Climate Investment Funds

FIP/SC.19/10
November 21, 2017

Meeting of the FIP Sub-Committee
Washington D.C.
Wednesday, December 13 – Thursday, December 14, 2017

Agenda Item 10

FIP INVESTMENT PLAN FOR ZAMBIA

PROPOSED DECISION

The FIP Sub-Committee, having reviewed the Document FIP/SC.19/, FIP *Investment Plan for Zambia*, [endorses] the investment plan.

The Sub-Committee recognizes the extent to which the pledges by the contributing member countries to the FIP have been allocated, in line with its decision in May 2015. The Sub-Committee also notes that should resources become available following the implementation of the FIP pipeline management policy, these resources could be provided to the FIP new countries for implementation of their investment plans and the Sub-Committee will take a decision on allocation of these resources once they become available.

The Sub-Committee encourages the Government of Zambia and the MDBs to actively seek resources from other bilateral or multilateral sources to fund further development and implementation of the projects foreseen in the investment plan.

Republic of Zambia

Ministry of Lands and Natural Resources

National Investment Plan to Reduce Deforestation and Forest Degradation (2018-2022)

November 2017

Executive Summary

Zambia has approximately 49.9 million hectares of forest, representing approximately 66 percent of its total land mass and is subsequently one of the most forested countries in southern Africa. However, deforestation is a major problem, with annual rates estimated at around 250,000 to 300,000 hectares. Such numbers amount to the potential loss of 10 million hectares of forest in the next 30 years (IDLO, 2014). The key drivers of deforestation and forest degradation in Zambia are agricultural expansion (commercial and subsistence), heavy reliance on wood fuel – energy demand (charcoal and firewood), unsustainable timber extraction (both legal and illegal) and infrastructure development (e.g., mining and other large infrastructural developments).

A study by UN-REDD, (2015) on the economic value of Zambia's forest ecosystems showed that the direct and indirect values of forests are estimated to make a direct contribution equivalent to about 4.7% of gross domestic product (GDP) or US$957.5 million (using 2010 figures). However, when the multiplier effects of forestry and tourism-related activities on other sectors are considered, the overall or economy-wide contribution of forests to GDP is estimated to be at least 6.3% or US$1,277 million (Table 1). Forests are estimated to provide at least 1.4 million jobs, supporting 60% of rural Zambian households, heavily dependent upon the use of natural resources to supplement or sustain their livelihoods (UN-REDD., 2015). Forest resources contribute to approximately 20% of household incomes including the market value of subsistence production. The true value of forests, including flows of goods and services for which no reliable data are available, is likely to be considerably higher.

Table 1: Overview of the economic value of forest ecosystem services and the estimated employment forest ecosystems generate.

Type of Service/Value	Gross Output/ Saving	Direct Value Added (US$ million per year)	Total Value Added	Employment ('000s people)
Industrial roundwood	35.8	21.5	32.0	10.1
Fuelwood (firewood and charcoal)	598.9	374.3	557.7	>500.0
Non-wood forest products	135.9	115.5	172.1	888.8
Sub-total Provisioning Services	**770.6**	**511.3**	**761.8**	**1398.9**
Percentage of GDP 2010		**2.5**	**3.8**	
Ecotourism	197.0	110.2	179.4	16.1
Erosion control and sediment retention	247.0	247.0	247.0	-
Pollination services	74.0	74.0	74.0	-
Carbon storage (damages avoided)	15.0	15.0	15.0	-
Sub-total Regulating, Supporting and Cultural Services	**533.0**	**446.2**	**515.4**	**16.1**
Percentage of GDP 2010		**2.2**	**2.5**	
Total	**1303.6**	**957.5**	**1277.2**	**1415.0**
Percentage of GDP 2010		**4.7**	**6.3**	

Source: UN-REDD., 2015

In its readiness phase, Zambia developed the National Forest Monitoring System (NFMS) in 2012, initiated development of a Safeguards approach and Information System (SIS) in in 2012, which is still on-going, developed its National Strategy to reduce Deforestation and forest Degradation in 2015and

submitted to the UNFCCC its Forest Reference Emission Level (FREL) in 2016 as per the UNFCCC requirements. With this document, the Government of the Republic of Zambia proposes an Investment Plan to take the REDD+ National Strategy to the next level – the investment phase, and to provide details for how the Strategy might be financed and implemented on the ground.

The preparation of this Investment Plan is rooted in the policy environment of the country. It recognizes and contributes to achieving the goal of the national REDD+ Strategy, "*to contribute to national reductions in greenhouse gas emissions by improving forest and land management, and to ensure equitable sharing of both carbon and non-carbon benefits among stakeholders*." Improved agricultural practices, forest conservation and management, sustainable management and utilization of forest resources and mining, appropriate energy sources and capacity development are thematic areas that speak to the multi-sectoral challenges of deforestation and forest degradation in Zambia. The implementation of investments in these areas will also put the country on course towards its contributions to the global sustainable development goals (SDGs) to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. It will equally contribute to the implementation of Zambia's Nationally Determined Contribution (NDC) to the implementation of the UNFCCC Paris Agreement on climate change, and most importantly, to national development objectives as expounded in the Vision 2030 and the Seventh National Development Plan (7NDP).

The IP recognizes that options to reduce deforestation and forest degradation include strengthening and enhancing management and governance of forests at the local level taking into account the different needs of men, women, youth and vulnerable populations. It introduces measures to reduce the urban demand for charcoal, supporting the development of livelihood and income generating activities that support or rely upon forest conservation and maintenance, and increasing the sustainability and efficiency of agricultural practices. The potential and relative success of each of these strategies depends very much on the prevailing ecological, social, economic and political context in the landscapes which they are implemented.

Strategically, the Investment Plan identifies **two Core Investment Priorities (CIPs)**: (1) Conservation of high-value forest areas; (2) Promotion of resilient landscapes, sustainable agriculture and energy; and activities for creating an enabling environment for successful implementation of the investment plan; Implementation of Policy and institutions Reforms. These investment priorities will, respectively, respond to the combined-three-way aspiration **to conserve, recover and restore** forest production landscapes in Zambia supported by an enabling environment. The third Core Investment Priority focuses on strengthening governance and technical capacities of local communities for forest management and conservation, capacity development, security of land and resource rights and key targeted policy implementation – all through a gender lens and effective knowledge management.

The Government has adopted a landscape approach in the National Strategy to reduce Deforestation and forest Degradation in order to integrally and holistically address the challenges of deforestation and forest degradation at the watershed level. The landscape approach seeks to achieve multiple objectives - social, economic and environmental - through stakeholder engagement and adaptive management tools in areas where different sectoral interests (i.e. Agriculture, mining, etc.) linked to environmental conservation objectives. In Zambia, the approach aims to address the drivers of deforestation and forest degradation while supporting actions aimed at improving the livelihoods of local communities. This holistic and integrated approach will help avoid duplication, consider cumulative impacts of development, scattering of resources and conflicts among resource managers,

which include local communities. The landscape approach will ensure that different aspects are dealt with simultaneously in a manner that coordinates sectoral investments and maximizes outputs and benefits.

This landscape approach is in line with the Government's effort to promote an integrated, coordinated and decentralized approach to development. The approach gives traction to the decentralization process to empower communities at lower levels to be active managers of natural resources that underpin their socio-economic well-being. It emphasizes analyses and appropriate means of consultation to identify gender responsive activities that will take into account the roles and specific needs of women, the elderly, vulnerable people and youth, who are often not considered in decision making processes. It also enhances confidence and builds local skills and capacities for meaningful engagement with the private sector intending to support and invest in local communities.

While in the past a sectoral approach has been used to address deforestation, this Investment Plan promotes an integrated and participatory approach, which takes into account various needs of communities as well as approaches that responds to the needs of the communities. The IP aims to support conservation and management of forests as well restoration through investing in local community's needs. The needs include functional local level management structures, ecotourism, general enterprises, good agricultural practices, markets and market linkages. In addition, addressing energy biomass through appropriate supply and usage. The overall aim will be to provide alternatives in terms of good practices as well as sources of incomes.

The National REDD+ strategy lays out strategic objectives and priorities for REDD+ implementation in Zambia but does not include an implementation and financing plan. To fill this gap, Government prepared the National Investment Plan to reduce Deforestation and forest Degradation and requested coordinated technical and financial assistance from the Forest Investment Program (FIP), implemented through two multilateral development banks (WB and AFDB), the Nature Conservancy and UN-REDD (FAO, UNDP and UN Environment).

In order to address issues of climate change, Government put in place a multi-sectoral coordination mechanism for climate change issues by establishing the Interim Climate Change Secretariat (ICCS). It was established in order to facilitate the establishment of a long term coordination mechanism for climate change. Overall coordination of Climate Change is the responsibility of the Ministry of National Development Planning. As the main agency responsible for REDD+ in Zambia, the Forestry Department at the Ministry of Lands and Natural Resources has equally been involved in the design of the REDD+ Investment Plan. REDD+ activities need to be implemented to promote sustainable forest management, and undertaken in accordance with national development priorities, objectives, and circumstances and capabilities in respect of national sovereignty.[1] The development of this Investment Plan has benefited from consultations with different stakeholders. The Plan has been informed by the following sectoral studies from development partners:

1. Scaling Up Community Participation in Forest Management through REDD+ (FAO)
2. Development by Design: Spatial Tools to Inform Land Use Planning (TNC)

[1]Routledge Book of International Environmental Law, ed S. Alam et al. (2013).

3. Strengthening the regulation of woodfuel and its improved utilization in Zambia through sustainable woodfuel value chain (UNDP)
4. Woodfuel Integrated Supply/Demand Overview Mapping (WISDOM) (FAO)
5. Mining Sector engagement and integrated landscape management: Operationalizing Zambia's National REDD+ Strategy (UN Environment)
6. Strengthening Zambia's extractives sector for REDD+ implementation (UNDP)
7. Engaging the Private Sector in the Forest Investment Plan: an overview of private sector in Zambia's forest sector (World Bank Group)
8. Strengthening of the civil society platform for REDD+ (UNDP/ZCCN)
9. Good and Bad Practices of Large-Scale Mining (LSM) in Forest Landscapes (Zambia case study) (World Bank Group)

Most importantly, the plan has been informed by local partners/projects (public, cooperating partners, private and community) on the ground implementing activities supportive of REDD+ at landscape level generally aimed at promoting sustainable management of forests and other natural resources, community resilience and adaptation, GHG mitigation, environmental risk management, sustainable agricultural practices, increasing environmental and economic benefits at community level and diversified income generating opportunities.

Foreword

Zambia is one of the most forested countries in Africa with approximately 67% (49,468,000 ha) of its land surface covered by forests. At the global level Zambia has been identified as one of the top 10 greenhouse gas (GHG) emitting countries as a result of deforestation and forest degradation mainly due to: a) over-exploitation of forest resources and encroachment of the protected areas as well as uncontrolled forest fires; b) extensive crop production practices especially through slash-and-burn agriculture; c) increased forest conversion for energy especially charcoal and firewood; d) forest conversion for mining and infrastructural development; and e) unplanned land uses that compromise forest integrity and biodiversity conservation. In 2009 Zambia was selected as one of the pilot countries for the UN-REDD Programme. The same year planning for REDD+ started and a National Joint Programme (NJP) developed coordinated by the Forestry Department of the then Ministry of Lands, Natural Resources and Environmental Protection, with technical support from the implementing bodies of the UN-REDD Programme – the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Programme (UNDP), and the United Nations Environment Programme (UNEP).

Zambia completed the first phase (Readiness Phase) of the REDD+ process, which includes development of a National REDD+ Strategy, Forest Reference Emission Level (FREL), National Forest Monitoring System (NFMS) and Safeguards Information System (SIS) as well as setting up of an Interim Climate Change Secretariat (ICCS) to coordinate activities under REDD+. It has also submitted its Nationally Determined Contribution (NDC) to the UNFCCC highlighting both mitigation and adaptation actions to be undertaken towards the Paris Agreement. These actions are reflected in the country's Seventh National Development Plan (7NDP, 2017-2021).

Zambia is now ready to proceed to the next phase of the REDD+ process – the Investment Phase. This IP strengthens the approach to addressing deforestation and marks the formal beginning of the of a systematic integrated approach of the Investment Phase. It sets out the implementation priorities of the REDD+ National Strategy over the next five years (2018-2022) based on a multi-sectoral approach as articulated under the 7NDP. This Investment Plan's core priorities draw from the 7NDP Implementation framework. It combines supportive programmes on capacity development, participatory mapping and strengthened community forest governance with two Core Investment Priorities (CIPs) on: a) Conservation and management of high-value forests; and b) Promotion of resilient landscapes, sustainable agriculture and energy. This IP aims at attracting and guiding the allocation of national and international funding sources for the implementation of the country's REDD+ strategy that will steer the country towards a green development pathway.

The Government of the Republic of Zambia is committed to achieving the goals set out in its Vision 2030, 7NDP, NDC, the REDD+ National Strategy and honour its responsibilities towards attaining the Paris Agreement and the Sustainable Development Goals (SDGs).

[Add signatures]

Honourable Jean Kapata, M.P.
Minister of Lands and Natural Resources

Acknowledgements

The formulation of the National REDD+ Strategy Investment Plan (IP) was based on a consultative process involving stakeholders across all relevant sectors notably representatives from line agencies including: i) the Ministry of National Development Planning –Hudson Mulumbi, Happy Banda, Chitembo K. Chunga and Deuteronomy Kasaro of ICCS, Carol Mwape Zulu and Janet M. Phiri of PPCR; ii) the Forestry Department – Ignatius Makumba, Mindenda Pande, Davies Kashole and Victor Chiba; iii) Ministry of Commerce, Trade and Industry – Chrissy C. Simukonda; iv) Ministry of Mines and Minerals Development –Choolwe Chadukwa; v) Department of Energy – Anna Banda Chandipo; vi) Ministry of Water Development, Sanitation and Environmental Protection - Environment Management Division – Abasalom Sakala.

Non-Governmental Organizations also participated in the process including World Wide Fund for Nature (WWF), Zambia Climate Change Network (ZCCN), Centre for Environment Justice (CEJ), Community Markets for Conservation (COMACO) and Zambia Chamber of Commerce and Industry (ZACCI). Appreciation and special thanks are extended to The Nature Conservancy (TNC) who provided spatial analysis to inform decision-making. The GRZ also thanks various community-based organizations, private sector associations, local governments, academia and development partners who provided their valued and pertinent inputs through the various consultative processes and in the development of the various inputs for the IP.

This investment plan additionally draws from the expertise, time and inputs from a range of stakeholders as well as consultants, institutions and international partners. GRZ wishes to thank the following cooperating partners for their technical and financial support: i) UNDP – Elsie Attafuah, Winnie Musonda, Wahida Patwa Shah; ii) UN Environment – Steven Swan, Thais Narciso and Benjamin Warr; iii) FAO – Wesley Roberts and Philippe Crete; iv) TNC – Linda Krueger and Anne Trainor; vi) World Bank (WB) - Douglas J. Graham, Iretomiwa Olatunji, Meerim Shakirova, Nicholas Soikan, Andrew Chilombo (lead author of an early draft of the IP), Gerardo Segura, Kenneth Green, and Felix Kalaba; and vii) the African Development Bank (AfDB) – Bamba Diop, Lewis Bangwe, Gareth Philips, Oroda Ambrose and Mark Eghan.

The contribution of these stakeholders and their active involvement in the development of this national REDD+ IP has ensured that the document is coherent, comprehensive and feasible. It reflects the cross-sectoral and landscape approach to respond to the drivers of deforestation and forest degradation, whilst ensuring livelihood support.

As we look forward to the implementation of the 7th National Development Plan, we endeavour to ensure that the implementation of the IP will contribute to improved livelihoods and the protection of the environment for future generations of Zambians.

[Add signatures]

Trevor Kaunda

Permanent Secretary,
Ministry of Lands and Natural Resources.

Objectives of the Investment Plan

Zambia's National REDD+ Strategy was prepared as part of an overall vision of reducing rural poverty and improving livelihoods, as laid out in the 6th National Development Plan and reinforced in the 7th National Development Plan. The Strategy lays out a goal "*to contribute to national reductions in greenhouse gas emissions by improving forest and land management, and to ensure equitable sharing of both carbon and non-carbon benefits among stakeholders*."

The Strategy indicates that the "implementation of the national REDD+ strategy will focus on tackling different drivers of deforestation in both the forestry and other identified key sectors in particular, agriculture, energy, mining and land use. The strategy will be implemented through a landscape approach at watershed level and through policy reforms at national level. It will take into account all land uses in a holistic way (including water and wildlife) and will work to lessen the competition for natural resources among different sectors. The approach ensures that the best possible balance is achieved among a range of different development objectives, including climate change mitigation and adaptation, environmental and biodiversity conservation, enhanced economic productivity, and improved livelihoods."

The Strategy did not include quantitative targets nor details on the financing needed to carry out the strategy. The Nationally Determined Contributions (NDCs) do establish a goal of mitigating 38,000 Gg CO_2eq by 2030 (assuming significant international support in addition to domestic efforts). Of this amount, the largest proportion, about 29 Gg CO_2eq, is attributed to land use change and forestry[2], the sectors that are the major focus of the REDD+ National Strategy.

This Investment Plan (IP) suggests how Zambia could implement land use and forestry parts of the REDD+ National REDD+ Strategy and thus help realize its NDCs to reducing global carbon emissions. For each of a small number of core investment priority areas, the IP indicates the actions that need to be undertaken to carry out the REDD+ National Strategy, what is likely to be done under existing initiatives, what are the missing investments, and proposes possible funding sources.

The implementation of this strategy requires the mobilization of multiple sources of funding (public and private, multilateral and bilateral) and calls on various funding modalities with a preliminary funding target in the range of **US$404.67 million over five years** and aims to shift from a project-based approach to a more integrated and inclusive approach. This approach will allow for the development of tools needed for the implementation of the REDD+ strategy and for carrying out transformational sector activities and reforms. While the integrated programmes aim to cover the entire country, following a logic of inclusive green development, the priority focal landscapes will be Zambezi, Kafue and Luangwa watersheds.

[2] The other sectors are agriculture, energy, and waste.

Table of Contents

List of Acronyms and Abbreviations

ADC	Area Development Committee
AfDB	African Development Bank
AMV	Africa Mining Vision
ANR	Assisted Natural Regeneration
BCP	Bio-Carbon Partners
BR	Botanical Reserve
CBFM	Community Based Forest Management
CBNRM	Community Based Natural Resource Management
CBO	Community Based Organization
CCA	Community Conservation Area
ccGAP	Climate Change Gender Action Plan
CEJ	Centre for Environment Justice
CERED	Centre for Environmental Research, Education and Development
CFM	Community Forest Management
CH_4	Methane
CIP	Core Investment Priority
CO_2	Carbon Dioxide
COMACO	Community Markets for Conservation
COP	Conference of the Parties
CPAZ	Charcoal Producers Association of Zambia
CPPP	Community Public Private Partnership
CSA	Climate Smart Agriculture
CSO	Civil Society Organization
CSO	Central Statistical Office
DDCC	District Development Coordinating Committee
DFNRMP	Decentralized Forestry and other Natural Resources Management Programme
DGM	Dedicated Grant Mechanism
DNPW	Department of National Parks and Wildlife
EIA	Environmental Impact Assessment
EMA	Environmental Management Act
ENSO	El Niño Southern Oscillation
ERB	Energy Regulation Board
FAO	Food and Agriculture Organization of the United Nations
FD	Forestry Department
FIP	Forest Investment Programme
FPIC	Free, Prior Informed Consent
FREL	Forest Reference Emission Level
GCF	Green Climate Fund
GDP	Gross Domestic Product
GEF	Global Environment Fund
Gg	Giga
GHG	Green House Gas
GIS	Geographic Information System
GMA	Game Management Area

GPS	Geographical Positioning System
GRZ	Government of the Republic of Zambia
HCS	High Carbon Stock
HCV	High Conservation Value
IBA	Important Bird Area
ICCS	Interim Climate Change Secretariat
ICT	Information, Communications and Technology
IDLO	International Development Law Organization
ILUA	Integrated Land Use Assessment
INDC	Intended Nationally Determined Contribution
INRM	Integrated Natural Resource Management
IP	Investment Plan
ISFL	Initiative for Sustainable Forest Landscapes
JFM	Joint Forest Management
JTM	Joint Technical Mission
LDCs	Least Developed Countries
LG	Local Government
LPG	Liquefied Petroleum Gas
M&E	Monitoring and Evaluation
MA	Ministry of Agriculture
MDBs	Multilateral Development Banks
MEWD	Ministry of Energy and Water Development
MFEZ	Multi-Facility Economic Zone
MLNR	Ministry of Lands and Natural Resources
MMMD	Ministry of Mines and Minerals Development
MNDP	Ministry of National Development Planning
MoF	Ministry of Finance
MoG	Ministry of Gender
MRV	Monitoring, Reporting and Verification
Mt	Metric tonne
N_2	Nitrous Oxide
NAP	National Agricultural Policy
NBSAP2	Second National Biodiversity Strategy and Action Plan
NCCRS	National Climate Change Response Strategy
NDC	Nationally Determined Contribution
NEP	National Energy Policy
NFMS	National Forest Management System
NGOs	Non-Governmental Organizations
NHC	National Heritage Commission
NJP	National Joint Programme
NP	National Park
NPCC	National Policy on Climate Change
NPE	National Policy on Environment
NRCF	Natural Resources Consultative Forum
NTFPs	Non-timber forest products
ODA	Official Development Assistance

PA	Protected Area
PDCC	Provincial Development Coordinating Committee
PFM	Private Forest Management
PLR	Policies, Laws and Regulations
PLUP	Participatory Land Use Planning
PPCR	Pilot Programme for Climate Resilience
RBAs	Results-Based Actions
REDD+	Reducing Emissions from Deforestation and Forest Degradation, Conservation of Carbon Stocks, Sustainable Management of Forests and Enhancement of Carbon Stocks
REL	Reference Emission Level
SADC	Southern Africa Development Community
SDGs	Sustainable Development Goals
SDGs	Sustainable Development Goals
SEA	Strategic Environmental Assessment
7NDP	Seventh National Development Plan
SESA	Strategic Environment and Social Assessment
SI	Strategic Intervention
SIS	Safeguards Information System
SMEs	Small Medium Enterprises
SNC	Second National Communication
SNDP	Sixth National Development Plan
SO	Strategic Objective
SOC	Soil Organic Carbon
STAR	System for Transparent Allocation of Resources
STWG	Safeguards Technical Working Group
TNC	The Nature Conservancy
ToR	Terms of Reference
TPAZ	Timber Producers Association of Zambia
TRALARD	Transforming Landscapes for Resilience and Development
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
WB	World Bank
WISDOM	Woodfuel Integrated Supply/Demand Overview Mapping
WWF	World Wide Fund for Nature
ZACCI	Zambia Chamber of Commerce and Industry
ZCCN	Zambia Climate Change Network
ZEMA	Zambia Environmental Management Agency
ZIFLP	Zambia Integrated Forest Landscape Project
ZNFP	Zambia National Forest Policy
ZNFU	Zambia National Farmers Union
ZTB	Zambia Tourism Board

List of Tables

List of Figures

1. National and Sectoral Context

1.1 National Context

1. Zambia is a landlocked country in Southern Africa surrounded by eight countries, namely; Malawi, Tanzania, Democratic Republic of Congo, Namibia, Angola, Botswana, Zimbabwe and Mozambique. With a surface area of 752,614 km^2 and a population estimated at 13 million people (Fig. 2), and annual population growth of 2.8%, the country is endowed with various natural resources. These natural resources include minerals, freshwater, forests, wildlife and fertile land. Nearly 56% or 42 million hectares of the total land area is arable. The main industries are mining, transport, construction, manufacturing and agriculture. Zambia is characterized as a service-oriented economy with the tertiary sector at 53.7%; Mining at 12.9%; Agriculture, Forestry and Fisheries at 9.9%; and Manufacturing at 7.9% (Figure 1). About 40% of freshwater resources in the southern African region are found in Zambia alone. The country harbours globally significant ecosystems and biodiversity.

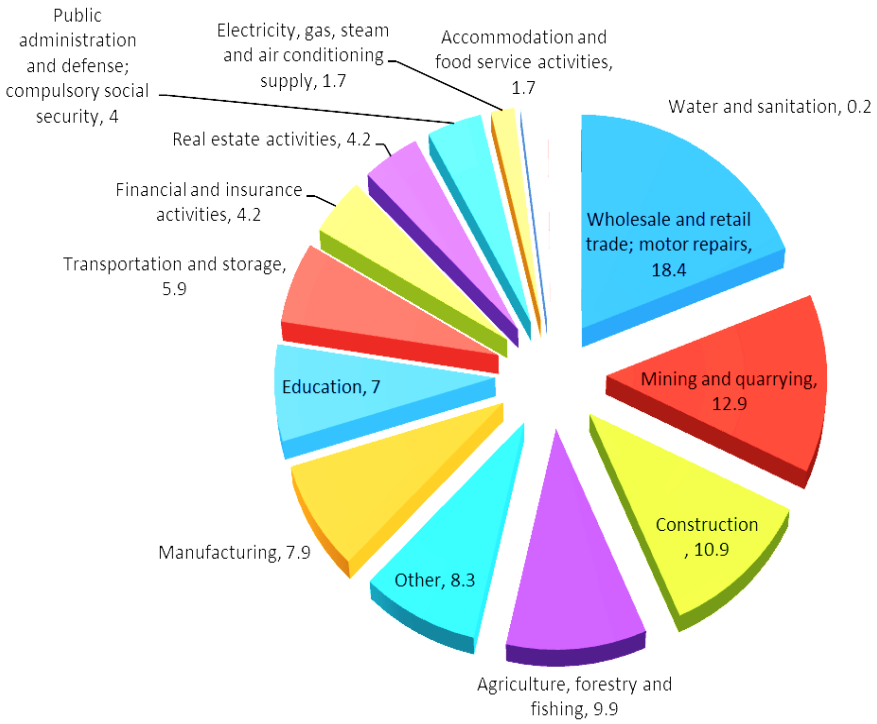

Figure 1: Sectoral contribution to Gross Domestic Product in 2010 (Central Statistical Office, 2014)

2. Zambia has experienced a decade of rapid economic growth. A combination of prudent macro-economic management, market liberalization policies, and a steep increase in copper prices helped drive investments in the copper industry and related infrastructure to achieve an average annual growth of about 6.4% during the last decade. However, recent economic growth has slowed because of declining copper prices and slowing growth in key markets. Despite robust annual growth in the recent past, poverty in Zambia remains very high. With a Human

Development Index of 0.586, Zambia ranks 139 out of 189 countries globally[3]. Poverty is disproportionately rural. Today 74% of Zambia's rural population still lives in poverty - more than double the level of urban poverty at 35%. In rural areas, livelihoods remain highly dependent on sectors unaffected by recent growth, namely the agriculture, forest, and wildlife sectors. Thus, most people still live with insufficient means to meet their daily minimum food requirements. A related problem is nutritional needs. More than half of the children are malnourished. Estimated losses attributed to mineral and vitamin deficiencies alone are worth more than US$186 million per year.

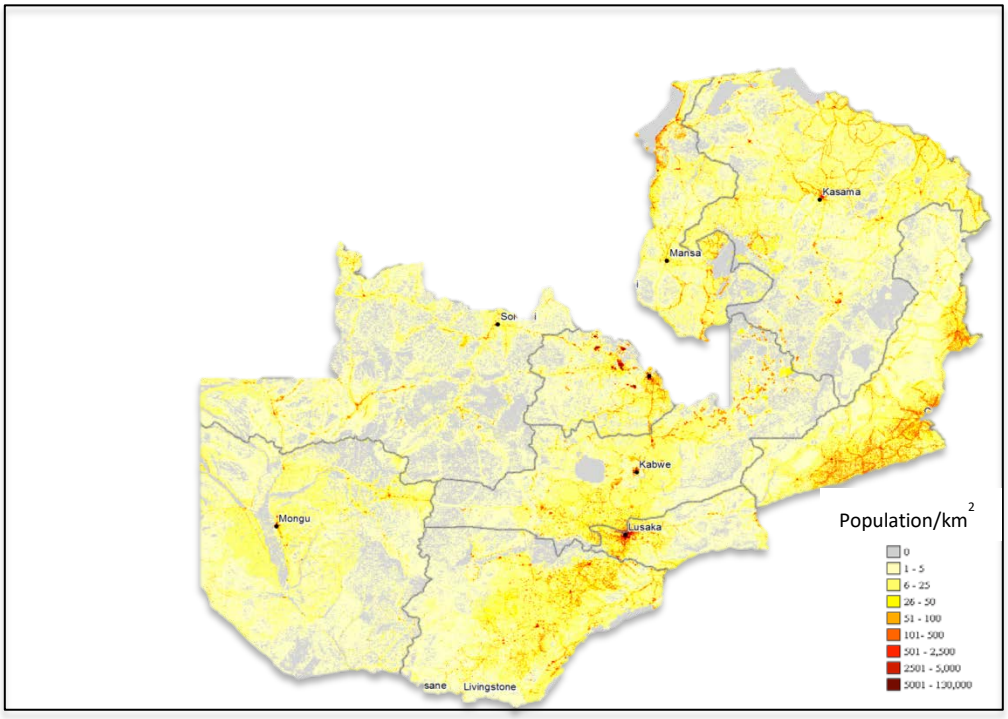

Figure 2: Population Density

3. Zambia's rural poor, dependent largely on agriculture and natural resources, are vulnerable to an inherently highly variable climate. Droughts and floods have increased in frequency and intensity over the past few decades and have adversely impacted food and water security, water quality, energy and livelihoods of the people, especially in rural areas. Because of human-induced global climate change, Zambia's climate has been changing over the last decades and projected additional changes are significant over the next decades. Based on records from 1960 to 2003, the mean annual temperature has increased by 1.3°C. This gives an average of 0.3°C per decade. Within the same period, mean rainfall has decreased by an average of 1.9mm/month (2.3%) per decade since 1960.[4]Adaptation to climate change is thus one of the forefront issues on the nation's development priorities.

[3] UNDP Human Development Index, 2014

[4] Zambia's Intended Nationally Determined Contributions (INDC) to the 2015 Agreement on Climate Change - 4http://www4.unfccc.int/ndcregistry/PublishedDocuments/Zambia%20First/FINAL+ZAMBIA%27S+INDC_1.pdf

4. The future trends in the country are towards a higher average temperature, a possible decrease in total rainfall, and some indication of more intense rainfall events. According to the Zambia Intended National Determined Contribution (INDC) (INDC, 2015) assessment of potential climate impacts shows that they will seriously undermine efforts to improve the livelihoods of Zambians if left unaddressed especially on sectors such as water, agriculture, forestry, wildlife, tourism, mining, energy, infrastructure and health. The aggregated estimated total GDP loss by sector will be in the range of US$4,330-5,440M with the following sector GDP losses: Agriculture (2,200 – 3,130), Energy related (270 – 450), Health (460), and Natural Resources (1,400).

5. Zambia emitted 120 million metric tons (MtCO2e) of greenhouse gases in 2011. The land-use change and forestry sector contributed 61% to overall emissions, followed by the energy sector (19%), agriculture sector (17%), waste sector (2%) and industrial processes sector (1%). Greenhouse gas emissions increased 3% from 1990 - 2011, while the gross domestic product grew from US $5.2 billion to US $13.4 billion in the same time period. This suggests that the economy became less carbon intensive during this time frame. Zambia's Nationally Determined Contribution (INDC) commits to reducing carbon dioxide-equivalent emissions by 25% by 2030 compared to 2010 base year emission levels. It will achieve this reduction through domestic efforts with limited international support. Zambia will achieve its greenhouse gas emissions reductions solely through the following sectors – sustainable forestry, sustainable agriculture, renewable energy and energy efficiency. Therefore this investment plan provides a means to achieve these reductions. Zambia also commits to achieving a higher reduction of 47% if substantial international support is available

1.2 Forest Resources

6. According to the Zambia National Forest Policy (ZNFP, 2014), forests cover 66 per cent of Zambia's total land area. This translates into approximately 49.97 million hectares (Tab.1). About 66%[5]of the total land is covered by forests, of which 40% constitutes miombo woodland dominated by *Caesalpinioideae* tree species including of the genera *Brachystegia, Julbernadia* and *Isoberlinia* (Fig. 4). The country has national protected areas that include 20 National Parks (NPs), 39 Game Management Areas (GMAs), 432 Forest Reserves (FRs), 59 Botanical Reserves (BRs), 42 Important Bird Areas (IBAs) and two (2) Bird Sanctuaries. These are however, facing serious threats from practices that include human encroachment for settlement, subsistence agriculture, mining activities, charcoal burning and logging, uncontrolled late season forest fires and poaching.

[5]National Forest Policy reports 66 percent

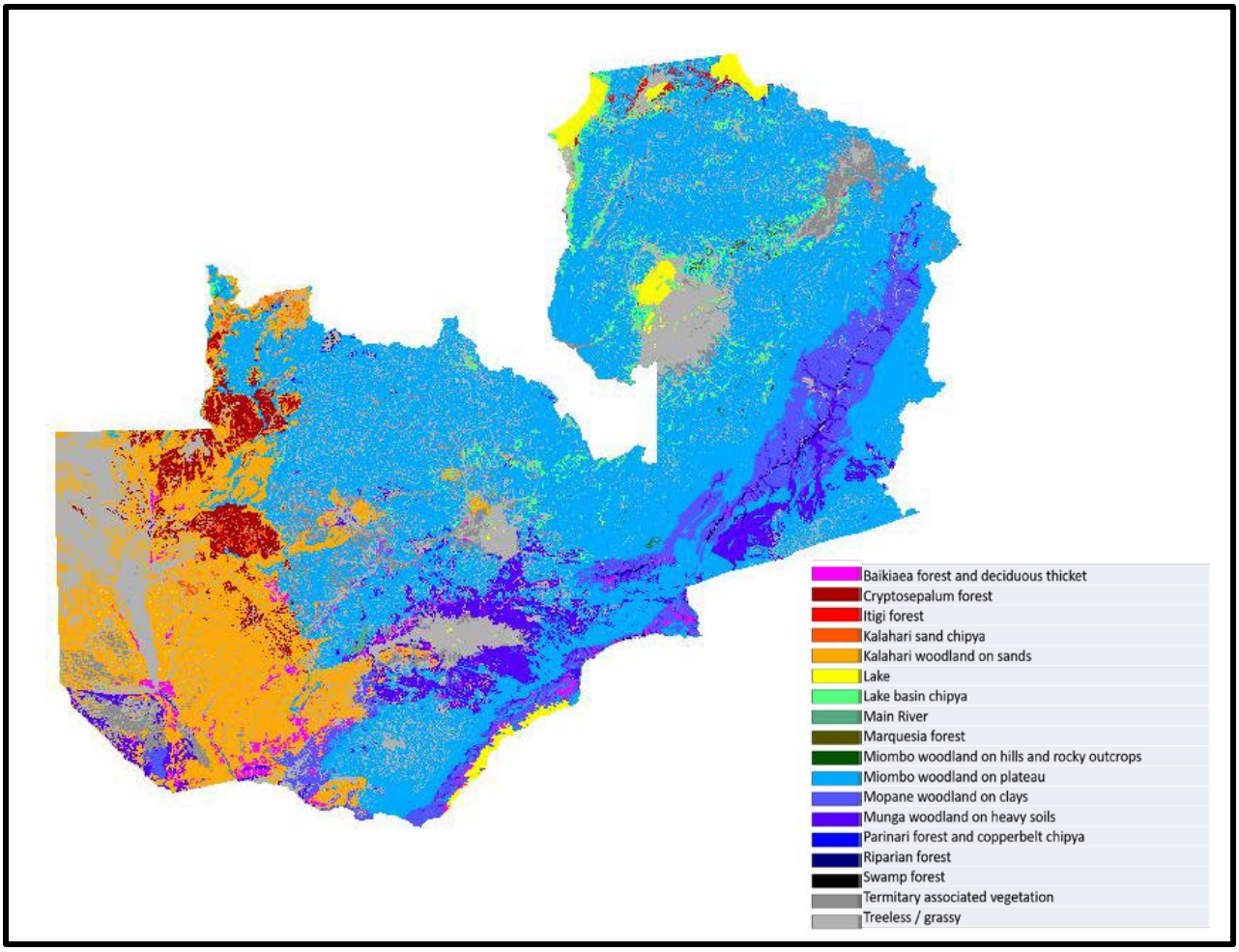

Figure 4: Vegetation Map

Table 1: Forest Area by Province

Province	Land area* (000 ha)	Forest Land (000 ha)	Other Wooded Land (000 ha)	Other Land (000 ha)
Central	11,002.94	5,641.50	2,239.80	3,093.70
Copperbelt	3132.84	1,872.50	420.10	840.20
Eastern	5,097.59	2,638.30	1,002.80	1,432.60
Luapula	5056.91	2,849.10	1,147.10	653.70
Lusaka	2550.74	1,651.30	416.20	469.90
Muchinga	8,680.60	6,176.60	1,463.90	1,001.60
Northern	7,692.75	4,440.70	1,379.30	1,446.60
North-Western	12,582.64	9,050.20	1,279.00	2,204.70
Southern	6,825.82	2,864.60	1,380.30	2,297.30
Western	12,638.58	6,985.40	2,490.60	3,093.00
Zambia	75,261.40	**44,170.20**	**13,219.00**	**16,533.30**

7. The ZNFP 2014 is cognizant of the link between livelihoods and the integrity of ecosystems. This link is critical regarding how communities use and manage forest resources. Rural livelihoods depend on forest products for day-to-day subsistence including fuel, shelter, food, pasture and fodder, medicines and household utility items. Forest products also provide alternative economic opportunities such as income generation through employment and small businesses. Forests are a safety net in times of shocks and stresses such as famine from bad weather or diseases that attack both crops and domesticated animals. The sustainability of productive capacities of forests for rural livelihood benefits as well as other environmental benefits hugely depends on sound and sustainable forest management practices. The Policy indicates that this "can be by optimizing actions that reduce deforestation, forest degradation and the emission of greenhouse gases". Improving forest management will need to pay attention to participatory and integrated approaches to forest resource management and coordinated land use planning and management, and strengthening local level monitoring and law enforcement as promulgated in the ZNFP and the National REDD+ Strategy.

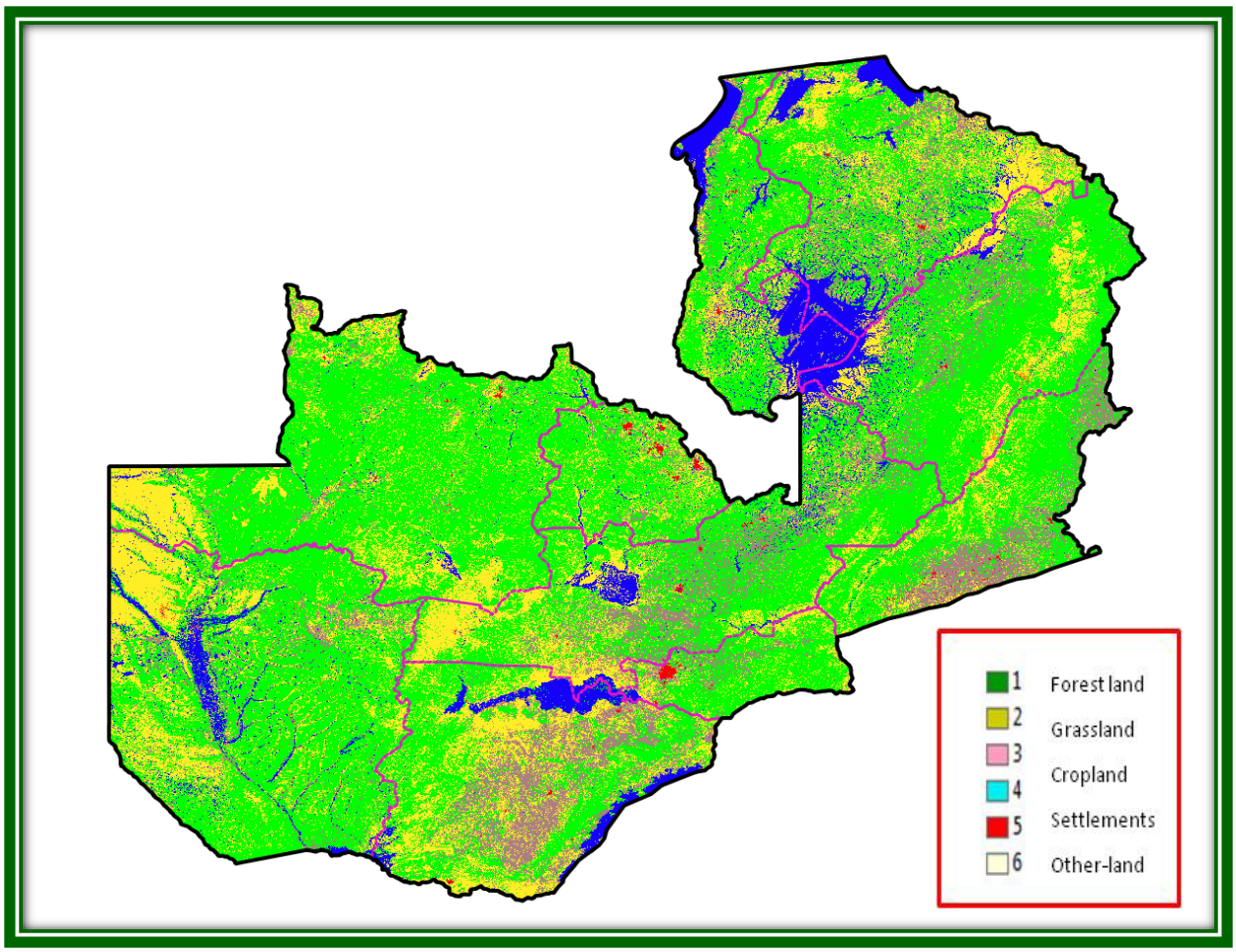

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Figure 5: 2010 Land Cover Map

8. The REDD+ Strategy (2015) identifies the causes of deforestation and forest degradation in the country to be land use changes, driven by forestry practices (over-exploitation, encroachment of protected forest areas and uncontrolled late season forest fires), agriculture (extensive and unsustainable crop/livestock production and management practices), energy (heavy reliance on wood fuel such as charcoal and firewood), mining (forest conversion for mining sites and settlement) and infrastructure development (unplanned land use that has no regard for forest integrity and biodiversity conservation). Annual deforestation is in the range of 250 000 to 300 000 hectares. If this trend continues unabated, the forestry sector contribution to the GDP of 5.2%[6] will dwindle (Jumbe *et al.,* 2009).

9. Zambian forests can however, contribute more to GDP through sustainable forest management, if these trends can be slowed or reversed. Currently, forest-based industries account for at least 3.7% of the GDP; charcoal production and fuelwood collection account for 2.2% and 0.8%,

[6] This figure does not include the contributions from illegal and unregulated informal activities such as charcoal burning (some studies estimate 3 percent contribution to GDP) and logging as income sources for rural livelihoods. The figure is therefore, likely to be higher than 5.2 percent

respectively. Commercial logging and non-timber forest products contribute about 0.3% and 0.1% to the GDP, respectively.[7]In addition, opportunities presented by forest carbon markets may enhance the contribution of the sector to the national GDP.

10. A study by UN-REDD (2015) on Benefits of Forest Ecosystems in Zambia and the Role of REDD+ in a Green Economy Transformation showed that the direct and indirect values of forests (excluding the market value of carbon) are estimated to make a direct contribution equivalent to about 4.7-6.3% of GDP or US$957.5 million (using 2010 figures). This figure is substantially higher than the updated national accounts that were released in July 2014.[8] The study also revealed that the contribution of forest ecosystem services to the Zambian economy that are currently not accounted for in GDP – such as ecotourism, erosion control and sediment retention, pollination and carbon storage – is estimated to be 2.5% of GDP or US$ 515.4 million annually. It can therefore be stated that depending on the estimate of the contribution of forests to GDP in Zambia, which range from 3.7% (Puustjärvi *et al*. 2005) to 6.2% (FAO, 2014), there is an undervaluation of at least 40 – 68%.

1.3 Policy, Law and Regulatory (PLR) Framework

11. Over the past few years, Zambia has made significant progress on developing conducive policy and legislative instruments as well as strategic plans for addressing climate change within the broader national economic development context. Some of the specific achievements that form the building blocks for REDD+ implementation in Zambia include among others, the following:

a) **Vision 2030** – adopted by GRZ in 2006, it sets the country's long-term development vision emphasizing development based on "*sustainable environment and natural resource management principles*" with an overarching principle to have a competitive national economy that is dynamic, resilient to external shocks and support the stability and protection of the biological and physical systems characterized by development of policies consistent with sustainable environment and natural resources conservation;

b) **Seventh National Development Plan (7NDP, 2017)** – emphasizing an integrated (multi-sectoral) development planning and implementation approach with a goal to create a diversified and resilient economy for sustained growth and socioeconomic transformation driven, among others, by agriculture. This is in support of Smart Zambia Transformation Agenda 2064 in line with the UN 2030 Agenda for Sustainable Development and the African Union Agenda 2063; The Core Investment priorities within this investment plan are aligned with the 7NDP Implementation Matrix.

c) **Second National Biodiversity Strategy and Action Plan (NBSAP2, 2015)** – The vision of Zambia's NBSAP2 is "*By 2025, biodiversity is valued, conserved, restored and wisely used, maintaining ecosystem services, sustaining a healthy environment and delivering benefits*

[7]Zambia National Forestry Policy, 2014

[8]UNEP (2015). Benefits of Forest Ecosystems in Zambia and the Role of REDD + in a Green Economy Transformation

essential for all Zambians and the Zambian economy." It sets out overarching objectives for biodiversity conservation in the country and emphasizes multi-sectoral coordination;

d) **National Policy on Environment (NPE, 2007)**–The focus of the NPE is the achievement of measures that address the pressing need to manage the impact of human activities on the environment including biodiversity loss, deforestation, land degradation, air pollution, inadequate management of water resources and water pollution. This is in line with the landscape approach at watershed level of the REDD+ strategy;

e) **National Policy on Climate Change (NPCC, 2017)** – whose objectives includes (among others): strengthened implementation of adaptation and disaster risk reduction measures to reduce vulnerability to climate variability and change; implementation of sustainable land-use management practices in order to contribute to reducing Green House Gases (GHG) emissions from land use and land use change and forestry (LULUCF); human resource and institutional capacity building for effective implementation of climate change interventions; and promotion of investments in climate resilient and low carbon development pathways in order to generate co-benefits and provide incentives for addressing climate change more effectively;

f) **National Climate Change Response Strategy (NCCRS, 2012)** – The NCCRS identifies clear priorities for adaptation and mitigation activities in various sectors of the economy and proposes a new institutional and governance structure for managing climate change issues in Zambia emphasizing a multi-sectoral and coordinated approach among different stakeholders to effectively reduce emissions towards a climate resilient and green economy.

g) **Zambia National Forest Policy (ZNFP, 2014) and Forest Act (2015)** – The policy recognizes the importance of minimizing the impact of greenhouse gas emissions and conserving biodiversity through the achievement of policy objectives related to socio-economic and ecologically sustainable forest management, maintaining and increasing the total natural forest cover and by increasing the percentage of land under plantation. Both the policy and Act explicitly recognize the important role of community and private sector involvement in the sustainable management of forest resources.

h) **National Agriculture Policy (NAP, 2016)** – The policy explicitly recognizes the significance of climate change adaptation by promoting climate-smart agricultural practices such as conservation agriculture and agroforestry and linkages to other sectors such as forestry, energy, land use and infrastructure development.

i) **Environmental Management Act (EMA, 2011)** – The Act provides the legal provisions for the integrated management of the environment and natural resources in the national development context. It provides for the development of sector specific environmental management strategies and application of Strategic Environmental Assessment of legislation, policies, plans and programmes that may be determined to have an impact on the environment across all sectors of national development. It further provides for public participation in environment management decision making.

j) **National Energy Policy (NEP, 2008)** – The NEP recognizes the potential role that renewable energy sources can play in meeting the country's energy demand and cushion the Zambian economy against the impacts of climate change and variability. It emphasizes the development and deployment of off-grid Renewable Energy Technologies (RETs) through public and private sector investments (e.g., solar, mini/micro hydro, wind, biomass and geothermal).

12. The implementation of the legal, policy and regulatory frameworks in Zambia[9] is reflected in the public administration structure, which comprises the Central Government and Provincial Administrations, District, City and Local Councils. For improved service delivery at these different levels, GRZ through the decentralisation implementation plan has been pursuing efforts for a development-oriented process of decentralization and devolution of powers. Decentralization is critical in ensuring jurisdictional allocation of power that will design benefit sharing mechanisms and ensure sustainable forest management and improved livelihoods. This is very relevant especially in the context of the new configurations of forests in the Forest Act 2015 meant to empower lower level governance structures, including communities and the private sector through Community Forest Management (CFM), Joint Forest Management (JFM) and Private Forest Management (PFM). The CFM, JFM and Private Forests are type of participatory forest management categories described in the Forests Act No. 4 of 2015 aimed at ensuring that stakeholders participate in the conservation and management of forests. These are options, which stakeholders can use in applying to manage forests with rights transferred to them. The categories are aimed at increasing the participation of various stakeholders with defined roles and responsibilities and rights. The CFM mechanism shall be used to confer management and control rights to local communities who are interested in managing the forests, while PFM applies to land owners who want to conserve forests on their land and entitled to some incentives provided by the government. JFM is a mechanism where collaborative forest management with local communities, government and other stakeholders is applied.

13. In the National Development Plans, there has always been a need to strengthen the clarity on how different sectors with their respective development priorities will be combined in a manner that addresses trade-offs while addressing deforestation in the country. This IP offers an opportunity to address that lack of clarity through implementation of proposed core investment priorities. This will build on demonstrated political will in furthering the process of decentralization and devolution of power to lower administrative levels.

14. For a successful REDD+ implementation, it will be very important to address policy priorities in the finance, agriculture, energy, forest, and other sectors so that there is coherence and

[9]Relevant legal instruments, policy and regulatory frameworks include:

- Zambia Forestry Act 2015
- Zambia Vision 2030
- Sixth and Revised Sixth National Development Plan
- Zambia National Climate Change Response Strategy
- Zambia National Climate Change Policy

sustainable management of trade-offs. In addition, the newly configured categories of forest in the Forest Act 2015, including protected areas under the jurisdiction of the Department of National Parks and Wildlife provide both opportunities and challenges for REDD+ implementation. Enforcement of supportive policies and regulations is key and the chronic lack of financial resources and human capital in the government institutions, particularly the forest sector will need to be addressed. Other factors include: inadequate forest product monitoring and control systems; limited geographic coverage of forestry personnel to carry out patrols in protected areas; inadequate collaborative arrangements between local communities and government; lack of involvement of local communities and other stakeholders in forest management.[10] All these need urgent attention to ensure a successful REDD+ implementation roll out in the country.

15. Gender considerations are increasingly being recognized as crosscutting issues in many of Zambia's sustainable development strategies and related ministries and national legislation. Women and youth (along with men), for example, are primary users of forests and their subsistence activities and indigenous knowledge of the forest can aid forest-related activities, such as species monitoring, soil management and forest restoration functions, which then can contribute positively to outcomes. However, given the challenges they face, it is important that they are involved in decision making processes, local level management structures and ensure benefit mechanisms that are responsive to their needs and that are equitable and gender responsive. This approach will ensure that women, men, youth practically participate instead of just being discussed. In 2014, the Ministry of Gender—released a National Gender Policy, which addresses gender mainstreaming across relevant sectors including energy, water, sanitation, transportation, and tourism sectors, and it makes note of climate change. Cognizant of the multi-sectorality of the issue, government in the Seventh Development Plan has promoted an integrated and multi-sectoral approach at landscape level that is cognisant of the needs of women in the development agenda of the country.

1.4 Zambia's Vulnerability to Climate Change

16. Zambia faces continued exposure to climate variability as well as the ever-present threat of a changing climatic regime. Projected changes in both temperature and rainfall indicate that Zambia needs now to make informed decisions about the management of natural resources. With regards to temperature; a projected increase of between 1.2° and 3.4°C is expected by 2060 and approximately 1.6° to 5.5°C by 2090.[11] Regionally, the rate of warming is slightly more rapid in the southern and western regions of Zambia while all projections indicate a substantial increase in in the number of days and night considered hot, with the converse being true for days and nights considered cold.

17. In terms of expected changes to rainfall, projections of mean rainfall do not indicate large changes in annual rainfall, however, seasonally the range of projections from different models

[10] UN-REDD Programme-Zambia Quick Start Initiative, National Programme Document
[11] Zambia Intended Nationally Determined Contributions (INDC)

is large. Ensemble projections indicate a decrease in September-October-November (SON) rainfall by 2090 while December-January-February (DJF) is set to increase by 2090, particularly in the north-east of the country. More importantly, the proportion of total rainfall that falls in heavy events is projected to increase annually, but mainly in DJF and March-April- May (MAM)[12].

18. These changes point towards an uncertain future where flexible and adaptive management will be required to minimize the effects of climate variability on the local population. As an example, The Zambian climate is also especially sensitive to the El Niño Southern Oscillation (ENSO) and La Niña (Anti-ENSO) phenomenon whereby periods of drought and above average rainfall are experienced interspersed with periods of reasonably stable climatic conditions. Zambia experienced an ENSO event in 2014 and 2015 which had a major impact on rainfall during the rainy season. Reduced rainfall led to challenges in the generation of electricity (Zambia relies heavily on hydro-electricity) which in turn led to an increase in demand for forest based energy biomass and thus more forests were harvested to generate additional charcoal to meet demands from urban areas.

1.5 Sustainable Development Goals

19. In step with the rest of the global community, Zambia agreed upon the 2030 Sustainable Development Goals (SDGs). These Goals represent a universal call that has created a common platform for the global community to resolutely act to eradicate unprecedented levels of poverty, protect the planet, and boost socio-economic prosperity and foster global peace. The Zambia National REDD+ Strategy recognises that the proximate drivers of deforestation and forest degradation are specific to the forestry, agriculture, energy, mining, and land use (infrastructure development) sectors. These drivers are hardly in isolation, they act in combination in production landscapes.

20. Zambia has had three development plans since the re-introduction of the medium-term development planning process in the early 2000s, namely the Fifth National Development Plan, 2006-2010 (FNDP), Sixth National Development Plan, 2011-2015 (SNDP) and the Revised Sixth National Development Plan, 2013-2016 (R-SNDP). These Plans were formulated with a view to meeting the national aspirations as articulated in the Vision 2030. The latest development plan is the Seventh National Development Plan (7NDP). It promotes integrated approach to development as opposed to sectoral approach. Therefore, the IP has been design to be in line with the aspirations of the nation expressed in the 7NDP.

[12] McSweeney, C., New, M., Lizcano., G et al., 2010: The UNDP Climate Change Country Profiles: improving the accessibility of observed and projected climate information for studies of climate change in developing countries. Bulletin of the American Meteorological Society, 91, 157–166.

21. Therefore, a landscape approach designed in an integrated, inter-sectoral and coordinated fashion to tackle these drivers will naturally contribute directly or indirectly to a number of SDGs, particularly; goal 1 on no poverty; goal 3 on good health and well-being; goal 6 on clean water and sanitation; goal 7 on affordable and clean energy; goal 8 on decent work and economic growth; goal 9 on industry, innovation, infrastructure; goal 10 on reduced inequalities; goal 12 on responsible consumption and production; goal 13 on climate action; goal 15 on life on land; goal 16 on peace, justice and strong institutions; and goal 17 on partnerships for the goals. In this regard, development interventions that identify drivers of deforestation and forest degradation specific to the five sectors will naturally contribute to putting Zambia on course to play her role in attaining the SDGs.

1.6 REDD+ in Zambia

22. Carbon emissions from forestry can be reduced (and carbon sequestration can be enhanced) through REDD+. With support from the UN-REDD Programme, Zambia has recently completed its National REDD+ Strategy, a comprehensive set of proposed actions, policies and measures to move forward on REDD+ implementation and eventually generate results-based payments. The Strategy was informed by a number of analytical studies and identified entry points for REDD+ into the wider policy framework by building on on-going national processes. Besides the need to reduce deforestation and forest degradation, promote sustainable management of forests, conserve and enhance carbon stocks, the National REDD+ Strategy recognises the need to improve the socio-economic conditions of rural communities that depend on forests and forest-related resources. Currently, the country is implementing an Integrated Forest Landscape Project in Eastern province as part of Phase 2. The country also undertook stakeholder engagement and partnership building for REDD+. Figure 2 shows the evolution of the REDD+ process in Zambia.

23. With a vision to realize a prosperous climate change resilient economy by 2030 that is anchored in sustainable management and utilization of Zambia's natural resources, the Strategy was conceived with 10 strategic objectives with respective 24 strategic interventions (Annex 1). The Strategy also seeks to contribute to national reductions in greenhouse gas emissions by improving forest and land management and to ensure equitable sharing of both carbon and non-carbon benefits among stakeholders. The Strategy proposes a holistic, inter-sectoral and landscape approach at watershed level that will ensure sound policy mix to account for different and competing land uses among different sectors, "including climate change mitigation and adaptation, environmental and biodiversity conservation, enhanced economic productivity, and improved livelihoods."[13]

[13]Zambia National REDD+ Strategy.

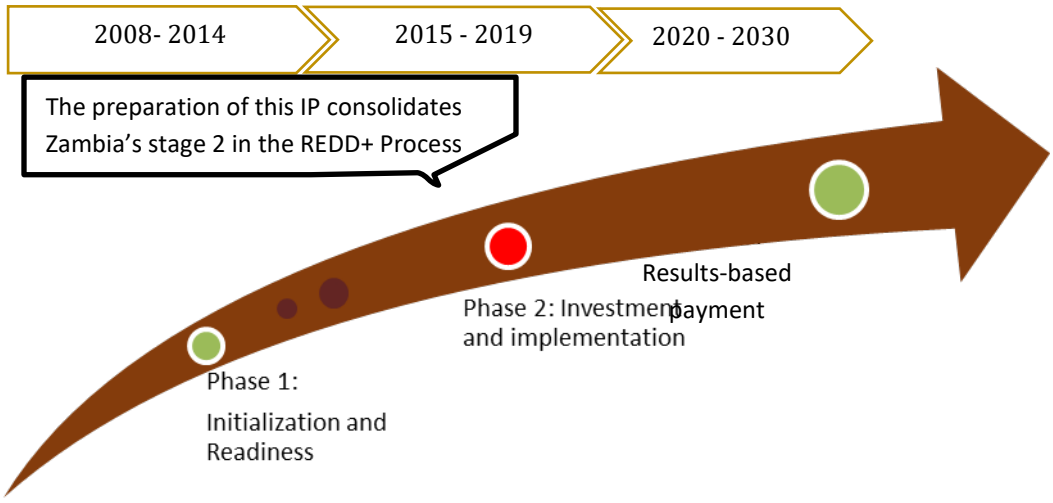


Figure 2: Evolution of the Zambia National REDD+ Process

24. Zambia also embarked on the establishment of the National Forest Monitoring System (NFMS). In January 2016, the country submitted its Forest Reference Emissions Level to the UNFCCC, and is currently engaged in the Technical Assessment process. The country is also engaged in the design of the first iteration of a Safeguards Information System (SIS)[14], which seeks to make information readily available on how safeguards are being addressed and respected in REDD+ implementation.

25. The country's REDD+ ambitions were further laid out and quantified in the INDC that Zambia proposed at the United Nations Framework Convention on Climate Change (UNFCCC)'s COP21 in Paris, France, in 2015. Taking 2010 as the base year, Zambia intends to mitigate an estimated 38,000 Gg CO_2eq by 2030. This is contingent upon availability of resources from both domestic and international sources. Zambia will require over USD 50 billion for both mitigation (USD 35 billion for domestic efforts with substantial International support) and adaptation (USD 20 billion) actions across the programs up to 2030. Of this, USD 15 billion will be unconditional support provided by the Zambian Government and USD 35 billion will be conditional support to be sourced externally.[15]

[14] UNFCCC guidance on SIS design emerged as Zambia was already well advanced in disbursing its REDD+ readiness grant, hence the delay in completing this pillar of the readiness phase.
[15] http://www4.unfccc.int/ndcregistry/PublishedDocuments/Zambia%20First/FINAL+ZAMBIA%27S+INDC_1.pdf

26. The National REDD+ Strategy and the IP are consistent with the intentions of Zambia's Climate Change Response Strategy which includes sustainable forest management, sustainable agriculture, renewable energy and energy efficiency. Zambia will require international support in form of finance, investment, technology development and transfer, and capacity-building to fully realize its intended contributions.[16]The INDC document indicates that climate change in the country has affected key economic sectors including water, agriculture, forestry, wildlife, tourism, mining, energy, infrastructure and health. It has adversely impacted food and water security, water quality, energy and livelihoods of the people, especially in rural communities. The IP is therefore, an opportunity for the country to galvanize international support in form of finance, investment, technology development and transfer, and capacity-building to fully realize its national contributions to climate change mitigation and adaptation. This IP is prepared to respond to the challenges that have been identified in the REDD+ Strategy, Vision 2030, 7NDP, INDC, NBSAP2 and other policy documents.

2. National Investment Plan to Reduce Deforestation and Forest Degradation

2.1 Background to needed Investments

27. Deforestation is the main source of GHG emissions in Zambia, accounting for about 73% of the total emissions. In order to address the drivers of deforestation, it is important to note that the needs of the local communities and improving their livelihoods is important. As a result, in addressing the drivers of deforestation consideration has to be made towards the alternative livelihoods of people as well as a combination of planning and actions that can reduce deforestation and improve the livelihoods. To ensure that the needs of the local communities are met, there is need to put in place an enabling environment by facilitating implementation of the policies and legislations that strengthen local community participation and investments, capacity development in integrated and participatory planning to address the causes of the challenges faced by local communities, appropriate landuse planning, functional local community management structures and an appropriate benefit sharing mechanism for the management of communal resources.

28. Achievement of the above approach will require taking into account all aspects sounding the livelihoods of local communities; community needs, landuse planning, good agriculture practices, innovative enterprises , conservation and management of natural resources (forests, wildlife, water) as well as innovative mechanisms to motivate local communities to take individual initiatives as well as initiatives to manage communal resources. The overall objective will be to increasing forest cover, reduce deforestation and hence reduced GHG emissions.

29. Increasing forest cover and reducing deforestation, will only be effectively achieved if the alternative livelihoods of people requires are identified and linked to actions that can practically improve resource management. The needed actions as follows:

[16] Zambia's Intended Nationally Determined Contribution (INDC) to the 2015 Agreement on Climate Change.

a. **Conservation and management** of existing forests in a sustainable manner, through innovative initiatives like eco-tourism, promotion of conservation by supporting other income generating activities like beekeeping, non-wood forest products e.g. mushrooms, fruits, caterpillars etc.
b. **Recover the degraded forests** through the promotion of natural regeneration, which has a greater potential in the dry forests (Miombo) of Zambia. The degraded forest are a result of poor agricultural practices, charcoal production, energy biomass harvesting, timber and poles for construction. While fire management is important in promoting natural regeneration, identification of potential forest produce with market values is essential, especially non-wood forest products in promoting natural regeneration. An important element would be the promotion of good agricultural practices and improve management of the value chain of the products.
c. **Restoration of deforested areas** through activities that promotes tree planting. Innovative tree planting will be promoted by trees that provide wood for poles, timber, energy including ornamentals and fruits e.g. cashew. The deforested areas are mainly a result of abandoned agriculture fields or over exploited areas for various forest products and mining.

30. Therefore, in order to take the above practical actions, there is need to address the needs of local communities and improve the management of the natural resources. The identified investment priorities have taken these issues into account.

2.2 Priority Investments in relation to Landscape characteristics

31. The descriptions of the needed actions is as a result of the trend of deforestation and forest degradation. These have been linked to the characteristics of the landscapes and the pattern of deforestation. There are areas with high value forests that need to be protected using participatory methodologies and there are also areas that require recovery and restoration.

32. The Northern regions of the country receive a relatively higher as compared to the southern regions. As a result there are more dense forests in the northern regions. In terms of populations, concentration is mainly along the line of rail from Livingstone in the South to Ndola on the Copperbelt. In addition, the northern regions are sparsely populated when compared to the line of rail and extreme eastern parts of the country (Fig. 2). On the other hand, the richness of these forest landscapes in terms of natural resources vary in terms of biodiversity, which also influenced the design of the type of investment to be implemented. Further, the potential alternative livelihoods of the local communities and the needed actions to reduce deforestation were considered.

33. Therefore, identification of investment opportunities to reduce deforestation took these issues into account. While the cause of deforestation may be the same in various areas, the way people are affected is different. In addition, even if the trend of loss may look even in particular areas, the needed actions to recover these forests will differ since the local practices differ. It is for this reason that a process approach has been adopted for the implementation of the investment plan.

34. Overall, there are three (3) main investment areas in order to reduce deforestation and these are:

a. Enabling environment to facilitate positive action;
b. Conservation and management of high value forest areas; and
c. Resilient landscapes, sustainable agriculture and energy.

35. In order to reduce deforestation, an **enabling environment** is needed. Therefore, enabling environmenmt is needed at any scale where practical actions area needed. In addition, the enabling environment could be needed at landscape level, which can be based political boundary (national, provincial or district) or ecological region level (fragile ecosystems, high value forests or wetlands). Noting that Zambia has areas that need **conservation and management** of existing high value forests, there was need to identify specific actions suitable for such areas in order to reduce negative on these areas. On the other hand, areas that require **recovery and restoration** also require specific actions based on the causes of the loss of forests as well as the needs of local communities. The priority landscapes are Luangwa, Zambezi and Kafue Watersheds (Fig.

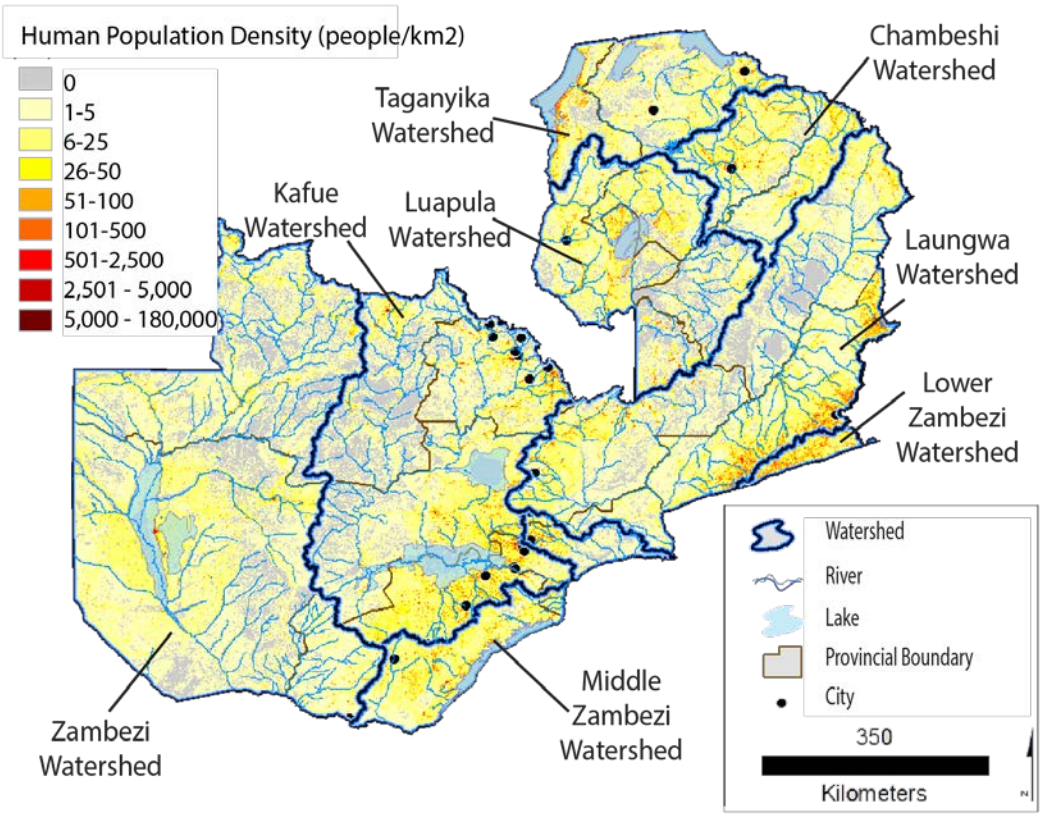


Figure 6: Watersheds of Zambia

Therefore, enabling environment will support two (2) core investment areas.

2.3 Identified Core Investment Areas

2.3.1 Enabling environment

36. It is expected that the enabling environment will create suitable conditions to facilitate livelihood investments needed to reduce deforestation and lay the ground for the core investment priorities. It

will identify policies and legislations that have been passed or approved but not yet effective with the objective of facilitating implementation. It will facilitate investments by improving conditions for investment to thrive through a participatory process of awareness raising and sensitization, landuse planning, training of technical staff and local communities, policy and legislation review and implementation, private sector engagement and adaptive research to enhance performance of the required investment. The enabling environment will create the necessary ingredients for the core investments to thrive, without which it would be difficult to reduce deforestation. To ensure that appropriate enabling environment is created, the following participatory approach will be used:

a. Awareness and sensitisation meetings about the projects
b. Conduct problem analysis to identify challenges and opportunities in the community;
c. Undertake participatory action planning at community level to understand the landscape;
d. Negotiate desired landscape outcomes;
e. Strengthen local level management structures and institutions;
f. Using participatory process undertake land use planning and zoning;
g. Develop rules and regulations for community implementation;
h. Design appropriate participatory management of natural resources (forests and wildlife) including energy needs and potential alternative sources;
i. Identify potential gaps to be addressed in the implementation of investments
j. Identify actions to promote good agricultural practices and improved capacity for small scale farmers;
k. Identify investment opportunities and promote income generating activities to increase income sources for households; and
l. Identify potential entry points for private sector finance in sustainable commodity value chain.

2.3.2 Core Investment Priority 1: Conservation and Management of high value forest areas

37. Core investment Priority 1, will be implemented in areas with good forest cover, which is under threat from over exploitation. Unless some investments are put in place, the forests may be lost. This investment area aims at providing support to the conservation of existing forests through innovative ways using an integrated and holistic approach. Conservation of forests will be achieved through promotion of sustainable forest management, sustainable agriculture and eco-tourism. The objective will be to ensure that alternative sources of household, improved agricultural practices and efficient use of biomass energy are promoted. In addition, practices that promote the protection of forests will be encouraged including enforcement of regulations, promotion of eco-tourism and beekeeping.

2.3.3 Core Investment Priority 2: Resilient Landscapes, Sustainable Agriculture and Energy

38. Core Investment Priority 2 will be implemented in areas where forests have severely been degraded or in those areas where deforestation has occurred. The aim is to restore and rehabilitate forest areas. The major activities will be promotion of sustainable agriculture, tree planting, natural regeneration, efficient biomass energy and promotion of enterprises to increase household incomes.

2.4 The Core Principles

39. In order to ensure that the IP is responsive to the needs of the country, its implementation will follow identified core principles in order to reduce deforestation and forest degradation, therefore reduce emissions.

40. In line with the Smart Zambia Transformation Agenda 2064, the core principles underpinning this investment plan are:

i. *Local ownership*
As the intended beneficiaries and most vulnerable to the impacts of climate change and variability, local communities and Zambians at large shall influence the conception, design, implementation and review of development interventions outlined in this IP. Implementing agencies, including civil society and the private sector, shall be based locally and representing the interests of ordinary Zambians. International cooperating partners shall play a supportive role. There shall be transparency and accountability among the various stakeholders.

ii. *Improved local livelihoods and environmental security*
Implementation of interventions under this IP should result in improved local livelihoods and promote inclusive economic growth whilst sustaining key ecological systems functionality, particularly under variable climatic regimes.

iii. *Gender equality*
Women shall be completely integrated into all activities of this IP, empowered through access to technologies and assure their equal representation in economic participation decision-making processes. Women are viewed as agents of change and not simply as beneficiaries. Gender equity shall be pursued to ensure that both men and women have the full range of opportunities and benefits arising from implementation of this IP. In implementing the IP, gender consideration will be integrated in the design of projects and activities in order to ensure that there is equity in all aspects, in line with the National Gender Policy and the Climate Change Gender Action Plan.

iv. *Financial sustainability*
In accordance with the country's NDC submitted to the UNFCCC, GRZ shall dedicate funding to this IP through the normal national budgetary processes to the relevant sectors to assure long term sustainability of the climate change mitigation and adaptation activities implemented under the IP. GRZ shall also diversify its funding sources for the IP to meet any financial shortfalls and assure sound administration of secured finances through strategic financial planning and sound risk management.

2.5 Implementation Approach

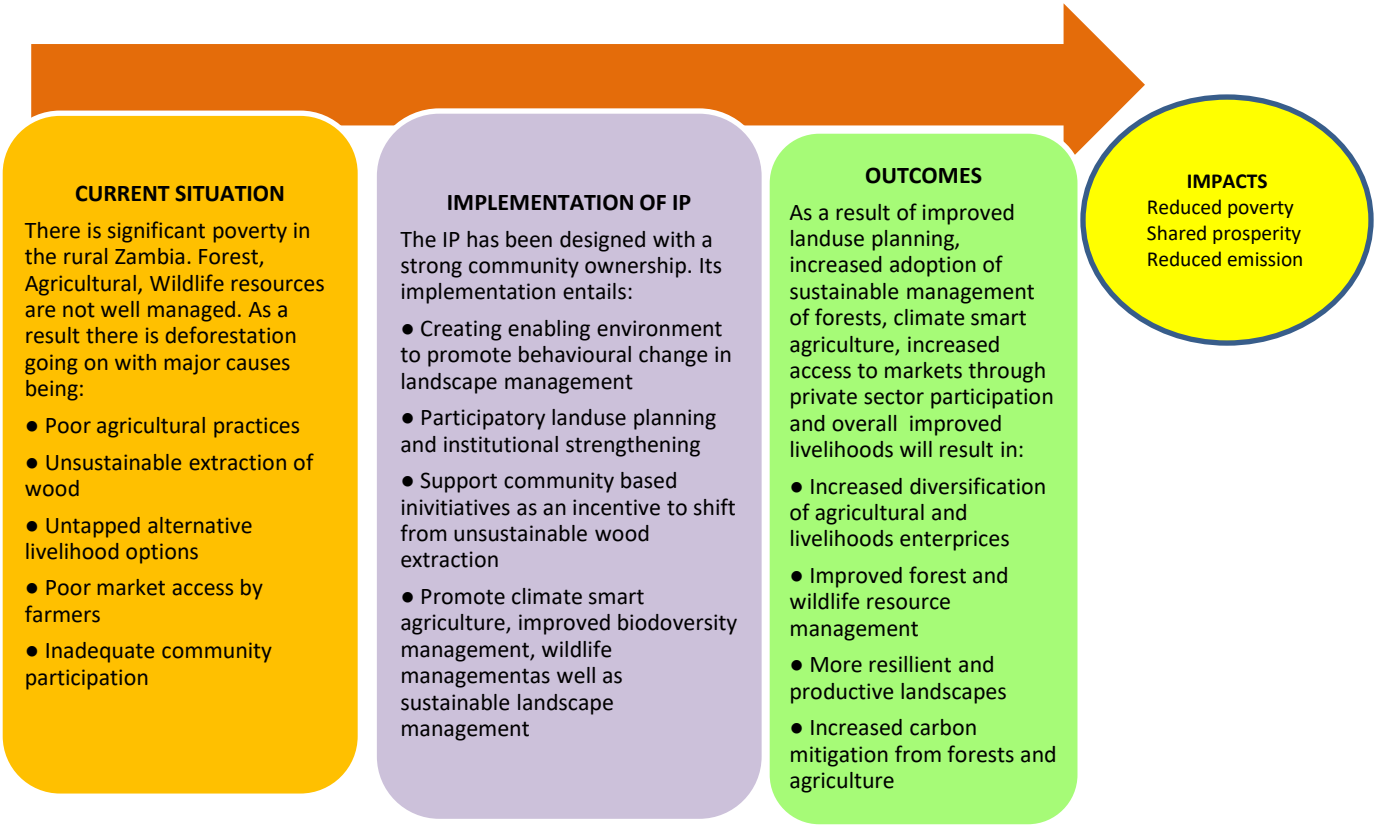
41. In order to ensure that the above principles are achieved, the implementation of the Investment Plan will follow a participatory and consultative approach, especially at local community level. The process will involve:

a. Understanding the Landscapes through problem analysis with local communities to identify causes of deforestation and opportunities that exist;
b. Negotiate the desired landscape outcomes since for local communities to commit to reducing deforestation, they need to undertstand their roles and responsibilities well. This will facilitate setting of targets and hence effective monitoring;
c. Develop action plans for the landscapes on which the investments will hinge on. The action plans will form a base for the commitments and performance;
d. Implement the Actions Plans, which will result in improved forest resource management and improved livelihoods;
e. Evaluate the landscape performance in order to assess progress on the actions that were put in place..

Overall the following activities will be promoted at field level in order to reduce deforestation:

a. Conservation and management of existing forests
b. Promotion of Woodlots and plantation (afforestation and reforestation)
c. Promotion of natural regeneration
d. Promotion of non-wood forest products enterprises
e. Agroforestry – growing of beneficial/multi-purpose trees/shrubs among crops.
f. Conservation agriculture - water harvesting, planting in the stubble, crop rotations, soil cover, and judicious use of fertilizers /organic fertilizers.
g. Sustainable land management – soil erosion interventions, grazing systems, fisheries and aquaculture.
h. Renewable energy interventions –solar, biogas, energy efficient systems.
i. Integration of Legume/Cereal rotations into Livestock Systems
j. intensification of arable farming; grazing under trees
k. Intensive/Semi-intensive livestock production – for example zero grazing, rotational grazing.
l. Promoting enterprise development
m. Improved value addition and market linkages
n. Payment for environmental services interruptions

2.6 The Theory of Change



42. The Theory of Change is based on the recognition that under the current situation, many rural communities in Zambia are locked into a cycle of poverty and resource degradation. Forests and ecosystem services continue to be lost; GHG emissions are significant due to deforestation, forest degradation, and encroachment of protected areas. Unless the value of forests is increased and captured by local people through improved livelihoods and benefits from the resources, these resources will continue to be degraded through neglect, inefficient or illegal use, or replacement by low-value land use options.

2.7 Detailed Description of Core Investment Priorities (CIPs) and Enabling Environment

43. The Investment Plan has been designed in a landscape approach. This is an interdisciplinary, cross-sectoral and holistic approach to help overcome challenges to deforestation and other challenges that need to be addressed together, avoiding barriers created by sector approach and contribute to sustainable resource management by connecting all stakeholders involved, starting with the communities at risk in the landscape.

44. The main characteristics of landscape approach, which the IP takes advantage of are:
    - Communities are at the centre of the investments
    - Takes into account all actors
    - Examines the entire landscape in which drivers of deforestation occur
    - Takes into account water resource management
    - Integrates ecosystem management and restoration
    - Helps manage trade-offs
    - Flexible to future changes since local communities are fully involved in the planning process
    - Promotes long-term perspective

2.7.1 Enabling Environment to Support Core Investments

45. This component supports the implementation of the National Strategy to reduce deforestation and forest degradation. Therefore, in order to facilitate a smooth flow of investment and filed level actions, the enabling environment will lay a foundation. The main issues to be addressed under the enabling environment are as follows:

2.7.1.1 Awareness raising and sensitization

46. In order to ensure effective investment and reduced deforestation, it is important that awareness raising and sensitisation is an important component of the investment priorities. It is expected that this will help to build a sense of responsibility and identify innovative actions needed to reduce deforestation. Awareness raising about the resources available and how these could be used to improve livelihoods and ensure sustainable resource management.

2.7.1.2 Land use planning

47. One of the needed actions to reduce deforestation is to facilitate community-based landuse planning. Landuse planning is important at community level as it provides an opportunity for communities to set various parcels of land for specific development or use. Enforced with appropriate rules and regulations, communities are able to have productive lands while at the same time reduce deforestation. In addition, this process facilitates land registration, which is important in ensuring that user rights are strengthened.

2.7.1.3 Capacity development

48. Once communities are provided with the right training, tools and equipment, they are capable of performing a lot of activities effectively. In order to ensure that the potential investments create positive results, local communities and technical staff may require training or acquisition of tools and equipment needed to achieve the set goals.

    - Building the skills and confidence of individuals and groups
    - Enhancing community decision making and problem solving processes
    - Creating a common vision for the future
    - Implementing practical strategies for creating change
    - Promoting inclusion and social justice.
    - Facilitating a sustainable investment environment
    - Enforcement of environmental and social safeguards

2.7.1.4 Enforcement of existing policies and legislation

49. The Government revised a number of policies and laws including in forestry, agriculture, landuse planning and wildlife management. However, it has been observed that while these may have been revised, implementation has been a challenge because some have not been put into practice. This could be due to unavailability of administrative procedures for the principle law. Therefore, this component will help identify laws that need enforcement of administrative processes to reduce deforestation and facilitate investments. In addition, the component will support communities to develop rules and regulations that would effectively help reduce deforestation and enhance investments.

2.7.1.5 Components, key activities and indicators for Enabling Environment

50. Table 7 below provides details enabling environment by identifying the relevant components, key activities and indicators.

Table 7: Enabling Environment and its relevant components, key activities and indicators

Investment	Component	Key Activities	Indicators
1. Enabling Environment	1.1 Awareness raising and Training 1.2 Landuse Planning 1.3 Capacity Development 1.4 Enforcement of existing policies and legislation	i. Awareness and sensitisation meetings about the projects ii. Conduct problem analysis to identify challenges and opportunities in the community; iii. Undertake participatory action planning at community level to understand the landscape; iv. Negotiate desired landscape outcomes; v. Strengthen local level management structures and institutions; vi. Using participatory process undertake land use planning and zoning; vii. Develop rules and regulations for community implementation; viii. Design appropriate participatory management of natural resources (forests and wildlife) including energy needs and potential alternative sources; ix. Identify potential gaps to be addressed in the implementation of investments x. Identify actions to promote good agricultural practices and improved capacity for small scale farmers; xi. Identify investment opportunities and promote income generating activities to increase income sources for households; and xii. Identify potential entry points for private sector finance in sustainable commodity value chain.	• Well informed communities; • Causes of problems related to deforestation identified; • Priority actions identified • Priority investment identified; • Action Plans developed; • Landuse plans developed • Rules and regulations developed; • Value addition potential and market linkages identified; • Collaborative mechanism between communities and private sector; identified and developed • Statutory Instruments to support community actions and investments developed.

2.1.1.1 Budget estimate for Enabling Environment

51. The estimated budget for enabling environment is presented in Table 8. This is broken down by activity and total budget (in million USD) presented for each activity.

Table 8: Budget estimation for enabling environment

CIP	Component	Key Activities	Amount in million USD					
			Yr1	Yr2	Yr3	Yr4	Yr5	Sub-Total
3. Policy and Institutions	1.1 Awareness raising and Training	i. Awareness and sensitisation meetings about the projects	2	0.2	.2	.3	.2	2.9
		ii. Conduct problem analysis to identify challenges and opportunities in the community;	0.25	0.25	0.25	0.25	0.25	1.21
	1.2 Land-use Planning	iii. Undertake participatory action planning at community level to understand the landscape;	0.35	0.25	0.25	.6	-	1.34
	1.3 Capacity Development	iv. Negotiate desired landscape outcomes;	0.5	1.0	1.5	0.5	0.5	4
		v. Strengthen local level management structures and institutions;	0.25	0.05	0.05	.2	.5	1.02
	1.4 Enforcement of existing policies and legislation	vi. Using participatory process undertake land use planning and zoning;	3.3	2.1	1.1	.8	.4	7.7
		vii. Develop rules and regulations for community implementation;	0.2	0.1	.5	.1	.1	**1**
		viii. Design appropriate participatory management of natural resources (forests and wildlife) including energy needs and potential alternative sources;	1.0	0.1	0.1	.1	.1	**1.5**
		ix. Identify potential gaps to be addressed in the implementation of investments	0.2	0.5	0.1	0.02	0.02	**0.84**
		x. Identify actions to promote good agricultural practices and improved capacity for small scale farmers;	1.0	1.5	0.4	0.5	0.5	**3.9**
		xi. Identify investment opportunities and promote income generating activities to increase income sources for households; and	1.0	1.5	1.0	1.0	1.0	**5.9**
		xii. Identify potential entry points for private sector finance in sustainable commodity value chain.	0.2	0.05	0.05	0.05	0.05	**0.4**
		xiii.	**10.21**	**7.6**	**5.5**	**4.2**	**4.2**	**32**

2.1.2 CIP1 – Conservation and management of high value forest areas

2.1.2.1 Focus of CIP1

52. This CIP focuses on effective conservation and management of forest reserves, open forest areas on customary lands, timber concession areas, threatened and sensitive protected areas and forests adjacent to mining and other large infrastructural development sites. **At the core of CIP1 is gender responsive community participation in the sustainable management of forests in these different forest regimes.**. The CIP incorporates REDD+ Strategic Objectives (SOs)1, 2, 3 and 8 on effective management and protection of forest reserves, effective management and monitoring of high value forests in open areas, effective and participatory management of forest concession areas, and participation of the mining industry in the sustainable management of surrounding indigenous forests and establishment of plantations for own timber needs, respectively (see Annex 1).

53. Forests of high conservation value are forests of outstanding and critical importance due to their high environmental, socioeconomic, biodiversity or landscape values (WWF, 2007). These could therefore include, for example, indigenous forests such as Zambezi teak (*Baikiaea plurijuga*) and mopane (*Colophospermum mopane*) in Zambia, forests protecting human settlements on slopes, forests on sacred burial grounds of local communities, large landscape forests protecting watersheds, production forests of high value timber and forest reserves protecting biodiversity. In Zambia, these forests occur on both state and customary lands.

54. The CIP is intended to avoid deforestation and degradation in areas of high ecological/biodiversity value for maintaining ecosystem services such as hydrological services, biodiversity/game management areas, botanical reserves, important bird areas (IBAs), wetlands and heritage sites. Ensuring the continued existence of natural forest areas clearly is critical to reducing overall deforestation rates and to maintenance of carbon stocks thus enhancing both conservation and forest values. The CIP also recognizes the important role that local communities, civil society, government agencies (e.g., FD, DNPW, Department of Energy, ZEMA, etc.) and private sector can play in enhancing both conservation and forest values.

55. Figure 3 shows two combined maps. Map A shows the conservation value of Zambia (Trainor, 2017). Map B shows the forest value of Zambia (UNEP, 2015). A number of similar maps were developed and shall be used to prioritise investment options taking into account conservation and forest values. The rationale will be to promote **conservation efforts** in areas of high ecological/biodiversity value for maintaining ecosystem services.

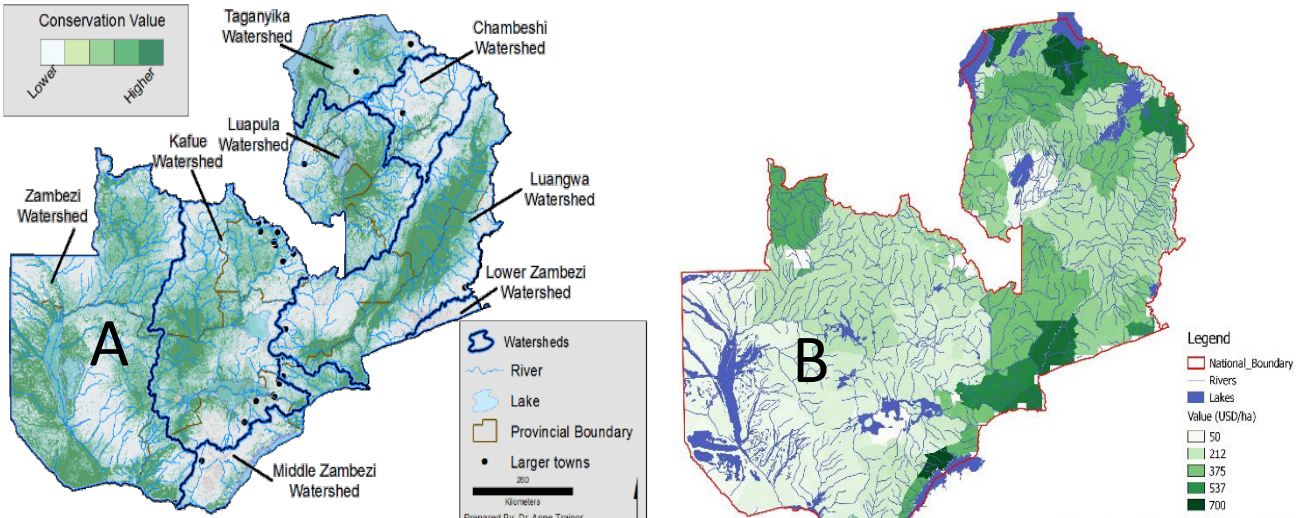


Figure 3: Conservation value map (A) versus forest value map of Zambia (B). Source: Trainor, 2017 and UN-REDD, 2015)

2.1.2.2 Development objective of CIP1

56. The development objective of core investment priority 1 is to promote innovative community-centred, gender responsive forest conservation and management practices through improved forest management, agriculture practices and ecotourism in order to reduce GHG emissions.

57. CIP1 will focus on four components: i) sustainable management of forests in protected areas, open areas and critical upper watersheds; ii) improved regulations for protecting ecologically sensitive areas; and iii) sustainable management of timber and non-wood forest products (NWFPs) iv) sustainable agricultural practices. Activities under each of these components are presented in Section 2.2.1.3 below.

2.1.2.3 Components, key activities and indicators for CIP1

58. Table 3 below provides details on CIP1 by identifying the relevant components, key activities and indicators.

Table 3: CIP1 and its relevant components, key activities and indicators

CIP	Component	Key Activities	Indicators
1. Conservation and management of high value forest areas.	1.1 Sustainable management of forests in protected areas (forest reserves, national parks, etc.), open areas (customary lands) and critical upper watersheds.	1.1.1 Promote participatory approaches to local forest management in protected and open areas through Community Forest Management (CFM), Joint Forest Management (JFM) and Private Forest Management (PFM).	• Number of protected and open areas under CFM, JFM and PFM • Size of forest land (ha) under CFM, JFM and PFM • Number of forest management plans developed • Number of communities involved in participatory forest management • Number of CPPPs developed and functional
		1.1.2 Develop generic cost-benefit, gender sensitive sharing models for management of forests in protected and open areas through CFM, JFM and PFM.	• Number of cost-benefit sharing mechanisms developed and functional • Number of men and women involved and benefiting through the models
		1.1.3 Identify and set up (declare) protected areas around threatened headwaters and other HCV and HCS areas (e.g. Kafue) – priority because of mining.	• Number of PAs identified and declared (including no-go areas) • Size (ha) of PAs identified and declared (including no-go areas)

		1.1.4 Develop integrated land management plans (e.g., soil fertility management, forest enterprises, energy, biodiversity, etc.) through a landscape approach.	• Number of integrated land management plans developed and enforced
		1.1.5 Promote sustainable management of forests adjacent to mining areas by mining companies including support to CFM initiatives.	• Area (ha)managed for natural regeneration • Area (ha) conserved • Number of forests managed by mining companies • Size (ha) of forests managed by mining companies • Number of CFM initiatives supported by mining companies
		1.1.6 Identify and develop game ranching opportunities for ecotourism.	• Number and size (ha) of game ranches established • Number of communities involved in game ranching
		1.1.7 Promote community-public-private partnerships (CPPPs) in ecotourism development.	• Number of CPPPs established for ecotourism development
CIP	**Component**	**Key Activities**	**Indicators**
	1.2 Sustainable management of timber concession areas and non-timber forest products (NTFPs)	1.2.1 Strictly enforce development of forest management plans by timber concessionaires.	• Number of management plans developed for timber concessions • Number of management plans for timber concessions being enforced • Size of area (ha) under timber concessions
		1.2.2 Create an independent monitoring unit for timber concession operations.	• Timber concession monitoring unit established and functional
		1.2.3 Implement participatory approaches using appropriate models for collaborative forest management in timber concession areas.	• Number of timber concession areas under collaborative management arrangements • Size (ha) of timber concession areas under collaborative arrangements • Number of communities participating in collaborative management of timber concessions
		1.2.4 Identify, develop, establish and promote NTFP industries/enterprises.	• Number and types of NTFP enterprises developed, established and community managed
		1.2.5 Identify, develop and support CPPP enterprises for timber and NTFPs including markets and market linkages.	• Number of CPPP enterprises for timber and NTFPs • Number of established and functional markets and market linkages for timber and NTFPs
		1.2.6 Support investments in certification schemes for timber and NTFP industries/enterprises.	• Number and size of area (ha) with certified NTFPs • Number and size of area (ha) with certified timber
	1.5 Sustainable agriculture	1.1.1 Promote climate-smart agricultural (CSA) practices related to production including uptake of agroforestry.	• Number of gender sensitive CSA practices promoted and adopted • Number of farmers adopting CSA practices • Area of land (ha) under CSA practices • Number of agroforestry practices adopted • Area of land (ha) under agroforestry
		2.1.2 Incentivise climate-smart agricultural practices that mitigate carbon emissions through market linkages.	• Types of incentives promoted for CSA adoption

			• Number of market linkages established for CSA
		2.1.3 Promote investment into reducing post-harvest losses.	• Tonnage of post-harvest recovery
		2.1.4 Promote farm-based natural regeneration practices to increase forest cover.	• Number of farm-based natural regeneration practices adopted • Area of land (ha) brought under farm-based natural regeneration
		2.1.5 Support land use planning to enable optimal location of agro-business concessions (farm blocks) and community climate smart agriculture.	• Number of land use planning and planning tools developed to guide commercial agricultural and CSA investments • Number of policy investment guidelines that reconcile both competing land uses and policy mismatch

2.1.2.4 Budget estimate for CIP1

59. The estimated budget for CIP1 is presented in Table 4. This is broken down by activity and total budget (in million USD) presented for each activity over a five-year investment period. Potential sources of financing are covered in Chapter 5.

Table 4*:*Budget estimation for CIP1 – Conservation and Management of High Value Forest Areas

CIP	Component	Key Activities	Amount in million USD					
			Yr1	Yr2	Yr3	Yr4	Yr5	Sub-Total
1. Conservation and management of high value forest areas.	1.1 Sustainable management of forests in protected areas (forest reserves, national parks, etc.), open areas (customary lands) and critical upper watersheds.	2.1.1 Promote participatory approaches to local forest management in protected and open areas through CFM, JFM and PFM.	10.5	10.0	8.5	6.2	5.3	**40.5**
		1.1.2 Develop and test generic cost-benefit sharing models for management of forests in protected and open areas.	1.5	1.0	0.5	-	-	**3.0**
		1.1.3 Identify and set up (declare) protected areas around threatened headwaters and other HCV and HCS areas (e.g. Kafue) – priority because of mining.	6.5	1.3	1.0	0.5	0.2	**9.5**
		1.1.4 Develop integrated land management plans (e.g., soil fertility management, forest enterprises, energy, biodiversity, etc.) through a landscape approach.	4.8	2.5	2.0	0.5	0.2	**10.0**
		1.1.5 Promote sustainable management of forests adjacent to mining areas by mining companies including support to CFM initiatives.	3.7	3.5	3.5	3.5	3.5	**17.7**

		1.1.6 Identify and develop game ranching opportunities for ecotourism.	4.2	3.5	2.8	1.7	0.8	**13.0**
		1.1.7 Promote community-public-private partnerships (CPPPs) in ecotourism development.	2.3	2.0	1.5	1.0	0.2	**7.0**
	1.2 Sustainable management of timber and non-timber forest products (NTFPs)	1.2.1 Strictly enforce development of forest management plans by timber concessionaires.	1.6	1.2	1.2	1.2	1.2	**6.4**
		1.2.2 Create an independent monitoring unit for timber concession operations.	3.0	1.2	0.3	-	-	**4.5**
		1.2.3 Implement participatory approaches using appropriate models for collaborative forest management in timber concession areas.	2.8	1.2	1.0	1.0	0.5	**6.5**
		1.2.4 Identify, develop, establish and promote NTFP industries/enterprises.	8.5	7.5	7.5	6.0	5.5	**35.0**
		1.2.5 Identify, develop and support CPPP enterprises for timber and NTFPs including markets and market linkages.	1.8	1.5	1.2	1.0	0.8	**6.3**
		1.2.6 Support investments in certification schemes for timber and NTFP industries/enterprises.	3.5	3.0	2.5	2.5	2.5	**14.0**
2. Resilient landscapes, sustainable agriculture and energy.	2.1 Sustainable agriculture	2.1.1 Promote climate-smart agricultural (CSA) practices related to production including uptake of agroforestry.	2.5	2.5	2.5	2.5	2.5	**12.5**
		2.1.2 Incentivise climate-smart agricultural practices that mitigate carbon emissions through market linkages.	1.2	1.0	1.0	1.0	0.75	**4.95**
		2.1.3 Promote investment into reducing post-harvest losses.	1.0	1.5	1.0	0.75	0.5	**4.75**
		2.1.4 Promote farm-based natural regeneration practices to increase forest cover.	0.5	0.5	0.5	1.0	1.0	**2.5**
		2.1.5 Support land use planning to enable optimal location of agro-business concessions (farm blocks) and community CSA	1.5	1.5	1.5	1.0	1.0	**6.5**
Sub-total			**54.7**	**39.4**	**33.5**	**25.1**	**20.7**	**194.60**

2.1.3 CIP2 – Resilient landscapes, sustainable agriculture and energy

2.1.3.1 Focus of CIP2

60. This CIP emphasizes adoption of climate-smart agricultural practices and restoration/rehabilitation of degraded land areas, regulated production of wood fuel and its

improved utilization, and promotion of wide adoption of appropriate and affordable alternative energy sources. These cover SOs 4, 5 and 6 of the REDD+ Strategy (see Annex 1).

61. Agriculture is an important livelihood activity of rural communities, including those on the fringes of forests. With population increase and poor farming methods and practices, communities encroach on forests. Systems that have now become unsustainable such as slash and burn enrich soils, but only for few planting seasons, after which communities need to clear new lands, including forests for agriculture. Investments are needed to ensure that farming communities produce sustainably, increase yields per unit area as well as restore the productive function of their production landscapes, which include forests. While protecting existing forests, local communities will engage in production systems, technologies and practices such as boundary planting, woodlots, plantations, natural regeneration and homestead planting (ornamental, shade trees, fruit trees, etc).

62. Figure 4 shows two combined maps. Map A shows the cropland potential (e.g. maize, suitability, soy bean suitability and distribution of current crop land) of Zambia and Map B shows the human influence of Zambia (e.g. transportation, urban centres and communities). Investment options will be informed by considering both human influence and cropland potential. The rationale will be promoting **restoration efforts** in degradation areas with compromised production capacity to improve socio-economic situations of communities, particularly food security.

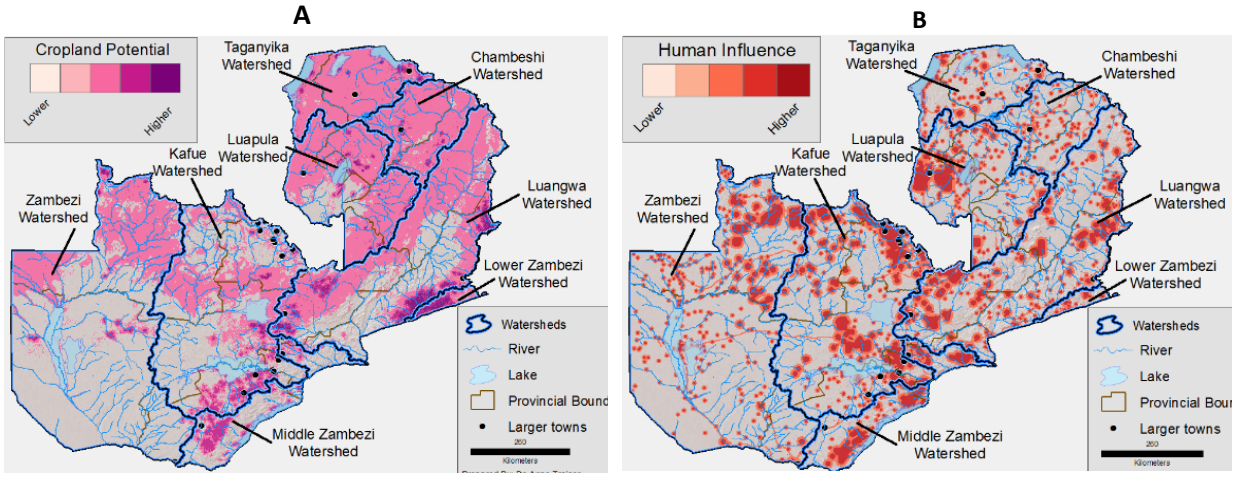


Figure 4: Cropland potential versus human influence across Zambia (*Source*: Trainor, 2017).

63. When developing landscape level plans, decision-makers require credible and accurate spatial data depicting 1) the current landscape and 2) factors that influence the suitability of siting different activities (e.g., forestry, mining, energy, and agriculture). The emergence of low-cost spatial technologies, including geographic positioning system (GPS), geographic information systems (GIS) and remote sensing (e.g., aerial photography), have enabled local communities and government agencies to collect spatial data to make more strategic and resilient development

plans. Figures 5 illustrates how the Conservation Value (Figure 3A), Cropland potential (Figure 4A) and the Human influence (Figure 4B) maps can help make more transparent and effective decisions when siting future to expand agriculture capacity. First, the potential development sites need to be delineated on the landscape (e.g., overlay the boundary with Google Earth or aerial imagery). Next, overlaying the boundary of a proposed project with the three spatial products will help identifying areas suitable for economic development while simultaneously limiting total ecological and environmental effects of that development. Compared to Site B, Site A avoids impacting critical natural resources, has greater crop suitability, and closer to existing infrastructure. Thus, providing broad initial involvement from multiple sectors and with full transparency in the decision-making process.

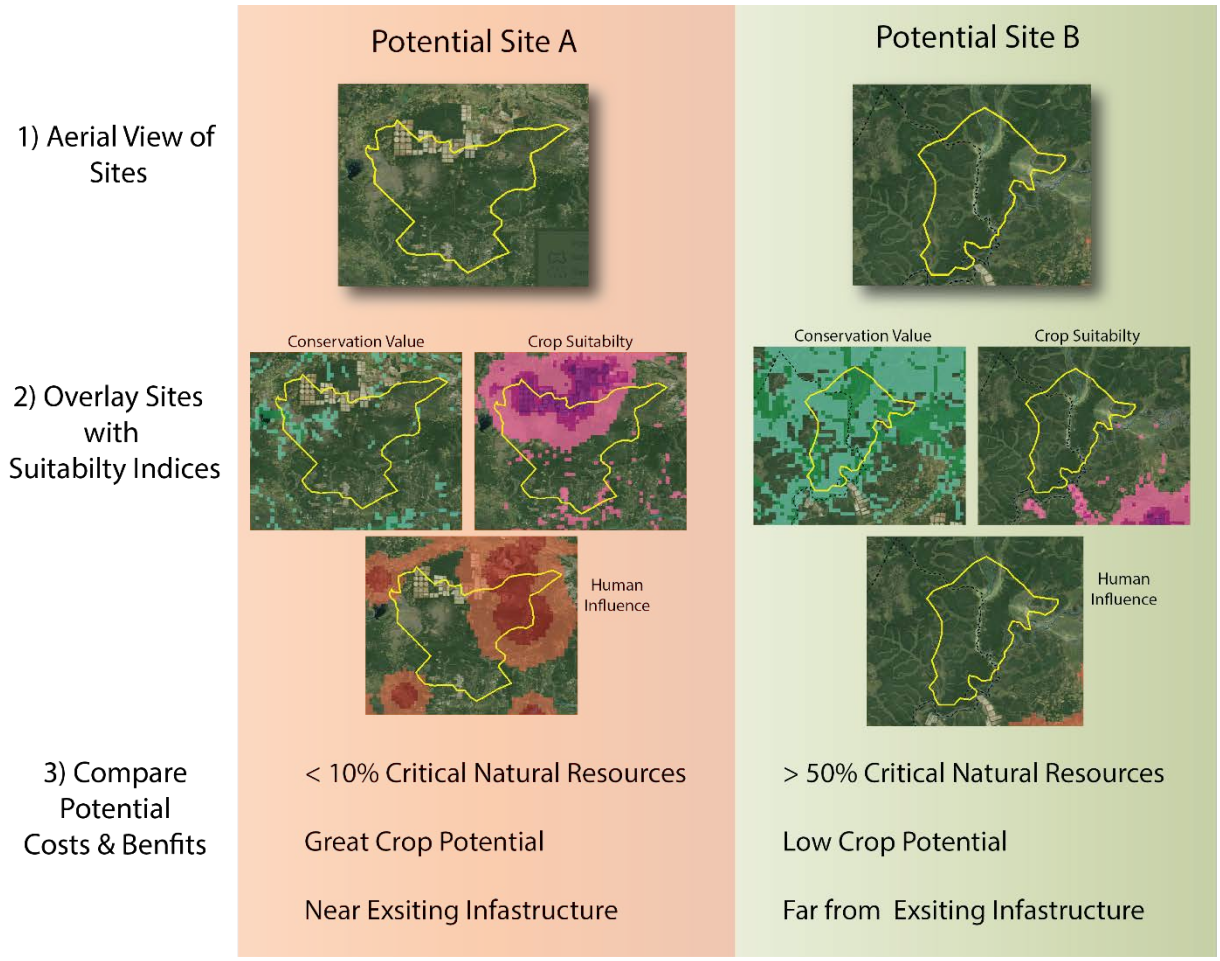


Figure 5 Hypothetical example of how to use spatial products (Conservation Value, Human influence, and Crop Potential maps) for strategic land use planning at landscape level (*Source*: Trainor, 2017)

64. Figure 6 illustrates how these spatial products can provide early warning of potential conflicts among sectors (e.g., natural resource extraction, agriculture, and energy), and b) among planned development and natural resources (e.g., nature, biodiversity conservation, and rural community livelihood). For instance, it is possible to map and overlay potentially competing

sectors within a watershed. This process will help locate areas where sectors are not competing against each other (Figure 6, "no conflict") and identify which sectors could be competing for the same space on the landscape (Figure 6, "Potential Conflict"). Due to each sector preferences and constraints, this example illustrates that not all sectors will likely conflict with each other throughout the watershed (Figure 6). Furthermore, the areas with potential conflicts among sectors are relatively small compared to the areas without conflicts (Figure 6 bottom maps). As a result, this approach can evaluated the potential conflicts between agricultural demand with expanding infrastructure and retaining critical natural resources throughout a watershed.

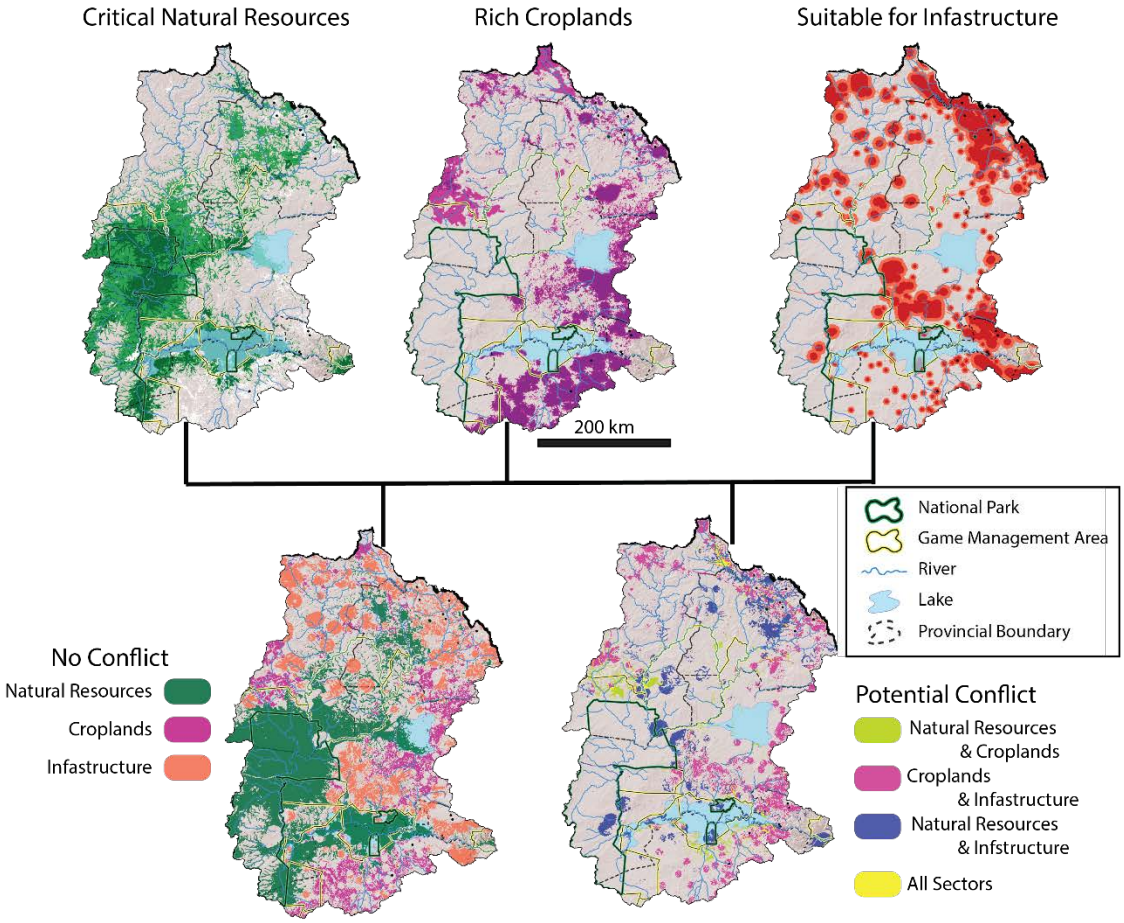


Figure 6 Map of the three spatial products (Conservation Value, Human influence, and Crop Potential maps) in the Kafue River watershed (Trainor, unpublished data).

65. A UNDP-financed study, prepared as part of this Investment Plan (see Annex 2),looked at strengthening the regulation of wood fuel and its improved utilization in Zambia. It noted that demand for wood fuel in form of firewood and charcoal contributes significantly to forest degradation. This is exemplified by the estimates amounting to 144,662 hectares per annum of woodland required to produce charcoal in four provinces of Zambia out of the nine provinces. Charcoal and firewood make up over 70% of the national energy consumption in Zambia as only 20% of the population has access to electricity. Charcoal production technology currently used

(earth kilns) is highly inefficient; the technology has both low conversion and recovery rates and charcoal production itself remains largely unregulated. This CIP aims to promote improved production of wood fuel and its utilization to mitigate GHG emissions from carbonization processes through improved production efficiency and enhanced carbon stock preservation in charcoal producing areas.

66. Promotion of alternative energy sources aims to diversify energy sources from firewood and charcoal with the aim of improving energy efficiency and effectiveness, reducing emission of greenhouse gases and contributing to the mitigation of environmental degradation resulting from wanton cutting of trees for charcoal production and firewood. Potential for developing appropriate energy saving technologies range from the harnessing of solar, biogas, wind, geothermal, Liquefied Petroleum Gas (LPG) to mini-hydro schemes. Promotion of appropriate alternative energy sources could be achieved through smart partnerships with technology development entities and smart incentives to facilitate wider adoption (e.g., low to zero tax rates on alternative energy technologies).

2.1.3.2 Development objective of CIP2

67. The development objective of core investment priority 2 is to recover and restore forest resources through improve agricultural practices, forest management and natural regeneration, as well use of efficient energy sources in order to mitigate GHG emissions. This will improve food security, energy security and environmental security. The CIP will focus on three components: i) sustainable agriculture; ii) renewable energy; and restoration of degraded forest and lands.

2.1.3.3 Components, key activities and indicators for CIP2

68. Table 5below provides details on CIP2 by identifying the relevant components, key activities and indicators.

Table 5: CIP2 and its relevant components, key activities and indicators (*cont……)*

CIP	Component	Key Activities	Indicators
2. Resilient landscapes, sustainable agriculture and energy.	2.1 Sustainable agriculture	3.1.1 Promote climate-smart agricultural (CSA) practices related to production including uptake of agroforestry.	• Number of gender sensitive CSA practices promoted and adopted • Number of farmers adopting CSA practices • Area of land (ha) under CSA practices • Number of agroforestry practices adopted • Area of land (ha) under agroforestry
		2.1.3 Incentivise climate-smart agricultural practices that mitigate carbon emissions through market linkages.	• Types of incentives promoted for CSA adoption • Number of market linkages established for CSA
		2.1.4 Promote investment into reducing post-harvest losses.	• Tonnage of post-harvest recovery
		2.1.5 Promote farm-based natural regeneration practices to increase forest cover.	• Number of farm-based natural regeneration practices adopted • Area of land (ha) brought under farm-based natural regeneration

		2.1.6 Support land use planning to enable optimal location of agro-business concessions (farm blocks) and community climate smart agriculture.	• Number of land use planning and planning tools developed to guide commercial agricultural and CSA investments • Number of policy investment guidelines that reconcile both competing land uses and policy mismatch
	2.2 Renewable energy	2.2.1 Promote alternative renewable energy sources (e.g., mini hydro, solar, biogas, geothermal, wind, etc.).	• Number of renewable energy technologies promoted • Improved access to affordable energy at household level
		2.2.2 Promotion of smart incentives for alternative energy sources adoption.	• Type and number of incentives promoted for alternative energy adoption
		2.2.3 Promote CPPPs in renewable energy technology development and utilization.	• Number of CPPPs promoted for renewable energy development
		2.2.4 Develop models for sustainable and regulated wood fuel production.	• Number of models developed for sustainable and regulated wood fuel production
		2.2.5 Promote energy-efficient wood fuel utilization technologies.	• Number of energy-efficient wood fuel utilization technologies promoted and adopted
		2.2.6 Support certification of feedstock supply, improved production systems and capacity along wood fuel value chains.	• Number of certified feedstock supply systems • Number of individuals/groups capacitated along the wood fuel value chain
		2.2.7 Develop incentive mechanisms for sustainable wood fuel production and utilization.	• Number of incentive mechanisms developed, applied and working
	2.3 Restoration of degraded lands	2.3.1 Identify and restore/rehabilitate degraded land areas across the focal landscapes.	• Area of degraded land (ha) restored/ rehabilitated
		2.3.2 Enhance natural regeneration and re-vegetation through assisted natural regeneration (ANR)[17] and tree planting.	• Total area (ha) of degraded land restored/rehabilitated through ANR • Total area (ha) of degraded land restored/rehabilitated through tree planting

2.1.3.4 Budget estimate for CIP2

69. The estimated budget for CIP2 is presented in Table 6. This is broken down by activity and total budget (in million USD) presented for each activity.

Table 6: Budget estimation for CIP2 – Resilient landscapes, sustainable agriculture and energy

CIP	Component	Key Activities	Amount in million USD					
			Yr1	Yr2	Yr3	Yr4	Yr5	Sub-Total
3. Resilient landscapes, sustainable	3.1 Sustainable agriculture	3.1.1 Promote climate-smart agricultural (CSA) practices related to production including uptake of agroforestry.	5.5	5.5	5.5	5.5	5.5	**27.5**

[17] ANR is a flexible approach to reforestation that assists natural regeneration of forest trees (natural seedlings and sprouts) through natural successional processes by removing barriers to natural regeneration such as soil degradation, competition with weedy species and recurring disturbances (e.g., fire, grazing and wood harvesting).

agriculture and energy.		2.1.3 Incentivise climate-smart agricultural practices that mitigate carbon emissions through market linkages.	2.4	2.0	2.0	2.0	1.5	**9.9**
		2.1.4 Promote investment into reducing post-harvest losses.	3.6	3.5	3.0	2.5	2.0	**14.6**
		2.1.5 Promote farm-based natural regeneration practices to increase forest cover.	2.2	2.0	2.0	2.0	1.8	**10.0**
		2.1.6 Support land use planning to enable optimal location of agro-business concessions (farm blocks) and community CSA	3.5	3.5	3.0	2.5	1.5	**14.0**
	2.2 Renewable energy	2.2.1 Promote alternative renewable energy sources (e.g., mini hydro, solar, biogas, geothermal, wind, etc.).	6.5	6.0	5.5	5.5	4.5	**28.0**
		2.2.2 Promotion of smart incentives for alternative energy sources adoption.	1.7	1.5	1.0	1.0	0.5	**5.7**
		2.2.3 Promote CPPPs in renewable energy technology development and utilization.	2.3	1.8	1.5	1.0	0.5	**7.1**
		2.2.4 Develop models for sustainable and regulated wood fuel production.	3.8	2.6	2.0	1.2	0.5	**10.1**
		2.2.5 Promote energy-efficient wood fuel utilization technologies.	4.6	3.5	2.5	2.0	1.4	**14.0**
		2.2.6 Support certification of feedstock supply, improved production systems and capacity along wood fuel value chains.	2.1	2.0	1.7	1.5	1.0	**8.3**
		2.2.7 Develop incentive mechanisms for sustainable wood fuel production and utilization.	3.0	1.2	0.8	0.5	0.2	**5.7**
	2.3 Restoration of degraded lands	2.3.1 Identify and restore/rehabilitate degraded land areas across the focal landscapes.	4.4	4.0	4.0	3.6	3.0	**19.0**
		2.3.2 Enhance natural regeneration and re-vegetation through assisted natural regeneration (ANR)[18] and tree planting.	2.6	1.0	0.2	0.2	0.2	**4.2**
Sub-total			**48.2**	**40.1**	**34.7**	**31**	**24.1**	**178.1**

4. Implementation Approach of the Investment Plan

3.1 Cross-Sectoral Approach

70. Forestry, agriculture, energy and mining, as per the National REDD+ Strategy, represent the main sectoral focus of the Investment Plan as these are the key drivers of deforestation and forest degradation in Zambia. Achieving REDD+ and climate change objectives requires a cross-sectoral and coordinated approach recognizing the complex interplay among these driving sectors.

71. Figure 6 illustrates a hypothetical example of cross-sectoral approach and stakeholder involvement when developing land-use plans across a watershed to expand agriculture capacity.

"No-go" areas for selected developments can be defined with conservation values maps depicting critical natural resources (Figure 3). Based on crop suitability and existing infrastructure maps, zoning for expanding croplands and energy can be planned in areas with the greatest likelihood of success while minimizing negative impacts to nature and communities. By identifying geographic priorities for multiple land use activities it is possible to find solutions that reconcile potential land use conflicts and achieve multiple land-use objectives.

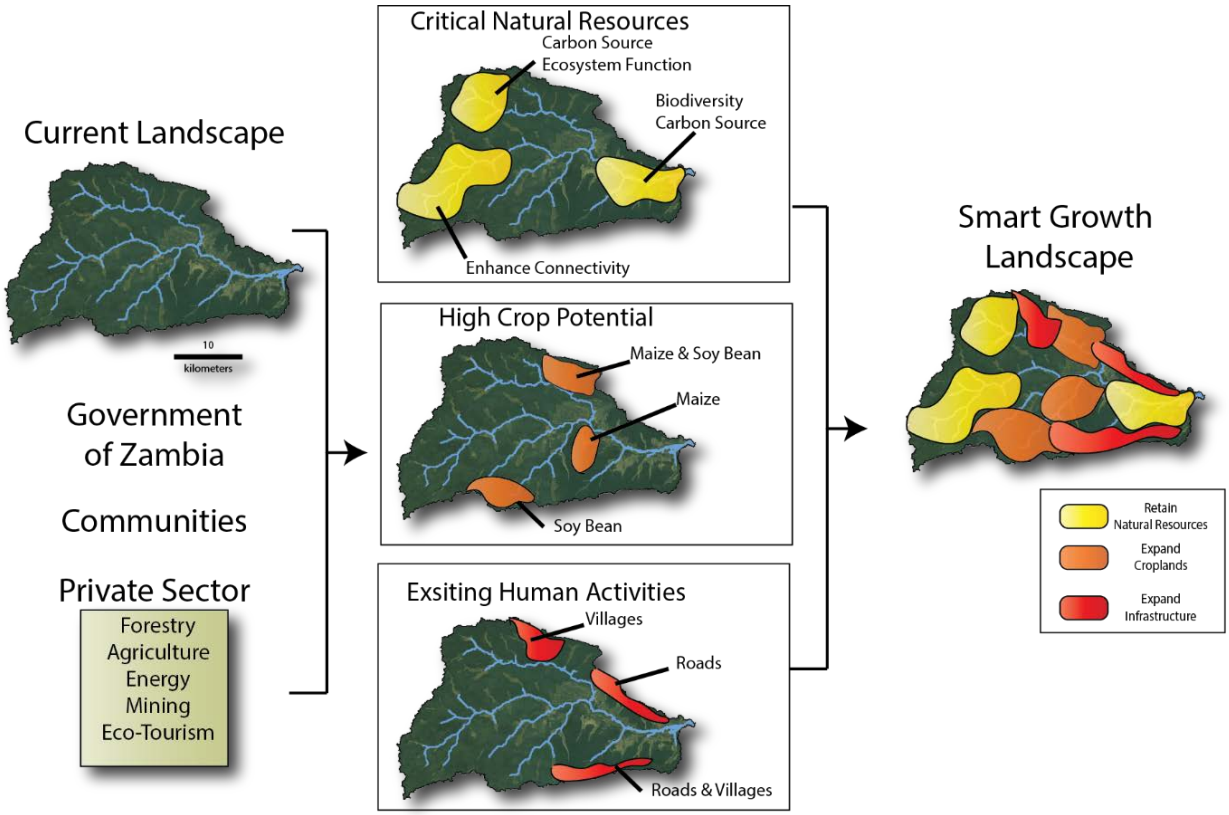


Figure 6*:* Cross-sectoral consideration in land use planning at landscape level (*Source*: Trainor, 2017)

72. The importance of the successful structuring of cross-sectoral and public-private partnerships cannot be understated. The role of the Government and the extractive industries in facilitating such a process is critical and existing examples of public-private partnership provide a blueprint that future investments could build on. One good example is in the establishment of multi-facility economic zones (MFEZ) in proximity to mines and relocated communities. Working in partnership, mines and government could work together to achieve a shared desired outcome. This could not have been done alone and certainly could not have been achieved by smaller companies who have since leveraged the investment and established themselves in the MFEZ, themselves contributing to an important diversification of the economy and creation of jobs beyond mining.

73. As pressures on forests from unsustainable development increase and the number of active mining companies swells in the Zambezi watershed, the need for legitimate sectoral representation with executive abilities and the development of coordinated shared investment strategies to address common problems and needs stemming from deforestation and forest degradation will intensify. This investment plan rests on the assertion that a holistic and coordinated cross-sectoral approach to making investments is essential.

3.2The Landscape Approach

74. By integrated landscape here, it is understood as "a social-ecological system that consists of a mosaic of natural and/or human-modified ecosystems, often with a characteristic configuration of topography, vegetation, land use, and settlements that is influenced by the ecological, historical, economic and cultural processes and activities of the area".[19] An integrated landscape approach for the implementation of the REDD+ Strategy is rationalised on the premise that it affords long-term collaboration to different groups of land managers and stakeholders to achieve their multiple objectives and expectations within the landscape for local livelihoods, health and well-being (ibid). It also offers an opportunity for coordinated cross-sectoral planning as described above in a single planning framework to meet multiple objectives with a balanced outcome to address deforestation and forest degradation.

75. Zambia has defined its landscape approach at watershed level. As per the conclusions of the Zambia National REDD+ Strategy, implementation of the two CIPs has been prioritized in three watersheds namely; Zambezi, Kafue and Luangwa (Figure 7). However, it is fully recognized that the investments described in this document could also be proposed for other watersheds in the country.

[19] http://peoplefoodandnature.org/about-integrated-landscape-management/

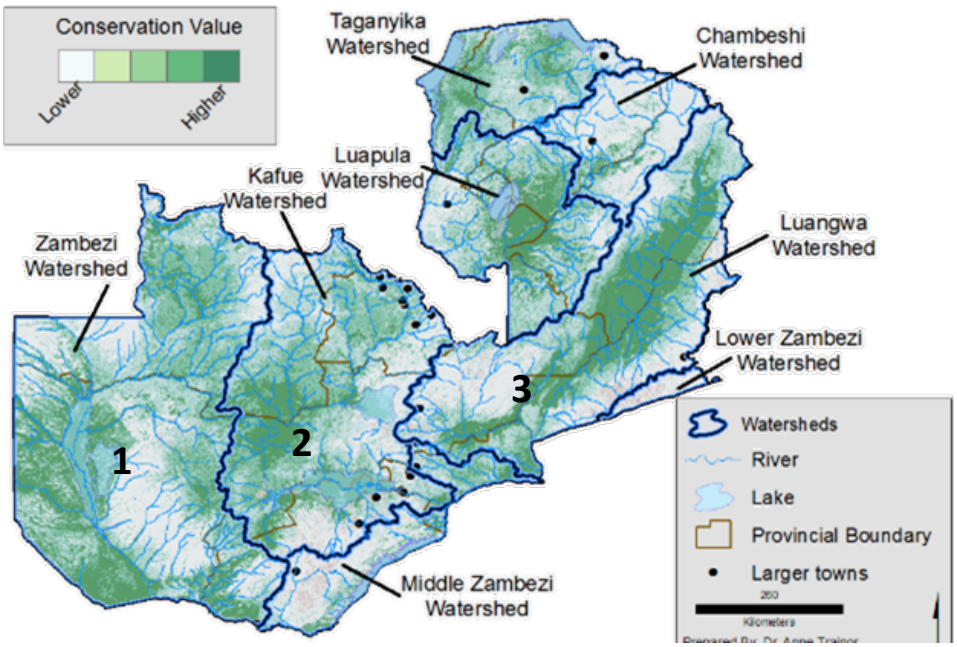


Figure 7: Three prioritized watersheds (focal landscapes) for the implementation of the REDD+ Strategy IP (*Source*: Trainor, 2017)

76. Nested within these three focal landscapes are protected forest reserves (national and local forests), forests in open areas, national parks and game management areas, major wetlands and rivers, agricultural and mining activities, infrastructure developments, REDD+ related investment programmes, human settlements, traditional authorities and at jurisdictional level – Provincial Development Coordinating Committees (PDCCs), District Development Coordinating Committees (DDCCs) and Area Development Committees (ADCs). Table 10 provides a summary of the nested characteristics of each of the selected focal landscapes.

77. Consequently, integrated landscape management presents an opportunity for tackling head-on the challenges of climate change by strengthening systems that shape the country's socio-economic and environmental resilience. As a production and jurisdictional area that considers natural capital and important production systems, an integrated landscape approach affords a possibility for improved implementation of interventions in environments such as watersheds and its surrounding communities.

    An integrated landscape approach for this Investment Plan is best suited to implement the National REDD+ Strategy to ensure that forests are maintained by promoting the use of tailored best practices and technologies in production, planning and local decision-making processes. This will ensure the continued flow of ecosystem goods and services, and the livelihoods of communities.

Table 9: Attributes of the selected three focal landscapes at watershed level

KEY ATTRIBUTES	FOCAL LANDSCAPE			
	Zambezi watershed No. and Est. total area (ha)	**Kafue watershed No. and Est. total area (ha)**	**Luangwa watershed No. and Est. total area (ha)**	**Total Area (ha)**
National forests	73 (2,306,975)	67 (1,829,003)	31 (1,427,492)	171 (5,563,470)
Local forests	49 (934,464)	37 (543,393)	68 (227,178)	154 (1,705,035)
National parks	6 (1,420,794)	3 (2,232,082)	7 (1,711,971)	16 (5,364,847)
Game Mgmt. Areas	13 (7,795,622)	11 (3,394,910)	11 (5,115,435)	35 (16,305,967)
Sub-total Area (ha)	**12,457,855**	**7,999,388**	**8,482,076**	**28,939,319**
Designated wetlands (includes rivers, swamps, dambos, etc.)	43 (2,104,634) Includes the Zambezi Headwaters	31(1,793,089) Includes the Kafue, Lamba and Lusitu Headwaters	19 (140,389) Includes the Mkushi Headwaters	83 (4,038,112)
Agricultural activities	Smallholder cassava, sorghum, tobacco and livestock based system practising slush and burn agriculture and use of wood for fish processing and tobacco curing.	Commercial sugar plantations, extensive smallholder and commercial maize and livestock based system practising clearcutting of trees for farm sites and use of wood for tobacco processing.	Key extensive smallholder farming area of Zambia with highest diversity of crops (maize, cotton, tobacco, groundnuts) and livestock practising clearcutting of trees for farm sites and use of wood for tobacco curing.	-
Mining activities	Copper, cobalt and uranium mining and extensive explorations	Key Copper and gemstone mining area of the country	Small scale mining of gemstones	-
Traditional authorities	Well organised traditional authority at village and chiefdom levels with a King in western part of the watershed.	Well organised traditional authority at chiefdom level	Well organised traditional authority at village and chiefdom levels with two paramount Chiefs in the eastern part of the watershed.	-
Large infrastructure developments	Mines; Hydropower stations: Kariba, Victoria Falls, Batoka Gorge, Kabompo Gorge and Zengamina (at Kalene Hills); road networks.	Mines; Hydropower stations: Itezi-tezhi and Kafue Gorge; Sugarcane plantations; road networks	Agro-processing industries developments on going, Mulungushi and Mita hills Dams, Pia-Manzi hydropower station; road networks.	-
Key threats to forests, biodiversity and other ecosystem services	• Intensified mining • Agricultural expansion • Projected increase in settlements from in-migration due to mining • Intensive dependence on unregulated wood and NWFP extraction for livelihoods • High poverty levels	• Intensified mining • Increased demand for industrial and road infrastructure • Urbanization (population pressure) and charcoal demand • Relative high competing demands for water abstraction	• Continued watershed degradation due to agricultural expansion as main source of livelihoods • Continued river siltation due to watershed degradation • Intensified charcoal production • High poverty levels	-

Table 10: Programmes and Projects in the selected three focal landscapes at watershed level

KEY ATTRIBUTES	FOCAL LANDSCAPE			
	Zambezi watershed No. and Est. total area (ha)	**Kafue watershed No. and Est. total area (ha)**	**Luangwa watershed No. and Est. total area (ha)**	**Total Area (ha)**
On-going/past REDD+ related projects/ programmes	• CIF/WB – Strengthening climate resilience in the Zambezi basin • GEF – Agriculture Adaptation to Climate Variability and Change in Agro Ecological Regions I and II • FINNIDA – Decentralized Forest and other Natural Resources Management Programme • IFAD – Rural Finance Expansion Programme focusing on micro-entrepreneurs and smallholder farmers • IFAD – Enhanced Smallholder Agribusiness Promotion Programme (E-SAPP) • EU/FAO – Conservation Agriculture Scaling Up (CASU) Project • Afdb: Zambia Aquaculture Enterprises Development Project (ZAEDP) • AfDB: Transforming rural livelihoods in western Zambia • AfDB: Agriculture productivity and market enhancement project	• CIF/AfDB – Strengthening climate resilience in the Kafue Sub-basin • LDCF/GEF - Promoting Climate-resilient, Community-Based Regeneration of Indigenous Forests in Zambia's Central Province Project • IFAD – Rural Finance Expansion Programme focusing on micro-entrepreneurs and smallholder farmers • IFAD – Enhanced Smallholder Agribusiness Promotion Programme (E-SAPP) • EU/FAO – Conservation Agriculture Scaling Up (CASU) Project	• WB – Zambia Integrated Forest Landscape Project (ZIFLP) • GEF – Adaptation to Climate Variability and Change in Agro Ecological Regions I and II • WB, NORWAY, SNV, USAID Promotion of climate-resilient crops and production technologies among small-scale farmers (Various models by Institutions and government) • PRIVATE COMPANIES/SOCIAL ENTERPRISES: REDD+ Related Projects • IFAD – Rural Finance Expansion Programme focusing on micro-entrepreneurs and smallholder farmers • IFAD – Enhanced Smallholder Agribusiness Promotion Programme (E-SAPP) • EU/FAO – Conservation Agriculture Scaling Up (CASU) Project	-

Source: Adapted from GRZ National REDD+ Strategy, 2015

3.3 Geographical Focus of the CIPs

78. The National REDD+ Strategy acknowledges that deforestation and forest degradation in Zambia is underpinned by anthropogenic influences such as extensive and unsustainable crop production practices, energy, mining activities, unplanned land use that has no regard for forest integrity and biodiversity conservation, overexploitation and unsustainable use of forests in open areas. These are multi-sectoral challenges to the forestry sector in Zambia. The sectoral impacts on the forestry sector partly depend on the socio-economic conditions of the local communities, nature of anthropogenic activities and existing biophysical conditions in target areas.

79. Some of the regions in the country have higher population densities, while others have high biodiversity values at both floral and faunal levels. Some regions are predominantly crop-production areas, while others have pastoral communities. In addition, some regions in the country are mining areas, while others demonstrate high eco-tourism potential. Against this background, spatial products will inform the geographical approach to the implementation of the National REDD+ Strategy through the three identified core investment priorities. These spatial products demonstrate national conservation value, national human influence, national cropland potential and the Zambia forest value (Figure 8).

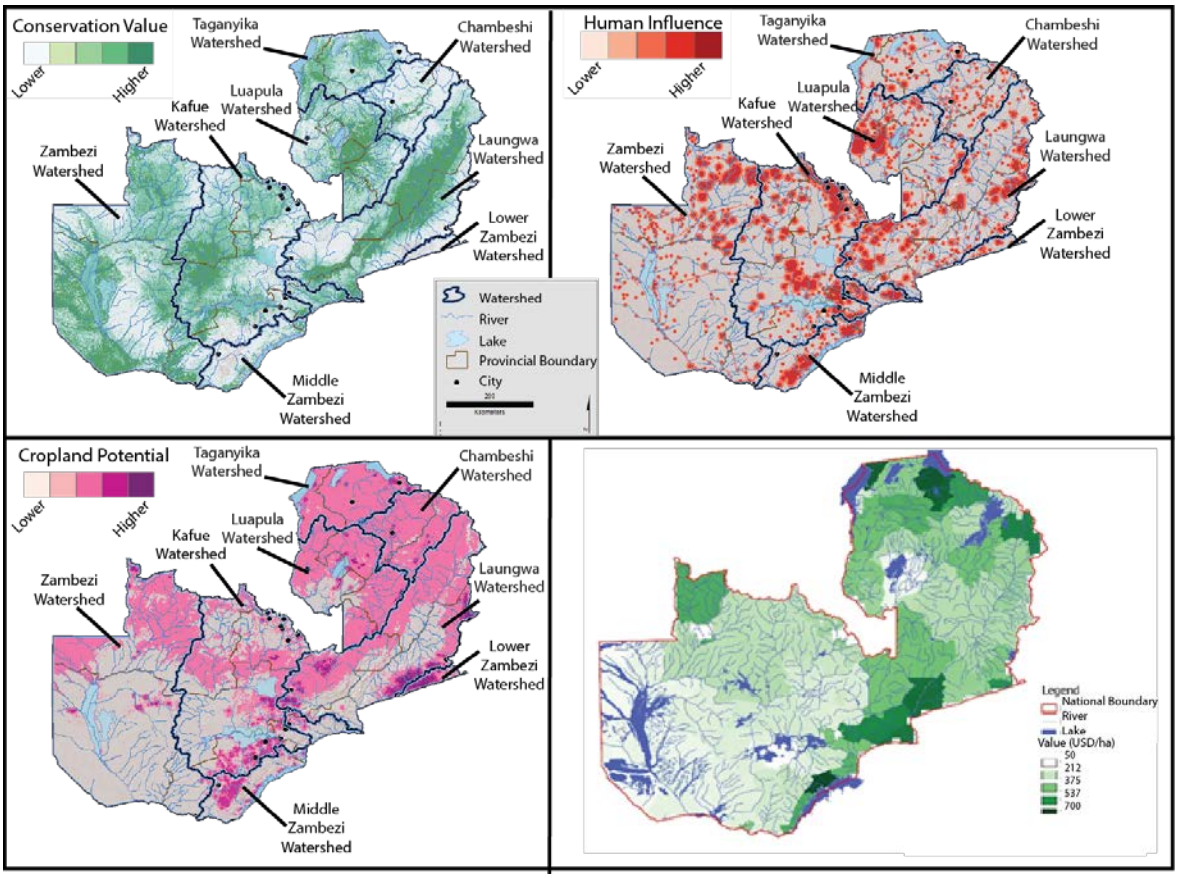


Figure 8: Conservation value, human influence, cropland potential and forest value maps of Zambia (*Sources*: Trainor, 2017- conservation value, human influence and cropland potential maps; U-REDD, 2015- forest value map)

80. The conservation value map has been created by integrating five ecological components: intact natural landscapes; sustaining biodiversity; maintaining ecosystem function; enhancing connectivity; and protecting valuable carbon resources. National human influence maps have been created based on current human disturbance from land use features such as transportation, urban centres, and communities to represent cumulative human influence as a departure from historic or natural conditions. The national cropland potential map has been drawn based on the crop suitability maps for maize and soya beans crops and proximity to existing croplands.

81. Viewing all the suitability maps with the forest value map enables stakeholders to spatially compare the potential areas that show greatest opportunities for investments through the three identified Investment Priorities to implement the National REDD+ Strategy. These areas also show the potential trade-offs to be made when a package of interventions is chosen over another. This process can identify one or more possible land-use management solutions that optimize varying and sometimes competing land-use objectives.

3.4 Geographical Rationale for Prioritizing Interventions of the IP

82. The drivers of deforestation and forest degradation identified at a national scale are relevant to each of the three priority watersheds of Zambezi, Kafue and Luangwa as they are across the country. However, the threat each key driver represents across and within each watershed varies in both magnitude and relative importance. Similarly, each watershed has unique characteristics of landscape, people and economy such that the preferred solutions must be tailored to their specificities. However, the drivers of deforestation and forest degradation as they occur in Zambezi, Kafue and Luangwa – their socio-economic and biophysical specificities go beyond the geographical boundaries of these three watersheds. The drivers and their impacts cross the boundaries.

83. The Zambezi, Kafue and Luangwa watersheds have been prioritised on the basis of urgency, following each watershed's distinct development trajectory and forest resource characteristics. As such the investment priorities and importantly the potential partners involved in execution of such, are the result of careful reflection of the 'landscape' – to be understood in its broadest sense – in which they will be made. However, this prioritization does not limit the implementation of the core investment priorities to only these three geographies. GRZ recognises the need for strategic interventions and investments in all regions of Zambia.

84. In the Kafue watershed, a history of mining activity and rapid urbanisation, characterised by upswings and downturns in the mining economy and proximity to major urban centres, has resulted in significant mining and subsequently agricultural development, which has led to the highest historic rates of deforestation in Zambia (Figure 9, top left). For instance, 50% of active copper mines are found in the Kafue watershed which provides drinking water for over 40% of the Zambian population. Should unchecked development follow a similar trajectory in the northern reaches of the Zambezi watershed in North Western Province, hailed as the 'new Copperbelt' where the most intact forest cover is found and also the highest concentrations of carbon storage, then we can expect to witness similar rates of forest loss and degradation.

85. Interventions in the Zambezi watershed are therefore focused on conserving and protecting the large intact forests and integrity of the hydrological systems facing a rapid population growth initiated by new mining and agricultural investments (Figure 9, top right). Interventions in the Kafue watershed focus similarly on conserving and protecting the remaining forests, but with greater emphasis on regenerating degraded forests through

sustainable utilisation in an agricultural sector which is burgeoning following the peak and decline of mining activities in the much of the Copperbelt.

86. In contrast, the forests of the Luangwa watershed face fewer threats from rapid rural industrialisation as witnessed in Kafue and expected in Zambezi, but are equally threatened by incremental, continuous degradation and conversion as local communities continue to exploit the forests unsustainably, to expand small holdings and practice shifting agriculture (Figure 9, bottom left).

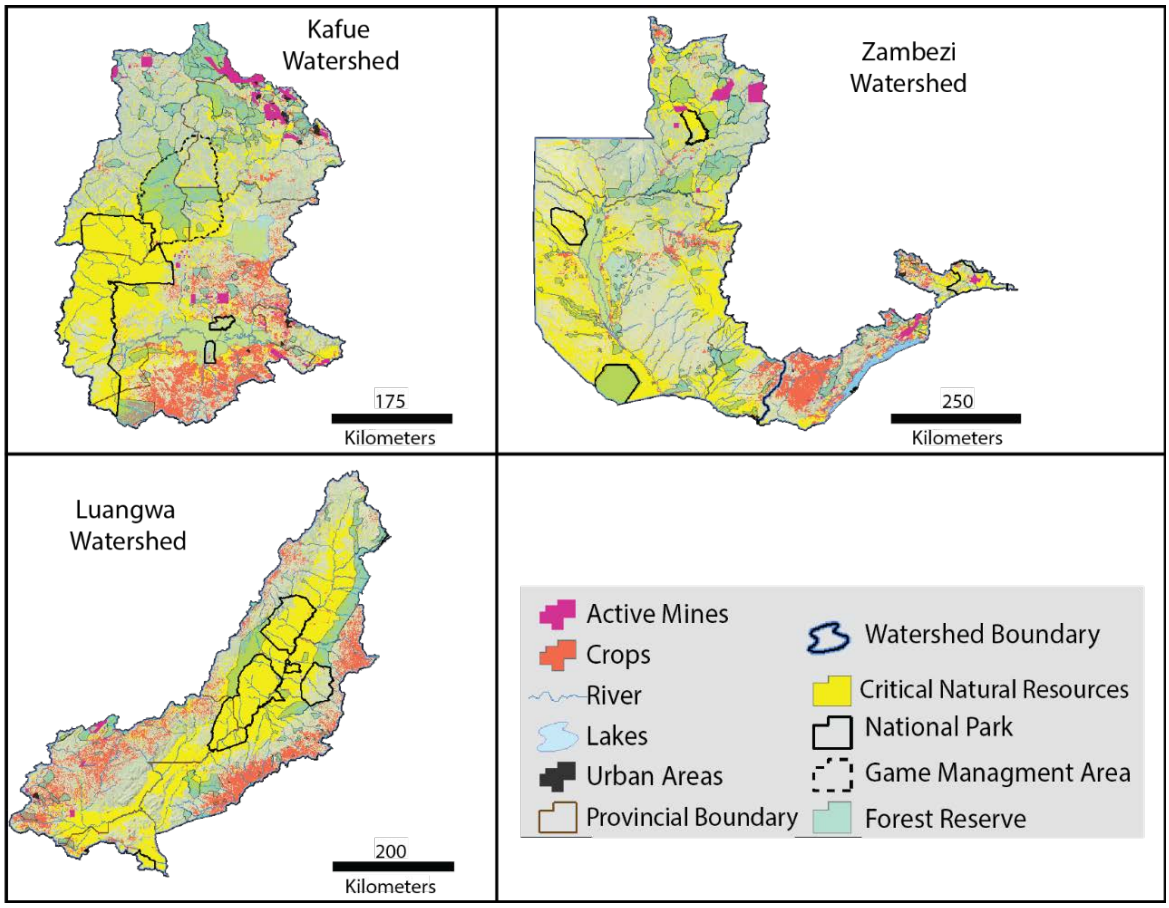


Figure 9: Priority National REDD+ Strategy watersheds (*Source*: Trainor, 2017*)*

3.5 Gender Considerations

87. Zambia has developed a Climate Change- Gender Action Plan (ccGAP). The objective of this ccGAP is to ensure that Zambia's climate change policy, programming and funding processes effectively mainstream gender considerations to guarantee that women and men can have access to, participate in, and benefit equally from climate change initiatives. In this manner, the interventions to redress the challenges of the forest sector in Zambia will require to address REDD+ and socio-economic forest benefits in an integrated fashion. It should also reflect the

gender dimensions of resource access, use and management in a manner that does not leave any communities disadvantaged.

5. Carbon and Non-carbon Benefits and Risks From IP Investments

88. The implementation of the IP will generate carbon and non-carbon benefits, as well as risks. The benefits and risks identified are as follows:

4.1 Non-Carbon Benefits

89. The non-carbon benefits are important in ensuring that the social, environmental and governance aspects of the IP provide positive benefits. The benefits will improve the livelihoods of especially rural communities. Therefore, they are the priority consideration in the implementation of the IP. The expected benefits to be derived from this IP include the following:

The non-carbon benefits expected after effectively implementing CIP1 , CIP2 and the enabling environment components are:

a. <u>Social</u>

- Improved livelihoods
- Employment opportunities
- Interactive relations for communities, private sector and government
- Potential of indigenous knowledge link with forest resource management
- Improved household incomes
- Capacity development in resource management
- Improved nutrition
- Increased energy efficiency, sufficiency, availability and reliability
- Diversified livelihoods

b. <u>Environmental</u>

- Protection of water related ecosystem services
- Protection and management of biodiversity
- Management and protection of ecologically sensitive areas
- Land use planning to enhance management of resources
- Increased forest cover
- improved ecosystem services include in particular, services related to water (infiltration, purification), soil (fertility/productivity, erosion control, reduced siltation) and cultural/aesthetic values (potential for ecotourism, cultural value for local communities)
- Improved productivity per unit area
- Reduced deforestation and hence GHG emissions
- Reduced use of chemical fertilisers
- Increased wood and non-wood forest products

c. **Governance**

- Functional local community management structures
- Local level decision making based on needs of communities
- User rights for communities
- Functional benefit sharing mechanisms
- Transpalent and effective governance systems at national and local level
- Implementation of policies and legislation
- Improved enforcement of laws and regulation by communities
- Improved support services

4.2 Expected Carbon Benefits

90. Emissions associated with land use change in Zambia have been quantified and documented in the country's Forest Reference Emissions Level which was submitted to the UNFCCC for technical assessment in January 2016. Zambia's FREL is calculated using an historical average approach whereby annualized rates of change are computed based on the analysis of historical land use change (forest to non-forest) through the analysis of remote sensing data. This historical change information is then coupled to the emissions factors generated and used to calculate annualized total emissions for the historical period. The annualized emissions calculated for the period 2000-2010 was 21,879,122.18 tons CO2e per year (21.88 MtCO2e/yr^{-1}) and for the second period, 2010-2014, the annualized emission was 29,848,604.19 tons CO2e (29.85 MtCO2e/yr^{-1}) (Figure 10). For the FEL submitted to the UNFCCC, Zambia used the average for the period 2006-2014 which came to an annual rate of 25.42 MtCO2e/yr-1 (shown in red, Figure 10).

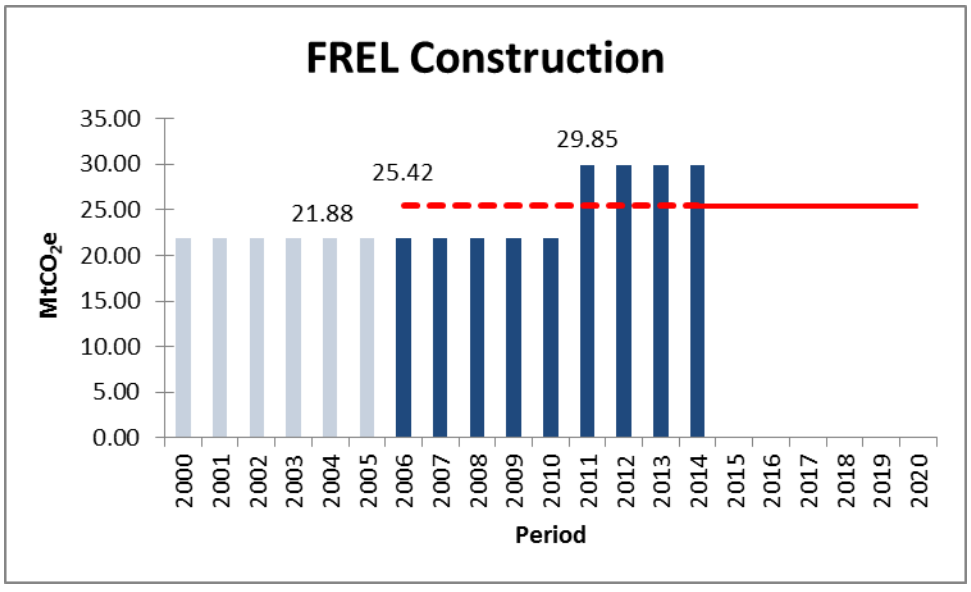


Figure 10: Zambia Forest Reference Emission Level (*Source*: GRZ, 2016)[20]

91. Zambia's submission to the UNFCCC includes only deforestation as the country is not able to reliably estimate emissions associated with degradation. Previous GHG inventory submissions to the UNFCCC indicated that land use change accounts for approximately 73.7% of emissions followed by agriculture with 18.9%, Energy registered 4.8% while industrial processed and waste accounted for 1.8% and 0.8% respectively. The Second communication to the UNFCCC also reported that by type of gas, the largest contribution came from CO_2 at 65.5%, followed by CH_4 and N_2O at 23.1% and 9.9%, respectively.[21.]

4.2.1 Zambia's REDD+ Approach to Emissions Reductions

92. In 2017 Zambia launched its National Strategy to Reduce Deforestation and Forest Degradation22 as part of its REDD+ readiness phase. The strategy is one of the four pillars of REDD+ and outlines the strategy that Zambia will use to reduce its emissions from land use change (73.7%) and agriculture (18.9%). It identifies 10 strategic objectives which will be used to guide emissions reductions activities in Zambia. Further the strategy identifies, wood fuel (charcoal and firewood), agricultural expansion, timber extraction, uncontrolled late bush fires, mining and land use and infrastructure development as the proximate drivers of deforestation. The present investment plan seeks to address these drivers as a means of reducing annual emissions through CIP1 and CIP2.

CIP1: Conservation of high--value forest areas

93. The first priority of the IP is focused on reducing emissions from deforestation and forest degradation through community based forest management. This priority has its genesis in the promulgation of the Forests act of 2015 which provides communities with the opportunity to establish community based forest management. The Act highlights the government's aim to decentralize the management of forests and to devolve responsibilities to communities (CFM and JFM) and the private sector (PFM). CFM and JFM will typically take place on customary land and local as well as national forests (state land) while PFM may take place in all three. The investment components under this priority include the following:

    1) Sustainable management of forests in protected areas, open areas and critical upper watersheds;
    2) Improved regulations for protecting ecologically sensitive areas; and
    3) Sustainable management of timber (timber concessions) and non-timber forest products.
    4) Sustainable agriculture

94. Approximately 94% of land in Zambia is designated under customary land tenure and as such this priority has significant potential for abatement of GHG emissions. Zambia's Forest reference emissions level quantified annual emissions to be in the order of 25.42 MtCO2e/yr^{-1}. If the

[20] GRZ. 2016. Zambia's Forest Reference Emission Level Submission to the UNFCC. January, 2016.
[21] Second National Communication to the UNFCCC 2000 – 2004 (2014)
[22] National Strategy to Reduce Emissions from Deforestation and Forest Degradation (2016)

government aims to cut its emissions from land use change (customary land only) by 30% (Forest to Non-Forest) then investment priority 1 has the potential to abate approximately 7.17 $MtCO2e/yr^{-1}$.

CIP2: Resilient landscapes, sustainable agriculture and energy

95. The second investment priority focuses on sustainable agriculture, renewable energy and land restoration. According to the Second National Communication to the UNFCCC, agriculture contributes 18.93% of the annual national GHG emissions to the atmosphere and that of land use change and forestry is 73.67% while energy, of which wood fuel is part, contributes 4.8%. The investment priority has three components:
    1) Sustainable agriculture;
    2) Renewable energy; and
    3) Restoration of degraded lands.

96. Sustainable agriculture will be promoted through climate smart agricultural practices that seek to improve productivity and production, build resilience to climate change and finally reduce emissions into the atmosphere. Calculating the abatement potential for this component is challenging as the proposed interventions in Zambia will occur in several landscapes as well as on several different tenure types. In addition, soil organic carbon (SOC) is highly site specific and variable across the landscape (Figure 11), especially in an environment such as Zambia where landscapes can be highly fragmented with intact forests found alongside fallow fields as well as productive agricultural areas.

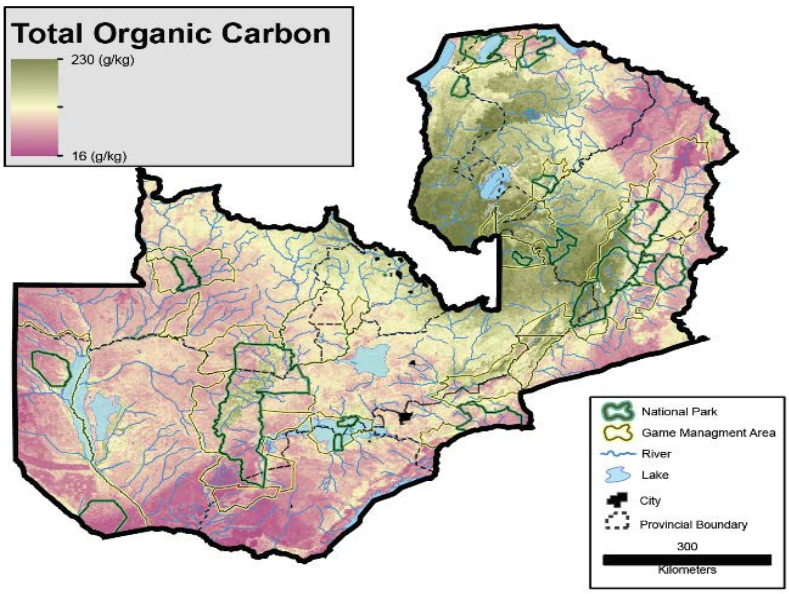


Figure 11. Recently produced map predictingtotal organic carbon in the soil measured in grams of Carbon/kg of soilat 1-km resolution in relation to Zambia's National Parks and Game Management Areas (http://www.isric.org/projects/soil-property-maps-africa-1-km-resolution).

97. The ILUA II study reports that undisturbed soils in Zambia contain approximately 8 tons of SOC per hectare, in general, deforestation causes a loss of around 42%[23] of the SOC; and in the absence of a soil carbon decay model for Zambia we will assume that this loss occurs when the land is converted from forest to non-forest. The net remaining SOC per hectare is therefore 3.36 t/SOC/ha on what we assume are agricultural lands. Zambia's Second National Communication to the UNFCCC reported that approximately 5 287 500 ha of land is currently under agricultural production. If CSA practices can return half of the SOC lost, 1.68 t/SOC/ha on 15% of all agricultural lands per annum then this investment priority has the potential to abate roughly 4.89 $MtCO_2e/yr^{-1}$.

4.3 Risks

98. The following risks were identified through the risks assessment carried out in July 2017. Based on these risks, a number of changes were made to the core investment priorities and management measures were defined.

CIP1 Risks : Conservation of high--value forest areas

99. The main risks lie with possible access restrictions for local people to water and other natural resources,forest products in the short term and areas of cultural significance even displacement of communities could be a risk if protected areas in ecologically sensitive areas are designated or through land use planning and management plans. This could also include risks of displacement of local people from customary land. There may be negative impacts onwildlife in protected areas as well as increased human-wildlife conflict.

100. Governance is a key factor and increases in illegal activities due to access restrictions and possible incentives for poaching may occur. Corruption around granting of licenses or meeting requirements could take place.

101. Landscapes have multiple uses and purposes, each of which is valued in different ways by different stakeholders. Watershed levelplanning demands an open-minded view of outcomes and acknowledgment of the tradeoffs among many different interests. Thus, a key component to successfully implementing any planning exerciseis identifying and recognizing the concerns froma diverse group of stakeholders with varying interests, policies, politics, and geographical boundaries. Engaging in the decision-making process captures case-specific needs and has proven essential to securing transparent and tangible outcomes for long-term sustainable growth.

102. Discrimination in terms of degree and level of participation by different stakeholders in the implementation of the IP activitiesincluding availability of information and availability of resources to participate, may result in the inability of vulnerable groups to participate. Conflicts

[23] FAO 2017. Soil Organic Carbon: the hidden potential. Food and Agriculture Organization of the United Nations Rome, Italy 2006 IPCC Guidelines for National Greenhouse Gas Inventories Volume 4 Agriculture, Forestry and Other Land Use. (Chapter 5 – Table 5.5).

could arise among stakeholders over resources or due to insufficient consultation. If plans are developed without full consultation and stakeholder engagement, communities will not feel any sense of responsibility or ownership over the plans regarding their roles. There may be pressure from powerful groups or individuals in communities or from the private sector and government, who would impose their ideas resulting in elite capture, including employment opportunities and unequal benefit sharing especially in community management plans. Conflict over benefit sharing may occur. Compliance mechanisms need to be clear. Discriminating against women, especially women-headed households will have to be managed as well as exacerbation of negative impacts as a result of activities and outputs that do not consider vulnerable groups.

103. Community management plans may not be developed with enough knowledge to ensure that plans are robust and have an array of sustainable uses. There may also be pressure from influential groups for the Inclusion of unsustainable uses in plans due to lack of knowledge or pressure. There are also risks of displacement of deforestation and forest degradation in these cases or over-harvesting in some areas. Environmental risks or loss of investment due to inappropriate location, choice or implementation of new practices were identified.

CIP2 Risks: Resilient landscapes, sustainable agriculture and energy

104. Reforestation and regeneration measures will need to ensure suitable tree selection, both ecologically and socially. Environmental risks pertaining to pests and damage needs to be taken into account, as well as managing risks that result from loss of investment if tree planting fails. When climate smart agriculture techniques are implemented, these should not replace tried and tested traditional farming methods which use local knowledge. Members of the local communities should be involved to provide valuable traditional knowledge and creative solutions to maintain rich cultural livelihood and ensure compatible land uses.If agro-chemicals are promoted, risks to human health and ecosystems from inappropriate use and/or handling will need to be taken into account. Risks relating to conversion of productive land to biofuel feedstocks, leading to food insecurity would also need to be avoided.

105. Increased resource consumption from tourism, impacts from increased access (opening areas up to influx of people or illegal use) may occur as a result of eco-tourism, game ranching and other activities. Conflict over land tenure, resources and use of land, especially having negative impacts on vulnerable groups are again noted.

106. Payment for ecosystem services - exclusion of poor households due to inability to meet certification costs or demonstrate compliance. Poor farmers or members of disadvantaged groups not being able to participate, because of need for initial high investment or lack of capacity, this also relates to climate smart agriculture activities.

With regards to agriculture, a pervasive issue will be sufficient land areas available for food crops and this will need to be managed carefully at the local level. Related to this is if increased market access leads then to more agriculture expansion, especially from commercial agriculture. Land use planning activities are key. Agricultural policies may conflict with forest conservation policies and this will be also need to be reconciled with

policies to allocate agricultural concessions. Again, unsuitable location of concessions due to lack of knowledge, pressure from powerful groups/ individuals or corruption may occur.

107. Regarding activities to move to sustainable value chain for charcoal and alternative energy sources, there may be reduced access to fuel for the poor or otherwise disadvantaged groups, due to price increases or supply shortages and the delay in the transition to more sustainable and renewable forms of energy would render some without energy sources. There may be a limited ability of small-scale producers/rights holders and populations of remote areas to participate, leading to inequitable distribution of benefits from the scheme.

108. Increased engagement with the private sector may result in dependence on companies leading to reduced ability to apply accountability. Unsuitable location of timber or mining concessions due to lack of knowledge or pressure from powerful groups/individuals or corruption may arise. However, the IP defines clearly the need to address this issue. Reduction of available areas for development could reduce inflow of foreign direct investment.

5.Potential Sources of Financing

109. In the Intended Nationally Determined Contribution document, GRZ recognises the need to mobilize both international and national financial resources to realise its emission reduction targets. Reducing emissions from deforestation and forest degradation, with additional benefits linked to conservation, improved sustainable forest management and enhanced carbon stocks has financial implications at various levels. The implementation process of REDD+ involves trade-offs that imply forgone incomes of forest users from crops, wood and wood products and pastoral activities. In addition, going beyond the forest sector to embrace an approach that improves the socio-economic situation of forest dependent communities implies establishing mechanisms that proactively promote rural development and growth without diminishing and destroying the productive capacities of forest resources. There is a price tag attached to forest protection and development of communities that depend on forest for their livelihoods. In other terms, those who suffer economic loss (former forest users and beneficiaries) and current stewards of the forest may be compensated for loss or receive reward for action. Establishing institutional and policy mechanisms to ensure benefit sharing mechanisms for successful implementation of REDD+ also attracts costs.

110. As a Party to the UNFCCC, Zambia together with other Parties at the 17th session of the Conference of the Parties agreed that 'results-based finance provided to developing country Parties that is new, additional and predictable may come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources.' Consistent with this agreement, Zambia will mobilize resources from different sources to implement the Investment Plan of the national REDD+ Strategy. Currently, the financial landscape has players that range from domestic sources, multilateral development banks, bilateral organisations, private sector, and international partnerships to international NGOs. The following section gives a brief look at these players as potential sources of funding for the implementation of the National REDD+ Strategy IP.

5.1 Government financing

111. The Zambian government development priorities are financed through tax revenues, non-tax revenues, grants, public-private partnerships, and domestic and external borrowing within the sustainable debt management levels. The government is cognizant of the environmental challenges that the country faces, but also that can undo any development efforts. Therefore, it allocates a certain percentage of the budget to environmental protection. For example, the 2017 national budget has allocated 1 percent of the total budget to environmental protection. Through various policies and documents, the government of Zambia is cognizant of the impacts of environmental degradation and climate change on the livelihoods of rural communities and development sectors in the country.

112. Domestic sources for financing the IP could include Government budgetary allocations, the carbon tax, and capitalized environmental funds. Another important source of finance could be through Public-Private Partnerships combining public resources with private sector resources.

113. The carbon tax which is levied on all motor vehicles every year could be a significant innovative source of domestic financing for REDD+ activities. The Road Transport and Safety Agency (RTSA) estimated the total number of motor vehicles in Zambia in 2010 was 329,000. Light vehicles are levied ZMW 100 (US$ 17) while heavy duty vehicles are levied ZMW 200 (US$ 34) per year. Assuming a 10% increase in the total number of vehicles every year, by 2018 Zambia will have a total of 770,612 motor vehicles. At an average of ZMW 150 per vehicle as carbon tax levy, this translates into a total of ZMW 79,478,700 or US$ 12,843,533 in carbon tax revenue alone. This is quite significant for investment programming that could be used to leverage results-based payments in the country.

114. There are also capitalized environmental funds under various ministries and agencies that could leverage domestic financing sources. Among these include:
    a) Environmental Protection Fund (EPF) under Mines – As at April 2012, about half the mining companies had contributed US$ 11,562,406 to the Fund (OAG, 2014). Mining Companies are not complying with the EPF's regulations in that the majority are not paying the stipulated contributions. With strict enforcement of the EPF regulations by the Mine Safety Department, this fund is capable of generating between US$ 40-75 million per year;
    b) Forest Development Fund under the Forestry Department (2015);
    c) Environmental Fund under ZEMA (2011); and
    d) Community Fund under the Wildlife Act (1998).

5.2 UN-REDD

115. The UN Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (UN-REDD) is a partnership between FAO, UNDP and UN Environment. It has a mandate to support partner countries to engage in REDD+ readiness and implementation through technical capacity building, sharing of expertise, common approaches, analyses, methodologies, tools, data, best practices and facilitated South-South knowledge

sharing.[24]By promoting the informed and meaningful involvement of all stakeholders, including indigenous peoples and other forest-dependent communities in the design and implementation of REDD+ as per UNFCCC guidance,[a] the UN-REDD Programme can provide targeted technical assistance to Zambia in mobilizing financial resources to implement the REDD+ Strategy in Zambia.

5.3 Multilateral Development Banks

5.3.1 World Bank

116. The World Bank has a long history of supporting the Zambian government's development efforts. Building on this history, the World Bank will continue to support the country with technical and financial means or otherwise as has been agreed through the Country Partnership Framework. For this particular National REDD+ Strategy Investment Plan, the World Bank is one of the two multilateral development banks that the Government of Zambia has approached for coordinated technical and financial assistance. As a multilateral bank, the World Bank serves as a conduit for resources from institutions, particularly the Forest Investment Program, that can reach Zambia. In addition, the World Bank will be supporting the government of Zambia in the Zambia Integrated Forest Landscape Projectin Eastern Province in one of the REDD+ Strategy priority areas. Potential future IDA projects such as TRALARD and future pipeline operations could provide further opportunities to implement key investments of the IP.

5.3.2 African Development Bank

117. The African Development Bank (AfDB) is one of the two multilateral development banks that the Government of Zambia approached for coordinated technical and financial assistance in the preparation of the National REDD+ Strategy Investment Plan. As a multilateral bank, the AfDB is an implementing agency of the Climate Investment Fund. AfDB is a potential source of funding for the implementation of the REDD+ Strategy. It will build on its development partnership that it has had with the government of Zambia.

5.4 International Partnerships

5.4.1 Global Environment Facility

118. The Global Environment Facility (GEF) is an international partnership that works with participants, conventions, agencies, civil society organisations and the private sector to protect the environment with a clear focused mandate on Biodiversity, International Waters, Land Degradation, Chemicals and Waste, and Climate Change Mitigation, as well as cross-cutting issues like sustainable forest management. GEF operates on a 4-year replenishment cycle. In the past 6 plus 1 replenishment periods, Zambia has benefited about $58.5 million from GEF grants that have leveraged almost $283.4 million[25] in co-financing to fund 18 projects with different agencies. Since Zambia is an eligible country, the GEF is a potential funding source for the implementation of the REDD+ Strategy. The GEF started the preparatory meetings for their seventh replenishment period in March 2017. Considering this, Zambia will need to start positioning itself in profiling the REDD+ Strategy as key priority to be funded from the country

[24,a] http://www.un-redd.org/how-we-work
[25] https://www.thegef.org/country

allocations that are usually ~ $11.5 million. Discussions with both the GEF Operational Focal Point and Political Focal Point need to be held to support the prioritization of the REDD+ Strategy in the use of GEF country allocations for GEF-7. It should be noted however, that GEF funding comes as an incremental catalyst to ensure projects and programs yield global environmental benefits as well as socio-economic benefits to local communities. That means, GEF funding only complements other funding sources, and cannot be used singly to fund a project or programme.

5.4.2 Green Climate Fund

119. The Green Climate Fund (GCF) is one of the financial mechanisms under the UN Framework Convention on Climate Change (UNFCCC). Its objective is to support developing countries to limit or reduce their greenhouse gas emissions (GHG) and adapt to climate change, thus fostering low-emission and climate-resilient development pathways. The GCF provides financing to all three phases of REDD+ and is expected to become the go-to institution for REDD+ results-based payments. Zambia is eligible for GCF funding and will continue ongoing discussions with the GCF Secretariat through itsNational Designated Authority for possible financing to support the IP.

5.5 BioCarbon Fund and ZIFLP

120. The BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL) seeks to promote reduced greenhouse gas emissions from the land sector, from deforestation and forest degradation in developing countries and from sustainable agriculture, as well as smarter land-use planning, policies and practices.[26]The Initiative operates within the calls for REDD+, and is supported by donor countries and managed by the World Bank.

121. The Initiative recognizes the critical role of the private sector. In Zambia, the ISFL will seek to sustainably manage trade-offs and synergies among different competing land uses for agriculture, forest-based livelihoods, wildlife management, energy, and forest protection. This will be achieved through a project focused on 1) increased carbon stocks through activities that address local drivers of deforestation, sustainable climate smart agriculture, and land management; (2) poverty reduction by providing alternatives to deforestation dependent livelihoods; (3) institutional strengthening of planning and coordination processes; and (4) biodiversity conservation because of conservation, improved institutional capacity, and better planning. The Initiative has innovative elements that are pertinent to the implementation of priorities of the REDD+ priorities. It is going to be implemented in Luangwa watershed which is one of the prioritized areas; it will seek to partner with the private sector because it recognizes the important role that the private sector plays in encouraging smarter land use and reducing deforestation and forest degradation. It will prioritize partnering with private firms involved in multiple supply chains to help “forest-roof” the sourcing of commodities and redirect market forces towards more sustainable land management practices for improved and efficient productive systems. The catchment area and focus of ISFL reflect priority areas of investment for the Investment Plan to implement the REDD+ Strategy. Therefore, ISFL presents an opportunity for leveraging financial resources and partnerships for the successful implementation of the REDD+ Strategy.

[26] http://www.biocarbonfund-isfl.org/

5.6 Climate Investment Fund: Forest Investment Program(FIP) and the Pilot Program on Climate Resilience(CPPR)

122. The Forest Investment Program (FIP) is a $775 million forest investment programme that serves as a funding window of the Climate Investment Fund. Through grants and soft loans that are channelled through multilateral banks such as the World Bank, FIP supports countries to empower them to address the drivers of deforestation and forest degradation both inside and outside of the forest sector to achieve the triple win of being good for forests, good for development and good for the climate.[27] However, recently FIP has indicated that there is little chance of being able to fund a full project in Zambia for lack of resources.

123. The Pilot Program on Climate Resilience (PPCR)Zambia is currently implementing the second phase of the PPCR, with AfDB and WB as partners. This program has made significant progress in ensuring the institutionalization of the climate change agenda and has been instrumental in the development and approval of the *National Climate Change Policy (NCCP)*. The PPCR has established a successful model to implement climate resilience and mitigation actions that are ready to be replicated in other parts of Zambia. The IP, with its landscape approach, would be an appropriate supporting vehicle to promote this scaling up in the three proposed watersheds.

5.7 Bilateral Institutions

124. Bilateral institutions that have or are currently supporting REDD+-related programmes/projects in the country include FINNIDA, SIDA, NORAD, DFID, GIZ and USAID. These should be approached for potential support to the IP.

5.8 Private Sector

125. The most plausible private sector investor in Zambia in certain elements of the IP is the mining industry. The industry will need to be approached through the Zambia Chamber of Mines, Zambia Development Agency or Ministry of Mines and Minerals Development for targeted investment support. In the agricultural sector, eco-tourism and forestry the private sector is expected to enhance the value chain in order to ensure that the local communities improve their livelihoods.

5.9 Non-Governmental Organizations

126. Non-governmental organisations (NGOs), national or international, play an important role in providing checks and balances to national governments in the management and governance of resources. Besides providing checks and balances, NGOs are also involved in the implementation of projects and programs in rural communities where government efforts do not always reach. Among the key NGOs (including INGOs) include TNC, WWF, COMACO and ZCCN.

5.10 Potential Partners

[27] http://www-cif.climateinvestmentfunds.org/fund/forest-investment-program

127. Table 9 summarizes the potential implementing and investing partners by activity. Information on potential investors draws from Chapter 5, Section 5.1 on potential sources of financing.

Table 10: Potential implementing and investing partners by activity[28] (*Cont*…..)

CIP	Component	Activity	Implementing Institution(s)	Potential Source of Finance	Activity budget (USD Million)
1. Conservation and management of high value forest areas	1.1 Sustainable management of forests in protected areas and critical upper watersheds	1.1.1 Promote participatory approaches to local forest management in protected and open areas through Community Forest Management (CFM), Joint Forest Management (JFM) and Private Forest Management (PFM).	Government, Civil Society, Private sector, community	MoF; FIP; WB; AfDB; GEF; UN-REDD; Bilateral Partners	40.5
		1.1.2 Develop generic cost-benefit sharing models for management of forests in protected and open areas through CFM, JFM and PFM.	Government, Civil Society, Private sector, community	MoF; FIP; Bilateral Partners	3.0
		1.1.3 Identify and set up (declare) protected areas around threatened headwaters and other HCV and HCS areas (e.g. Kafue) – priority because of mining.	Government	MoF; IUCN; FIP; UN-REDD	9.5
		1.1.4 Develop integrated land management plans (e.g., soil fertility management, forest enterprises, energy, biodiversity, etc.) through a landscape approach.	Government, Civil Society, Community	MoF; FIP; WB; AfDB; GEF; UN-REDD; Bilateral Partners	10.0
		1.1.5 Promote sustainable management of forests adjacent to mining areas by mining companies including support to CFM initiatives.	Government, Civil Society, Private sector, community	MoF; AMV (SADC); WB; FIP; AfDB; Bilateral Partners; UN-REDD	17.7
		1.1.6 Identify and develop game ranching opportunities for ecotourism.	DNPW	MoF; WB; AfDB	13.0
		1.1.7 Promote community-public-private partnerships (CPPPs) in ecotourism development.	DNPW; Zambia Tourism Board (ZTB); Private Tourism Operators (PTOs)	MoF; WB; AfDB; Private Sector	7.0

[28] Activities are over a five-year period from 2018-2022.

Table 9: Potential implementing and investing partners by activity (*Cont*…..)

CIP	Component	Activity	Implementing Institution(s)	Potential Source of Finance	Activity budget (USD Million)
1. Conservation and management of high value forest areas	1.2 Sustainable management of timber and non-timber forest products (NTFPs)	1.2.1 Strictly enforce development of forest management plans by timber concessionaires.	Government, Cooperating partners; Civil Society, Private sector, community	Ministry of Finance; Bilateral Partners	6.4
		1.2.2 Create an independent monitoring unit for timber concession operations.	Government	MoF; FIP	4.5
		1.2.3 Implement participatory approaches using appropriate models for collaborative forest management in timber concession areas.	Government, Cooperating partners;Civil Society, Private sector, community	MoF; FIP; WB; AfDB; UN-REDD	6.5
		1.2.4 Identify, develop, establish and promote NTFP industries/enterprises.	Government, Cooperating partners; Civil Society, Private sector, community	MoF; FIP; WB; AfDB; UN-REDD	35.0
		1.2.5 Identify, develop and support CPPP enterprises for timber and NTFPs including markets and market linkages.	Government, Cooperating partners; Civil Society, Private sector, community	MoF; FIP; WB; AfDB; UN-REDD	6.3
		1.2.6 Support investments in certification schemes for timber and NTFP industries/enterprises.	Government, Cooperating partners; Civil Society, Private sector, community	FSC; FIP; MoF; WB; AfDB; UN-REDD; WWF	14.0
2. Resilient landscapes, sustainable agriculture and energy	2.1 Sustainable agriculture	2.1.1 Promote climate-smart agricultural (CSA) practices related to production including uptake of agroforestry.	Government, Cooperating partners; Civil Society, Private sector, community	MoF; ICRAF; Bilateral Partners	27.5
		2.1.2 Incentivise climate-smart agricultural practices that mitigate carbon emissions through market linkages.	Government, Civil Society, Cooperating partners; Private sector, community	MoF; BCP; Bilateral Partners	9.9
		2.1.3 Promote investment into reducing post-harvest losses.	Government, Cooperating partners; Civil Society, Private sector, community	MoF; GCF; WB; AfDB	14.6
		2.1.4 Promote farm-based natural regeneration practices to increase forest cover.	Government, Cooperating partners; Civil Society, Private sector, community	LDCF; GCF; UN-REDD; Bilateral Partners	10.0
		2.1.5 Support land use planning to enable optimal location of agro-business concessions (farm blocks) and community climate smart agriculture.	Government,Co operating partners; Local Governemnt	MoF; FAO; FIP; WB; AfDB	14.0

	2.2 Renewable energy	2.2.1 Promote alternative renewable energy sources (e.g., mini hydro, solar, biogas, geothermal, wind, etc.).	Government, Cooperating partners; Civil Society, Private sector	MoF; FIP; WB; AfDB	28.0
		2.2.2 Promotion of smart incentives for alternative energy sources adoption.	Government	MoF; WB; AfDB; FIP; UN-REDD	5.7
		2.2.3 Promote CPPPs in renewable energy technology development and utilization.	Government, Cooperating partners; Civil Society, Private sector, community	MoF; Private Sector; WB; AfDB	7.1
		2.2.4 Develop models for sustainable and regulated wood fuel production.	ME, FD	MoF; WB; AfDB; FIP; UN-REDD	10.1
		2.2.5 Promote energy-efficient wood fuel utilization technologies.	ME; FD	MoF; WB; AfDB; FIP; UN-REDD	14.0
		2.2.6 Support certification of feedstock supply, improved production systems and capacity along wood fuel value chains.	ME; MA; FD	FIP; WB; AfDB; FSC	8.3
		2.2.7 Develop incentive mechanisms for sustainable wood fuel production and utilization.	ME; ERB; FD	MoF; WB; AfDB; FIP; UN-REDD	5.7
	2.3 Restoration of degraded lands	2.3.1 Identify and restore/rehabilitate degraded land areas across the focal landscapes.	FD; CSOs; Private Sector	MoF; WB; AfDB; FIP; UN-REDD; GCF; GEF	19.0
		2.3.2 Enhance natural regeneration and re-vegetation through assisted natural regeneration (ANR)[29] and tree planting.	FD; CSOs; Private sector	MoF; WB; AfDB; FIP; UN-REDD; GCF; GEF	4.2

Table 9: Potential implementing and investing partners by activity (*Cont…….*)

CIP	Component	Activity	Implementing Institution(s)	Potential Source of Finance	Activity budget (USD Million)
3. Policy and Institutions	3.1 Institutions, Policy, Legislative and Regulatory (IPLR) Reform	3.1.1 Regulate licensing procedures and avoid HCV and HCS areas	FD; DNPW	MoF	**0.2**
		3.1.2 Enforce existing regulatory mechanisms for environmental protection – e.g., SEA/EIA to protect threatened and sensitive protected areas (PAs).	ZEMA	MoF	**1.25**
		3.1.3 Develop guidelines for ecologically sensitive areas and PA classification and strengthen capacity and enforcement	FD; DNPW	MoF; WWF; TNC	**0.85**
		3.1.4 Facilitate and support customary land tenure registration.	FD; Ministry of Lands	MoF; WB; AfDB	**4.0**
		3.1.5 Develop regulations for the charcoal industry in accordance with the NAMA on charcoal	ME; FD	MoF	**0.35**
		3.1.6 Review the Forest Act (2015) and Forest Policy (2014) to harmonize how communities can exercise their rights to issue permits and collect levies	FD	MoF; WB; AfDB	**0.2**

[29] ANR is a flexible approach to reforestation that assists natural regeneration of forest trees (natural seedlings and sprouts) through natural successional processes by removing barriers to natural regeneration such as soil degradation, competition with weedy species and recurring disturbances (e.g., fire, grazing and wood harvesting).

		3.1.7 Clarify institutional mandate for wetland management in the country	Government	MoF; WWF; TNC	**0.3**
		3.1.8 Revise forestry subsidiary legislation (regulations) to adequately support CFM, JFM and PFM	FD	WB; AfDB; MoF	**1.2**
		3.1.9 Develop documentation to operationalize CFM.	FD	MoF; WB; AfDB	**2.5**
	3.2 Safeguards	3.2.1 Assessing existing PLRs and implementing institutional capacity	Government	WB (ZIFLP)UN-REDD	**0.1**
		3.2.2 Enforce SEA as per Environmental Management Act 2011	ZEMA	MoF	**0.1**
		3.2.3 Interpret the Cancun safeguards in accordance with national circumstances	Government; Civil Society	UN-REDD	**0.01**
		3.2.4 Implement priority PLR reforms	Various – depending on the PLR to be reformed	MoF	**0.05**
		3.2.5 Identify/ strengthen/ develop inter-institutional information sharing arrangements	Government; CSO;	MoF	**0.03**
		3.2.6 Develop national/ subnational reporting templates	Government	MoF; UN-REDD	**0.03**
		3.2.7 Develop national criteria and/or indicators	Government; Civil Society; Private sector	MoF	**0.03**
		3.2.8 Compile information; populate database; analyse and interpret information	Government	MoF	**0.25**
		3.2.9 Conduct an assessment of secondary institutions' information systems and capacity needs	Government	MoF	**0.01**
		3.2.10 Refine SIS design to produce v1.1	Government, Civil Society	MoF; UN-REDD	**0.01**
		3.2.11 Produce summaries of information	Government	UN-REDD; MoF	**0.25**
		3.2.12 Produce domestic safeguards information products	Government	MoF	**0.1**

Table 9: Potential implementing and investing partners by activity (……*Cont*.)

CIP	Component	Activity	Implementing Institution(s)	Potential Source of Finance	Activity budget (USD Million)
3. Policy and Institutions	3.3 Capacity development	3.3.1 Strengthen local institutions for forest concession management and forest-based business development.	Government; Cooperating partners; Civil Society	MoF; GCF; WB	**5.5**
		3.3.2 Build capacity of charcoal producers and communities.	Government, Cooperating partners; Civil Society, Private	MoF; FCPF; WB; AfDB	**5.0**

			sector, community		
		3.3.3 Implement priority institutional capacity building for SIS	Government, Cooperating partners; Civil Society	UN-REDD	**0.01**
		3.3.4 Capacitate SIS task team to operate SIS	Government; Cooperating partners; Civil Society	WB	**1.0**
		3.3.5 Capacitate subnational and local government, together with non-government REDD+ implementing institutions	FD	MoF, ZCCN	**0.25**
		3.3.6 Capacitate non-state actors to contribute to SIS functions	Various non-state actors	Bilateral ODA grants to domestic NGOs	**0.125**
		3.3.7 Capacitate local communities involved in CFM in participatory land use planning and mapping	Government, Cooperating partners; Civil Society	MoF; WB; AfDB; UN-REDD, ZCCN	**2.5**
		3.3.8 Strengthen community management structures and ensure gender issues are considered for CFM and JFM implementation	Government; Cooperating partners; Civil Society	MoF; WB; AfDB; UN-REDD	**3.0**
		3.3.9 Support appropriate multi-stakeholder fora to enable involvement in forest management and governance	Government; Cooperating partners; Civil Society	MoF; WB; AfDB; UN-REDD, ZCCN	**0.3**
		3.3.10 Strengthen extension services to facilitate effective community participation.	Government; Cooperating partners; Civil Society	MoF; WB; AfDB; UN-REDD	**2.5**

6. Implementation Framework

9.1 Institutional arrangements for REDD+ Strategy Implementation

128. The REDD+ Strategy has identified that the proximate drivers of deforestation and forest degradation are specific to forestry, agriculture, energy, mining, and land use (infrastructure development) sectors. In addition, the Strategy has proposed a landscape approach prioritizing the implementation in three watersheds, namely; Zambezi, Kafue and Luangwa for its implementation. However, emerging challenges in other watersheds in the country are also considered. Cognizant of the interrelatedness of the proximate drivers of deforestation and forest degradation at the landscape level in the priority watersheds, GRZ is putting weight behind an approach that reflects integration and inter-sectorality to achieve reduced deforestation and forest degradation, mitigation, adaptation to climate change impacts and national development goals.

129. Therefore, the implementation of the Strategy will require institutional arrangements that are both multi-sectoral and multi-stakeholder. These include GRZ Ministries and respective departments, especially those directly related to the proximate drivers of deforestation and forest degradation, as identified in the Strategy are key stakeholder, as are relevant statutory bodies, international and national NGOs and Civil Society Organizations, the Private sector and local community institutions such as community resource boards. Cooperating partners (both bilateral, multi-lateral) are key to the implementation of the IP.

130. In line with the decentralisation policy of Governement, the implementation of the Investment plan will be achieved through the existing structures. At provincial level implementation will be facilitated through the Provincial Development Committee (PDCC), while at district level, the District Development Coordinating Committee will facilitate the implementation of the IP.

131. Given this array of stakeholders, the implementation of the Strategy demands institutional arrangements that are both multi-sectoral and multi-stakeholder working in harmony to achieve the overall programme objective of reducing emissions through a verifiable measurement of reduction in emissions commensurate with reductions in the rates of deforestation and forest degradation. Below is the proposed structural arrangement for both coordination and implementation of the Investment Plan of the REDD+ Strategy (Figure 11).

132. Without (necessarily) creating new structures, as shown in the figure below, the Forestry Department is the agency mandated with oversight over the design and implementation of sustainable forest management and REDD+ readiness and implementation more broadly. The Interim Climate Change Secretariat (ICCS) is the lead agency charged with the design of the REDD+ Investment Plan in line with its mandate to coordinate cross-sectoral climate change

policy design. It follows that the implementation of the REDD+ Investment Plan through on-the-ground results-based actions is a responsibility of the Forestry Department to be executed in collaboration with relevant sectors and stakeholders. This means that existing government structures will be capacitated and resourced to play the coordination and implementation role, as appropriate and required. This will ensure aid effectiveness, cost effectiveness and better coordination of the implementation. The proposed institutional arrangements include government and traditional institutions working side by side with donors, private sector, NGOs, CSOs and local communities in the implementation, monitoring, evaluation and reporting during implementation of the REDD+ Strategy. It is important that arrangements at the sectoral coordination level and implementation level of the REDD+ Programme are sound and sustainable and that they are integrated with on-going activities in the country such as the Zambia Integrated Forest Landscape Project in Eastern Province and others.

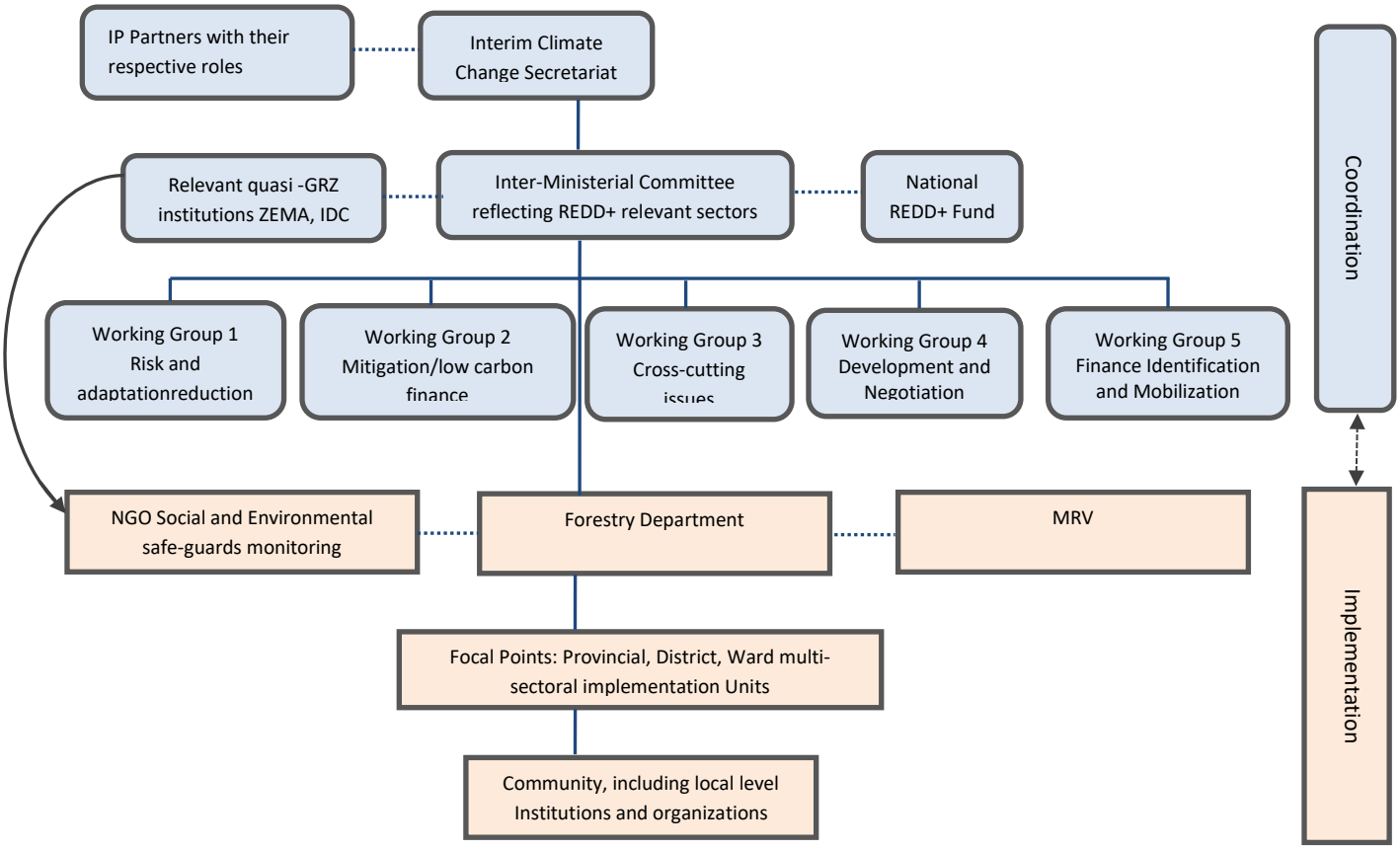


Figure 11: Institutional arrangements for the implementation of National REDD+ Strategy

133. In adopting an integrated multi-sectoral approach at landscape level, and given the policy differentiation between land and forest governance in the country, the implementation process is not insulated from implementation risks in various ways and at different levels. Capacity building at all relevant levels, community involvement, collaborative governance and participatory consultative processes that are gender-sensitive and account for poverty

disparities are some of the ways to respond to the implementation challenges and risks associated with REDD+ interventions. Table 8 below summarizes broad key potential risks associated with the implementation of proposed investment priorities. The table also includes proposed mitigation measures for each of the risks. More detailed risks will be elaborated at the development of specific projects from the investment priorities that have been proposed. This includes tailored socio-environmental assessments in the investment priority areas to gain a better understanding into the potential social and environmental risks that can counter the objectives of the Investment Plan as have been carved from the national REDD+ Strategy.

Table 11: Implementation risks and mitigation measures

Identified Risks	Risk Rating	Risk Mitigation Measure
The proposed multi-sectoral integrated approach at landscape level will be implemented within the policy framework of new forest configurations. The Land Policy has not yet been finalized. Knowledge on the implementation of community forests and benefit sharing mechanisms is yet to be fully understood, especially given the Land Policy is still under development. The implementation of decentralization process is not fast enough to support the implementation of differentiated (and coordinated) land and forest policies. Customary land tenure law is not always consistent with the forest policy and regulations. In addition, partly due to potential land related conflicts with traditional authorities, consensus has not been reached on some essential elements of the land policy. This casts a fragmented and unclear picture on forest and land management and governance.	High	The process of decentralization is laid down in the National Decentralization Policy (2010) and is fully supported by the Forestry department where the implementation of the national REDD+ Strategy will be anchored. The investment priorities will build on and benefit from lessons from the Finnish supported project on community forest. The review of both the Land Act (2015) and Forest Act (2015) will inform the interventions to ensure successful implementation of the investment priorities. There is an appreciable level of government buy-in in the proposed investment priorities, and therefore, sensitization programs at relevant levels will contribute to surmounting risks associated with land-forest policy fragmentation, land related misunderstanding and conflicts and increasing level of knowledge regarding community forests and the bundle of property rights for communities.
Zambia has been experiencing extreme weather events. Some of the climate and seasonal variability events may affect the implementation of some components of investment priorities at project level.	Medium/High	The project designs will ensure that the seasonal variability and weather events in the three watersheds are accounted for and necessary measures included in the design. For afforestation/reforestation components, climate-resilient plant species might need to be prioritized to restore deforested and degraded lands.
The multi-sectoral approach at landscape proposed for the implementation of the national REDD+ Strategy calls for close cooperation and sharing of information among relevant government ministries, Investment Plan Partners, and other stakeholders to ensure a level of harmonization.	Medium	The multi-sectoral approach at landscape is a government initiated approach to harmonize investments in development programs and projects. It therefore, has government back-up. In addition, the process leading to the development of the Investment Plan has been in collaboration with all Investment Plan Partners and in consultation with other stakeholders through meetings. For a successful implementation of the national REDD+ Strategy, roles of Partners will be clarified. It will be imperative to acknowledge the different policy structures of the relevant sectors so as to be able to harmonize them in a way that will yield sustainable environmental and socio-economic impacts.

Limitation and in some cases lack of technical capacity will reduce or compromise the quality and efficiency in the implementation of investment priorities.	Low/ Medium	Local communities and local authorities in the catchment areas of the three watersheds where the investment priorities will be implemented will be trained in the design, planning and implementation of projects. This will be reinforced with support from international experts who will be engaged to assist local authorities according to implementation needs.
Loss of government support owing to the restructuring and re-alignment of ministries and departments. This sometimes has led to the change of staff leading to disruptions to the processes for implementing investment priorities.	Low/ Medium	The investment priorities in this Investment Plan are identified priorities of the national REDD+ Strategy, a government document has been launched by the Minister of the Lands and Natural Resources. With this political support, the investment priorities will be institutionalized in the national development mechanisms that use existing institutional set-ups to achieve development goals. In addition, the mandate of the ICCS that play a facilitation and coordination role, and the Forest Department where the implementation will be anchored, have not been changed in terms of their portfolio functions.
Lack of financial resources to successfully implement the national REDD+ Strategy. The global financial landscape is unpredictable. The government of Zambia recognizes that it does not have all the resources required to successfully implement its development programs.	Medium	Efforts have been made to identify potential sources of funding for the investment priorities. The government will also be required to raise the profile of investment priorities in the Investment Plan in its negotiations with development partners so that enough resources are mobilized to implement identified investment priorities.
The involvement of the private sector in the management of natural resources calls for a balance between short term economic benefits for the private sector and long term development benefits for rural communities depending on land and forest resources. Lack of capacity to ensure compliance to investment regulations may lead to involuntary resettlements, environmental degradation and conflicts.	Medium/High	The preparation stages of investment priorities at project/program level will take into account the socio-economic and environmental and biophysical particularities so that socio-economic and environmental risks are averted or mitigation measures are accounted for in the design. In the context of the policy guidelines for the establishment of community forests, capacities will be built beyond concerned communities and community resource boards to include other land and forest administration levels. In addition, the Forest Department will remain instrumental in their role to support communities and mediate their engagement with the private sector to ensure meaningful benefit sharing mechanisms.
For a development undertaking that involves various Partners and stakeholders, this can be a strength if each of the Partners and stakeholders focus on bringing in their comparative advantage and expertise. When this does not happen, the collaboration might lead to siloed operations that will defeat the purpose for integrated approach to investments in development programs.	Medium	During the development of the Investment Plan, the Partners have been involved; each of them bringing to the document, their expertise through the works that have informed the full development of this document. During the implementation process, Investment Plan Partners as well as other stakeholders will play the role that will add value to the implementation of national REDD+ Strategy. The government will work closely with other Partners based on the Partner's comparative advantage.
The implementation of investment priorities does not reflect cost-effectiveness in the three watersheds	Low	Making the implementation of investment priorities as cost-effectiveness as possible without compromising the quality of the outputs is key in justifying the value addition of financial resources from different sources. Cost benefit analyses as well as exploring alternative implementation strategies will be part of the design of investment priorities at project level.

6.2 Stakeholders and consultation processes

6.2.1 Collaboration with International Partners

134. International support for the preparation of this IP came from two major sources: the Forest Investment Program (FIP) and the UN-REDD Programme (including UNDP, UN Environment, and FAO). Support from the FIP was channelled through the World Bank and the African Development Bank[30]. The Nature Conservancy (TNC) was an important partner. Other stakeholders have been the Zambia Climate Change Network, WWF, and many other institutions that have been consulted such as the Decentralized Forest and other Natural Resources Management Project Secretariat, BioCarbon Partners and Tetratech.

135. The first Joint Mission meeting that convened all Partners took place in June, 2016 during which discussions around the potential contributions and roles of each Partner were tabled. The table of contents of this Investment Plan was also discussed and agreed upon in consultation with all Partners. Partners supported the design of sectoral analyses related to the main drivers of deforestation and degradation with the view to embedding their results into the Investment Plan. There has been meaningful engagement among Partners at the level of communication and sharing ideas that need to inform the IP development, including coordination and implementation. The Second Joint Mission took place in June 2017.

6.2.2 National Consultations

139. The process that led to the national REDD+ Strategy involved nation-wide consultations. One of the major outcomes that came from these stakeholder consultations was that the Strategy to reduce emissions from deforestation and forest degradation should not only focus on greenhouse gas (GHG) emission reductions and carbon payments but should encompass the broader national development and poverty reduction goals as enshrined in the Vision 2030, based on an integrated natural resource management (INRM) approach.'[31]The Investment Plan builds on these prior consultations.

140. The two Investment Plan Partner Joint Missions have been occasions for consultations that have enriched the contents of the Investment Plan document. During the missions, ideas have been exchanged on what needs to be included based on the development needs and priorities of the country. Besides the presence of the ICCS and the FD, participants came from other government ministries: Finance; Agriculture; Energy; Local Government; Gender; Lands; Trade, Commerce and Industry; Mines and Minerals Development; Water Development, Sanitation and Environmental Protection; the Department of National Parks and Wildlife (DNPW); and the quasi-government agency – Zambia Environmental Management Agency (ZEMA). Non-Governmental Organizations included The Nature Conservancy (TNC), Worldwide Fund for Nature (WWF), Zambia Climate Change Network (ZCCN), Centre for Environment Justice (CEJ), Community Markets for Conservation (COMACO) and Zambia Chamber of Commerce and Industry (ZACCI).

[30] The International Finance Corporation (IFC) participated in early discussions on theIP but due to lack of resources to adequately support the IP preparation, chose not to participate as one of the FIP-supported MDBs.
[31]The National REDD+ Strategy document, p3

141. The investment plan implies a more intensive dialogue and partnership among the participants of the forestry, agriculture, energy and mining sectors and government in proposing and developing projects at the scales required to reduce deforestation and forest degradation. The success of this investment plan in addressing deforestation and forest will be determined by its ability to address the complex interplay among these sectors. A multi-stakeholder approach that underscores and reflects a level of coherence in how all stakeholders across these different sectors and institutional mandates contribute to the implementation of the investment priorities, is required.

142. A civil society meeting supported by the UN-REDD Programme, was held to discuss the participation of Zambia Civil society in the national REDD+ process. A report was produced which presents the outcome of a participatory self-assessment workshop on the participation of the Zambian Civil Society, within the framework of the Zambian Climate Change Network (ZCCN). It offers some learning points that will inform a broader civil society organizations (CSOs) strategy to effectively engage in the Zambia REDD+ process and specifically in the elaboration and implementation of the National REDD+ Investment Programme.

143. The workshop participants agreed that ZCCN and its members have participated in the REDD+ process by helping to frame the road map and in the elaboration of the REDD+ Strategy, as well as implementing on the ground projects and activities that are related to REDD+ readiness. They ZCCN and members have also raised awareness to local communities and other actors, including the media, at the grassroots, district, provincial and national levels and have been implementing activities related to REDD+, such as: tree planting, sustainable agriculture and advocacy to halt mining and other deforestation activities in intact and high value forest areas.

The IP implementation process will take into account further needs in order to enable civil society representation in the REDD+ implementation process; this includes better organization, communication and strategic thinking within the network. Specific activities that will be carried out are to carry out an inventory of current and potential ZCCN members with interest and actions related to REDD+; strengthen ZCCN members' capacity at national, provincial, district and local levels, with emphasis on strengthening the capacities of women and youths to fully participate; and develop a holistic and operational action plan for ZCCN's participation in the Zambian REDD+ process, including the implementation of the REDD+ investment plan. Asmall interim REDD+ coordinating committee (IRCC) to oversee the implementation has been put in place.

144. Given the array of stakeholders, it is recognised that the successful implementation of the Strategy demands institutional arrangements that are both multi-sectoral and multi-stakeholder. These need to work in harmony to achieve the overall programme objective of reducing deforestation and forest degradation, and deliver co-benefits to communities. As indicated, different actors have been involved in the process to develop the REDD+ Investment Plan and the conceptualisation of the investment priorities and co-benefits.

145. Subsequent processes at design, inception, and implementation will entail another level of detailed stakeholder engagement. These processes and plans will be at project level from the

two Core Investment Priorities. This therefore, pertains to the design phase of the projects that are to be developed to implement the National REDD+ Plus from the developed Investment Plan.

146. Stakeholder engagement supports the development of strong, constructive, and responsive relationships that are critical for sound project design and implementation. Effective stakeholder engagement enhances project acceptance and ownership and strengthens the social and environmental sustainability and benefits of supported interventions. It is both a goal in itself – upholding the rights of citizens and others to participate in decisions that may affect them – as well as an effective means for achieving project outcomes, including those related to democratic governance, protecting the environment, promoting respect for human rights, and preventing and resolving conflict. This will be important as interventions are proposed with communities, on community land and relate to access and use of natural resources important for the livelihoods.

147. The objectives of stakeholder engagement during the processing of developing the Zambian Investment Plan have included the following:

- Strengthening development results through effective partnerships;
- Identifying stakeholder priorities to better tailor components and activities of Core Investment Priorities, opportunities and benefits;
- Identifying potential constraints and conflicts that could affect effectiveness of Core Investment Priorities;
- To avoid and mitigate risks and impacts by learning from and incorporating local knowledge in the conceptualization of Core Investment Priorities;
- Ensuring that a feedback and monitoring mechanism is embedded in the implementation plan of the Core Investment Priorities; and
- Providing a platform for a meaningful dialogue leading to consensus-building and decision-making in process of developing the Investment Plan.

148. Therefore, besides reporting, the development of this Investment Plan recommends that the implementation of the National REDD+ Strategy through the projects will address stakeholder engagement requirements in action plans and management measures, involve stakeholders in monitoring and participatory monitoring.

6.3 Institutional Coordination and Implementation Capacity

149. Zambia has had experience in implementing development projects and programmes. With support from development partners through financial and technical assistance, some capacities have been built to support the successful development of programmes. For the implementation of investment priorities in a multi-sectoral manner at landscape level, horizontal and vertical coordination will remain a *conditio sine qua non* to ensure success. The Ministry of Lands and Natural Resources through the Forestry Department is responsible for implementing the

government's vision of the forestry sector to attain sustainable forest management of all types of forests to enhance forest products and services, which will contribute to mitigation of climate change, income generation, poverty reduction, job creation and protection and maintenance of biodiversity.[32]

150. In Zambia the proximate drivers of deforestation and forest degradation are specific to the country's forestry, agriculture, energy, mining, and land use (infrastructure development) sectors. This means that the ministries under which all these sectors fall are key players that should constitute an inter-sectorial collaboration mechanism to harmonize policies and implementation. This collaboration will carry the government's vision of rural development, making more effective and sustainable use of land and forest resources, reverse deforestation and forest degradation trends, improve conservation, enhance carbon stocks without compromising the livelihood base of rural communities. The coordination and facilitation role of the Interim Climate Change Secretariat will remain pivotal in realizing the inter-sectoral collaborative governance structures that will also give space to other development partners and other stakeholders.

151. Even with the existence of capacity development programs and institutional coordination frameworks, experience shows that there is sometimes lack of clarity on institutional portfolio mandates. This leads to overlaps, duplication of efforts, and sub-optimal allocation of human and financial resources. This challenge will need to be tackled by strengthening governance structures ensuring that responsibilities of key sectors are consolidated and aligned as required. The decentralization process, slow as it is, is one important step in the direction of remedying overlaps and redundancy in institutional portfolio mandates. Minimizing staff reshuffles will also be critical in ensuring consistency and momentum in the implementation process.

152. The decentralization process strengthens the governance structures at provincial, district, ward and even local community levels. Due to human and financial resource constraints, the levels of representation at these lower levels for all the sectors related to deforestation and forest degradation in Zambia will vary. In some cases, particularly where the central government representation is non-existent, civil society organizations and local level institutions such as community boards will prove useful in strengthening management and governance. Thus, civil society institutions will be part and parcel of the implementation process. These different institutional levels serve as avenues of consultation and collaborative participation in land and forest resources management. For example, the establishment of community forests as legislated in the Forest Act 2015 will benefit from the different political administration levels of forests, including community boards that will be part of the pathway of paperwork before approvals from the Director at the Forestry Department in Lusaka.

153. All requests for establishing community forests will benefit from existing local level institutions, formal or informal before escalating the procedures and processes to the ward, district and provincial levels and finally the Director at the Forestry Department. Alignment and clear definition of roles and responsibilities will facilitate the processes that can be complex with the involvement of different stakeholders with different access and exercise of power over land and

[32]Zambia National Forestry Policy, p9

forest resources. This will be critical for Zambia where the bundle of property rights to access and use of land do not guarantee the same rights to the access and use of forest resources on the same piece of land.

6.4Monitoring, Reporting and Verification/Forest Reference Emission Levels

154. Zambia's experience and capacity for measuring and reporting carbon stocks, changes in carbon stocks and GHG emissions is summarized in the box below:[33]Established systems for monitoring, reporting and verification (MRV) are cardinal in the implementation of national REDD+ projects and programs.

Box 1:MRV for REDD+ in Zambia

Zambia's work in the area of MRV for REDD+ has focused on the development of a decentralized national forest monitoring system (NFMS). Ten provincial forest monitoring laboratories have been established and equipped with tools for forest monitoring, including computers with Geographical Information System (GIS) software, Geographical Positioning System (GPS) units for forest monitoring field activities, and printers and plotters for field map production. Each provincial laboratory is staffed by a group of trained cross-sectoral technicians from the forestry, agriculture and planning sectors who provide a decentralized hub of MRV expertise. The laboratories will provide near real-time spatial data on deforestation and forest degradation that can be relayed to the central national forest monitoring laboratory in Lusaka to inform national reporting.

Along with this infrastructure development, extensive capacity building of provincial cross-sectoral technicians in GIS, GPS, MRV and GHG reporting methodologies has also been carried out. In 2012, intensive training of technical staff in the central office in Lusaka was conducted at Brazil's National Institute for Space Research (INPE). Brazil's Terra Amazon platform, which allows different users to work simultaneously on forest cover classification and monitoring, will be used as the basis of a land cover classification system that will be adapted to Zambian needs and integrate country-tailored algorithms and image processing modules.

With over 4,000 sampling sites across Zambia, the Integrated Land Use Assessment II (ILUA II) has assessed forests and integrated land-use practices to provide new qualitative and quantitative information on the current situation and trends regarding the state, use and management of natural resources. It has provided technically-sound information on the physical characteristics of forests and the socio-economic condition of communities living in and around these forests. With technical support from FAO, the information collected in ILUA II will

[33]Excerpted from Developing Zambia's National Forest Monitoring System: success story
file:///C:/Users/s1040713/Downloads/Zambia_NFMS_EN_FINAL%20(1).pdf

155. The National Forest Monitoring System that the government developed during the REDD+ readiness process, is key in providing information on the status of forests (landcover). The MRV focus on changes in carbon stock and greenhouse gas (GHG) emissions resulting from deforestation and forest degradation, and from the conservation and enhancement of carbon stocks and sustainable forest management practices. The implementation of the national REDD+ Strategy at landscape level will generate lessons to feed into national-level policy making processes and inform and guide implementation.

156. The government of Zambia completed the country's forest reference emissions level (FREL) that only included gross deforestation[34]for submission to the UNFCCC in 2016. The study estimated that the annualized emissions for 2000-2010 period were 21,879,122.18 tons CO_2e per year while the second period, 2010-2014, the emissions were 29,848,604.19 tons CO_2e. The average estimate associated with land use change (forest to non-forest) for the near future was an annual rate of 25.42 $MtCO_2e/yr^{-1}$. Using both above and below ground carbon fluxes across the country, the map below spatially stratifies carbon content in Zambia. Figure 12 below shows the carbon status levels in the country.

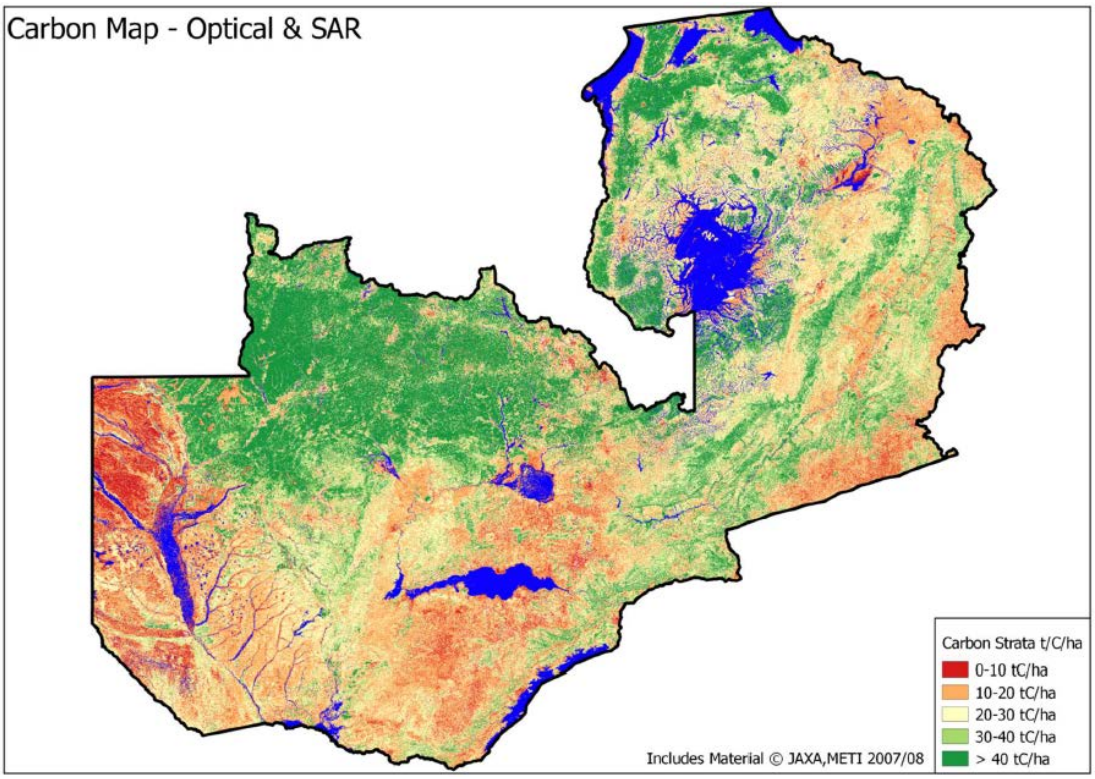


Figure 12: Carbon status in Zambia (*Source*: GRZ, 2016 - Zambia's forest reference emissions level for submission to theUNFCCC).

[34]Zambia's forest reference emission levels (2016) http://redd.unfccc.int/files/2016_submission_frel_zambia.pdf

7. Knowledge Management and Monitoring

157. Knowledge management is an important practice and backbone of learning from projects and programmes. The development of communication plans, knowledge products for different stakeholders who are directly and indirectly impacted by investment priorities, including the dissemination of knowledge products will support the ownership and sustainability of the intervention outcomes.

158. A multi-sectoral approach at landscape level to address a multi-sectoral challenge constitutes an innovation of this Investment Plan. Therefore, there will be a lot of lessons to be learned to improve the programming of interventions in the selected watersheds. These lessons will form basis for consultations with relevant stakeholders. This is particularly important because GRZ places great value on having wide consultations so that views of stakeholders do not only reflect in the interventions, but also constitute the development priorities of the country. The proposal to finance knowledge management and monitoring therefore, is a reflection of the government's goal to ensure that there is strategic coordination in sharing lessons learned with the investment priorities, establishing and strengthening sectoral partnerships with other interventions in the forest sector.

159. Monitoring will enable the valuation of the relevance of the investment priorities in reducing emissions from deforestation and forest degradation, improve sustainable forest management, improve biodiversity conservation and enhance carbon stocks, and contributing to reducing rural poverty levels. In terms of reporting on the progress of the investment priorities, knowledge management and monitoring will constitute an important element in that exercise. To operationalize knowledge management and monitoring for the identified investment priorities of this investment plan:

- Stakeholders that include government structures, civil society, private sector and traditional authorities and local communities will be required to follow capacity-building programmes for M&E to inform the monitoring and evaluation framework for the FIP investment priorities;
- Routine and systematic M&E for the FIP investment priorities will need to be conducted building on initial collection of baseline data;
- It will be important to develop and disseminate progress reports to relevant stakeholders and at relevant national and international events; and
- It will be important to understand other interventions by other development partners with which FIP investment priority investments can synergize to bring the impacts to scale.

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The Forest Investment Program http://www-cif.climateinvestmentfunds.org/fund/forest-investment-program

The Global Environment Facility Country Profiles https://www.thegef.org/country

The Green Climate Fund and Zambia http://www.greenclimate.fund/-/gcf-spotlight-on-zambia

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Greenhouse Mitigation in Agriculture
http://rstb.royalsocietypublishing.org/content/royptb/363/1492/789.full.pdf

Integrated Landscape Management http://peoplefoodandnature.org/about-integrated-landscape-management/

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The UN-REDD Programme http://www.un-redd.org/how-we-work

Annex 1: Zambia National REDD+ Strategy Strategic Objectives (SOs) and Strategic Interventions (SIs)

Strategic Objective	Strategic Interventions
1. By 2030, threatened and unsustainably managed national and local forests are effectively managed and protected to reduce emissions from deforestation and forest degradation and contribute with ecosystem services across selected landscapes.	1.1 Improving effectiveness of institutions and governance of the protected national and local forests through appropriate reforms.
	1.2 Enhancing participatory approaches to local forest management.
2. By 2030, selected high value forests in open areas are effectively managed and monitored.	2.1 Enhancing participatory approaches and traditional authorities' role in forest management and monitoring in high value forests in open areas.
	2.2 Developing generic cost-benefit sharing principles for management of forests in open areas.
3. By 2030, all timber concession areas have management plans that are enforced and monitored with the full participation of local communities.	3.1 Engaging traditional leaders and local communities in timber concession management.
	3.2 Strengthening local institutions for forest concession management and forest-based business development.
	3.3 Creating an independent monitoring unit for timber concession operations.
4. By 2030, good agricultural practices that mitigate carbon adopted.	4.1 Promotion of climate smart agricultural practices related to production.
	4.2 Provision of performance-based incentives for climate smart agricultural practices that mitigate carbon emissions.
	4.3 Promotion of good agricultural practices related to reduced emissions from agro-processing dependent on use of wood fuel from indigenous forests.
5. By 2030, regulated production of wood fuel (charcoal & firewood) and its improved utilization in place.	a. Enhancing models for sustainable and regulated wood fuel production.
	b. Promotion of energy-efficient wood fuel utilization technologies.
6. By 2020, appropriate and affordable alternative energy sources widely adopted	6.1 Promotion of alternative renewable energy sources.
	6.2 Promotion of smart incentives for alternative energy sources adoption.
7. By 2020, threatened and sensitive protected areas legislated as "no-go areas" for mining and infrastructure development	7.1 Enforcing the Environmental Management Act (2011) to protect threatened and sensitive protected areas (PAs).
	7.2 Harmonizing existing legislation in order to address overlapping concession/ licensing systems.
	7.3 Developing guidelines for PA classification.
8. By 2025, mining industry contributing to management of surrounding	8.1 Encouraging the mining industry to invest in forest plantation establishment to meet own wood needs.

indigenous forests and establishment of forest plantations for own timber needs.	8.2 Enhancing the Mining industry compliance to Strategic Environmental Assessment.
9. By 2025, land and resource rights on customary land legislated and secured.	9.1 Developing integrated land use plans that are compatible with sustainable management of forests to guide infrastructural development and developing mechanisms that ensure long term ownership and usufruct rights to local communities
	9.2 Supporting efforts towards ratification of the Customary Land Bill, Forest Bill and Urban and Regional Planning Bill.
10. By 2020, relevant institutions capacitated to enable them to plan, manage, implement and monitor REDD+ programme activities.	10.1 Developing institutional and stakeholder capacities to implement and monitor REDD+.
	10.2 Developing REDD+ benefit sharing models

Annex 2: Summaries of Investment Plan Studies

These studies were commissioned by the World Bank Group and the UN-REDD Programme to inform the REDD+ Investment Plan

These studies are summarised and presented here as follows and correspond and provide additional detail to the core investment and enabling environment investments;

1. Scaling Up Community Participation in Forest Management through REDD+
2. Development by Design: Spatial Tools to Inform Land Use Planning
3. Strengthening the Regulation of Woodfuel and its Improved Utilization in Zambia Through Sustainable Woodfuel Value Chain
4. Woodfuel Integrated Supply/Demand Overview Mapping (WISDOM)
5. Strengthening Zambia's Extractives Sector (legislation, policy and financing mechanisms) for REDD+ Implementation in Line with the African Mining Vision (AMV)
6. Mining Sector in North Western Province: Community Engagement and Energy, Agriculture and Governance Investment Options
7. Engaging the Private Sector in the Zambia REDD+ Investment Plan
8. Study on Strengthening Zambian Civil Society Participation in REDD+: Report of Lessons Learned and Way forward for ZCCN's Effective Participation in REDD+-IP

I. Summary of Study by FAO: Scaling Up Community Participation in Forest Management through REDD+

This study, Scaling Up Community Participation in Forest Management through REDD+, was commissioned to support the Forestry Department, in collaboration with other institutions and stakeholders, identify and prioritize specific and bankable options for investment in participatory forest management in effective nationwide implementation of the REDD+ mechanism in Zambia.

The study adopted a step-wise approach, involving a situation analysis; the development of transparent, academically sound and practical criteria for assessing past best practice; the scoping of best practice through case study analysis; and the identification of promising options for community-based sustainable forest and land management practices relevant to REDD+. The main outputs were (i) a set of lessons learnt from the case studies and (ii) a list of options for how to operationalize community-based forest management for REDD+.

The key terms used for collaborative forest management in the report are: community-based forest management which is proposed as the umbrella term for the interventions options put forward in this report and participatory forest management, which refers to government policy on community empowerment in forest management (GRZ 2014). The terms 'community forest management' (CFM), 'joint forest management' (JFM) and 'private forest management' (PFM) are forms of participatory forest management as defined in the 2015 Forest Act (GRZ 2015a).

LEGAL, POLICY AND INSTITUTIONAL CONTEXT FOR CBFM UNDER REDD+

Key issues arising from the **National Forestry Policy** (NPF) are: (i) the overall objective of the national policy is sustainable forest management (SFM); (ii) communities and traditional authorities play an important role; (iii) Community empowerment is a means and an end in itself; (iv) The role of Forestry Department is to facilitate the process of grooming communities and traditional authorities as forest stewards, by putting in place key structures and mechanisms; and (iv) Interventions are to be developed within the context of the guiding principles and implementation framework of the National Forest Policy (GRZ 2014).

Key issues arising from an analysis of the **2015 Forest Act** are: (i) The Act devolves powers to communities to manage forests through CFM, JFM and PFM in quite prescriptive terms; (ii) To effectively operationalize the Act, devolved powers need to be matched with support to the local level through the provision of subsidiary legislation, new and revised regulations, guidelines, training and capacity-building of communities, traditional authorities, local government and other stakeholders; (iii) Without guidance the communities are unlikely to meet their new responsibilities due to low levels of education and a poor resource base. Third party organizations – NGOs, CSOs - will be needed to help the communities become fully-fledged partners in collaborative forest management; (iv) Partnerships with the private sector may provide opportunities for economic development of the CBFM areas in the medium-term; (v) The modalities for tripartite arrangements – between Government, Communities and the Private Sector / NGOs need elaboration to ensure that fair and equitable partnerships are formed. For effective participation, stakeholders should be brought on board into the process of formulating subsidiary legislation; (vi) The Government's policy principle of broad-based participation through empowering local communities and traditional leaders is weak in other forms of forest management (i.e. those that are not explicitly participatory). Guidance is needed for how communities may engage in timber concessions, plantations and public-private partnerships in forest conservation. Multiple opportunities exist that would benefit from appraisal. (GRZ 2015a).

The key issues arising from the review of **Zambia's Nationally Determined Contribution** (NDC) to the 2015 agreement on climate change are that (i) Participatory forest management is one of the key vehicles the ambitious mitigation programme to reduce CO_2eq emissions. A concerted effort will be needed to operationalize CFM/JFM/PFM in a manner that will yield tangible carbon capture over a relatively short period of time; (ii) Sustainable forest management is one of the key means at the Government's disposal to meet the 2030 emissions reductions goals; (iii) Participatory forest management features centrally in

the proposed mitigation programme on Sustainable Forest Management; (iv) Mitigation and adaptation are seen as closely interlinked in the NDCs. Participatory Forest Management through CFM, JFM and PFM bridges the two. (GRZ 2015b)

Zambia's **National Climate Change Policy (NCCP)** provides an implementation framework for a coordinated response to climate change by that will steer current and future initiatives, fully mainstreaming climate change into sector strategies and national development plans (GRZ 2016). The policy emphasizes the following: (i) Community economic and social (co-)benefits, i.e. poverty alleviation, access to natural resources, resilience, risk management, and livelihood diversification; (ii) Sustainable land management practices, i.e. coordinated land-use planning, protection of water catchments, reduced forest degradation and loss of forest ecosystems, fire management and soil conservation; (iii) The interlinkage between mitigation and adaptation; (iv) the need for a consultative approach promoting stakeholder participation and partnerships; and (v) social inclusion, building capacity and resilience to cope with climate change and manage risk for all segments of society, e.g. rural communities inclusive of vulnerable groups and women; and (vi) enhanced coordination of institutional, legal, policy and planning response through the establishment of new structures and review of existing policy and legislation to meet national goals (GRZ 2016).

The **national REDD+ Strategy** emphasizes the role of the community and district level in the operationalization of REDD+, drawing attention to the need for an enabling environment, supportive policy, legislation and regulations, clear locally-driven institutional arrangements, stakeholder participation and partnerships, clear incentives and benefits as well as targeted activities (e.g. fire management, value addition). Particularly important is the need to recognize and protect community rights, and build the capacity of communities and local level structures to shoulder the responsibility to implement REDD+. Sustained participation of local communities in sustainable forest management will be dependent on the implementation of benefit sharing mechanisms that can incentivize local communities. Integrating climate change objectives in community-based forest management programmes creates additional benefits and livelihood opportunities. The success of the proposed CFM, JFM and PFM is dependent on the extent to which equitable benefit sharing in forest resource management will be realized (GRZ 2015b).

INTEGRATING CBFM OPTIONS INTO THE REDD+ INVESTMENT PLAN

The proposed CBFM programme presented in this study may be integrated into the draft REDD+ Investment Plan in several ways: (i) adopted as a stand-alone priority area (i.e. as an additional Investment Priority area); (ii) fused into an existing investment priority, though potentially losing out on key features; (iii) or the proposed modules may be adopted as cross-cutting activities that feed into all three investment priority areas.

Three components, i.e. the Platform Component, the Policy Component and the Pilot Design of incentive and market-based mechanisms, support the investment plan. How community action components relate to the investment priority areas is shown below.

Table. Matching CBFM options to draft Investment Priority Areas in the REDD+ Investment Plan

IP Priority	Description of Core Investment Priority	Matching CBFM Action Component

Core Investment Priority 1:	Community-based Forest Management to Improve Livelihoods (recover and increase)	5.3. Joint Forest Management 5.4. CFM buffers for PAs and concessions 5.5. Smallholder private forestry
Core Investment Priority 2:	Community-based Forest Management to Improve Livelihoods (recover and increase)	5.2. Community Forest Management 5.3. Joint Forest Management 5.4. CFM buffers for PAs and concessions 5.5. Smallholder private forestry
Core Investment Priority 3:	Improved Management and Restoration of Degraded Forest Areas (Restore and increase productive function of production landscapes)	5.5. Smallholder private forestry

In order to assess and prioritize the components under the CBFM programme for REDD+, criteria were prepared drawing on the past experiences of other countries in the Forest Investment Programme, other climate investment facilities (e.g. PPCR and GCF), the Central African Forest Initiative and the national criteria established by the Zambian Government in recent policy, strategy and planning documentation. A tentative scoring of the proposed CBFM programme components is found in Annex 10. The actual prioritization and assessment of the long-list was not possible to undertake within the study period (see item # 5).

DISCUSSION AND RECOMMENDATIONS FOR THE IMMEDIATE WAY FORWARD

The review of opportunities and barriers in national policy and legislation, the scoping of best practice in the field and the criteria for assessments developed in this study provide tools for screening the potential of the long-list of CBFM options for the implementation of national REDD+ responses.

A group exercise is recommended to complete the process. In line with the national REDD+ strategy call for broad stakeholder engagement, the exercise should involve stakeholders from forestry sector and key potential implementation partners: communities, the traditional rulers, district implementation teams (Forestry Department district level), the private sector, policy makers (Forestry Department national level) and traditional authorities

The short-list will then be developed for further consideration. The next step is to ensure (i) that the proposed interventions are compliant with Government Policy, good practice in CBFM, SFM, REDD+, and the Cancun safeguards; and to address (ii) Immediate action points that will create leverage for the process.

Compliance measures that need attention include: the effective involvement of civil society; gender recognition and mainstreaming; good governance; partnership building; inter-sectoral challenge; effectively addressing PLR challenges; risk management; social safeguards and FPIC; as well as ensuring adequate stakeholder involvement.

Immediate leverage may be created by addressing key PLR barriers, source for funding to extend the Decentralised Forest and Other Natural Resource Management Programme (DFNRMP) pilot and broaden stakeholder consultations and involvement in the planning of REDD+ activities, as these will build the foundation for the partnerships and multi-stakeholder dialogue which is necessary for implementation of CBFM within the envisaged integrated landscape approach.

II. Summary of Sectoral Study by The Nature Conservancy: Development by Design: Spatial Tools to Inform Land Use Planning

Rationale

Zambia embodies a rich array of natural resources, biodiversity, ecosystem services, and diverse culture. Given rapidly growing plans for new infrastructure over the coming decades in Zambia, it is critical to ensure that planning decisions are not merely based on technical and economic viability but are also informed by social and environmental considerations. To date, The Government of the Republic of Zambia (GRZ) has relied mainly on Environmental Impact Assessments (EIAs), which have several limitations as a planning tool (e.g., applied late in the project planning process, fail to consider cumulative impacts from multiple projects, tend to be reactive actions at small ecological scales, fail to include adequate follow-up and monitoring, and do not strive for no net loss of ecosystems). The GRZ has committed to promoting land-use planning guidelines which enable more environmentally compatible development while maintaining resilient ecosystems that support community livelihoods with a science-based spatial planning approach called "Development by Design" (DbD).

Development by Design Framework

Development by Design blends landscape planning with the mitigation hierarchy – avoid, minimize, restore, or off set – to identify situations where development plans and conservation outcomes may be in conflict and help steer impacts away from areas of high conservation value. When unavoidable impacts occur, offsets can be designed to best deliver values ecologically and functionally equivalent to those lost, be located at an acceptable proximity from the impact site, and contribute to regional conservation goals. This four-step DbD framework supports sound land use planning, helping decision-makers avoid and mitigate conflicts between development impacts and conservation priorities, and supporting the use of compensating conservation actions (off sets) to achieve better outcomes for people and nature. Furthermore, the DbD process builds effective partnerships that enable Zambian decision-makers to have more active roles in designing future landscapes that benefits multiple sectors while ensuring sustainable development and healthy ecosystems.

Specifically, the Development by Design approach will support Zambia's Investment Plan by:

1) Increasing awareness of valuable environmental assets that, if developed, could not be replaced,
2) Providing "early warnings" of potential conflicts among sectors (e.g., mining, agriculture, and energy) and among planned development and natural resources (e.g., carbon sources, forests, biodiversity, and rural community livelihood),
3) Integrating spatial planning perspectives into Zambia's national (e.g., 7th National Development Plan), regional (e.g., Province and Game Management Area planning), and local (e.g., chiefdom and community) planning processes,

4) Increase efficiency and transparency by creating seamless transfer of consistent information across ministries, stakeholders, and regions, and
5) Promote cooperation and collaboration among partners to discover ways to implement the avoidance component of smart growth planning into action.

Conservation Value Map

The first step in Development by Design is creating a national Conservation Value Map that identifies areas with valuable natural resources (Fig. 1). This map will help decision makers 1) Identify and secure areas with critically high natural resource value, 2) facilitate assessment of potential impacts of future development projects on natural resources, and 3) inform offset projects. For instance, overlaying the boundary of a proposed project with the conservation value map and its components will provide insight into which natural resources (land and associated biodiversity and water) could be impacted by the project. Conversely, the map could help identify areas suitable for economic development that also contain relatively low ecological value. Furthermore, the conservation value map can guide developers and regulators to identify offsets activities that deliver values ecologically equivalent to those lost.

Overview Methodology for Conservation Value Map

Conservation science offers a myriad of ecological metrics describing the distribution and state of nature. But, with such an abundance of metrics, decision makers may have difficulty determining the appropriate actions. To overcome inaction, we developed a flexible portfolio that integrates five important ecological components (see below) were integrated into a single terrestrial conservation value map (p84).

Conservation Value Map Components

Protect large, intact, natural landscapes

Preserving large intact natural landscapes help support large-scale processes that generate and maintain biodiversity and endemism (Schmitz *et al.* 2015). Even if areas lack exceptional endemism (Kareiva & Marvier 2003), they are likely to contain a large complement of native species, including densities of top carnivores large enough to affect community structure. Such intact systems also enhance resiliency to disturbance regimes (e.g., flood and fire).

Sustain Biodiversity

The intent is to identify current geographic patterns and gradients of biodiversity across landscapes (e.g., biodiversity hotspots) in the country. This component also recognizes that species within communities are interdependent with each other and may provide important ecological services through those interdependencies.

Enhance Connectivity

The persistence of wildlife populations depends on the degree to which landscape features facilitate animal movements between isolated habitat patches. To mitigate these negative effects, the fragmenting

of wildlife habitat, conservation actions will attempt to maintain connections or reconnect populations existing in geographically distinct habitats or conservation areas. Connecting landscapes with corridors often enhances landscape permeability for plant and animal movement. This is expected to sustaining gene flow among species populations, prevent local extinction (demographic rescue), and facilitate recolonization after local extinction.

Sustain Ecosystem Function

Ecosystem function refers broadly to ecological processes, including levels and stability of productivity, nutrient cycling, invasion resistance, support for higher trophic levels, and so on, that depend on the contributions, abundances, and identities of species in an ecosystem (Chapin *et al.* 2000). From a conservation perspective, ecosystem function can enhance the persistence or restoration of native biodiversity. Many ecosystem functions are linked to, but not synonymous with, ecosystem services to society that are also increasingly the targets of conservation and restoration action (Chan *et al.* 2006). These services include air and water purification, maintenance of soil fertility, and aesthetic beauty (Daily 1997).

Protect Carbon Storage

Terrestrial carbon conservation provides critical environmental, social, and climate benefits. Yet, the geographically complex mosaic of threats to, and opportunities for, conserving carbon in landscapes remain largely unresolved at national scales. For instance, the expansion of urban and croplands are leading to global declines in biomass carbon storage. Furthermore, carbon emissions from developing tropical countries are dominated by deforestation and forest degradation, which together contribute approximately 10% of the world's total emissions each year. This has driven an effort, known as REDD+, to reduce carbon emissions from deforestation and forest degradation, and to enhance carbon stocks through forest management. Here, protecting carbon storage directly aligns with Zambia's REDD+ objectives UN-REDD2015).

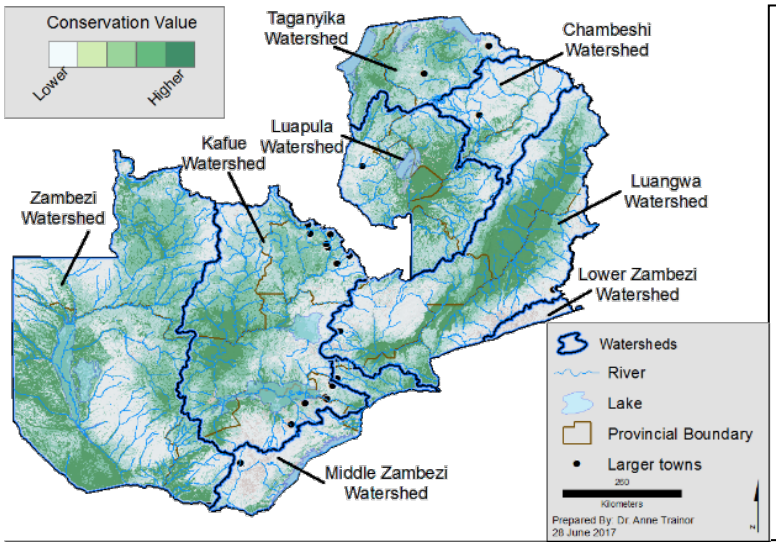


FIGURE 1. FULLY INTEGRATED TERRESTRIAL CONSERVATION VALUE MAP. THE CONSERVATION VALUE MAP HAS A CONTINUOUS GRADIENT OF VALUES (E.G., VALUES RANGING FROM 0 TO 1). THIS CONTINUOUS MAP CAN ALSO BE TRANSFORMED INTO DISCRETE CLASSES (E.G., CRITICAL AND HIGH CONSERVATION AREAS AND INTENSE HUMAN USE AREAS) BASED ON THRESHOLD VALUES DETERMINED DECISION-MAKERS IN THE ZAMBIAN GOVERNMENT.

III. Summary of Sectoral Study by UNDP: Strengthening the Regulation of Woodfuel and its Improved Utilization in Zambia Through Sustainable Woodfuel Value Chain

Introduction

Thestrategic objectives of the Zambia National Strategy to Reduce Emissions from Deforestation and Forest Degradation (REDD+) with respect to energy are:

i. By 2030, regulated production of wood fuel (charcoal & firewood) and its improved utilization in place; and
ii. By 2020, appropriate and affordable alternative energy sources widely adopted.

1.1 Wood fuel

Charcoal and firewood make up over 70% of the national energy consumption in Zambia as only 20% of the population has access to electricity. Charcoal is an important source of energy for both rural and urban populations and it is estimated that 98% of low-income families (which make up 85% of the urban population) depend on charcoal as their main energy source. The significance of charcoal's contribution to forest degradation is exemplified by the estimates amounting to 144,662 hectares per annum of woodland required to produce charcoal in four provinces of Zambia out of the nine provinces. Firewood is in high demand especially in rural areas for cooking and heating needs at household level and also among tobacco farmers especially those producing Virginia tobacco which requires smoke curing as well as for brick burning in the booming construction of houses in the rural and peri-urban areas of rural towns. It is also in high demand by fisher folks in rural areas for fish smoking to dry the fish.

The underlying causes to the high demand of wood fuel are:

i. *Demographic:* Zambia's population is growing at a rate of over 3% per annum and this places increased demand for fuelwood by households.
ii. *Economic:* The economic fiscal regime structure of Zambia requires incentives for conservation and sustainable use of forests. There are no incentives for forest products value addition. The result is a preference by community members to transform a standing forest to other economic uses perceived to be more profitable in the short term such as agriculture with fertilizer subsidies from government than forest conservation.
iii. *Policy and institutional*: There is inadequate policy articulation and differences between policy and the complex reality of implementation. Forest management in Zambia is very weak with inadequate allocation of human and financial resources to the Forestry Department for carrying out its mandate of forest management and monitoring.
iv. *Technological*: Charcoal production technology currently used (earth kilns) is so highly inefficient that it requires more wood biomass per unit of charcoal produced and required for producing reasonable amounts of charcoal to make good profits. In short, the technology has both low conversion and recovery rates.

1.2 Sectoral and policy approaches to addressing deforestation and forest degradation

The current practices for charcoal production fall short of making sustainable charcoal production in relation to forest regeneration in forest areas. Several development planning instruments acknowledge the importance and need for the promotion of alternative energy sources. However, the efforts and impacts of a number of pilot activities in the promotion of energy efficient technologies for charcoal and firewood utilization and alternative energy sources remain inadequate. The determinants of low adoption

rates for energy efficient technologies such as appropriateness of the technologies to specific socio economic circumstances need to be addressed.

The Forestry Department (FD), Ministry of Mines, Energy and Water Development (MMEWD) and Zambia Development Agency (ZDA) have overlapping mandates when it comes to charcoal. FD is responsible for licensing, enforcing production, transport and sale of charcoal, while the MMEWD has authority to monitor the levels and structure of competition and pricing within the energy sector. ZDA is also mandated to develop a rational and implementable approach to improve sustainability of biomass energy supply and raise end-use efficiencies. Despite these shared mandates, the three institutions administer projects in isolation with no collaboration towards a cross-sectoral approach. Cross-sectoral collaboration and harmonization of policies/acts among energy, water, forestry and Zambia Development Agency will be critical to remove jurisdictional ambiguities over charcoal and promote synergies.

1.3 Energy Strategic Interventions

The sustainable wood fuel production should be focused in heavily deforested districts within and surrounding selected focal landscapes. On the demand side, the promotion of alternative energy sources is an option that requires FD collaboration with the energy sector.

Core Investment Priority 2.2 provides the key activities that will be undertaken. These include

Enhancing models for sustainable and regulated wood fuel production.

The objectives are (i) contribution to employment generation; (ii) maintenance and increased forest cover; and (iii) reduction of carbon dioxide emissions from the production process. The intervention will be achieved through an approach that focuses on interlinked sub-interventions along the charcoal value chain as follows:

i. Designation or certification of charcoal production areas with clear and enforceable management plans and secure land tenure and/or administration;
ii. Improvement of charcoal production methods by building the application of the coupe-shelterbelt system for wood harvesting, promotion of the Casamance kiln which is an improvement over the traditional earth kiln to reduce emissions and increase charcoal yield compared to the current situation;
iii. Capacity building through the training of charcoal producers and facilitation of local people or communities to have and exercise control over production areas through participation in monitoring and reporting about charcoal production data, biomass and carbon removal, regeneration that is transparent and easily verifiable, and provision of incentives/benefits to the land managers;
iv. Putting in place an incentive system such as a premium price for charcoal and briquettes bought by the retailers from the designated certified areas; and
v. Lowering taxes/levies for the wholesalers and retailers participating in the regulated value chain.

Expected Result: Mitigation of GHG emissions from carbonization processes through improved production efficiency and enhanced carbon stock preservation in charcoal producing areas that are regulated through the coupe-shelterwood system.

Promotion of energy-efficient wood fuel utilization technologies.

Promotion of improved stoves with higher energy efficiency and requiring reduced biomass are being tested by several organizations in the country but with limited success due to inadequate diagnosis of targeted areas' socio economic circumstances and introduction of unsuitable types. This intervention will require the following approach:

i. Diagnosis of the best bet energy efficient technologies based on the socio-economic and biophysical conditions in the selected target areas;
ii. Development of the appropriate type of energy efficient stoves supported by the analysis from the diagnosis above;
iii. Promotion of appropriate improved firewood and charcoal stoves through demonstrations;
iv. Promoting other energy efficient provision technologies such as briquetting and pelleting technologies to enhance the improved stoves' efficiency; and
v. Promoting use of alternative sources of biomass other than wood such as agricultural waste, e.g., maize and groundnut husks, etc. in the briquetting and pelleting production of solid fuel.

Expected Result: Mitigation of GHG emissions from combustion of charcoal and firewood in traditional cooking stoves and improved livelihoods.

Core Investment Priority 2.2 also provides for key activitie that will enable *appropriate and affordable alternative energy sources to be adopted.*

Promotion of alternative renewable energy sources.
The strategic objective focuses on diversifying energy sources from firewood and charcoal. This intervention will be achieved through:
i. Diagnosis of the targeted areas' specific potential for developing the appropriate energy saving technologies ranging from the harnessing of solar, biogas, wind, geothermal, LPG to mini-hydro schemes;
ii. Developing models for the promotion of the appropriate technology based on its technical requirements and the local socio-economic circumstances of the targeted areas; and
iii. Promotion of appropriate alternative sources through smart partnerships with technology development entities to facilitate wider adoption.

Expected Result: Contribution to national development, improved livelihoods and reduced net emissions from deforestation and forest degradation.
Promotion of smart incentives for alternative energy sources adoption.
Smart incentives for alternative energy sources primarily refer to incentives targeting energy consumers For consumers, incentives could include:

- Introduction of low to zero tax rates on alternative energy technologies; and
- For unsustainable charcoal/fuelwood producers/ retailers: high tax rates/levies for non-green and uncertified wood fuel.

Expected Result: Reduced national emissions from deforestation and forest degradation, biodiversity conservation and improved livelihoods.

1.4 Implementation Approach
The strategic objectives will be implemented through the value chain approach in the identified focal landscapes. Complementary studies by FAO provide more information on where in the landscape efforts need to be targeted.

The woodfuel value chain may appear basic but is a sophisticated supply chain that operates like a conventional goods/services industry and transforms natural resources (biomass) into a finished product (charcoal) that in turn provides energy for heating (service) to the end-users. The 'value' delivered by

charcoal is at three levels: at a primary level charcoal provides energy for cooking and heating; at a secondary level, it brings economic value to its various participants in the value chain; and at a tertiary level, the value is created in terms of support of the socio-economic development of the society at large.

Thus, the positive impacts of a sustainable woodfuel value chain go beyond affecting the direct users but extend to include a much larger group of stakeholders. A fragmented approach in tackling the value chain can only lead to marginal improvement. To be truly sustainable, components of value chains need to be tackled simultaneously. Isolated interventions (reforestation, sustainable forest management, dissemination of improved stoves) fail to exploit adequately possible synergies. In addition, the activities related to promotion of alternatives need to take place in tandem with interventions in the wood fuel value chain.

1. REQUIRED INTERVENTIONS ALONG THE WOODFUEL VALUE CHAIN

The 'value' delivered by charcoal is at three levels: at a primary level charcoal provides energy for cooking and heating; at a secondary level, it brings economic value to its various participants in the value chain; and at a tertiary level, the value is created in terms of support of the socio-economic development of the society at large.

As depicted in Figure 2, the charcoal value chain can be broadly categorized into four sets of links for which the key activities at each link are as follows: (i) wood production, (ii) carbonization and packaging, (iii) transportation, (iv) marketing, and (v) consumption.

Figure 2: Woodfuel Value Chain Links

The basic components of sustainable charcoal systems include supply and demand side interventions. Supply side interventions are aimed at managing forest resources for charcoal production to include: (i) agroforestry, (ii) woodlot management, (iii) controlled exploitation of forestry resources, and (iv) improved carbonization skills and technologies. Demand side interventions include: (i) promoting use of improved woodfuel cookstoves and briquetting, and (ii) creating awareness on energy conservation, and encouraging the use of eco-charcoal and firewood. The proposed strategic interventions for sustainable woodfuel production and utilization along the value chain are depicted in Figure 3 and discussed in the full report.

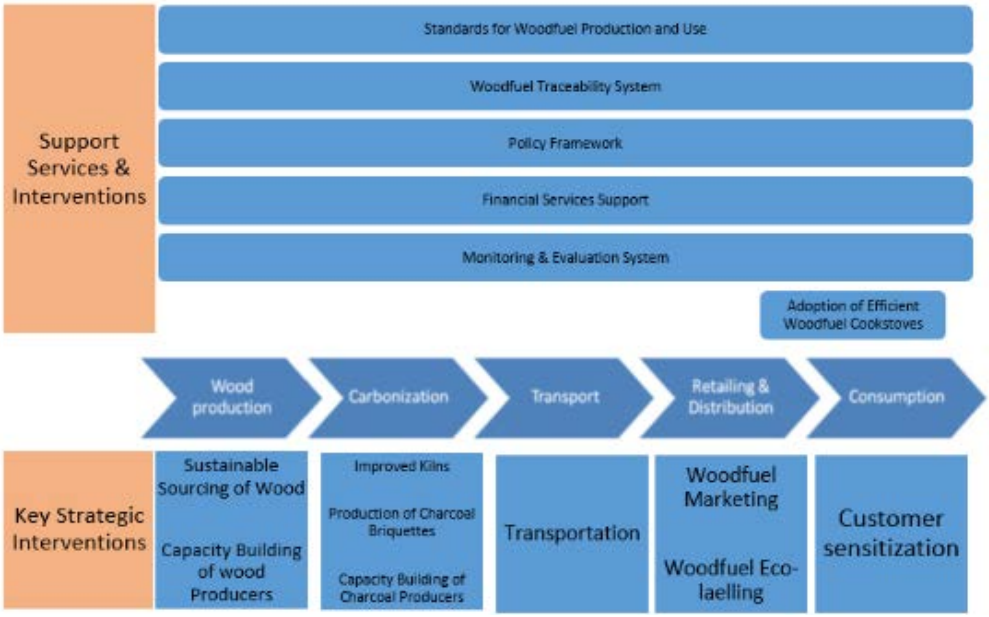


Figure 3: Key Strategic Interventions Along the Woodfuel Value Chain

IV. Summary of Sectoral Study by FAO II: Woodfuel Integrated Supply/Demand Overview Mapping (WISDOM)

This study contributes to Zambia's Integrated Land Use Assessment (ILUA II) efforts to address domestic forestry information needs as well as international reporting requirements, and to provide valuable information on the forest sector to users. This study contributes to the formulation of the REDD+ Investment Plan for Zambia by analysing the nexus between the growing national needs for woody biomass and ongoing processes of deforestation and forest degradation, by identifying the areas under unsustainable harvesting pressure as priority areas of intervention, and by quantifying the emission reduction potential of such interventions.

In this study, we carried out a spatial-explicit analysis of the demand for wood products in Zambia, the supply potential and the sustainability of wood harvesting, with particular attention to fuelwood and charcoal, with the scope of identifying areas under high risk of forest degradation due to excessive harvesting and, as far as possible, concluding on drivers of forest-cover change and their underlying causes. This required the integration of spatial and statistical data related to the demand for wood products, to the sustainable woody biomass supply potential and its physical, legal and economic accessibility.

A variety of data sources were used. The most relevant source of data has been ILUA II, which provided rich biophysical data, including georeferenced forest inventory data (3,586 field plots), land cover and carbon mapping, forest area change maps covering the periods 2000-2010 and 2010-2014, and socio-economic data from the Forest Livelihood and Economic Survey (FLES) 2014. Other important sources of

data have been the Central Statistical Office, national forestry and energy agencies, academic research and development programmes.

Summary of demand for wood products

- The national demand for wood products in 2010, including charcoal, fuelwood, construction material and timber is estimated to be 13 million tons DM (= 20. 7 million m^3), 82% of which as fuelwood and charcoal in the residential sector.
- The total consumption of charcoal is estimated at 1.15 million tons, corresponds to 5 million tons of wood (DM), 67% of which is consumed by urban households. The total consumption of fuelwood is estimated at 6.48 million tons DM, 94.8% of which by rural households.
- Around half of the national demand for wood products (47%) is concentrated in a relatively small area along the central axis of the country and the main markets are (North to South) Chingola, Kitwe, Ndola, Kabwe and Lusaka. In this analysis it is assumed that most of the commercial harvesting feeding these market sites takes place within 16 hours of transport time. The accessible resources along such axis are those under highest harvesting pressure and thus under higher risk of degradation.

Summary of supply potential

- The total stock of woody biomass[35] is estimated at slightly over 2 billion tons DM. This could be estimated with good confidence thanks to the field inventory data and land cover mapping produced by ILUA II.
- In the absence of representative growth data, the potential annual productivity is estimated by applying two generic MAI/stock equations: one based on tropical/sub-tropical broadleaved formations, representing the "High MAI" variant, and one reflecting the stock/growth values given in IPCC Guidelines, representing the "Low MAI" variant.
- According to the High MAI variant, the total potential productivity is 104 million tons DM, with 67.6 million tons physically and legally accessible. Per the Low MAI variant, the total potential productivity is 71.9 million tons DM, with 46.8 million tons physically and legally accessible. To be "conservative" in the estimation of the production potential the Low MAI variant has been taken as reference of sustainable supply potential for all subsequent phases of analysis

National supply/demand balance

- Taking the Low MAI variant, the local supply/demand balance, estimated within a context of 5 km, shows a large national-level surplus of 33.7 million tons DM. The commercial balance, shown in Figure (i), estimated by excluding from the local surplus all wood resources that are too sparse for commercial exploitation, shows, for the Low MAI variant, a net surplus of 23.9 million tons DM.
- The balance analysis indicate that 61 % of the total demand (7.9 million tons DM) is satisfied by local resources (within a radius of 5 km), while 39% (5.1 million tons DM) depend on the supply from distant areas, through commercial production systems. Comparing this last value (i.e. the gap to be filled) with the commercial surplus, 23.9 million tons DM, it's evident that the Country has great abundance of wood resources.

[35]Including dendroenergy biomass (DEB) and dead wood (DW). DEB includes stem and branches and is calculated by deducting stump, twigs and foliage from aboveground biomass (AGB).

- Except Lusaka, all provinces show surplus conditions. Out of 74 districts, deficit conditions are found only for 12, represented mainly by small urban districts. This tells that the resources of the Country are not only abundant, they are also evenly distributed.
- Even assuming the Low MAI variant, the Country shows large surplus, which indicates that there are ample possibilities for the establishment of sustainable production systems for the full satisfaction of current needs for energy and wood industries as well as for future bioenergy programmes.

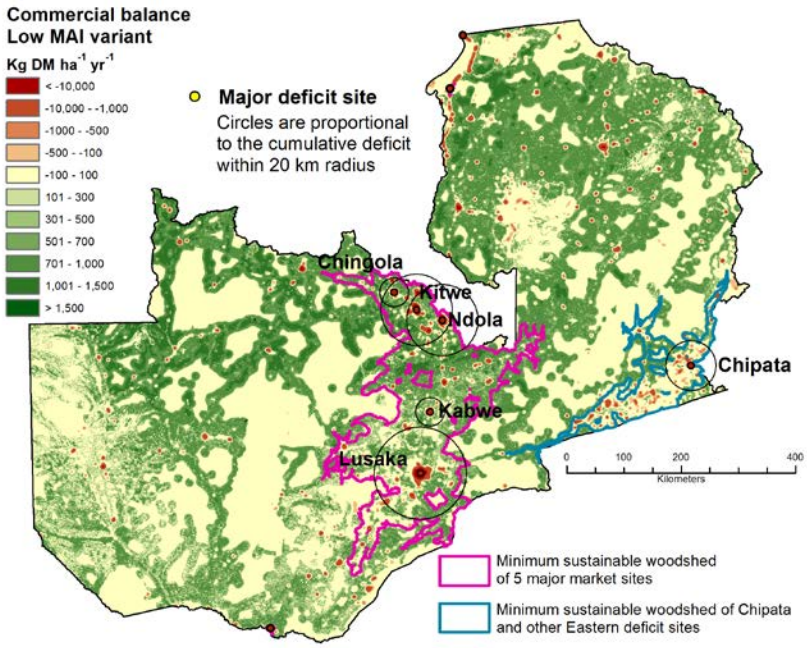
Theoretical sustainable woodshed

- This analysis shows that the theoretical minimum sustainable woodshed of the 5 major market sites (Chingola, Kitwe, Ndola, Kabwe and Lusaka), as well as the one of Chipata and surrounding deficit sites are well separated and relatively small (all necessary resources are within 150-200 km distance from market sites), as shown in Figure (i). This indicates that the sustainable production of fuelwood, charcoal and industrial roundwood not only is feasible, it has a great potential in Zambia.
- While SFM should be implemented in all forest areas, these woodsheds clearly define the primary target of forest production and protection measures, wood energy planning and landscape management.

Expected commercial harvesting sustainability and degradation rates

- Considering current sub-optimal resource management and harvesting practices, rather than optimal practices, the degradation due to excessive exploitation of wood resource is expected to occur primarily in the harvesting zones that feed the major market sites, along the central axis of the Country (purple area in Figure i).
- Assuming a 16-hours transportation threshold as the limit within which commercial harvesting concentrates, the expected annual degradation in all land cover classes in the central commercial harvesting zone is estimated to range between 224 and 629 thousand tons DM, assuming full-use and no-use of deforestation by-products, respectively. Considering forests only, the expected annual degradation is estimated to range between 134 and 391 thousand tons DM.
- Degradation of minor entity due to un-regulated harvesting and charcoal making is expected to occur in other areas of the Country where pressure is high, as in the territory around Chipata, for instance. In most areas, however, fuelwood, charcoal and timber are by-products of deforestation processes and thus direct harvesting (without land use change) are limited and abundantly surpassed by natural re-growth capacities.

Map 1 Commercial balance, major deficit sites and the minimum sustainable woodsheds



Source: FAO (2017) WISDOM Study

The relevant contributions of WISDOM to the Investment Plan are summarised in table 1 below:

TABLE 1

REDD+ Strategic Objectives for which the WISDOM analysis can support the formulation of the REDD+ Investment Plan.

Selected strategic objectives laid down by the REDD+ Strategy	Relevance	Specific contribution of WISDOM study and supported interventions
1. By 2030, threatened and unsustainably managed national and local forests are effectively managed and protected to reduce emissions from deforestation and forest degradation and contribute with ecosystem services across selected landscapes	***	Ranking of priority areas (provinces, districts, watersheds, or any chosen area) for risk of degradation and/or sustainable supply potential (See Table 9 and Figure 22, main text). Definition of emission reduction targets and locally-tailored protection/production management objectives for each chosen unit.
2. By 2030, selected high value forests in open areas are effectively managed and monitored	**	Profiling of the selected high value forests (harvesting pressure and degradation risk; urban/rural population within and around the forests; accessibility; etc.).
5. By 2030, regulated production of wood fuel (charcoal & firewood) and its improved utilization in place	***	Definition of sustainable woodfuel production targets and locally-tailored protection/production management objectives. Basis for consumption surveys. Support to improved charcoal-making programmes. Etc.
6. By 2020, appropriate and affordable alternative energy sources widely adopted	***	Contribute to the definition of the actual impact of the substitution of wood energy on GHG emissions, reduction of deforestation, livelihood and employment in rural areas, etc.

10. By 2020, relevant institutions capacitated to enable them to plan, manage, implement and monitor REDD+ programme activities	**	The use and maintenance of the WISDOM multi-thematic GIS layers (if supported by appropriate GIS training) strengthen the institutional planning capacities.

Main conclusions on WISDOM development

With this analysis, we estimated the risk of degradation, spatialized and quantitative, but still the risk and not the actual degradation that remains to be assessed in the field and through multi-temporal high-resolution remote sensing techniques. As such, the WISDOM analysis represents an indirect approach for the estimation of forest degradation. A key contribution that the WISDOM analysis can make to the direct observation of degradation is in the stratification of forests and other landscapes according the risk of degradation (see Figure 21), thus making the data collection more efficient and cost-effective.

The WISDOM model does not allow for analysis if there are missing data, therefore its implementation implied the use of assumptions and of provisional value attributions to fill in for information gaps. To improve and consolidate the knowledge base the provisional estimates and assumptions applied here should be validation and replaced by solid reference data, when available.

Data weaknesses were identified concerning consumption statistics, woody biomass productivity and accessibility, which were resolved as well as could possibly be done with the available knowledge. Each weak element should be strengthened or replaced by better data. Nonetheless, the elements available were sufficient for a robust analysis and, while better quality data will certainly improve the results, it is unlikely that they will contradict or revolutionize the main conclusions of this study.

Due to limited time the analysis was limited to the most probable set of assumptions. The analysis has in fact followed a single path, applying a "conservative" supply variant and taking "most probable" assumptions concerning market mechanisms and transport time threshold. It would be useful to take alternative assumptions and data variants in order to carry out a comprehensive sensitivity analysis.

V. Summary of study: Strengthening Zambia's Extractives Sector (legislation, policy and financing mechanisms) for REDD Implementation in Line with the African Mining Vision (AMV):

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1. Mining as a driver of deforestation

Although the country has a diverse range of mineral resources, Zambia's mining industry have been primarily focused on copper, lead, zinc, silver, gold and cobalt mining[36]. Zambia is ranked as the world's seventh largest producer of copper, generating 3.3% of the western world's production, and the world's second largest producer of cobalt (19.7%). About 78% of the mining is under large scale mining; about 9% is under small scale mining; and about 6% is under large scale gemstone mining.

[36]Mining in Zambia – Overview: https://www.mbendi.com/indy/ming/af/za/p0005.htm

Zambia's National REDD+ Strategy identifies mining as one of the driving sectors of deforestation and forest degradation due to[37]:

i. felling of trees to create space for mining site and settlements for labour; Timber is used in the various operations of the mine, particularly in pit mining where timber is used for pit props and as rail sleepers[38].
ii. clearing of forests for mining infrastructure siting; and
iii. pollution from mine effluents detrimental to biodiversity integrity
iv. use of large quantities of wood in other production processes and activities.

Where available, indigenous timber species are preferred for underground support, rail sleepers and platforms due to their superior strength and durability relative to plantation timber. If locally available timber does not suit the requirements of the mine and surrounds, timber may be sourced from elsewhere. The use of private contractors to source timber, often from forests far removed from the mine site itself, allows mining operators to distance themselves from the associated impacts on forests and the communities that depend on them.

Underlying these direct drivers are policy and legislative disconnect/overlaps in concession/ licensing systems with regards to various Government Ministries and agencies (e.g. forestry, mining, wildlife, etc.). There is the perception that the mining law/acts is "supreme" over other natural resource policies. The lack of long-term land use planning for area designated for mining, weak inter-linkages with sectors such as agriculture, forestry, water and loopholes in the EIA/SEA processes such that the assessments do not adequately reflect the impact of mining on loss of biodiversity and ecosystem goods and services caused by deforestation and forest degradation are other causes. Mining creates urban pressures from the growth of mining towns; construction of transport infrastructure may open up remote forests to other activities, such as logging, hunting and agriculture. The development of settlements near mine sites for workers has local impacts, too, including attracting those who are looking for associated economic opportunities. For example, the number of people living in the new mining town Solwezi almost doubled in less than a decade. Theforest areas surrounding new settlements become a source of wood supplies; charcoal for brick making, cooking and selling for cash illegally; and agricultural land.

Further, new areas for mining are designated; existing mining companies have short and long term exploration programs to delineate additional resources in the deposits being mined and to discover new ones. The Bangweulu Block, Kafue Anticline, Irumide Belt, Mozambique Belt, Zambezi Belt, Katanga Terrain, Choma- Kalomo Block, Mwembeshi Shear Zone and the Hook Granite Complex constitute areas with exploration potential for gold, copper-cobalt, uranium, base metals mineralisation and for industrial minerals. The Karoo sediments in the Luangwa, Zambezi, and Kafue Basins are being targeted to determine their potential for energy minerals and hydrocarbons. These basins are have since been demarcated into oil blocks for prospecting.

[37]GRZ 2015. Zambia National Strategy to Reduce Emissions from Deforestation and Forest Degradation (REDD+).

[38]Mwitwa J., F. Paumgarten, and L. German. 2012. Evaluating the Impacts of Expanded Trade and Investment in Mining on Forests: Customary Rights and Societal Stakes in the Copper Belt of Zambia

2. Policy, Legal, Regulatory and Institutional Framework

2.1 Alignment of the Zambia Mines and Mineral Policy and Act to the African Mining Vision (AMV)

One of the specific actions Africa Mining Vision is to "Ensure compliance of industry players with the highest standards of corporate governance, and environmental, social and material stewardship" (AU, 2009). The vision proposes that successful mining companies and industries should be assessed according to a triple bottom line, namely financial success, contribution to social and economic development, and environmental stewardship. The full study describes the extent to which the Zambia Mining Policy 2013 and the Mines and Minerals Act of 2015 / Amended Act of 2016 can be aligned to the AMV.

2.2 Zambia Mining Policy, Legal, Regulatory and Institutional Framework

The mining industry is administered by the Ministry of Mines and Minerals Development and specifically by the office of the Director of Mines. The primary law governing the mining sector in Zambia is the Mines and Minerals Development Act (MMDA) No. 11 of 2015 of the Laws of Zambia which repealed and replaced the Mines and Minerals Development Act No. 7 of 2008. The MMDA deals with mining rights, licences, large-scale mining, gemstone mining, health and safety, environmental protection, and geological services on analysis, royalties and charges. Other pieces of mining legislation include: Mines Acquisition (Special Provisions) Act; Chapter 218 of the Laws of Zambia and Mines Acquisition (Special Provisions) (No. 2) Act; and Chapter 219 of the Laws of Zambia. Relevant to the impact of mining on deforestation, the Zambian mining industry is also affected by the following laws and acts:

i. Customary law which has some influence with respect to surface rights on land held under customary law tenure. The Local Government Act, 1995 provides for Provides for the establishment of local councils and districts whose functions include environmental protection and natural resources management including preventing pollution of water supplies.

ii. The Forest Act of 2015 which promotes the principle that forests and trees shall be managed as an asset for succeeding generations, and emphasizes the need to apply the precautionary principle to the development, management, utilisation and conservation of forest ecosystems, their biological diversity and habitats.

iii. The Environmental Management Act (2011) which covers matters pertaining to Strategic Environmental Assessment (SEA – Section 23 of the Act) and Environmental Impact Assessment (EIA – Section 29 of the Act). In Zambia, mining activities are always considered having a large impact on the environment and a mine developer is required to prepare a "full **Environmental Impact Assessment (EIA)**" which is referred to as an **Environmental Impact Statement (EIS)**. All mines have to address environmental issues as per EIA/EMPs. All EMPs are audited from time to time for compliance with EMPs.

Whilst the policy, regulatory, legal, and institutional framework for environment issues is in place, there is however, a lack of coordination between institutions. The implementation of existing laws and regulations is not satisfactory. The quality of EIA reports for mining operations varies a lot, but in general remains low.

3. Issues and Drivers in the Mining Sector

The active mining operations in the region are located in former protected forests or adjacent to them. A significant reduction in the area under protected forest areas (PFAs) has taken place by Government decree with more than 280,000 ha of forest reserve being de-gazetted or excised over ten years in North-

Western Province. It is estimated that at least 350,000 ha of PFAs are undergoing conversion, a process driven mostly by mining, and this conversion is likely to increase as new mines open up[39].

As the major mining activity moves away from the highly urbanized Copperbelt Province to the sparsely populated North-Western and other provinces, traditional Chiefs holding customary title to 94% of Zambia's land have a more prominent role in mining. Sixty three percent of Zambia's forest area is on customary lands[40]. Thus, the establishment of mines likely requires approval by local traditional leaders. Such approval has focused most heavily on the resettlement of people residing in areas with customary rights, in order to make way for mines. The development rights of a large-scale mining license holder are guaranteed by Section 23 of the Mines and Minerals Act of 2008. However, it is largely recognized that companies seeking to operate with a social license must consulting with and reach agreements with local chiefs[41].

Environmental Impacts of Mining

The direct impacts include deforestation and removal of topsoil for open-cast mining, cumulative forest loss caused by artisanal and small scale mining and the pollution of soil and water sources. Both the scale and the impacts of the ASM sector are difficult to quantify because of the high level of informality and the associated lack of data.

The direct impacts of large-scale mining tend to be easier to quantify because they are relatively well regulated. Environmental problems directly linked to historical mining operations in the Copperbelt are largely related to geotechnical integrity of waste dumps. There are at least 21 waste rock dumps covering more than 388 hectares, 9 slag dumps covering 279 hectares, more than 45 tailing dams covering an area of around 9125 hectares, and more than 32 overburden dumps covering an area of approximately 206 465 ha (Environmental Council of Zambia 2008). In total, more than 10 000 hectares in the Copperbelt is covered with mineral waste and thus represent a "loss of opportunity" for the local population in terms of other land use such as agriculture, forestry, housing, ranching etc (SGAB et al. 2005). In addition to the geotechnical risks associated with waste dumps, the use of tailing ponds for water supply and fishing, as well as growing crops on the tailing surface has the potential to cause negative health impacts. The study contains case studies from the Lumwana and Chingola Mines

Gaps and Inconsistencies in the PLR Framework

Existing laws and regulations regarding environmental performance are relatively up to date in Zambia; the main problem is that the implementation is not satisfactory[42]. Partially this is explained by lack of coordination between institutions but also to a large extent on the lack of manpower and technical capacity. A special concern is the lack of supervision towards the active industry and the generally low quality of EIA reports compiled. Several institutional failures that contribute deforestation in and around mining areas include the following[43]:

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[39]Kissinger G., and B. Warr. 2017. Mining Sector Engagement and Integrated Landscape Management: Operationalizing Zambia's National REDD+ Strategy, UN-REDD Programme

[40]Turpie, J., B. Warr, J. Carter Ingram, 2015. Benefits of forest ecosystems in Zambia and the role of REDD+ in a green economy transformation. United Nations Environment Programme.

[41] KPMG. 2013. Mining Zambia: Country Mining Guide. KPMG International

42 Lindahl, J. 2014. Environmental Impacts of Mining in Zambia. Towards better environmental management and sustainable exploitation of mineral resources. SGU

43 Office of the Auditor General (OAG). 2014. Report of the Auditor General on the management of environmental degradation caused by mining activities in Zambia. GRZ.

a) inadequate measures to efficiently and effectively manage environmental degradation arising from mining activities; and
b) poor enforcement of legislation, especially enforcing the requirements of the EMPs;
c) failure to enforce mining companies to contribute to the Environmental Protection Fund as required by law.

Indications are that the EIA process and its implementation, are not effective. The EIA challenges include: (i) poor public consultation, (ii) weak stakeholder engagement, and (iii) weak EIA output documents. The Environmental Impact Statements (EIS) lack scientific rigor[44]. The other challenge on the EIA practice is the lack of post decision follow-ups by ZEMA. There are no follow-ups to see whether the EMPs provided in the EISs are being followed by the projects proponents, or whether the predicted impacts actually occur.

None of the mining companies in Zambia are ISO 14001 certified, though most of these mines are in the planning phase to have certification systems put in place. This is an indication that the mining industry in Zambia cannot comply voluntarily: it cannot drive the environmental protection agenda without being forced to, through regulation.Implementation of Zambia's environmental regulatory regime faces wide range of problems, from a highly centralized financial and decision-making system and budgetary allocation of negligible size, to lack of appropriate tools, equipment and personnel technical capacity. Compliance is a key issue, as environmental regulations are up to date and measures if implemented could work effectively. Makondo, et al. (2015) shows failure by 8 in 10 mining firms to submit periodic reports as per regulatory conditions on their permits.

4. Investment Needs

The following activities have been identified to respond to this driver.

Activity 1: Impact of Mining on Deforestation Study

While there is much anecdotal information about the direct and indirect impact of mining on forests, no comprehensive review has been undertaken to date.

Activity 2: Developing a Monitoring System for Forests under Mining

Accurate and recent data and baselines are essential tools for monitoring the impact of mining on forest degradation. Monitoring the impact of mining on forests requires a landscape-level approach so that not only impacts beyond those of individual projects are taken into account but also interactions with other land uses. The following applications can be adopted for monitoring forests under mining:

i. GIS mapping tools can be used to layer mining information onto forest cover maps. Ultrahigh resolution satellite imagery can be used to monitor forest change. The spatial resolution maps based on satellite data can be used to monitor how various land uses impact on deforestation.
ii. The potential value of real-time forest monitoring: mobile phones can be used to collect data on forest change.

Activity 3: Land-use Planning

There is need to promote integrated land-use planning for mining and associated infrastructure. Improved inter-ministry coordination of land-use planning and the sharing of land-use data would help provide a

44 Makondo, C.C. et. al, Environmental Management Compliance, Law and Policy Regimes in Developing Countries: A Review of the Zambian Case. International Journal of Environmental Protection and Policy 2015; 3(4): 79-87

more coherent picture of how the impact of mining on forests compares with that of other sectors and forms of economic activity. In addition, such cooperation could help support the development and implementation of coherent cross-sector legislation, where appropriate. Inclusive planning can help reduce land-use conflict and minimize indirect and cumulative environmental impacts. Another important aspect of land-use planning is consultation with local communities. Due to low or no consultations, community expectations of the potential benefits are too high and awareness of some of the negative impacts too low.

Activity 4: Providing Extension Services and Partnerships to Support Establishment of Plantations

The mining sector will be encouraged to establish plantations to meet own timber and wood requirements through engaging the extension services and partnerships to establish the plantations. This will the accomplished through (i) developing and promoting silvicultural practices on identified mining lands in order to preserve and improve their standing stock, increase forestry productivity and favour rational and sustainable tree-cutting; and (ii) enforce regulations to stop illegal timber and wood harvesting in restricted mining forest.

Activity 5: Institutional Capacity Building

Capacity building and training of government institutions to enforce environmental regulations: Government lacks the capacity and resources to implement such regulation.

Awareness campaigns for private sector (mining entities, financial institutions) on sustainable timber and wood harvesting in and around mining areas: The private sector plays a key role in reducing negative impacts not least because it manages most operations on the ground. However, for small-scale and artisanal mining companies, securing the financial and human capacity to meet environmental and social 'best practice' is particularly challenging.

The financial sector has a crucial role to play, too, in reducing the impact of mining on forests, as investors often require compliance with such standards as part of their risk-management process. For example, most commercial banks apply the Equator Principles, which are based on the IFC Performance Standards, as part of the lending approval process. Hence awareness / lobbying will be done with the banking sector to implement the Equator Principles and other standards in financing the mining sector.

Capacity building of civil society to lobby for sustainable mining practices: Civil society organizations play a key role in supporting best practice. While monitoring against international standards is often done by international consultants, national organizations are usually best placed to implement long-term monitoring and to hold companies and governments to account; however, capacity for such monitoring is often very limited

Activity 6: Promoting Corporate Reporting for Sustainable Mining Supply Chains

There are a number of initiatives aimed at promoting sustainable supply chains, including through voluntary approaches and legislation[45]. Both mining companies and the governments of producer and consumer countries can tap into those initiatives to improve monitoring of the impacts of mining on

45 For example, following the Roundtable for Sustainable Palm Oil (RSPO) initiative requiring all member companies to disclose maps of their concessions, the international standards on mining should include criteria on spatial data disclosure – requiring companies to publish maps of their concessions – in order to improve transparency in the sector and enable monitoring by stakeholders.

forests. Company reporting is an important policy lever to promote data collection and transparency in the mining sector.

VI. Summary of Sectoral Study by UN Environment: Mining Sector Engagement and Integrated Landscape Management: Operationalizing Zambia's National REDD+ Strategy

This study is intended to assess the rationale and motivations for mining sector investment in REDD+ compatible activities, and to design and propose options for implementation. These options fall into two areas:

1. Areas of convergence in shared risks and opportunities for shared action between mining companies, communities, government and stakeholders, that builds upon a strong rationale for mining sector engagement (e.g. it must have a business rationale and fit within mining company operations).
2. Policies, measures and actions government can pursue to operationalize the mining sector component of the National REDD+ Strategy. It will be beneficial if these measures reinforce mining sector investment in key outcomes identified.

In Zambia, the main direct drivers of forest degradation are charcoal production and illegal timber extraction, while drivers of deforestation are primarily agricultural and human-settlement expansion (UN-REDD, , 2015). Mining activities play a key role in driving these activities. . The National REDD+ Strategy identifies mining as a key sector responsible for forest conversion and includes mining sector engagement in sustainable management of forests in its strategic objectives. While mining is an important driver of forest cover change, there are regional and historical differences in forest transition patterns. In North Western Province, mining is the primary economic activity that results in deforestation and forest degradation. North-Western Province's forests are nationally significant, as they contain the most intact forest cover and also the highest concentrations of carbon storage. Forest carbon storage in North-Western Province is generally more than 90 tonnes per ha, and in some areas, average carbon storage ranges up to 124.7 tonnes per ha (UN-REDD, 2015). Mining companies are perceived to be responsible for the risks associated with forest conversion, given their significant role in the region and the lack of governance. This affects their social license to operate.

Development patterns in the Copperbelt and now in North-Western indicate significant rural influx once mines are established, largely due to rural poverty and the hope of financial gain by settlers. The result is theforest areas surrounding new settlements become a source of wood supplies; charcoal for brick making, cooking and selling for cash illegally; and agricultural land. This link between poverty, rural influx to mining areas, and the role the mining operations play in drawing such influx, yet needing to manage it, in order to mitigate various risks (security, environmental and social issues) is at the heart of the challenge. Although the Zambian government has consistently expressed a wish to take development to rural areas, steering such development in a sustainable way has been an elusive

intention, and low domestic earnings, coupled with high demand for fuelwood, have combined to exert strong pressure on forest resources in rural Zambia.

In this context and building on the North Western Province experience, this study seeks to propose key investments that the mining sector can make to address key risks and help leverage public benefits within their operating region. This investigation relied on expert interviews in Lusaka and North-Western Province, interviews with stakeholders including the Forest Department; Kalumbila, Lumwana and Kansanshi mine staff; the Chamber of Mines; NGOs and CSOs, two local Chiefs, and others during September and October 2016.

The rationale for investment in activities that helps protect the Zambezi watershed and the forests of North-Western Province can be broadly defined as investments that have commercial benefit, in addition to the social and environmental benefits. Such activities or projects do not include expenditure on *a priori* obligations stipulated by legislation, for example compliance with environmental or social regulations, and additional investment requirements imposed during negotiations with Government to secure license to operate. Therefore, in the context of this report, we limit ourselves to **examination of activities which extend beyond the core activities of mining companies in the region and should be part of sustainable mining**. These investments beyond the mine site and direct employees, which can be referred to as '**beyond compliance'** investments.

While much harder to quantify than direct earnt revenues, beyond compliance investments can bring significant benefits in the form of **reduced risk** and greater real options[46] value accruing to the corporation. Discussions with the Barrick Lumwana, First Quantum Kalumbila and Kansanshi mines indicates there is a need to think beyond the scope that mines directly operate in, to bring communities and the region together to address regional risks. Mining companies also identify that the weak enforcement of current binding rules and regulations on forest exploitation for charcoal production and timber extraction is the main driver of weak governance in this space. There is interest on the part of companies and the government to pursue partnerships to address future risks.

The priorities identified below define key investments that the mining sector can make to address key risks and help leverage public benefits within their operating region. This is framed within the context of an overall package approach, in which mining company investments are leveraged and reinforced by multi-lateral investments. The central role of government and close coordination with mining companies will be crucial to drive innovative practices by the mining sector to support integrated land management

Identified risks and proposed solutions:

Risks identified	How risks impact stakeholders	Possible solutions
Loss of land and access to forests	• Communities rely on land for their sustenance,	• Community Forest Projects (CFPs) and Community Based Natural

[46] A real option is the right, but not the obligation to undertake certain business initiatives, such as deferring, abandoning, expanding, staging or contracting a capital investment project.

	traditional and customary lands are their largest asset • Mining companies see increased security risk from development adjacent to mines • Government resources for management of uses is limited	Resource Management (CBNRM) • Establishment of 'no-go' areas for mining
Influx and illegal settlement	• Often results in illegal and unmanaged charcoal production, timber and wildlife resource extraction • Local traditional leaders are challenged to manage influx without the help of regional government (e.g. policing, enforcement) • Energy and waste systems are stressed • Resources lacking for policing unsustainable and illegal practices	• Improved planning for new uses, restrictions on expansion into forests • Access to modern energy: - Large-scale centralised energy production - Distributed energy production • Sustainable and alternative charcoal • Climate-smart agriculture
Land and water resource degradation	• Long-term loss of ecosystem services • North Western Province contains the last in-tact forests, which provide watershed protection for the entire Zambezi River system (national and international importance) • Puts pressure on mining companies to provide alternative service provision	• Community Forest Projects (CFPs) and Community Based Natural Resource Management (CBNRM) • Establishment of 'no-go' areas, identified for ecosystem function values
Illegal extraction of forest resources	• Illegal and unmanaged charcoal production, timber and wildlife resource extraction which government agencies can't manage • Land and water resource degradation, which	• Alternative means of revenue generation, including NTFPs, sustainable bushmeat, game reserves • Regulated and sustainable charcoal supply chains

	increases both public and private sector risks • Loss of government revenue from illegal extraction	• Improved enforcement of restrictions on timber harvesting (rosewood)
Governance/enforcement of laws	• Disparity in negotiation power between local communities and mining companies creates tension and impacts customary land rights • Mining companies more equipped and financed to provide governance functions in the Province than the Forest Department	• Increased focus and resources for local communities to define land management intentions and outcomes • Partnership opportunities between mining companies and government agencies

Priority areas for intervention:

1. <u>Defined "no-go" areas</u>: An anchor of high conservation value lands set aside from future development and agreed to by all parties

A landscape approach for evaluation of highest priority "no-go" areas for mining is an anchor of this package approach, and should be identified through a dialogue process with local communities, the Forest Department, ZEMA, Ministry of Mines, and then legislated. The process can also identify areas suitable for potential future mining and urban expansion. Attention should be put to developing livelihood benefits from the ecosystem services of the "no-go" areas, such as game parks, NTFP collection, and other uses, as appropriate. Implement the Initiative for Responsible Mining Assurance (IRMA) provision 3.8 on biodiversity outside protected areas[47] on the basis of no net loss or a net gain of biodiversity in the context of mine siting and associated development (Anglo American and Arcelor Mittal are involved in IRMA).

Mining company investment: no direct cost at this time, as "no-go" areas would come from future expansion potential, which may or may not contain viable mineral deposits. Minimal costs to support public-private partnership for management.

Public sector/multi-lateral investment: Support for capacity to manage "no-go" areas, capacity-building for local community stewardship.

2. Energy: A regional, and perhaps even national, approach to regulate charcoal and encourage sustainable charcoal production + improved cook-stoves and feedstocks

[47]For more detail, see: http://www.responsiblemining.net/irma-standard/irma-standard-draft-v2.0/chapter-3.8-biodiversity-outside-officially--protected-areas/

A systematic approach to improve charcoal production and decrease pressure on North Western Province forests is necessary. The approach should combine: a) alternative 'green' charcoal based on crop residue use (e.g. maize cobs) as a feedstock, b) improved cook-stoves and feedstocks (such as wood pellets, ethanol, or plant oil), c) supply chain interventions to ensure positive interventions are not undercut in the marketplace, d) legislation for stricter controls of the charcoal market to shift it from an informal sector to a modern sector. Identifying solutions requires dialogue and agreement on a transformative approach to charcoal production at the national scale, including all stakeholders including farmers, charcoal producers, transporters, vendors, retailers, consumers, and government. Partnership and strategic investments by mining companies can be crucial leverage to bring capacity and political support for bold action, and also embeds current CSR green charcoal programmes in a much more impactful context. Improving sanitation conditions and market hygiene by installing community and household biogas latrines can also be supported.

3. Agriculture: Climate-smart agriculture, game and non-timber forest products can solutions to intensify agriculture production sustainably exist and are viable options, if there are simultaneous measures put in place to limit agricultural expansion

Mines can build on the climate-smart agriculture interventions they are already undertaking, but scale up these efforts through partnerships. Forest game reserves and ranches hold the greatest promise of safeguarding forest areas, and providing alternative forms of income from standing forests. Mining companies can partner with government and communities to identify suitable areas, and set these aside as 'no-go' areas, while partnering on strategic investments to carry out activities (First Quantum Minerals efforts are a model to build upon). Game ranches require investment of several to tens of millions of dollars. Extrapolating revenues from similar areas in South Africa, we estimate that the revenue potential could be over $223 million, which could be generated on existing Game Management Areas (GMAs) and Protected Forests (4,057,578 ha). With areas set aside, this revenue projection would increase accordingly.

4. Governance: Supporting improved governance through partnerships and investments

Public-private partnerships can be pursued for investment in the energy and agriculture interventions above. A platform for dialogue and support for communities to express their vision for the region through the process of Free, Prior Informed Consent is crucial. Capacity assistance to support resource conservation and land use zoning in the identification of 'no-go' areas will be required. Capacity support to developcommunity forest management, particularly through Community Based Natural Resource Management (CBNRM) groups is crucial. Direct support to Government Institutions (Forestry Department and ZAWA) can also be considered. Mining companies should apply all 8 International Performance Standards on Environmental and Social Sustainability.

VII. Summary of Sectoral Study by World Bank Group: Engaging the Private Sector in the REDD+ Investment Plan: an overview of private sector in Zambia's forest sector

Zambia's formal private sector involvement in the forestry sector has focused on wood based industries and small-medium scale enterprises, while the informal sector is focused mainly on woodfuel (charcoal), sawmilling and sale of non-timber forest products NTFPs

The formal private sector is regulated through licences, permits and other legally binding arrangements by the lead government agencies and by authorities responsible for trade. Broadly, the major challenges faced by the private sector include access to long-term financing in forestry resources development, inadequate incentives to invest in forestry due to perceived or low returns, and poorly regulated trade that floods the market with illegal timber, negatively affecting prices. Illegal harvesting of high value hardwoods such as *Pterocarpus chrysothrix* (Mukula) and *Guibourtia coleosperma* (Muzauli, Rosewood) is rampant as logs are smuggled out of the country mainly to the Far East.

Opportunities for investment with potential impacts of reducing GHGs

Private sector involvement in Zambia is centred on forest-related sectors, such as the timber industry and related operations and within the agriculture sector, energy and associations of these sectors. Private sector partners were involved in the preparation of the national REDD+ strategy and therefore partnerships developed through the readiness process will be built upon in the implementation of the IP. Investments within Zambia's forest sector that has potential to reduce GHGs and provide other socio-environmental co-benefits are suggested within the forestry, energy and agriculture sectors. Proposed investments includes:

Identification, development and promotion of NWFPs

The private sector will partner with local communities in the promotion of non-wood forest products (NWFPs) of high economic value (e.g. oils, honey, etc). This will involve identification of NWFPs, development of markets and support of public/private partnerships and community based enterprises linked to improved markets. The private sector will provide technical support and technologies for processing of NWFPs while local communities will provide raw materials. Private sector companies include Kalahari Oils andForest Fruits. To enhance the role of private sector investment in poverty alleviation, it is imperative to ensure effective and efficient community-company partnerships and increase support to small and medium forest enterprises.

Sustainable utilization of hardwoods for industrial high-value products

Zambia has high value hardwoods such as *Pterocarpus chrysothrix* (Mukula), (rosewood and *Pterocarpus angolensis* (Mukwa) that can be sustainably used for production of high- value furniture and product diversification. Investment in establishing wood processing industries within the watershed areas and partnership with local communities as suppliers of hardwoods will help curb uncontrolled and illegal harvesting of timber. This intervention will require creation of manufacturing industries for high-value timber products from hardwoods. Since significant high value hardwood trees are found on customary

lands, local communities will provide raw material from sustainably managed community forests while the private sector will provide financial and technical resources. The private sector will be responsible for establishing export markets for high-value wood products.

Value addition and eco-tourism

Encourage private sector investments in wood value addition, wood values chains, forest based eco-tourism and support training for skilled labour force for supporting value addition and value chains. Value addition to forest wood products and development of forest based eco-tourism will increase revenues available for management of natural forests, those in forest protected areas.

Establish industrial-forestry plantations concessions

The FIP will seek to establish industrial-forestry plantations concessions on 50, 000 hectares of land. This will be in remote areas with low human populations to reduce resettlement incidences for people to be affected by these large-scale investments. Local administrative and traditional authorities will help in the identification and possible consolidation of the larger areas of land needed for these large-scale operations. Establishing and operating the industrial plantations will then depend on private investors, and in some cases public initiatives or public-private partnerships. Industrial-forestry plantation will provide co-benefits with a transformative impact. These are socio-economic impacts through employment creation and therefore diversified incomes for local communities that will be employed in various silvicultural operations from the site preparation to harvesting of trees. Ecological impact will include increase for carbon stocks in long-term. Plantations will further provide environmental co-benefits through improved soil fertility and maintenance of the micro-climate.

Industrial –scale production of utility poles

Globally, timber poles have been successfully utilised as an adaptable, cost effective and durable product in the power and utility industries. Zambia is a net-importer of utility poles. The service life of the poles can be extended by effective preservative treatment to protect the timber from fungal and insect attack. The poles will be sourced from sustainably managed forests. There is an available market for utility poles by the Zambia Electricity and Supply Cooperation which is constantly creating demand for utility poles as they replace utility poles as well as erect poles in new areas. Zambia is a net-importer of utility poles and currently imports industrial utility poles from Zimbabwe and South Africa region due to the inability of Zambia to provide the required quantity and quality.

Establishment of industrial fuelwood plantation

To cope with high demand for fuelwood in urban areas, regulated commercial production of woodfuel is expected to reduce pressure on protected forest areas. Given the demand of fuelwood and charcoal in Zambia were natural forests are cleared, investing in cultivating plantations of quick growing forestry trees species such as *Eucalyptus* is proposed. FIP investments in the private sector will focus on private sector-led development of industrial fuelwood plantations in areas with high demand for woodfuel for industrial and domestic uses. This will reduce pressure on indigenous forests and supply both fuelwood as well as

raw material for charcoal production.

Development of small-scale timber plantations

The IP will support the development of small-scale timber plantations through promoting small-scale investment in high value timber species such as teak, *Pterocarpus angolensis* due to their income-generating potential. The establishment of small-scale timber plantations has the potential to provide employment (i.e. during establishment of nurseries, silvicultural operations such as pruning, thinning) and incentives to small-scale planters while creating incentives to plant valuable timber species that improves Carbon stocks. The final beneficiaries from such an investment will be companies and local communities.

Sustainable agriculture for small-to-large scale agriculture farmers

Promoting and scaling-up agroforestry practices has the potential to increase aboveground carbon storage on agricultural landscapes and further provide various social, economic and environmental benefits.

FIP will finance activities in sustainable agriculture and livelihoods to achieve more resilient landscapes and provide an array of social, economic and environmental benefits. Activities in sustainable agriculture and integrated watershed management will aim to provide benefits to communities by providing skills, materials and access to new sustainable agriculture techniques and markets for agriculture and natural resources products. In this investment, communities will be given incentives and tools to improve landscape management in watersheds for improved livelihoods and tree cover and consequently carbon sequestration potential of landscapes. Expected benefits of this investment will include improved agricultural practices and sustainable land management thereby increasing productivity, improved ecosystem services, improved tree cover and more resilient ecosystem and reduced deforestation. Private sector companies will be engaged to promote sustainable agriculture in rural communities.

To promote sustainable agriculture, smallholder farmers will be supported to adopt conservation farming to increase their productivity and income and reduce the need to clear new areas for agriculture production. Extension services to farmers will be enhanced through already established institution alongside financing. IP will promote incentives in that involve the adoption of nitrogen-fixing agroforestry tree species (e.g. *Faiderbia albida*) among smallholder farmers

Private sector companies will be engaged to promote sustainable agriculture in rural communities. Partnerships between private and public organisations between government through the Ministry of Agriculture, and organisations working with communities such as COMACO.

VIII. Summary Study on Strengthening Zambian Civil Society Participation in the REDD+: Report of Lessons Learned and Way forward for ZCCN's Effective Participation in REDD+-IP (UNDP)

This report presents the outcome of a participatory self-assessment workshop on the participation of the Zambian Civil Society, within the framework of the Zambian Climate Change Network (ZCCN), in the national REDD+ process. The report has been produced in order to share the lessons learned and experience that civil society has had in engaging in a national process REDD+. It is hoped that the report can offer some learning points that will inform a broader civil society organizations (CSOs) strategy to effectively engage in the Zambia REDD+ process and specifically in the implementation of the National REDD+ Investment Programme.

The Zambian civil society have been involved in the REDD+ process, mostly through the ZCCN, at provincial, national and international levels since the early stages of the process. In terms of international participation, representatives have been present at international Climate Change and REDD+ conferences, including; the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) as well as at several REDD+ related workshops and seminars at Africa regional level. A member of the board of ZCCN is currently representing African CSOs at the Policy Board of the UN-REDD.

At a national level, the ZCCN was established in 2009 and formally registered in 2011, and comprised of civil society and faith based organisations working in the domain of natural resources, environment, gender, development and human rights. All though updated data on active membership is lacking, it appears that most organisations working in areas that might be affected by REDD+ have had the chance to be involved in the ZCCN and there are members of the network at provincial and district levels in Zambia. Civil society also has seats allocated on various REDD+ committees and working groups, although some of these are themselves not yet operational.

The workshop participants agreed that ZCCN and its members have participated in the REDD+ process either through directly influencing the national process or by implementing on the ground projects and activities that are related to REDD+ readiness and implementation. They mentioned that ZCCN and its members were incorporated in the prior and initial set up of REDD+ in Zambia as well as in framing the road map and participated in the elaboration of the national REDD+ strategy, although it was difficult to find documented evidence on how they have influenced the REDD+ process. ZCCN and members have also raised awareness to local communities and other actors, including the media, at the grassroots, district, provincial and national levels and have been implementing activities related to REDD+, such as: tree planting, sustainable agriculture and advocacy to halt mining and other deforestation activities in intact and high value forest areas. These activities have given ZCCN and its members some recognition both by government and some international agencies like the UN agencies, the World Bank and the Norwegian Church Aid.

Nevertheless, despite these seemingly successes, there have been some weaknesses in civil society involvement in the process.

The presence, visibility and impact of community representatives and other grassroots groups in the process has been very limited, as has the participation of women, even though the current chair person of ZCCN is a woman.

In terms of civil society engagement, the main challenges have been around how to engage a diverse and geographically extensive group of organizations, with very different levels of knowledge, experience and competencies, in a national process, which very few actors in any sector fully understand.

They went on to identify the following key action areas as a road map for effective participation in the REDD+ process; at immediate, short and medium term:

- Carry out an inventory of current and potential ZCCN members with interest and actions related to REDD+

- Map existing capacities of ZCCN members related to REDD+, at national, provincial, district and local levels, as well as their capacity needs, and develop a capacity building plan for ZCCN on REDD+ (with emphasis on strengthening the capacities of women and youths to fully participate)
- Complete diagnosis on the general functioning of ZCCN (analyse the organs and internal processes, including manual of procedures, by-laws, etc.) and propose areas for improvement, with emphasis on structuring of the ZCCN REDD+ thematic group/platform/Forum or sub-committee;
- Criteria for selecting ZCCN REDD+-IP focal point to coordinate effective participation of CSOs in the REDD+-IP elaboration and implementation
- Assess current communication strategies within ZCCN, and elaborate an internal and external communication plan in consultation with ZCCN members.
- Develop a holistic and operational action plan for ZCCN's participation in the Zambian REDD+ process, including the implementation of the REDD+ investment plan. Develop procedures and criteria for selecting representatives to attend consultation and training workshops, meetings, conferences, etc., and feedback from such meetings
- Put in place of a small interim REDD+ coordinating committee (IRCC) to oversee the implementation of this Road map with responsibilities of image building among donors and partners, mobilizing resources in collaboration with statutory ZCCN organs. This committee was put in place at the end of the workshop with clear tasks.

These actions have been tabulated in a road map with responsibilities and datelines for meeting them.

Key lessons learned: Participation of CSO in the REDD+ processes in Zambia

- The Zambian civil society through the ZCCN can have a real and positive impact on REDD+ processes.
- While there is the need for the Government and international institutions to ensure that adequate time is given for civil society to consult its members and to reach communities on the ground, ZCCN should be proactive.
- Consensus-based decision-making amongst the members of the network, and within multi-stakeholder bodies takes time, but delivers more sustainable results.
- ZCCN and its members need to identify where they agree and what objectives they share at the start of a process if they choose to engage in, and to review this at regular intervals so that their input is focused and can have a bigger impact.
- Clear and transparent decision-making process and clear responsibilities for ZCCN members
- Civil society is not homogenous and may have a variety of perspectives. Particular attention needs to be given to how groups that are often marginalized can be included: women, tribal/traditional peoples, local communities, young people, etc.,
- Any process that involves representatives speaking on behalf of ZCCN– needs to be supported such that the representative is well briefed by the members or organizations, has the competencies required to negotiate and put forward a point of view, and can give feedback to the members or organizations that they are representing.
- Some civil society organizations, members of ZCCN, have members with good skills and experience, and international organizations and governments should make an effort to seek them out.

The summary recommendations are as follows; ensure full and effective participation; develop strategy and vision for engagement in REDD+; capacity strengthening; coordination and coherence between programs and donors; ZCCN governance, decision-making and communications. There are explained further in detail, in the full study.

IX. Good and Bad Practices of Large-Scale Mining (LSM) in Forest Landscapes (Zambia case study) (World Bank Group)

About 3.5 billion people live in countries rich in oil, gas or minerals and nearly one-third of all active mines and exploration sites are located within areas of intact ecosystems of high conservation value, most of them forests. The World Bank Group's involvement in extractive industries and natural resources management seeks to help countries seize opportunities they offer for development, poverty reduction and boosting shared prosperity and at the same time sustainably manage natural resources, including through "Forest-Smart Mining".

Forest-Smart means "acknowledging the interlinkages between forests and other land uses" and a forest-smart approach means a "development trajectory through an integrated landscape approach" which "will not only ensure that adverse impacts on forests and their biodiversity are avoided or minimized, but also will proactively seek win-win solutions where both are fully integrated in the design of the interventions".

Supporting forest-smart interventions will not only ensure that adverse impacts on forests and their biodiversity are avoided or minimized, but also identify opportunities for increasing the productivity and resilience in the mining sector. The World Bank is currently seeking to better understand what exactly Forest-smart mining means in relation to Large Scale Mining (LSM) by identifying case studies of good and bad practices of LSM in forested landscapes; and analyzing the conditions and mechanisms that drive these practices. This includes case studies in several countries and is financed by the Program on Forests (PROFOR).

The mining-forest nexus in Zambia provides a rich context for learning about LSM in forest landscapes and for helping with the implementation of the REDD+ National Strategy Investment Plan. The case study in Zambia is under preparation as of October 2017.

The Zambia case study will contribute to the global analysis and comparison across countries and will be complemented a study of forest-smart Artisanal and Small Scale Mining (ASM) practices in the world. The results should also identify "no regrets" options that can inform ongoing planning of actions, including potential activities that could be supported by the World Bank in Zambia.

Responses to Peer Reviewer Comments

Comments and responses are provided only for "yellow" or "red" comments. Suggestions embedded in the "Green" comments of the reviewer were also considered and the IP adjusted in consequence.

Criteria	Rating	Comments of Peer Reviewr	GRZ Response
Part 1: General criteria: The Investment Plan complies with the general criteria indicated in the TORs			
A. Country capacity to Implement Plan	Yellow	The FIP identifies the Forest Department as the key implementing agency, while also describing Zambia's decentralization strategy and the need for community based approaches. It also emphasizes the need for cross sectoral approaches at all levels and illustrates overall FIP implementation architecture (figure 11). However it does not provide any specifics on implementing arrangements for each project, nor on capacity to implement. Project 2, for example, is likely to require close participation by agricultural authorities, while project 3 will require more participation of central government agencies in reviewing/revising regulations. The FIP would benefit from an institutional assessment with a clearer indication of which areas need strengthening, at national but especially at local level, in order to implement the projects. Each project is quite ambitious in design, with several components and subcomponents. Furthermore there is currently no information, for example, on the size of the rural population	The Core Investment Priorities (CIPs) are in fact not projects but rather an indication of broad programming areas which the GRZ would favor going forward, to most effectively implement the National REDD+ Strategy. This has been more clearly explained in the IP. At time of completion of IP, no FIP resources were available for a follow-on project and it remains to identify actual financing and partners for the majority of the suggested investments. Thus it is not possible at this time to enter into the specifics of project preparation. This would of course be done as part of standard project preparation, as the projects emerge over next several years.

		in each intervention area, nor on the extent of agricultural and non-agricultural activities. Table 10 is helpful but could usefully be added to. The FIP identifies mining companies as key partners, but some more specifics on how they would participate would be welcome. Table 10 highlights the extent of land that is managed as game management reserves, emphasizing the need to bring wildlife management into the FIP.	
D. Prioritization of investments, lessons learnt, M&E, links to results framework	Yellow	The logic behind prioritization is usefully illustrated by the maps and articulated in the introductory sections. Each project provides key indicators though these are not quantified at present. An estimate is made of GHG reductions from each project, though the document rightly emphasizes the difficulty of doing this at this stage of preparation. A broader point is that in order to quantify the benefits, it will be necessary to estimate the scale of the different interventions and numbers of people/areas to benefit.	See above under Response A, in which we note that the intention was not to present formulated projects, and thus specific indicators, GHG reductions, and benefits, could not be calculated.
G. New investments or Funding additional to on-going/ planned MDB investments	Yellow	The FIP describes ongoing programs both government and IFI supported, and mentions a planned IDA operation in sustainable landscape management. It does not mention specific related AfDB operations. A PPCR was approved under the CIFs for Zambia; it would be helpful to have some more	AFDB's PPCR project in the Kafue Sub-basin is mentioned in Table 10 and page 53.

		detail on progress and how this relates to the FIP … in Zambia climate resilience and climate change mitigation are closely related in sustainable landscape management. A challenge for the FIP is that under the CIF FIP program there is currently no allocation for Zambia	
H. Institutional arrangements and coordination	Yellow	An institutional framework for FIP implementation is articulated and embedded within REDD strategy implementation. Cross sectoral coordination and the principle of the landscape approach are strong features. Implementation arrangements at project (watershed) level are not yet described. Furthermore (see above) it might be helpful to weave in local capacity building activities to the two principle investment operations, rather than have them as a stand- alone activity under project 3. The FIP mentions that, especially at district level, staffing and capacity are weak; at this stage of project preparation it is not possible to know what capacity building measures will be necessary to secure smooth project implementation, and, more important, post project sustainability. It would be helpful to carry out an institutional assessment linked to the geographical areas of intervention at an early stage of project preparation.	As noted above, the CIPs are not projects and so it is not feasible to add much detail on capacity building needs specific to a given investment – this will come later during project formulation. The capacity building under enabling environment aims to allow IP investments to go forward more smoothly. However, it is noted that in the designing of projects, the idea of institutional capacity assessment at the landscape level is a good one.
J. Cost effectiveness of proposed investments	Red	It is not possible to assess the cost effectiveness of interventions without an understanding of the likely number of	Agreed that now, in the absence of specific detailed project proposals, little more can be said about costs and beneficiaries.

		beneficiaries, area of intervention, or balance of intervention between different activities. However, once funding sources are identified it will be possible during project preparation to have a better understanding of these parameters. It would also be useful to draw upon past experience in this regard.	
Part 2: compliance with investment criteria of FIP			
Principle (vi): Early, integrated and consistent learning efforts	Yellow	The FIP build on monitoring systems being supported under REDD and landscape management initiatives and provides a framework for knowledge management. This framework will need to be developed during project preparation, both for projects 1 and 2. Project 3 would benefit from specific provision for learning across the FIP, with a costed program.	Agreed that as follow-on projects are formulated that additional focus will be needed on monitoring and learning. Section 7 outlines the priority accorded by the GRZ to knowledge management and learning. The enabling environment component has taken into account the needed actions
Objective (d): To provide valuable experience and feedback in the context of UNFCCC on deliberations on REDD	Yellow	The FIP is well placed to do this … however, more explicit linkage of PPCR and FIP initiatives would be welcome	The PPCR has established a successful model to implement climate resilience and mitigation actions that are ready to be replicated in other parts of Zambia. The IP, with its landscape approach, would be an appropriate supporting vehicle to promote this scaling up in the three proposed watersheds.
Criterion (f): Forest related governance	Yellow	The FIP articulates governance arrangements clearly, and project 1 in particular proposes cooperation arrangements the game management industry.. Some more specifics	There is no forthcoming FIP project funding so the question is rather how the IP can better integrate DNPW in plans to move forward on REDD+. For the CIP1 investments that involve conservation of

		about how the FIP will interact with the Department of Wildlife within the Ministry of Tourism would be helpful as preparation proceeds, given the extent of areas managed under some form of protection or as game reserves, and the challenge of poaching .If there has been good experience in Zambia on reducing illegal harvesting for charcoal or other illegal activities, it also would be helpful, as the program is further developed, to have some specific on this.	protected areas (Component 1), DNPW will surely be the implementing agency. DNPW's role is highlighted in Table 11. One of the supporting studies carried out as part of the IP preparation was on wood fuel (as noted in Annex 2) so this detail is available but was too extensive to be included in the main body of the IP.
Criterion (g): Safeguarding the integrity of natural forests	Yellow	The FIP seeks to strengthen sustainable management of high conservation value forests. However the FIP document does not at present provide a tabular categorization of Zambia's forest by main types/areas .. it mentions that 40 percent is miombo forest and woodland, and mentions forest types in the high conservation value forests. It would benefit from providing specifics on forests/wooded landscapes by predominant type and area.	This has been done by providing the vegetation map and forest areas by province in Table 1.
Criterion (i): Cost effectiveness, including economic and financial viability	Yellow	It is too early to have a sense of this: there is no information yet on unit costs or on the scale of interventions	See responses to Part A above.
Criterion (j): Capacity building	Yellow	The FIP would benefit from more specifics on capacity building, especially at local level, in projects 1 and 2.	See responses to Part A above.
Criterion (k): Implementation potential	Yellow	Although there is strong institutional alignment, it is not possible form a judgement on implementability since the interventions are not linked to capacity building	See responses to Part A above. Agreed that in the absence of more specific financing arrangements, implementability is difficult to judge.

Results Framework C2b: Evidence that laws and regulations in the project/program areas are being implemented, monitored and enforced and violations detected, reported and prosecuted	Yellow	The FIP has a particular focus on operationalizing community forest management. It includes measures for revising concessions to avoid HCV and for protection of other sensitive ecosystems. It also proposes improving regulations across a number of areas. It does not provide detailed indicators on monitoring and enforcement of specific violations,	Community forest management is still incipient in Zambia, which is the reason that the IP prioritizes making more rapid progress in this area. Monitoring and enforcement of violations of community management practices remains to be better developed.
Results Framework C4c: Improved access to effective justice/recourse systems	Yellow	This area will be better defined during detailed project preparation	Grievance redress mechanisms are indeed something that would be developed on a project-by-project basis. For example, GRMs are now obligatory in all WB-funded projects.
Results Framework C6: New and additional resources for forest projects	Yellow	Funding is not yet clear, especially given the scale of the proposed FIP	Indeed, that is the shortcoming of this IP, as it was prepared without the possibility of follow-on FIP project funding. Other funding sources are being carefully followed up by the GRZ (most notably, GCF, GEF, IDA and other MDB investments).