regulation and management water resources in Zambia. Provides for the preservation, protection and conservation of wetlands, dambos, marshlands and headwaters. Provides for preservation of the integrity of river catchments for water resources management.	Water Resources Management Act No 21 2011; Environmental Management Act No. 12 of 2011; Urban and Regional Planning No. 3 2015; Lands Act 1995; Forestry Act No. 4 of 2015
Dept. of Energy	Energy	Create conditions that will ensure the availability of adequate supply of energy from various sources, which are dependable, at the lowest economic, financial, social and environmental cost consistent with national development goals	Energy Regulation Act Cap.436; National Energy Policy of 2008

Table 14 (continued)

Responsible	Sector	Description of key roles	Key Supporting Legislation
National Heritage Conservation Commission	Heritage Conservation	Provides for the protection and preservation of archaeological and heritage sites. Ensures sustainable management of archaeological and heritage resources	National Heritage Conservation Act; Urban and Regional Planning No. 3, 2015 Lands Act 1995
ZEMA	Environmental Protection	To provide regulatory, advisory, consultative, monitoring, coordinating and information dissemination functions on all environmental issues in Zambia. It also provides for the declaration of protected areas such as wetlands.	Environmental Management Act No. 12 2011; Water Resources Management Act No. 12 of 2011; Urban and Regional Planning No. 3 2015; Lands Act 1995
National Biosafety Agency	Biotechnology & biosafety	To balance the need to sustainably use biotechnology in the nations' quest for socio-economic development, and the need to protect human and animal health as well as the environment, including biological diversity	Biosafety Act No. 10 of 2007; National Biotechnology & Biosafety Policy of 2003

5.2 Biodiversity Finance-Related Capacities and Needs

Capacities and needs in the biodiversity sectors are as follows

i. Agriculture
   - Low human resource capacity in terms of training and numbers)
   - Inadequate equipment (transport/vehicles)

ii. Fisheries
   - Low staffing levels as well as inadequately trained personnel
   - Inadequate equipment: data capture and information dissemination as well as research and development activities.

iii. Forestry
   - Lean structure, lack of forest guards, insufficient appropriately trained human resource
   - Inadequate office space & accommodation; lack of operational vehicles; technical limitations

iv. Wildlife
   - Inadequate human resources and skills capacity
   - Poor park infrastructure; Inadequate equipment

v. Water
   - Inadequate and inappropriately skilled human resources
   - Inadequate monitoring equipment for both surface and groundwater resources quality and quantity

vi. Heritage Conservation
   - Insufficient human resources and capacity, inadequate sustainable conservation planning and management
   - Inadequate resources for documentation and inventories of the heritage

vii. Environmental Protection
   - Inadequate human capacity in terms of training and numbers
   - Inadequate remote & on-site environmental monitoring infrastructure

Inadequate finances was a common constraint to all sectors which in some way affects the number of personnel for management as well as the skill levels or levels of training.

5.3 Summary of Prioritization Results

The analysis of institutions indicates human and resource capacities as two key constraining factors to sustainable biodiversity management. Human capacity inadequacies refer specifically to the elements listed below:

i. Level of training and numbers of trained personnel affects ZEMA, Department of Fisheries, Forestry Department, WARMA and DNPW in particularly. The geographic spread of ZEMA personnel is significantly low such that it affects the organisation's ability to enforce and monitor compliance to environmental regulations. Some of the training needs are in integrated resource economics, governance and management; and resource assessment using RS/GIS techniques. Finance solutions related to wildlife and park management identified in later sections will primarily involve and most likely be led by DNPW. This includes payment for ecosystem services and certification schemes.

ii. Department of Fisheries, Forestry Department and ZEMA are secondly affected by inadequacies of modern equipment for research, enforcement and monitoring. A typical example is the absence of a functional and central biodiversity database. Finance solutions related to forestry, fisheries, the environment and protected area management identified in later sections will primarily involve and most likely be led by Fisheries Department, Forestry Department and ZEMA. This includes payment for ecosystem services, certification schemes, and management of carbon taxes.

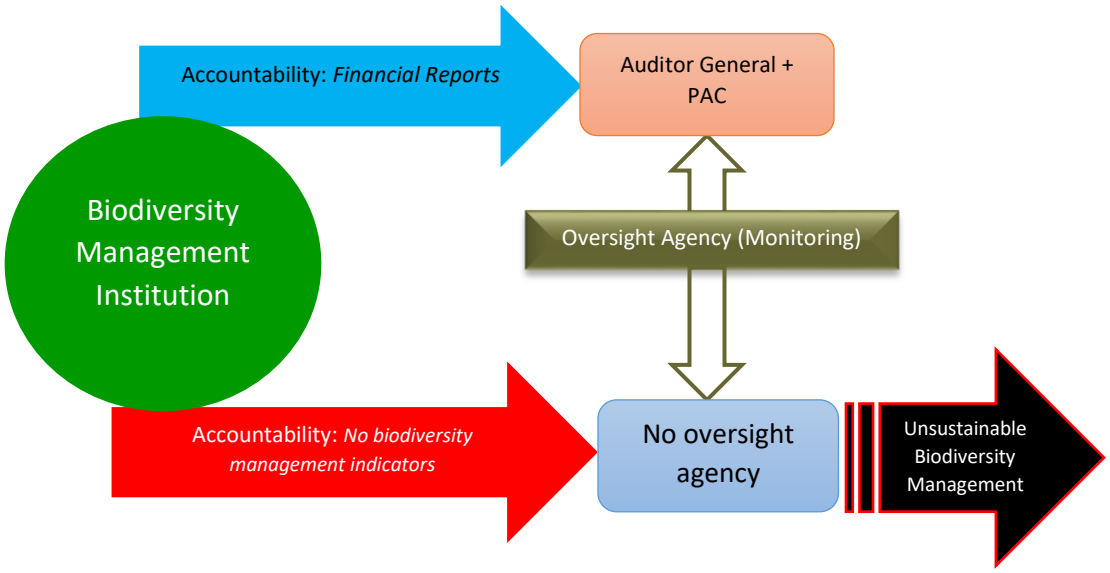
iii. Financing has historically been a problem in Zambia particularly as it relates to the environment and biodiversity. Government has historically prioritised other sectors over the environment and biodiversity. However, the 7NDP has made a significant shift from previous NDPs as sub-sectors of biodiversity have been listed as priority development programmes. This does not however solve the financing problem as the resource envelope for Zambia is limited and cannot adequately finance all sectors.

5.4 Institutional Responsibilities or Accountabilities

Public institutions are accountable for the revenues generated and the finances expended. These institutions are accountable to government following audit by the Auditor General's Office. The Public Accounts Committee (PAC) is an instrument through which financial management in public institutions is scrutinised. The role of the Committee is to "*examine the accounts showing the appropriation of sums granted by the National Assembly to meet the public expenditure, the Report of the Auditor-General on these accounts and such other accounts. It also exercises the powers conferred on it under article 117(5) of the Constitution of Zambia*".

However, accountabilities of public institutions tasked with biodiversity management is not limited to how finances collected and expended by these institutions are used only. Institutions must also account for meeting or failure to meet set biodiversity targets such as sustainable forest management indicators. These are as key to sustainability as financial prudence is. The failure to establish benchmarks of institutional performance in terms of achievements towards management indicators or criteria is one of the reasons why biodiversity management in Zambia has stagnated. Criteria and indicators for sustainable forest management, natural resources management, hunting and many other natural resources exist that can be adapted to Zambia using internationally accepted best practices. One of the reasons why this has not been applied to Zambia's biodiversity, is because almost all the sectors except for agriculture, have the core institution as the regulator and management agency with limited oversight by any other body. The absence and weaknesses in civil society is partly to account for this. The failure to establish accountabilities at the biodiversity management level (Figure 7) is a serious challenge for effectively meeting the targets that have been set in NBSAP 2, even if adequate resources are made available as the future is likely to be a business as usual scenario.

Figure 7. Accountability of biodiversity management institutions in Zambia



In the context of accountability and implementation of NBSAP 2, a key question arises as to who will monitor who? When failure to meet set biodiversity targets is proven, what courses of action will be applied to ensure that the failing organisation or institution provides corrective action. This entails that the implementation of NBSAP 2 is supposed to be accompanied by the provision of an oversight body and enhanced participation of civil society and corporate entities.

6.0 SUMMARY OF KEY RECOMMENDATIONS

The section provides overall conclusions and recommendations on national level barrier analysis organized by sectors, including legal and policy recommendations. Changes in sectoral policies and practices that would help reduce biodiversity loss, and/or that could improve biodiversity finance are clarified in accordance with this process. Institutional or/and organizational and capacity development recommendations are also made as are opportunities for improvements in the budgeting and planning process.

Institutional accountability related to biodiversity performance indicators such as internationally accepted criteria and indicators, just as financial accountability, is key to the sustainable management of biodiversity, is necessary to avoid eroding biodiversity and avoid maintaining the business as usual culture in biodiversity management. Even though Zambia has limited human capacities for biodiversity management, collaboration and integrated planning approaches can ensure that this cadre succeeds in biodiversity management using the limited existing human capacity. Additional to this is increasing efforts of leveraging financial resources from the global resource base and ensuring that policies and practices for budgeting and financial allocation from the Treasury ensure equity in allocations to the biodiversity sector.

6.1 Agriculture

The agriculture sector remains vibrant as it is led by the private sector in terms of investments in sugar, oil palm and other food crops. The institutional framework remains business orientated, with the main partner being the ministries of agriculture, finance, fisheries and livestock, MWDSEP, commerce and industry, Zambia Revenue Authority (ZRA) and civil society. The sector also collaborates with the forestry sector primarily over seedling or timber sourcing. There is little if any financing that flows into the non-agrobiodiversity sector for biodiversity management. One of the contributing factor is the inability of the mainstream biodiversity dependent sectors to source resources from the agriculture sector.

Legal and Policy Recommendations

Ensuring that agriculture sector is compelled to collaborate with other biodiversity sectors such as forestry and wildlife. Extensive clearing of forests and woodlands for agriculture, use of wood in tobacco curing (e.g.in Eastern Province), require collaborative engagements with the forestry sector over sustainable utilisation of wood.

6.2 Environment

ZEMA generates significant finances from EIA/EPBs and also from fines and penalties. It has a wider extent of stakeholders across all sectors, despite its funding levels being below 50% of its annual requirements. Constraining factors include inadequate geographic spread and human capacities to adequately monitor compliance. This is a governance threat to biodiversity management particularly as it relates to mining operations as events of pollution can occur but cannot be adequately dealt with by ZEMA due to its ability to respond to such incidences.

Legal and Policy Recommendations

The following policy and legal reforms are required to enhance revenue generation as well as retention

i. Carbon tax collections: collection of this tax to be done by ZEMA and ZEMA empowered to distribute this revenue to biodiversity sectors to fund research and management.

ii. Establish a Permanent Environmental Fund (PEF) which should be a funding mechanism to fund biodiversity research and management particularly in areas affected by mining. ZEMA to treat this as a project and seek support, through government, to source financing from a diverse range of stakeholders including mining companies.
iii. Establish a biodiversity levy for every developer whose operations lead to the degradation of biodiversity. The developer either funds restoration works to the extent of the damaged area or provides financing equivalent to the economic value of degraded or damaged biodiversity.
iv. Legislation should allow for retention of part of the revenues generated by ZEMA to fund operations.

6.3 Fisheries

Fisheries resources have a huge potential for raising substantial amounts of revenue to finance biodiversity conservation, if the identified and discussed loopholes are addressed. The Fisheries Act, Number 22 of 2011, in principle provides a conducive framework for investment planning and management approaches. Additionally, stakeholder significantly support the sector from governance to management. These include government, civil society, corporate entities and local communities. Significant challenges exist that relate to technical aspects in terms of equipment and machinery for use in research, patrols and other management interventions. However, the challenges facing the sector are far from being technical alone, but also relate to management and human resource capacities. Nevertheless, these challenges should not detract from the recognized need to harness the sector's potential to contribute to socio-economic development and poverty reduction in Zambia. DoF faces serious challenges in terms of data capture and information dissemination as well as research and development activities. These arise mainly because of inadequate resourcing to undertake routine activities, but also an eroding knowledge and skills base, and weaknesses in strategic planning and use of the output. Despite the availability of institutions at various levels of the fish value chain, operational harmonization has been a challenge for DoF. Many of the partner and stakeholder institutions, including government departments, do not easily declare their financing potential and full disclosure of their programmes to DoF. In some cases, there has been overlaps of tasks and assignments, a situation that has somehow worked against the goals of DoF.

Legal and Policy Recommendations

i. It should be a priority, through a strategic piloting scheme, to establish 'good practice' for implementing key provisions in the Act, in particular the Fisheries and Aquaculture Development Funds which should be aligned to the development and phased implementation of the Fishery-level Management Plans at decentralized levels.
ii. There is extensive use of illegal gears and fishing methods in most major fishery areas. It is therefore vital to enhance the process of gazetting more honorary fisheries officers, as a way of improving enforcement of fisheries regulations. This process can be used as a conduit for indirectly raising finances (through fees, taxes, penalties etc) for the fisheries sector.
iii. The custom of collecting fisheries resource dependent revenues and directly depositing all monies collected into the Government consolidated account has proved to be retrogressive and uninspiring in the sector. This trend can be reversed by allowing legally authorised officers to apportion at least a sizeable portion/per cent of the collected revenue into a local account upon receipt of revenues and for use at local level.
iv. As a way of promoting collaborative management, there is need to engage chiefs (traditional leaders) to provide for volunteer inspectors of illegal fishing activities (with logbooks) in all designated entry points to fishery areas, by cutting off other ports currently used by fishers across the complex fishery coupled with the introduction of temporal fishery closures managed locally.
v. Establish a local fisheries database as a resource of data and information for the management of fisheries.

vi. Split the Department of Fisheries so that aquaculture is placed under livestock.

6.4 Forestry

The forestry sector just like other sectors has a huge potential to contribute to a sustainable environment through its strategic contribution to biodiversity revenues and integrated biodiversity management. This is one sector that has extensive networks of protected areas as well as presence in every district in Zambia. As such, the sector has a myriad of stakeholders from government, civil society, corporate entities, academia and research and local communities. The policy and legal framework has improved with the passing of the Forest Act and forest regulations by Parliament. However, the sector faces serious institutional and non-institutional challenges that include inadequate cross sector collaboration, sometimes overlaps in PAs and thus legal jurisdiction, illegal and unsustainable harvesting and export oftimber; revenue returns from forfeited timber does not return to the department, inadequate personnel numbers and human capacities, lack of institutional reforms to re-establish the forest patrolman cadre to safeguard forest PAs.

Legal and Policy Recommendations

i. Institutional structure constrains the Forestry Department from intervening at the source of the resource as the restructured Forestry Departments lacks the forest patrolmen cadre who were the interface between the resource, the community and the Forestry Department. Restoring this employee category is likely to improve biodiversity management.
ii. In its current structure, the protected area network in Zambia is segmented among four sectors: fisheries, forestry, water and wildlife. Reclassifying the whole system along the IUCN classification, or other classification, can pool resources together, transfer some of the overhead costs to middle management and technical personnel.
iii. Forestry Department should be legally empowered to retain revenue generated, through Appropriation in Aid or a fixed percentage, at point of source which should be re-invested in biodiversity management.
iv. The Budget should provide adequate financing to the Forestry Development Fund so that it is fully operational.
v. The department should be re-capitalised to resume the Local Supply Plantation programme in regional centres to reduce the pressure for timber being exerted on indigenous plantations.

6.5 Water

Legislations, policies and development plans governing water resources management and development show that these are sufficient to operate this sector efficiently. Legislation, policies and plans have provided for environmental and biodiversity management. However, awareness on the importance of this sector and its potential contribution to sustainable economic and national development is still lacking. Provisions for penalizing offenders in environmental degradation and pollution of water resources are adequate but more has to be done regarding the enforcement of such provisions by mandated regulatory institutions and Local Authorities. The institutional landscape (operational landscape of stakeholders) is adequate to provide the required services and an environment where the subject matter of biodiversity management and financing can flourish but the recent re-alignment of Ministries undertaken by the Government is expected to yield more results in terms of overcoming the challenges of operational efficiency and coordination which have hampered growth in the water sector. Funds that Government allocates to the water sector are very low. However, finances within the water sector generated through fees and charges, penalties and fines, non-tax revenues and auctions are sufficient to set the stage for demonstrating the importance of sustaining biodiversity and keeping ecosystem functions in their desired state. As observed under the MTEF and financing under the SNDP, particular allocations are not given to financing biodiversity management but rather to water specific projects and programs. Water

management has had challenges related to financing of the sector, inadequate trained personnel, low geographic spread of the available personnel and inadequate equipment and machinery to implement management interventions and also to monitor compliance with existing laws and regulations.

Legal and Policy Recommendations

i. Coordination of efforts and attraction of private financing to the Water Development Trust Fund which is intended to be established in the Ministry may contribute significantly to the management of biodiversity.
ii. In the interest of promoting efficiency and avoiding duplicity of efforts and resources, harmonizing of pieces of legislation is still needed because mandates for management of the water sector are seen to be overlapping.
iii. Budgetary allocation meant for water management should also carry a strong theme of biodiversity management as the two are interdependent.
iv. The Water Development Trust Fund to be set at MWDSEP should be broader in scope in terms of its support to water resources management and development.
v. Public disclosures should be a legal requirement on how much of the fees and charges collected under the provisions of the Environmental Management Act No. 12 of 2011, Water Resources Management Act No. 21 of 2011 and the National Water Supply and Sanitation Act No. 28 of 1997are rechannelled into environmental management, preservation of ecosystems, restoration of biodiversity and conservation of headwaters, wetlands and water catchment management.
vi. The carbon tax being collected by RTSA should be budget tracked to ensure the revenue is used to address impacts of fossil fuel carbon emissions on the environment and biodiversity
vii. The subject of impacts of fossil fuel carbon emissions on the environment and biodiversity can also be negotiated as a component of the current Toll Fees being collected by the National Road Fund Agency (NRFA).
viii. The National Planning and Budgeting Act should be enacted to facilitate the implementation of its new provisions in the budgeting process

6.6 Wildlife and Tourism

The wildlife and tourism sector has a policy and legal framework which is a trend setter especially in terms of devolved governance. Additionally, this infrastructure allows for robust resource monitoring in Community Resource Boards where revenues are being generated. There is a need for additional policy reforms to seal up loopholes in legislation. DPNW has an extensive array of stakeholders and stakeholder interests ranging from local to regional and international interests. Even though Zambia faces significant threats to wildlife, particularly elephants and rhinos, the sector has in the recent past made headways in stemming this tide in some of the PAs. Financing has been a constraining factor affecting management effectiveness in terms of few trained personnel, inadequate vehicles for operations, inadequate modern equipment, lack of finances to carry out animal censuses for purposes of effective management, pervasive government interest and interference has made it difficult for DNPW to attract private partners, and the current institutional set up whereby DNPW is both the regulator and management entity weakens systems of monitoring and accountabilities. This also affects the technical capacity of DNPW to provide accurate statistics for management purposes. Inadequacies in information required for the development of management plans for all PAs is constrained by finances from government.

Legal and Policy Recommendations

i. Re-Introduction of VAT on Tourist Packages: An SI should be issued which must compel all tour operators to charge VAT on tourist packages which combine park entry fees, bed night levy and game

viewing services, including all photographic, cultural, hunting, business and incentives tourism. This shall be a precondition for ongoing seasonal licensing and permits in protected areas and on private game farms and ranches.

ii. Retention of Court Fines: Amend the Zambia Wildlife Act to empower DNPW to retain court fines as compensation for expenses incurred in arresting and prosecuting suspects. In addition, Admission of Guilt Fines should be reviewed upwards.

iii. Introduction of Fees for Culling of wildlife products in support of registered Traditional and Cultural Ceremonies: all registered ceremonies must be funded through a predetermined budget line under the portfolio responsible for Chiefs and Traditional Affairs, in conjunction with the Disaster Management and Mitigation Unit, and under the Office of the Vice President.

iv. Introduction of Wildlife Product Permits and Export/Import Permits from Private Ranches, Farms and Zoos: It should be a requirement for all game farms, game ranches, private zoos and reptile parks to issue permits on behalf of DNPW/MTA for all transactions with clients, between local ranches and for export.

v. Devolve management of GMAs to CRBs in areas where revenue earnings have been consistent and management capacity has been built. The model proposed under the Reclassification Project (REMNPAS Project) of Community Conservation Areas (CCA), as a PPP, can be revised to include guaranteed tenure or proprietary rights.

vi. Broaden the scope of the meaning of "resources" and composition in CRBs to focus on all natural resources additional to wildlife to broaden the revenue base.

vii. Restructure DNPW into a policy formulation and monitoring unit with management of PAs transferred to the private sector. Models exist in Liuwa National Park which can be improved with a small, professional and well-funded monitoring unit within government.

viii. Wildlife production should be classified under livestock.

6.7 Opportunities for improvements in the budgeting and planning process

6.7.1 Opportunities for Improvement in the Budgeting Process

The approval by government of NBSAP 2 as a strategic plan for biodiversity management should ensure that it is mainstreamed in the 7th National Development Plan as this is the key document that influences the budgeting process. This is due to the fact that the NDP stipulates priority socio-economic development sectors which government focusses on for the planning period. NBSAP 2 provides a window of opportunity as long as the five strategic goals or the strategic interventions allocated to responsible ministries are articulated in the 7th National Development Plan.

6.7.2 Improvements in the Planning Process

Establishment of a system of cross sector planning and coordination in the biodiversity sector is more likely to improve biodiversity management. Additionally, it can reduce or minimise overlapping of plans and activities which can minimise expenditures. This can also establish a system where information is shared for purposes of management.

TECHNICAL APPENDICES

A. Biodiversity Finance Review

A1. Details of the sectoral analysis

Legislation, Institutions and Institutional Roles in Biodiversity Governance and Management

Sub-Sector	Legislation	Key Role of Sector in Biodiversity Management	Responsible Government Body	Partner Institutions and Organisations				
				Government Ministries & Departments	Statutory Bodies	Civil Society (NGOs, CBO, FBOs)	Corporate Entities & Projects	Bi- and Multilateral Organisations / Cooperating Partners
Agriculture and agrobiodiversity	Agric. Lands Act 1994	Finance, manage & regulate agro- biodiversity in agro-landscapes	Ministry of Agriculture	√	√	√	√	√
Fisheries	Fisheries Act Cap 200	Finance, manage & regulate aquatic & livestock biodiversity	Department of Fisheries	√		√		
Forestry	Forestry Act 2015	Finance, manage & regulate overall management of biodiversity within protected, customary & private forests	Forestry Department	√	√	√	√	√
Wildlife	Zambia Wildlife Act 2015	Finance, manage & regulate overall management of biodiversity within protected, customary & private wildlife sanctuaries	Department of National Parks & Wildlife	√	√	√	√	√
Water	Water Resources Management Act 2011	Manage catchments, regulate water extractions	Water Resources Management Authority	√	√	√	√	√
Energy	Energy Regulation Act Cap.436;	Manage energy sector	Department of Energy					
Heritage conservation	National Heritage Conservation Act Urban and Regional Planning No. 3, 2015; Lands Act 1995	Protect & management heritage & related objects of national importance	National Heritage Conservation Commission	√	√	√	√	√

Legislation, Institutions and Institutional Roles in Biodiversity Governance and Management (Continued)

Sub-Sector	Legislation	Key Role of Sector in Biodiversity Management	Responsible Government Body	Partner Institutions and Organisations				
Biosafety & biotechnology	Biosafety Act No. 10 of 2007	balance the need to sustainably use biotechnology & need to protect human and animal health environment, & biological diversity	National Biosafety Agency	√	√	√	√	√
Environmental Protection	Environmental Management Act No. 12 2011	Provide regulatory, advisory, consultative, monitoring, coordinating & information dissemination on environment & declaration of protected areas.	Zambia Environmental Management Agency	√	√	√	√	√
Planning and Finance	Acts related to finance, development & urban & regional planning (i.e. Financial Management Act / Urban & Regional Planning Act	Planning & regulatory oversight on biodiversity finance & budgets; facilitate biodiversity financing negotiations with cooperating partners either as loans, grants or project support.	Ministry of Finance; Ministry of Development Planning	√	√	√	√	√

Partner Institutions and Organisations in the Biodiversity Sector

Local Communities	Other Key CSOs	Private Sector	Cooperating partners, bi- & multi-lateral organisations	Academia & Research	Regional Collaborators
1. Traditional leadership 2. Communities residing inside or adjacent to NPs, GMAs, fishing camps, PFAs & catchments, wetlands and water resources. 3. Communities in customary lands.	a. The World Conservation Union (IUCN) b. Worldwide Fund for Nature (WWF) c. African Wildlife Foundation (AWF) d. David Shepherd Conservation Foundation (DSCF)	a. Tour Operators b. Photographic Tourism Operators c. Timber Producers Association d. Fisher folk Associations e. Mining Companies	a. UNDP, World Bank and NORAD = NEAP, ESP & NBSAP process. b. GEF\UNDP + IUCN = preparation of NBSAP 1 c. Netherlands + FAO = ZFAP d. FAO = NFP facility.	a. University of Zambia (UNZA) b. Copperbelt University (CBU) c. Mulungushi University (MU) d. University of Lusaka (UniLus)	Zambia cooperates with other countries in the region on matters affecting biodiversity management: 1. Signatory to the Lusaka Agreement on Management of Elephants and other endangered species

4. Farming communities	e. Frankfurt Zoological Society (FZS) f. Conservation Lower Zambezi (CLZ) g. Conservation South Luangwa (CSL) h. Wildlife and Environmental Conservation Society of Zambia (WECSZ) i. Lower Zambezi REDD+ Project j. Academic institutions	f. Zambia Electricity Supply Corporation (ZESCO) g. Safari Hunting h. Sawmillers i. Agri-businesses (Zambia Sugar, Zampalm, ZAFFICO, CFC, farmers) j. Insurance companies and financial institutions (including banking institutions).	e. FINNIDA = PFAP f. Donors + World Bank\IDA = ASIP g. JICA, EU, NORAD, USAID, Frankfurt Zoological Society, WWF, AWF, David Shepherd Foundation = MPs in NP/GMAs h. DFID, FINNIDA, British ODA, DANIDA, IDA, IFAD, CIDA, AfDB, NORAD, NORDIC Development Fund DANIDA = CBD related programs	e. Natural Resources Development College (NRDC) f. Zambia Forestry College (ZFC) g. Zambia College of Agriculture at Monze and Mpika h. NISIR i. ZARI	2. Joint Permanent Commissions

B. Details of all revenues inventoried

All revenues in this section are presented in Kwacha rebased for 2013 to 2016 and not rebased up to 2012, unless specified otherwise.

B1. Forest Sector

2011 Forestry Department Revenue Summary

Province	General Revenue 2011	Revolving Fund 2011	Allocated 2011	Actual Expenditure 2011	Others
Lusaka	K 399,683,412.00	K 22,309,000.00	K1,513,812,675.00	K1,176,635,616.00	
Central	K432, 777,160.00	K 28, 928,500.00	K 200,714,833.00	K 198,373,912.00	
Copperbelt	K 498,678,208.79	K 6,046,500.00,	K 687,201,996.00	K533, 178,333.00	
Luapula	K 63,020,672.00	K 327,875,511.00		K 153,557,236.00	
Northern	K 139 822 337.00	K 1, 174,777,406		K 192 382 382.00	K253 000 000.00
Eastern	K 438,925,459.00	K 215, 830,190.00	K399,215,827.79	K 235,376,644.79	
Southern	K 347,338,765.00	-	K 885,999,318.36	K 739,015,841.36	
Western	K 2, 878,347,172.00	K 73,027,300.00		K 550,901,584.94	K 72,369,700.00
North-western	K 223 369 950.00	K 68 555 790.00	K 439 339 736.00	K 168 449 328.00	K 20 000 000.00
Forest Research	-	K 232, 993,900.00	K 1,350,602,331.00	K 680,306,536.00	
Total	**K 5,421,963,135.00**	**K 2,150,344,097.00**			

Analysis of all revenues from the sale of forest produce and services by Province – 2011

Types of Produce	Central	Copperbelt	Eastern	Luapula	Lusaka	Northern	N/Western	Western	Southern	TOTAL
Bamboo Canes	0	1,460,400	1,864,800	187,200		474,480				
Bamboo baskets		30,000								
Baskets			4,176,000	0						
Reed mats	0	2,024,800	5000	67,400		44,000		12700		
Reed cans			1605,600							
Confiscated Charcoal Bags				330,000						
Bark rope								219,600		
Bush poles	1,048,400	61,799,000	3,222,180	2,747,000		165,1840		16,418,600		

Analysis of all revenues from the sale of forest produce and services by Province – 2011 (Continued - a)

Types of Produce	Central	Copperbelt	Eastern	Luapula	Lusaka	Northern	N/Western	Western	Southern	TOTAL
Papyrus Head Load			904,680	833,148				971,200		
Charcoal Cord Production	173,664,000	2,106,000	67,466,200	2,683,260		19,322,000		28,981,000		
Charcoal Cords	189,329,400	30,859,600	32,735,975	3,960,990		928,2600		15,103,800		
Firewood cord Production	3,132,000		17,826,300	108,000		594,000		2,844,000		
Firewood cord Conveyance	511,757,600		3,071,800	1,296,000		111,000		5400		
Firewood head load			4,405,600	599,400				36,000		
Charcoal Bags Conveyance				2,462,400						
Charcoal Bags Production			2,039,000	2,937,600						
Confiscated Charcoal Bags	185,000	2,837,000	330,000	2,864,000		620,300		367,3000		
Commitment fees pit saw				0						
Cultivation fees				0						
Charcoal penalty	1,770,300			0						
Fibre (bundles)	36,000		3,600,000	0				261400		
Confiscated fuel wood sale				0						
Grazing fees				0						
House rentals	1,295,6000			0				3065000		
Penalty fees	64,800	2538,000	1,600,000	0				2160000		
Admission of guilt fees		165,000		2,538,000				412500		
Plantation pole				4,074,300						
Confiscated plantation				0						
Plantation logs	20,982,300			0						
Confiscated reed mats				0						
Others		3,196,729		7,718,000						
Willows				0						
Confiscated Devils craw								410,400		
Sawing Charges				8,121,545						
Timber penalty fees	2,080,000			0						
Timber production	2,025,000		24,435,650	15,681,148						
Timber production penalty	259,700									
Timber conveyance fees		71,403,336		1,199,999						
Swan Timber				166,411,272						
Landscaping				0						
Comb Honey				0						
Charcoal cords + penalty	1,490,990			0						
Site fees	1,458,000	3,500,856		2,304,000						

Analysis of all revenues from the sale of forest produce and services by Province – 2011 (Continued-b)

Types of Produce	Central	Copperbelt	Eastern	Luapula	Lusaka	Northern	N/Western	Western	Southern	TOTAL
Hut material				0						
Thatching grass				0						
Timber Export Indigenous		704,160		0				32211000		
Timber Export Pine		425,750,281								
Restored ox cart			1058000							
Sand/Soil				108,000						
Top soil		31,906,000	1014600							
Tomato sticks				0						
Confiscated Pitsaws		3,931,800		0						
Confiscated willows				0						
Devils craw conveyance								2,700,000		
MOU for Chaba										
Telephone Towers		2,596,160						8,160,000		
Temporary Shelter			756,000							
Total				373,371,948						
Surcharges on Charcoal	1,403,800			0						
Consultation				0						
Pitsaw License fees				0						
Canoes/Drums				0				696600		
Trees for curios				0						
Curios conveyance				0						
Baobab wildling				0						
Others				7,718,000						
Palm leaves				399,600		15000				
Timber cants				0						
Other Services				396,000						
Imported poles				0						
Confiscated bicycles	3,000,000			0				54,000		
Trees	5,774,820	100,646,428	9,440,818	134,851,186						
Restored bicycles			290,000	5,128,000		4,320,000				
Restored Vehicles	1,440,000			1,160,000		12,000,000				
Ox-carts	360,000			0						
Auctioned plants/logs				0						
Confiscated Timber	832,400			1,600,000		5,178,893		31,530,000		
Imported sawn timber			87,007,396	0						

Analysis of all revenues from the sale of forest produce and services by Province – 2011 (Continued-c)

Types of Produce	Central	Copperbelt	Eastern	Luapula	Lusaka	Northern	N/Western	Western	Southern	TOTAL
Rail sleepers		481,248								
Honey			2,121,000	0						
Auction bicycles			4,519,500	0						
Confiscated soft wood		134,173,260	1,600,000	0						
Confiscated rafters								602,700,612		
Confiscated firewood				0						
Broom conveyance				0						
Wattles								108,000		
Mat conveyance				0						
Basket Conveyance				0						
Cultivation Temporary				0				3,384,000		
Devils craw								3,726,000		

2012 Forestry Department Revenue Summary

Province	2012 General Revenue (K)	2012 Revolving Fund (K)	2012 Allocation (K)	2012 Actual Expenditure (K)
Lusaka	275,231.60	32,702.82	1,541,296.83	1,176,635.62
Central	506,273.72	17,853.70	397,635,749	394,942.93
Copperbelt	505,499.31	6,320.40	2,325,028.84	623,459.14
Luapula	89,959.46	231,329.50	624,311.70	624,311.70
Northern	87,794.74	668,412.01		232,419.20
Eastern	221,218.22	140,640.65	485,845.92	485,845.92
Southern	1,218,244.36		1,152,301.12	875,477.61
Western				
North-Western	223,369.95	68,555.79	439,339.74	168,469
Forest Research		317,682.52	2,109,000.00	582,398.66
Total	3,127,591.36	1,483,497.39	406,312,873.15	5,163,960.11

Analysis of all revenues from the sale of Forest produce and services by Province – 2012

Types of Produce	Central	Copperbelt	Eastern	Luapula	Lusaka	Northern	N/Western	Western	Southern	TOTAL
Bamboo Canes	0									
Bamboo baskets	0									
Baskets	0									
Reed mats	0									
Reed cans	0									
Confiscated Charcoal	1,933,100									
Bark rope	0									
Bush poles	1,751,000									
Papyrus Head Load	0									
Charcoal Cord	166,678,600									
Charcoal Cords	0									
Firewood cord	15,309,000									
Firewood cord	2,997,000									
Firewood head load	288,000									
Charcoal Bags	185,528,800									
Charcoal Bags	0									
Confiscated Charcoal	1,933,100									
Commitment fees pit	0									
Cultivation fees	0									
Charcoal penalty	0									
Fibre (bundles)	0									
Confiscated fuel wood	0									
Grazing fees	0									
House rentals	7,015,000									
Penalty fees	8,262,800									
Admission of guilt fees	0									
Plantation pole	696,300									
Confiscated plantation	0									
Plantation logs	421,000									
Confiscated reed mats	0									
Others	6,705,000									
Sawing Charges	0									
Timber penalty fees	0									
Timber production	4,779,000									
Timber production	0									
Timber conveyance fees	24,249,600									
Swan Timber	2,322,000									
Landscaping	0									
Comb Honey	0									
Charcoal cords + penalty	0									

Analysis of all revenues from the sale of Forest produce and services by Province – 2012 (Continued – a)

Types of Produce	Central	Copperbelt	Eastern	Luapula	Lusaka	Northern	N/Western	Western	Southern	TOTAL
Site fees	234,000									
Hut material	0									
Thatching grass	0									
Timber Export	0									
Timber Export Pine	0									
Restored ox cart	0									
Sand/Soil	22,606,000									
Top soil	0									
Tomato sticks	0									
Confiscated Pitsaws	0									
Confiscated willows	0									
Willows	0									
Surcharges on Charcoal	1,258,800									
Consultation	0									
Pitsaw License fees	0									
Canoes/Drums	0									
Trees for curios	0									
Curios conveyance	0									
Baobab wildling	0									
Others	1,105,400									
Palm leaves	0									
Timber cants	0									
Other Services	0									
Imported poles	0									
Confiscated bicycles	1,224,000									
Trees	50,511,772									
Restored bicycles	0									
Restored Vehicles	0									
Ox-carts	200,00									
Auctioned plants/logs	0									
Confiscated Timber	0									
Imported sawn timber	0									
Rail sleepers	0									
Honey	0									
Auction bicycles	54,000									
Confiscated soft wood	0									
Confiscated rafters	0									
Confiscated firewood	130,049									

Analysis of all revenues from the sale of Forest produce and services by Province – 2012 (Continued – b)

Types of Produce	Central	Copperbelt	Eastern	Luapula	Lusaka	Northern	N/Western	Western	Southern	TOTAL
Broom conveyance	0									
Wattles	0									
Mat conveyance	0									
Basket Conveyance	0									
Cultivation Temporary	0									
Devils craw	0									
Confiscated Devils craw	0									
Devils craw conveyance	0									
MOUs	15,000,000									
Telephone Towers	0									
Temporary Shelter	0									
Total	524,127,421									

2013 Forestry Department Revenue Summary

Province	General Revenue (K)	Revolving Fund (K)	Allocation (K)	Actual Expenditure (K)
Lusaka	457,354.56	28,677.50	403,368.00	360,326.00
Central				
Copperbelt	730,467.73	217,883.00	2,694,346.862	496,378.93
Luapula				
Northern	90,360.80	223,824.74		318,663.00
Eastern				
Southern	569,340.00		4, 428,024.60	643,748.00
Western				
Muchinga	43,977.50		913,101.00	281,800.00
North-Western				
Forest Research				
Total	**1,891,500.59**	**470,385.24**		

2014 Forestry Department Revenue Summary

Province	General Revenue (K)	Revolving Fund (K)	Allocation (K)	Actual Expenditure (K)	Others (K)
Lusaka	1,174,967.21	185,106.50	471,176.00	233,935.00	
Central	2,676,601.00	10,744.30	725,299.00	547,682.00	
Muchinga	158,640.69	-	-	-	
Copperbelt	814,230.12	-	766,949.00	632,616.96	
Luapula	230,547.99	462,060.60	-	-	
Northern	173, 138.95	759,611.91	-	-	
Eastern	1,498,031.5	457,751.90	625,761.00	-	
Southern	359,759.00	-	-	-	
Western	2,082,709.00	24,263.90	-	-	
NorthWestern	571,108.11	-	-	231,000.00	
Forest Research	-	518,288.06	2,589,185.00	1,414,233.96	518,288.06
Total	**9,566,594.11**	**1,899,539.11**			

2016 Forestry Department Revenues

Forestry Department Revenue Returns by Districts for 2016

District	January	February	March	April	May	June	July	August	September	October	November	December	Total
WESTERN													
Sesheke	121,806.00	41,817.00	80,208.00	115,125.00	214,233.00	316,950.00	248,061.00	144,327.00	266,427.00	388,074.00	265,821.00	265,821.00	**2,468,670.00**
Lukulu	110,175.00	113,460.00	163,266.00	120,757.50	96,600.00	214,950.00	209,094.00	174,492.00	220,401.00	171,723.00	209,860.00	121,519.50	**1,926,298.00**
Kalabo	126.00	-	-	420.00	170.00	130.00	390.00	-	230.00	-	1,054.00	-	**2,520.00**
Sioma	98,826.00	171,927.00	221,457.00	84,492.00	84,708.00	165,123.00	96,944.00	96,600.00	83,724.00	165,598.00	52,074.00	167,929.00	**1,489,402.00**
Senanga	150,462.00	117,606.00	172,508.00	6,672.00	29,262.00	64,110.00	14,886.50	10,023.00	36,937.00	9,744.00	7,002.00	-	**619,212.50**
Kaoma	68,340.00	62,700.00	48,081.00	63,880.50	135,946.50	112,062.00	86,178.00	97,472.50	58,506.00	64,140.00	38,104.50	80,123.00	**915,534.00**
Mongu	25,036.00	45,483.90	38,559.75	44,556.00	33,590.25	42,102.50	46,684.50	31,332.00	56,760.00	6,854.75	3,223.13	4,016.25	**378,199.03**
Shangombo	10,356.00	8,676.00	9,399.00	8,790.00	513.00	-	-	-	-	-	-	-	**37,734.00**
Nkeyema	1,608.00	2,194.00	4,343.00	9,011.00	4,252.50	5,427.00	7,105.00	6,060.50	8,228.00	8,032.00	5,482.00	3,531.50	**65,274.50**
Mwandi	16,564.80	31,462.20	22,887.00	39,370.80	40,387.60	21,171.30	20,409.00	-	1,706.40	-	540.00	769.00	**195,268.10**
PFO		15,000.00	-	-		15,800.00	-	-			20,815.49	20,100.00	**71,715.49**
Total	**603,299.80**	**610,326.10**	**760,708.75**	**493,074.80**	**639,662.85**	**957,825.80**	**729,752.00**	**560,307.00**	**732,919.40**	**814,165.75**	**603,976.12**	**663,809.25**	**8,169,827.62**
COPPERBELT													
District	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**Total**
Ndola	8,397.00	6,658.00	7,633.50	17,519.40	7,479.00	8,074.50	6,581.50	5,012.00	4,845.00	23,205.00	-	11,993.00	107,397.90
Kitwe	918.00	1,663.50	2,318.00	1,797.00	1,255.50	1,280.70	1,053.00	810.00	1,593.00	1,012.50	610.00	-	14,311.20
Chingola	6,108.00	4,819.50	9,250.50	-	2,929.50	10,058.00	4,549.50	5,690.00	4,345.00	3,010.50	3,048.50	4,108.50	57,917.50
Mufulira	4,914.50	3,631.50	7,141.50	3,699.00	607.50	6,223.50	4,761.50	1,602.00	4,617.00	-	3,141.00	-	40,339.00
Luanshya	836.00	1,891.50	2,110.50	7,353.50	2,395.50	2,594.00	1,442.00	-	-	-	2,514.50	3,441.00	24,578.50
Chililabombwe	2,281.50	1,573.20	5,645.50	10,965.00	2,787.80	2,023.70	3,197.70	4,773.70	2,863.00	3,693.70	4,018.20	-	43,823.00
Kalulushi	13,410.00	8,016.00	18,000.00	12,067.50	13,067.80	21,755.00	28,781.00	-	9,604.50	-	-	-	124,701.80
Masaiti	6,886.50	3,322.50	2,815.50	2,097.00	2,524.50	1,617.00	1,980.00	1,395.00	1,579.50	3,091.50	2,917.74		30,226.74
Mpongwe	6,844.50	6,348.00	13,024.50	15,317.00	10,807.50	12,963.00	10,858.00	13,906.50	-	-	-	-	90,069.00
Lufwanyama	7,006.50	10,813.50	11,542.50	10,786.50	8,734.50	13,797.00	10,435.50	11,596.50	12,379.50	9,396.00	12,757.50	8,734.50	127,980.00
PFO	-			-		-	-	-	-		-	-	-
Total	**57,602.50**	**48,737.20**	**79,482.00**	**81,601.90**	**52,589.10**	**80,386.40**	**73,639.70**	**44,785.70**	**41,826.50**	**43,409.20**	**29,007.44**	**28,277.00**	**661,344.64**
SOUTHERN													
District	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**Total**
Chikankata	1,742.00	729.00	1,134.00	1,215.00	1,944.00	1,256.00	2,427.50	1,639.00	729.00	748.00	689.00		14,252.50
Choma	2,685.00	11,890.00	12,015.00	11,870.00	10,175.00	12,120.00	11,900.00	12,775.00	10,300.00	23,690.00	12,972.00		132,392.00
Gwembe	120.00	100.00	141.00	162.00	-	2,200.00	241.00	270.00	1,224.00	325.00	337.00		5,120.00
Kalomo	300.00	180.00	540.00	710.00	945.00	2,925.00	1,530.00	675.00	1,215.00	585.00	540.00		10,145.00
Kazungula	11,525.00	32,950.00	28,384.00	19,437.00	3,885.00	-	16,910.00	9,650.00	10,365.00	46,900.00	76,528.00		256,534.00
Livingstone	4,643.00	2,620.00	3,405.00	8,537.00	3,682.00	-	8,029.00	2,303.00	6,319.50	2,063.00	6,375.00		47,976.50
Sinazongwe	24.00	50.00	105.00	135.00	108.00	1,024.00	270.00	379.00	2,204.00	216.00	405.00		4,920.00
Zimba	-	580.00	1,026.00	405.00	-	1,350.00	540.00	-	109.00	270.00	513.00		4,793.00
PFO	-	-	-	-	-	-				-	-		-
Total	**25,621.00**	**67,313.00**	**60,391.00**	**57,440.00**	**23,992.00**	**23,666.00**	**48,458.40**	**32,317.00**	**38,824.00**	**78,954.00**	**102,772.00**	**-**	**559,748.40**
EASTERN													

EASTERN													
District	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**Total**
Chipata	10,569.00	6,419.00	12,504.50	8,523.00	12,171.50	12,875.50	8,023.50	6,993.00	9,328.50	11,093.50	5,169.50	9,474.00	113,144.50
Chadiza	857.50	414.00	1,608.50	1,372.50	2,879.30	2,232.00	969.00	7,649.00	11,889.25	2,250.25	1,104.75	760.50	33,986.55
Msipazi	-	-	-	-	-	-	-	-	-	-	-	-	-
Katete	540.00	36.00	392.00	1,589.00	2,395.00	1,971.00	1,269.00	-	4,029.40	1,528.25	761.00	675.00	15,185.65
Lundazi	751.50	-	1,950.00	1,790.00	13,275.00	13,072.00	8,511.00	8,092.50	14,093.00	7,542.00	4,149.00	4,720.00	77,946.00
Mambwe	372.00	1,353.00	40,669.50	1,680.00	2,953.93	819.00	31,959.95	4,848.60	4,426.60	1,135.43	2,592.75	1,442.75	94,253.51
Nyimba	5,320.00	3,435.00	7,803.00	23,632.00	17,527.00	12,840.50	7,932.50	5,758.50	9,071.50	3,869.00	9,544.50	5,761.50	112,495.00
Petauke	10,486.30	6,334.00	3,831.70	5,094.90	3,515.40	9,187.00	8,781.38	6,983.70	5,059.40	3,533.66	5,643.00	4,742.70	73,193.14
Vubwi	-	-	280.00	-	310.50	543.00	100.00	648.00	-	36.00	100.00	-	2,017.50
Sinda	936.00	2,943.80	2,894.00	8,444.00	1,930.38	2,078.25	1,426.05	2,524.50	3,980.00	666.00	2,208.10	598.50	30,629.58
PFO	-	-		-	-	-	-	-	-	-	-	-	-
Total	**29,832.30**	**20,934.80**	**71,933.20**	**52,125.40**	**56,958.01**	**55,618.25**	**68,972.38**	**43,497.80**	**61,877.65**	**31,654.09**	**31,272.60**	**28,174.95**	**552,851.43**
NORTHERN													
District	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**Total**
Chilubi	-	877.50	270.00	-	-	-	-	-	360.00	-	-	-	1,507.50
Kaputa	-	40.00	40.00	-	-	150.00	83.70	90.00	-	120.00	-	-	523.70
Kasama	5,166.50	4,591.00	3,069.00	10,557.00	5,720.90	35,689.00	4,300.00	2,854.50	3,811.50	6,717.00	10,715.00	8,388.50	101,579.90
Luwingu	100.00	190.00	90.00	465.00	-	300.00	530.00	-	250.00	1,380.00	1,415.00	100.00	4,820.00
Mbala	100.00	81.00	350.00	1,823.00	1,080.00	100.00	-	-	-	972.00	540.00	-	5,046.00
Mporokoso	900.00	15,975.00	8,150.00	525.00	17,190.00	8,445.00	10,437.00	7,875.00	-	-	-	8,000.00	77,497.00
Mpulungu	1,080.00	3,256.00	1,157.80	813.00	675.00	2,360.00	1,845.00	2,040.00	1,080.00	3,525.00	33,890.00	197,202.00	248,923.80
Mungwi	1,008.00	5,152.50	410.00	1,518.50	1,300.00	540.00	-	-	910.00	470.00	2,720.00	550.00	14,579.00
Nsama	-	960.00	405.00	18.00	-	-	200.00	-	-	-	-	-	1,583.00
PFO	-	-		-	-	-	-	-		-	75,375.00	45,875.00	121,250.00
Total	**8,354.50**	**31,123.00**	**13,941.80**	**15,719.50**	**25,965.90**	**47,584.00**	**17,395.70**	**12,859.50**	**6,411.50**	**13,184.00**	**124,655.00**	**260,115.50**	**577,309.90**
LUAPULA													
District	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**Total**
Milenge	324.00	-	-	1,822.50	-	405.00	820.00	607.50	-	-	15,303.00		19,282.00
Samfya	805.00	1,458.00	3,213.00	877.50	1,660.50	1,522.90	1,458.00	-	574.00	256.50	2,440.00		14,265.40
Mansa	26,420.10	28,582.50	6,145.20	54,906.00	13,961.00	162.00	41,722.00	10,327.00	21,015.00	8,097.00	4,217.00		215,554.80
Mwense	1,575.00	216.00	576.00	1,508.50	1,666.00	924.50	2,133.00	993.60	1,476.90	1,089.00	1,795.50		13,954.00
Kawambwa	504.00	2,110.51	445.00	2,213.50	1,492.00	1,886.43	345.98	3,920.40	3,446.90	2,402.30	3,278.32		22,045.34
Mwansabombwe	227.96	879.00	-	114.75	350.56	590.40	1,067.45	1,199.30	3,391.31	3,436.33	598.41		11,855.47
Nchelenge	2,232.00	270.00	639.00	1,759.50	3,484.50	868.50	517.50	2,763.00	3,016.50	874.50	5,394.00		21,819.00
Chembe	-	-	-	-	-	-	-	-	-	2,010.00	310.50		2,320.50
Chienge	425.00	621.00	18.00	-	209.25	90.00	279.00	497.25	611.25	452.00	459.00		3,661.75
PFO	-	-	-		-	-				-	-		-
Total	**32,513.06**	**34,137.01**	**11,036.20**	**63,202.25**	**22,823.81**	**6,449.73**	**48,342.93**	**20,308.05**	**33,531.86**	**18,617.63**	**33,795.73**	**-**	**324,758.26**

NORTH-WESTERN													
District	January	February	March	April	May	June	July	August	September	October	November	December	Total
Mwinilunga	2,723.00	477.00	1,902.50	1,134.00	400.00	2,029.50	1,984.50	1,984.50	6,025.00	3,539.00	-		22,199.00
Ikelenge	121.50	108.00	542.25	184.50	265.50	200.70	238.50	351.90	711.00	202.50	148.50		3,074.85
Solwezi	4,063.50	4,916.50	945.00	4,335.30	2,001.00	5,294.00	9,565.00	2,557.70	3,508.40	2,065.50	2,708.00		41,959.90
Kasempa	8,173.50	7,267.50	9,869.70	1,684.50	10,362.48	1,927.50	8,520.00	1,684.00	10,043.82	31,306.50	40,021.19		130,860.69
Mufumbwe	24,327.00	11,428.00	1,422.00	18,564.58	1,233.00	32,010.40	1,693.50	80,459.54	79,916.15	58,340.25	78,821.25		388,215.67
Manyinga	65,182.50	39,758.70	23,611.50	36,912.00	38,318.50	31,117.00	128,618.12	92,386.00	52,599.00	133,047.90	111,961.50		753,512.72
Kabompo	19,133.40	5,616.00	13,199.70	26,887.00	23,941.95	88,249.25	14,496.00	10,895.50	115,440.00	10,770.00	123,728.00		452,356.80
Zambezi	2,588.85	3,897.81	22,035.77	17,693.50	56,320.78	61,883.22	85,216.69	68,421.69	63,446.76	25,208.06	70,545.53		477,258.66
Chavuma	189.00	730.50	1,252.50	94.50	229.50	361.50	429.00	1,260.00	2,436.08	469.50	1,179.00		8,631.08
PFO	-	-	-	-	-	-	-	-		-	-		-
Total	**126,502.25**	**74,200.01**	**74,780.92**	**107,489.88**	**133,072.71**	**223,073.07**	**250,761.31**	**260,000.83**	**334,126.21**	**264,949.21**	**429,112.97**	**-**	**2,278,069.37**
LUSAKA													
Province	January	February	March	April	May	June	July	August	September	October	November	December	Total
Chongwe	2,430.00	2,025.00	2,808.00	4,560.00	2,835.00	4,185.00	7,007.00	4,185.00	5,130.00	1,080.00	2,430.00		38,675.00
Rufunsa/Chinyun	7,903.00	9,126.00	12,082.52	12,042.00	11,880.00	8,775.00	10,935.00	18,015.00	10,665.00	59,031.00	8,235.00		168,689.52
Chilanga	3,335.00	5,022.00	4,950.00	7,533.00	9,205.00	10,131.50	7,006.50	10,530.00	6,593.25	9,490.00	8,006.50		81,802.75
Sibuyunji	21,699.50	10,017.00	11,785.50	12,679.50	18,240.50	14,798.00	13,579.50	18,621.00	12,355.50	16,947.00	17,113.50		167,836.50
Kanakantapa	-	540.00	2,295.00	1,890.00	1,210.00	1,620.00	2,160.00	6,075.00	675.00	2,155.00	540.00		19,160.00
Kafue	-	-		405.00	405.00	850.50	810.00	824.00		256.50			3,551.00
Luangwa	140.00	-		-	-		-	369.00		-			509.00
Chirundu	-	-	3,500.00		405.00	283.50	-	20,270.00	30,405.00	2,700.00			57,563.50
L/South	3,210.00	5,045.00		9,310.00	12,832.00	15,984.00	10,752.00	6,360.00	9,900.00	20,888.00	29,767.00		124,048.00
L/North	2,580.00	5,214.00	58,510.00	18,510.00	8,190.00	19,404.00	18,000.00	14,190.00	11,520.00	4,550.00	31,752.00		192,420.00
Total	**41,297.50**	**36,989.00**	**95,931.02**	**66,929.50**	**65,202.50**	**76,031.50**	**70,250.00**	**99,439.00**	**87,243.75**	**117,097.50**	**97,844.00**	**-**	**854,255.27**
CENTRAL													
District	January	February	March	April	May	June	July	August	September	October	November	December	Total
Mumbwa	23,001.00	29,037.00	12,936.00	24,075.00	19,291.00	24,025.00	20,295.00	26,520.00	18,043.50	35,193.00	33,657.00	19,354.00	285,427.50
Kabwe	10,003.50	4,536.00	19,466.50	8,019.00	8,289.00	9,639.00	4,131.00	9,563.00	1,809.00	1,215.00	3,172.50	2,351.50	82,195.00
Chibombo	4,762.00	3,040.00	7,277.00	8,572.50	6,560.00	3,995.00	5,400.00	3,590.00	4,320.00	3,666.00	28,323.00	4,050.00	83,555.50
Kapiri	7,627.50	1,215.00	7,129.50	3,307.50	2,956.50	4,063.50	3,807.00	270.00	4,439.00	2,971.50	2,767.50	12,343.50	52,898.00
Mkushi	49,185.00	6,561.00	41,538.00	15,819.00	48,144.00	41,150.00	57,859.50	60,577.50	24,267.00	33,079.00	46,046.00	29,769.00	453,995.00
Serenje	41,847.00	4,131.00	13,656.00	-	87,837.00	124,698.00	115,021.50	228,964.00	212,067.00	139,050.00	275,256.00	216,235.50	1,458,763.00
Itezetezi	2,020.50	270.00	2,146.00	499.50	32,890.50	49,966.50	29,758.50	96,882.00	10,351.50	23,101.00	2,438.00	1,237.00	251,561.00
Chisamba	117,078.00	55,738.50	118,433.25	103,671.00	101,316.00	149,791.50	133,151.50	45,616.50	38,506.50	42,853.00	34,282.50	35,077.50	975,515.75
Luano	-	-	-	-	-				-		24,120.00	74,164.00	98,284.00
Chitambo	1,351.00	-	1,215.00	-	-	8,995.50	8,505.00	4,050.00	10,930.00	6,880.00	820.00	1,620.00	44,366.50
Ngabwe	-	-	-	-	-	-	-	-	-	-	-	-	-
PFO	-	-	-	-	-	-	-	-		15,000.00	-	47,000.00	62,000.00
Total	**256,875.50**	**104,528.50**	**223,797.25**	**163,963.50**	**307,284.00**	**416,324.00**	**377,929.00**	**476,033.00**	**324,733.50**	**303,008.50**	**450,882.50**	**443,202.00**	**3,848,561.25**

MUCHINGA													
District	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**Total**
Chama	690.00	6,375.00	6,540.00	50.00		345.00	245.50	202.50	2,242.20				16,690.20
Chinsali	1,058.70	3,037.50	3,720.00	23,920.51	23,635.50	43,487.50	96,131.50	208,558.50	49,194.00				452,743.71
Isoka	4,833.00	1,431.00	-	4,521.00	2,376.00	7,641.00	6,075.00	5,589.00	3,132.00				35,598.00
Mpika	2,160.00	4,743.00	1,215.00	2,268.00	5,877.00	-	11,462.00	1,084.50	20,997.00				49,806.50
Nakonde	-	150.00	1,370.00	400.00	-	3,198.00	700.00	-	800.00				6,618.00
Mafinga	-	-	363.50	135.00	-	500.00	610.00	405.00	135.00				2,148.50
Shiwang'andu	-		405.00	-	-	-	405.00	-	405.00				1,215.00
PFO			-										-
Total	**8,741.70**	**15,736.50**	**13,613.50**	**31,294.51**	**31,888.50**	**55,171.50**	**115,629.00**	**215,839.50**	**76,905.20**	**-**	**-**	**-**	**564,819.91**
											GRAND TOTAL		**18,391,546.05**

Source: Forestry Department

Timber and non-timber forest products revenues10

i. Estimates of per capita incomes from trade in non-timber forest products have been estimated to range from US$55.41 and US$61.86 annually.
ii. The annual per household revenues have been estimated at US$724 for NTFPs whilst income from timber has been estimated at US$1,112. These estimates are based on market values and not the total value of household consumption. Per capita revenues from honey and bee wax, exceed ZMK 1,734,000 which higher than that of charcoal (ZMK 663,250).
iii. Estimates of the forest sector contribution to GVA in 2006 was 5.2% derived primarily from the contribution of timber.
iv. The cost of managing forests to generate this GVA is largely unknown.

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[10] Ng’andwe *et al.* 2015.

B2. Wildlife Sector

Hunting Revenues For CRBs & DNPW (*Equivalent to what DNPW collected as CRB=50% & DNPW=50% of hunting revenues*)

		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	TOTAL
06-300	Mwanya CRB	240,302.97	406,128.35	406,103.95	489,514.20	601,930.46	608,233.54	3,200.00	8,597.50	426,675.00	912,532.75	**4,103,218.71**
06-301	Sesheke West CRB	12,105.00	149,049.92	-	1,305.16	-	-	-	-	-	-	**162,460.08**
06-302	West Zambezi - Upper	51,930.30	-	1,250.10	-	-	-	-	-	-	-	**53,180.40**
06-303	Mubambe CRB	201,759.47	194,243.55	319,079.13	225,635.53	335,587.09	281,962.80	-	-	16,983.23	444,928.89	**2,020,179.67**
06-304	Moomba CRB	217,795.17	275,858.51	337,468.75	365,781.88	283,320.77	516,410.35	76,749.01	322,768.00	21,098.28	903,596.70	**3,320,847.42**
06-305	Chifunda CRB	220,863.27	252,163.66	305,657.55	246,250.78	436,462.19	418,071.20	-	5,301.00	153,951.90	1,139,353.69	**3,178,075.23**
06-306	Nabwalya CRB	408,281.66	540,840.68	724,521.14	737,239.94	1,242,137.86	1,030,641.76	-	-	271,209.06	1,765,047.70	**6,719,919.78**
06-307	Sandwe CRB	30,644.42	104,771.82	33,708.52	23,854.62	33,756.73	55,678.95	-	-	7,709.40	4,509.83	**294,634.28**
06-308	Nsama CRB	101,627.40	203,346.08	99,974.00	144,465.13	178,209.51	311,437.73	108,778.48	186,500.91	60,204.55	258,240.45	**1,652,784.24**
06-309	Chisomo CRB	1,905.00	33,120.64	16,468.27	23,344.83	11,180.64	-	-	35,044.96	94,758.58	17,136.38	**232,959.28**
06-310	Lundu CRB	125,010.44	142,490.67	194,075.63	166,437.32	122,884.42	182,284.11	17,800.00	-	29,185.15	29,449.58	**1,009,617.30**
06-311	Chikwa CRB	203,180.79	215,479.36	297,796.32	235,428.48	269,486.30	470,159.98	1,040.00	-	341,895.55	235,428.48	**2,269,895.26**
06-312	Nyawa CRB	33,233.00	56,976.09	1,819.17	680.38	54,615.05	59,307.61	40,496.83	6,750.00	5,156.63	158,490.16	**417,524.92**
06-313	Siachitema CRB	33,233.00	56,976.09	1,819.17	680.38	47,762.93	67,531.67	51,635.45	-	5,156.63	158,490.16	**423,285.48**
06-314	Nyalugwe CRB	30,602.70	54,401.23	23,879.32	55,381.55	29,976.53	52,181.40	-	-	24,882.23	-	**271,304.95**
06-315	Luembe CRB	13,351.50	63,420.71	19,441.60	160,328.43	355,947.30	361,557.65	162,280.80	-	92,993.90	424,596.38	**1,653,918.26**
06-316	Musungwa CRB	75,412.24	110,497.20	130,249.21	104,401.99	180,073.62	137,345.40	2,500.00	-	21,108.11	249,293.46	**1,010,881.23**
06-317	Shezongo CRB	75,412.24	110,497.20	130,249.21	104,401.99	180,073.62	128,345.40	-	-	21,108.11	249,293.46	**999,381.23**
06-318	Muwezwa CRB	92,837.60	113,602.07	124,770.62	60,019.22	136,553.79	69,547.26	5,742.00	-	39,736.02	32,667.40	**675,475.98**
06-319	Shakumbila CRB	92,837.60	114,911.82	124,770.62	50,019.22	154,101.68	87,095.14	5,742.00	-	39,736.02	32,667.40	**701,881.49**
06-320	Choongo CRB	29,774.86	18,349.60	18,607.46	12,765.00	44,058.96	44,612.88	2,296.80	-	21,545.80	15,379.61	**207,390.96**
06-321	Hamusonde CRB	29,774.86	18,349.60	18,607.46	12,765.00	42,343.86	41,955.85	2,296.80	-	21,545.80	15,379.61	**203,018.83**
06-322	Mungaila CRB	29,774.86	18,349.60	18,607.46	3,311.44	34,625.90	34,237.89	2,296.80	-	21,545.80	-	**162,749.76**
06-323	Nalubamba CRB	29,774.86	18,349.60	18,607.46	12,765.00	42,343.86	41,955.85	2,296.80	-	21,545.80	15,379.61	**203,018.83**
06-324	Mulendema CRB	102,850.51	128,639.22	144,186.26	134,790.76	402,969.62	194,051.49	-	145,623.30	21,819.93	124,012.03	**1,398,943.12**
06-325	Chibuluma crb	102,850.51	128,639.22	144,186.26	134,790.76	402,969.62	194,051.49	-	145,623.30	21,819.93	124,012.03	**1,398,943.12**
06-326	Kabulwebulwe CRB	102,850.51	128,639.22	144,186.26	134,790.76	402,969.62	194,051.49	-	145,623.30	21,819.93	124,012.03	**1,398,943.12**
06-327	Kazembe CRB	191,543.93	290,422.36	346,646.19	305,009.40	398,906.10	529,634.05	-	1,510.50	444,007.63	693,571.73	**3,201,251.86**
06-328	Chitungulu CRB	207,945.93	304,512.56	367,499.28	336,180.38	383,786.67	468,710.20	2,339.00	2,374.00	49,774.75	796,528.44	**2,919,651.19**
06-329	Nsefu CRB	118,585.11	148,595.07	123,119.38	123,244.64	165,336.71	57,850.51	-	-	22,790.18	217,081.65	**976,603.25**
06-330	Jumbe CRB	118,585.11	148,595.07	123,119.38	123,244.64	165,336.71	57,850.51	-	-	22,790.18	217,081.65	**976,603.25**
06-331	Mnkhanya CRB	118,585.11	115,660.13	123,119.38	123,244.64	263,297.91	57,850.51	-	-	22,790.18	217,081.65	**1,041,629.51**
06-332	Msolo CRB	99,919.50	-	-	61,070.75	3,555.77	-	-	-	-	-	**164,546.02**
06-333	Malama CRB	186,826.21	246,519.95	273,198.88	254,494.14	429,391.60	411,213.65	-	-	251,457.03	401,215.63	**2,454,317.07**
06-334	Kakumbi CRB	186,826.21	246,519.95	273,198.88	257,994.14	429,391.60	411,213.65	-	3,990.00	251,457.03	401,215.63	**2,461,807.07**
06-335	Shikabeta CRB	8,521.50	2,130.38	111,224.00	-	43,290.18	-	-	1,648.44	-	-	**166,814.50**
06-336	Mboloma CRB	-	-	-	-	-	-	-	-	-	-	**-**
06-337	Mbosha	-	-	-	500.00	-	-	-	-	-	-	**500.00**
06-338	Chilyabufu CRB	25,542.71	26,720.43	31,845.85	34,689.83	50,007.89	35,310.72	-	408,400.00	14,072.08	140,416.17	**767,005.66**
06-339	Kaingu CRB	26,121.81	28,455.92	31,572.27	43,573.83	49,196.23	34,499.05	-	-	14,072.08	140,416.17	**367,907.34**
06-340	Shimbizi	23,130.98	26,622.86	31,572.27	43,573.83	49,196.23	34,499.05	-	-	14,072.08	140,416.17	**363,083.45**
06-341	Chiundaponde	91,635.75	68,606.75	98,606.48	18,369.04	-	66,491.09	21,023.20	38,401.35	-	-	**403,133.67**
06-342	Kopa CRB	73,313.60	54,885.40	78,885.19	15,895.23	-	53,181.28	17,364.16	30,721.08	-	-	**324,245.95**
06-343	Kabinga	18,327.15	13,721.35	19,721.30	2,091.48	-	13,290.67	3,659.04	7,680.27	-	-	**78,491.26**
06-344	Kasempa CRB	402,185.90	422,125.70	522,345.24	512,643.26	710,493.31	743,110.80	-	59,698.00	19,768.13	1,180,491.15	**4,572,861.46**
06-345	Bwalya Mponda CRB	45,817.88	34,303.38	70,470.72	9,934.52	7,756.37	33,235.89	10,511.60	19,200.67	-	-	**231,231.01**
06-346	Nsamba CRB	45,817.88	34,303.38	49,303.24	9,934.52	7,756.37	33,490.44	10,511.60	19,200.67	-	-	**210,318.09**
06-347	Kalasa Mukoso CRB	-	-	-	-	14,356.50	-	-	-	-	-	**14,356.50**
06-348	Mburuma CRB	62,051.28	50,929.03	55,268.13	13,805.58	64,856.25	65,510.95	19,404.00	14,458.39	18,236.30	6,389.75	**370,909.65**
06-349	Mphuka CRB	62,051.28	50,929.03	55,268.13	13,805.58	71,183.77	65,510.95	19,404.00	14,458.39	18,236.30	33,862.39	**404,709.81**
06-350	Mpanshya CRB	62,051.28	50,929.03	55,268.13	13,805.58	99,769.07	128,084.15	19,404.00	14,458.39	18,236.30	33,862.39	**495,868.30**
06-351	Chiawa CRB	170,821.98	284,122.46	189,526.47	242,821.14	328,087.47	306,774.40	34,210.00	6,180.00	-	266,000.40	**1,828,544.31**
06-352	Mwanachingwala CRI	29,774.86	18,349.60	18,607.46	3,311.44	34,625.90	34,237.89	2,296.80	-	21,545.80	15,379.61	**178,129.36**
06-353	Chikanta CRB	39.15	-	-	-	-	-	-	14,250.00	-	-	**14,289.15**
06-354	Chibwika Ntambo CR	-	-	-	-	-	-	12,785.47	11,060.00	-	-	**23,845.47**
06-355	Mukungule CRB	94,427.10	87,615.90	42,944.00	88,006.73	71,490.85	67,479.30	23,443.20	103,548.03	9,936.10	203,335.18	**792,226.38**
06-356	Chizera CRB	9,019.85	1,162.38	8,075.66	-	-	-	5,385.60	-	-	-	**23,643.49**
06-357	Kambombo CRB	46,780.88	37,518.98	89,013.20	103,300.75	98,225.25	89,090.40	10,480.80	798.00	-	-	**475,208.25**
06-358	Tembwe CRB	46,780.88	37,518.98	89,013.20	103,300.75	98,225.25	207,107.03	80,229.60	131,887.73	-	-	**794,063.41**
06-359	Kahare CRB	-	-	-	-	30,305.00	-	-	87,281.00	-	295,955.65	**413,541.65**
06-360	Lewanika CRB	-	-	-	-	2,600.37	-	-	24,764.20	-	-	**27,364.57**
06-361	Mufunta CRB	-	-	-	-	84,864.00	20,780.19	9,310.79	-	-	-	**114,954.98**
Total		**5,263,007.45**	**6,489,867.65**	**7,078,523.19**	**6,498,995.49**	**10,181,631.28**	**9,608,716.18**	**786,914.63**	**2,017,801.38**	**3,038,433.44**	**12,834,199.13**	**63,798,089.80**

Revenues generated by national parks increased from ZMK 15.6 million (2000) by 67% to ZMK 47.8 million in 2012. Income from trophy and hunting declined from ZMK26.0 million to ZMK6.3 million from January to December 2013

B3. Tourism Revenues

B3.1. Economic contribution of travel and tourism: real 2013 prices

(ZMKbn, real 2013 prices)	2008	2009	2010	2011	2012	2013	2014 (Estimate)	2024 (Forecast)
1. Visitor exports	1005.5	920.3	1041.4	1214.3	1287.1	1268.8	1234.4	1806.7
Domestic expenditure 2. (includes government individual spending)	2891.7	2859.1	2709.5	2695.5	2987.7	3318.3	3690.4	7981.8
2. Internal tourism consumption (= 1 + 2)	3897.2	3779.3	3750.9	3909.8	4274.8	4587.1	4924.8	9788.4
4. Purchases by tourism providers, including imported goods (supply chain)	-1,698.9	-1,610.0	-1,600.3	-1,732.0	-1,910.9	-2,032.1	-2,163.3	-4,022.9
5. Direct contribution of Travel & Tourism to GDP (= 3 + 4)	2,198.3	2,169.3	2,150.7	2,177.8	2,363.9	2,555.0	2,761.5	5,765.5
Other final impacts (indirect & induced) 6. Domestic supply chain	1,313.2	1,296.4	1,285.3	1,301.6	1,412.8	1,527.0	1,650.4	3,445.7
7. Capital investment	284.1	336.4	395.6	350.9	360.0	380.9	410.7	868.9
8. Government collective spending	321.4	347.4	339.9	363.5	391.4	425.3	460.1	949.1
9. Imported goods from indirect spending	-134.4	-91.1	-122.6	-145.5	-161.4	-164.3	-167.5	-188.0
10. Induced	958.3	1,012.3	981.8	930.1	1,016.6	1,116.4	1,228.6	2,939.7
11. Total contribution of Travel & Tourism to GDP (= 5 + 6 + 7 + 8 + 9 + 10)	4,940.9	5,070.7	5,030.7	4,978.4	5,383.2	5,840.3	6,343.8	13,781
Employment impacts ('000) 12. Direct contribution of Travel & Tourism to employment	21.0	21.4	21.2	22.3	22.9	23.3	23.4	37.9
13. Total contribution of Travel & Tourism to employment	62.0	64.6	62.3	61.1	65.4	66.6	67.6	94.7
Other indicators 14. Expenditure on outbound travel	285.7	334.0	406.1	446.2	478.5	496.6	514.4	664.4

Source: Turner, R. 2014. Travel and Tourism: Economic impact on Zambia. World Travel & Tourism Council. London.

B3.2. Revenues from Tourism 2012-2015

Type of Tourism Earnings	2012		2013		2014		2015	
	ZMW	US$	ZMW	US$	ZMW	US$	ZMW	US$
Accommodation Establishments	2,086,454,342.90	405,136,765.61	2,726,293,066.80	495,689,648.51				
Hunting Concessions	21,774,992.55	4,228,153.89	1,883,956.00	342,537.45				
Heritage Site Visits	-	-	8,276,088.96	1,504,743.45				
Park Fees	6,561,609.30	1,274,098.89	7,221,588.19	1,313,016.03				
Visits to Museums (Entry Fees)	327,302.00	63,553.79	336,925.00	61,259.09				
Car Hire	72,576,000.00	14,092,427.18	95,760,000.00	17,410,909.09				
Restaurants	10,978,878.00	2,131,820.97	15,779,520.00	2,869,003.64				
Travel Agents	69,888,000.00	13,570,485.44	104,544,000.00	19,008,000.00				
Other Tourism Fees	2,910,938.12	565,230.70	11,058,306.24	2,010,601.13				
Total	**2,271,472,062.87**	**441,062,536.48**	**2,971,153,451.19**	**540,209,718.40**	**3,945,710,713.08**	**616,517,298.92**	**4,408,160,075.42**	**401,106,467.28**
Exchange Rate	**US$1=K5.15**		**US$1=5.50**		**US$1=6.40**		**US$1=10.99**	

B4. Fisheries and Livestock Revenues (2016; January-March 2017)

B4.1 Department of Fisheries Revenues (2015-2016)

The revenues are from fingerling sells, fishing licence, Certificate of Origin, fish imports and exports per province

2015 and 2016 Revenues for Department of Fisheries

Province	2015	2016
	Amount (ZMW)	Amount (ZMW)
Southern	83,914.88	89,854.18
North-Western	0.00	43,925.00
Lusaka	56,230.00	122,399.25
Western	37,319.00	66,492.00
Muchinga	24,396.50	5,573.00
Northern	100,440.82	144,183.70
Luapula	182,550.79	131,146.50
Eastern	5,434.80	30,806.38
Copperbelt	23,364.00	49,060.50
Central	31,137.75	63,917.00
Chilanga- Hq	1,381,537.43	1,909,844.49
Total	**1,926,325.97**	**2,657,202.00**

B4.2 2016 Department of Veterinary Services Revenues

A total of K2,241,007.06 was collected as revenue from the various services the department offers that included stock movement permits, slaughter permits, sanitary inspection charges, import and export permit fees, vaccine sales and diagnostic fees. This figure shows an increase in revenue collection of 1.01% from the previous year. The figures presented are underestimated as some districts and provinces did not submit their figures by the time of reporting.

2016 Revenue collection in the Department of Veterinary Services

Province	Revenue type	Amount (Kwacha)
Central	stock movement permits	62,150.20
Copperbelt	stock movement permits	26,580.00
Eastern	stock movement permits	62,036.50
Lusaka	stock movement permits/ Export permits	222,676.00
Luapula	stock movement permits/slaughter permit	300.00
Muchinga	stock movement permits	2,018
Northern	stock movement permits	67,633.00
North-western	stock movement permits/ Slaughters inspections	29,106.00
Southern	stock movement permits/ pregnancy diagnosis, cleaning charges	155,499.40
Western		
CVRI	Vaccine sales and diagnostic services	755,581.96
NALEIC	Issuance of import permits	857,426.00
Headquarters	Brands registration	
Total revenue collected		2,241,007.06

In September 2016, the Ministry of Finance called for a meeting to review Non Tax Revenue from all Government agencies to guide revenue collection for the 2017 budget. The department revised its fees as this had been

outstanding for a long time and the new fee structure was published on 30th December 2016 through a Government Gazette as Statutory Instrument number 105 of 2016 and became effective on 1st January 2017.

B4.3 January-March 2017: Department of Veterinary Services Revenues

A total of K1,355,839 was collected as revenue by the department during the period under review. The amount of revenue collected is higher as information from some provinces and sections was unavailable at the time of compiling statistics.

2017 (1st quarter) Revenue collection in the Department of Veterinary Services

Province	Revenue type	Amount (Kwacha)
Central	stock movement permits	-
Copperbelt	stock movement permits	-
Eastern	stock movement permits	18,375.00
Lusaka	stock movement permits/ Export permits	92,502.00
Luapula	stock movement permits/slaughter permit	1,250
Muchinga	stock movement permits	5,440
Northern	stock movement permits	166,240
North-western	stock movement permits/ Slaughters inspections	38,361.00
Southern	stock movement permits/ pregnancy diagnosis, cleaning charges	85,914
Western	stock movement permits	-
CVRI	Vaccine sales and diagnostic services	154,425.00
NALEIC	Issuance of import permits	793,332.00
Headquarters	Brands registration	-
Total		**1,355,839**

C. Detailed list and description of each government subsidy reviewed

C1. Key Government Subsidy

Sector	Type of Subsidy	Description (% of budget)	Likely impact
Agriculture	Farmer Input Support Programme (FISP)	Subsidy to support small-scale farmers to access farm inputs particularly fertilisers. In 2017, 4.4% (K2,856 million) has been allocated to FISP. Environmental protection has been allocated 1% (K616 million).	Overloading of croplands & pollution from synthetic fertilisers & pesticides; expansion of agriculture into forested lands

Subsidy	Intervention
Subsidies in agriculture – FISP (Farmer Input Support Programme)	• Removal of subsidies • Subsidy accompanied with agriculture intensification as opposed to extensification. • Appropriate agrochemical management

Budgetary allocation to FISP

	FISP	Fisheries Development Fund	Livestock	Irrigation	Tourism	Environmental Protection	Agric. Forestry and Fisheries	Recreation, culture & religion
2009	435		70.7	56.5	77.6	117.3	434.1	183.2
2010	430				120.8	148.5	709	97.5
2011	485				63.3	121.3	581.6	108
2012	500				52.6	31.8	873	136.9
2013	500				63.8	74.2	1065.4	252.3
2014	500					165.2		298.9
2015	1083.17					174.96		323.63
2016	1000	5				151.4		261.5
2017	2856.4					616.47	554	323.5

2009-2013 = in Billion Kwacha; 2014-2017 = in Million Kwacha

C2. Other Subsidies with Potential Impact on Biodiversity

Sector	Type of Subsidy	Description (% of budget)	Likely impact
Energy	Electricity subsidy	Subsidy allocated to petroleum products; "*Minister of Energy David Mabumba says that government has been subsidizing over $500 million annually….. ZESCO actually spends more than they generate…. ZESCO imports electricity at $0.13/kW but sells at $0.03/kW forcing government to subsidies this difference.*"[11]	ZESCO recently increased electricity tariffs by more than 50%. Revenues arising from removal of subsidy could be invested in protecting catchments contributing to environmental flows.

[11] https://www.lusakatimes.com/2017/05/07/tarrifs-will-increase-government-subsidizing-500-million-annually-energy-ministy/. Accessed 09.05.2017

	Fuel subsidy	Estimates of subsidies in 2012-2013 reached over $30 m; in 2015, government subsidy equivalent to 40% of cost of feedstock.	Increased consumption of fossil fuels, public & ZESCO leads to pollution of environment through releases of sulphur.
Fisheries	Fishing vessel import duty subsidy	Allocated to importers of fishing vessels & equipment primarily for commercial fishing	Over-harvesting of fish & negative impact on effective breeding populations

The Public Service MicroFinance is also an example of a subsidy that encourages use of equipment that leads to clearing of land. This initiative can be considered a having the potential to affect biodiversity because it leads farmers to clear large tracts of land for agriculture due to availability of equipment or machinery.

D. Complete listing of all economic valuation studies

i. Musumali, M.M., Heck, S., Husken, S.M.C. and M. Wishart. n.d. Fisheris in Zambia: An undervalued contributor to poverty reduction. Policy Brief 1913. The World Bank/WorldFish Center

ii. UNEP. 2015. Benefits of forest ecosystems in Zambia and the role of REDD+ in a green economy transformation. DEPI, UNEP

iii. Turpie, J., Smith, B., Emerton, L. and J. Barnes. 1999. *The Economic Value of the Zambezi Basin Wetlands.* Harare,

iv. IUCN - The World Conservation Union, Regional Office for Southern Africa

v. World Tourism Organization. 2014. *Towards Measuring the Economic Value of Wildlife Watching Tourism in Africa – Briefing Paper,* UNWTO, Madrid

vi. ZDA. 2013. Sub-sector profile: mineral beneficiation industrial minerals. Zambia Development Agency. Lusaka.

vii. World Bank. 2009. Zambia: Managing water for sustainable growth and poverty reduction. A country Water Resources Assistant Strategy for Zambia. August 2009. The World Bank Water Resources Management Africa Region. Washington DC.

E. Summary description of all current finance solutions

1 Payments for ecosystem services

A study by the Ministry of Environment and Natural Resources (now MLNR) undertaken by WWF identified 3 mechanisms for possible piloting in Zambia: payments for ecosystem services, certification and conservation concessions. Do not require any changes in the legislation (PES, certification) or had been tested before (certification) and, concessions (hunting, tourism & timber) are already in use (concessions – hunting, tourism and timber).

2 Carbon Tax / Green Tax

There is a lack of an enabling legal and policy framework for the implementation of budget tracking of Carbon Taxes. One of the reforms is to allow ZEMA collect Carbon Tax currently collected by the Road Transport and Safety Agency (RTSA) as inland tax revenue while the Zambia Revenue Authority (ZRA) collects at importation or at entry point. This may enable its application towards biodiversity management. Alternatively, it can be classified as a *conservation tax* for it to be more specific and applied to conservation endeavors.

3 Green Treasury Bill

Establishment of a *Green Treasury Bill* intended specifically to raise financing for biodiversity. The bill can be structured in such a way that it is a more attractive investment with good returns for the investor.

4 Green markets through agricultural trade and value chains

Green markets have the potential to generate funds for biodiversity conservation through promotion of certification and providing a premium price for produce from stakeholders engaged in biodiversity conservation. COMACO is an example of Green markets while organic farming is another potential area.

5 Climate finance

Zambia is about to complete the REDD readiness programme once the design of a safeguards information system (SIS) – is met. Climate financing is therefore a critical source of funding for biodiversity conservation as it is one of the key components under REDD+.

6 Environmental Protection Fund

Environmental Protection Fund (EPF) under Mines & Minerals Act of 2015 and can raise up to $50 m from a single mine per year. No expenditures are made from accrued funds. Revise the Investment Act to invest these funds in trusts and bonds, with earnings channelled to biodiversity management.

7 Issuance of Tenders for Private Sector Investments in Tourism Facilities

There are currently speculative private sector investments estimated at more than $20 million earmarked for the Kafue National Park and other PAs. Investments in PAs are largely dependent on government identifying and tendering tourism investments in the key national parks (South Luangwa and Kafue NP).

F. Detailed list of all stakeholders identified and consulted throughout the PIR

Sector	Government	Local Organisations	International Organisations	Embassies
Agriculture		Zambia Sugar, Zampalm, Zambeef, ZAFFICO		
Civil society		ZCCN, WECSZ, COMACO, BirdLife Zambia, Zambia CBNRM Forum,	WWF, TNC, CIFOR, CRBs	
Cooperating Partners			World Bank, COMESA	USAID, Finnish Embassy, Embassy of Japan
Environment / Biodiversity Management / land / water	Min. Agric., ZEMA, Dept. Fisheries, DNPW, Forestry Dept., Min. Land, WARMA			
Financial Organisations / Institutions		Bank of Zambia, Development Bank of Zambia, Indo-Zambia Bank, ZANACO	Access Bank, Barclays Bank, EcoBank, FNB, Standard Bank, Stanbic Bank	
Insurance entities		ZSIC, Madison, Professional Insurance, Pensions and Insurance Authority, NAPSA		
Mining entities			Mopani, KCM, Kansanshi (FQM), Lumwana	
Revenue collection & administration	Min. of Finance			
	Lusaka CC, Kabwe CC, Ndola CC and Kitwe CC			

G. Glossary of Terms

Biodiversity: Biological diversity means the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems (UNDP, 2016).

Biodiversity Finance: Biodiversity finance is the practice of raising and managing capital and using financial incentives to support sustainable biodiversity management. It includes private and public financial resources used to conserve biodiversity, investments in commercial activities that produce positive biodiversity outcomes and the value of the transactions in biodiversity-related markets such as habitat banking (www.biodiversityfinance.net/about-biofin/what-biodiveristy-finance).

Carbon Market: A popular term for a trading system through which countries may buy or sell units of greenhouse gas emissions (not just carbon dioxide) in an effort to meet their national limits on emissions, either under the Kyoto Protocol or under other agreements, such as that among member states of the European Union. The term comes from the fact that carbon dioxide is the predominant greenhouse gas and other gases are measured in units called 'carbon-dioxide equivalents' (IPIECA, 2007).

Carbon Sequestration: The storage of carbon or carbon dioxide in the forests, soils, ocean, or underground in depleted oil and gas reservoirs, coal seams and saline aquifers. Examples include: the separation and storage of CO2 from flue gases or the processing of fossil fuels to produce H2; and the direct removal of CO2 from the atmosphere through land-use change, afforestation, reforestation, ocean fertilization, and agricultural practices to enhance soil carbon (IPIECA, 2007).

Carbon Sinks: Natural or man-made systems that absorb carbon dioxide from the atmosphere and store them. Trees, plants and the oceans all absorb CO2 and, therefore, are carbon sinks (IPIECA, 2007).

Carbon Stock: The quantity of carbon in a pool (Aalde *et al.*, 2006).

Carbon Tax: A tax placed on carbon emissions. It is similar to a BTU tax, except that the tax rate is based on the fuel's carbon content (IPIECA, 2007).

Climate: The average and statistics of variations of weather in a geographical region. The averaging period is typically several decades (IPIECA, 2007).

Climate Change: (UNFCCC definition) A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability over comparable time periods (IPIECA, 2007).

Climate Finance: Climate finance aims at reducing emissions, and enhancing sinks of greenhouse gases and aims at reducing vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate change impacts.

Conference of the Parties: The Conference of the Parties (to the UNFCCC) is the supreme body of the Convention, comprised of countries that have ratified or acceded to the UNFCCC. The first session of the COP (COP-1) was held in Berlin in 1995, and sessions have been held annually since then (IPIECA, 2007).

Corporate Social Responsibility: The responsibility of an organization for the impacts of its decisions and activities on society and the environment (UNDP, 2016).

Deforestation: The direct human-induced conversion of forested land to non-forested land (Aalde *et al*., 2006). The removal of forest stands by cutting and burning to provide land for agricultural purposes, residential or industrial building sites, roads, etc., or by harvesting the trees for building materials or fuel (IPIECA, 2007).

Drivers, pressures, state, impact, responses: A causal framework for describing the interactions between society and the environment (UNDP, 2016).

Ecosystem Service: Benefits people receive from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services, such as nutrient cycling, that maintain the conditions for life on Earth (UNDP, 2016).

Finance Solution: Described by a source(s) of finance, the lead agent or the intermediary(ies), the instrument(s) or mechanisms used and the desired finance result (UNDP, 2016).

Fiscal Policy: Government financial actions and norms including both revenues, such as taxes, and expenditures (UNDP, 2016).

Forest: Forest is a minimum area of land of 0.05 – 1.0 hectares with tree crown cover (or equivalent stocking level) of more than 10 – 30 per cent with trees with the potential to reach a minimum height of 2 – 5 metres at maturity in situ. A forest may consist either of closed forest formations where trees of various storeys and undergrowth cover a high portion of the ground or open forest. Young natural stands and all plantations which have yet to reach a crown density of 10 – 30 per cent or tree height of 2 – 5 metres are included under forest, as are areas normally forming part of the forest area which are temporarily unstocked as a result of human intervention such as harvesting or natural causes but which are expected to revert to forest (Aalde *et al*., 2006).

Forest management: A system of practices for stewardship and use of forest land aimed at fulfilling relevant ecological (including biological diversity), economic and social functions of the forest in a sustainable manner (Aalde *et al*., 2006).

Forest plantation: Forest stands established by planting or/and seeding in the process of afforestation or reforestation. They are either of introduced species (all planted stands), or intensively managed stands of indigenous species, which meet all the following criteria: one or two species at planting, even age class, and regular spacing (Aalde *et al*., 2006).

Green Growth: Fostering economic growth and development while ensuring that natural assets continue to provide the resources and environmental services on which our well-being relies (UNDP, 2016).

Payment for Ecosystem Services: A voluntary transaction whereby a well-defined ecosystem service, or a land-use likely to secure that service, is being bought by at least one buyer from at least one provider, if, and only if, the provider secures the provision of the service (UNDP, 2016).

Perverse subsidies: Subsidies exerting environmental and economic impacts over a long period; detrimental to environmental values. A *subsidy is a government expenditure that makes a resource appear cheaper to final consumers that its full economic cost.* (IUCN – http:economics.iucn.org)

Poverty: Categorised as absolute (*Specify the amount of money that is required to meet a minimum standard of living, such as basic nutritional requirements and non-food necessities*) and relative poverty (*Describes an individual or group's wealth relative to that of other individuals in the group under study*) (CSO, 2012).

Protected Area: Physical preservation and/or conservation of important stocks of natural, cultural and social capital, yielding flows of economically valuable goods and services that benefit society, secure livelihoods, and contribute to the achievement of Sustainable Development (UNDP, 2016).

Stakeholder: The public, including individuals, groups or communities, affected, or likely to be affected, by the proposed project activity or programme of activities, or actions leading to the implementation of such an activity (UNFCCC, 2017).

Subsidies: Current unrequited payments that government units, including non-resident government units, make to enterprises on the basis of the levels of their production activities or the quantities or values of the goods or services which they produce, sell or import (UNDP, 2016).

Sustainable Development Goals: Also the "Global Goals," are a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. These 17 Goals build on the successes of the Millennium Development Goals, while including new areas such as climate change, economic inequality, innovation, sustainable consumption, peace and justice, among other priorities. The goals are interconnected; often the key to success on one will involve tackling issues more commonly associated with another (UNDP, 2016).

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