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April 26, 2019

Closing Date: Wednesday, May 15, 2019 at 6:00 p.m.

FROM: Vice President and Corporate Secretary

Zambia - Transforming Landscapes for Resilience and Development Project

Project Appraisal Document

Attached is the Project Appraisal Document regarding a proposed credit to Zambia for a Transforming Landscapes for Resilience and Development Project (IDA/R2019-0105/1), which is being processed on an absence-of-objection basis.

Distribution:
Executive Directors and Alternates
President
Bank Group Senior Management
Vice Presidents, Bank, IFC and MIGA
Directors and Department Heads, Bank, IFC, and MIGA

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Report No: PAD3074

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 71.6 MILLION (US$100 MILLION EQUIVALENT)

TO THE

REPUBLIC OF ZAMBIA

FOR A

TRANSFORMING LANDSCAPES FOR RESILIENCE AND DEVELOPMENT PROJECT

April 23, 2019

Environment and Natural Resources Global Practice
Africa Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective February 28, 2019)

Currency Unit =	ZMW (Zambian Kwacha)
ZMW 12.03 =	US$1
US$ 1.40 =	SDR 1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

BoZ	Bank of Zambia
CE	Citizen Engagement
CERC	Contingency Emergency Response Component
CFM	Community Forest Management
CFMG	Community Forest Management Group
CPF	Country Partnership Framework
CRAFT	Climate Risk Adaptation Facilitating Team
CNRB	the Community Natural Resource Board
CRI	Corporate Results Indicator
DFNRMP	Decentralized Forest and Other Natural Resources Management Program
DLI	Disbursement-Linked Indicator
DMMU	Disaster Management and Mitigation Unit
DNPW	Department of National Parks and Wildlife
EFA	Economic and Financial Analysis
EIRR	Economic Internal Rate of Return
ENPV	Economic Net Present Value
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
EX-ACT	Ex-Ante Carbon Balance Tool
FAO	Food and Agriculture Organization
FM	Financial Management
FMS	Financial Management Specialist
GBV	Gender-Based Violence
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GMA	Game Management Area
GPS	Global Positioning System
GRM	Grievance Redress Mechanism
GRS	Grievance Redress Service

GRZ	Government of the Republic of Zambia
IFMIS	Integrated Financial Management Information System
IPF	Investment Project Financing
IPR	Independent Post Review
IUCN	International Union for Conservation of Nature
LMN	Luapula, Muchinga, and Northern
LMNP	Lavushi Manda National Park
M&E	Monitoring and Evaluation
MCC	Mpumba Community Conservancy
MIS	Management Information System
MoNDP	Ministry of National Development Planning
MWNP	Mweru Wantipa National Park
NEOC	National Emergency Operation Center
NDP	National Development Plan
7NDP	Seventh National Development Plan
NFR	Natural Forest Regeneration
NGO	Nongovernmental Organization
NPF	New Procurement Framework
NPIU	Northern Project Implementation Unit
NPCU	National Project Coordinating Unit
NRM	Natural Resources Management
NRZ	Northern Region of Zambia
OAG	Office of the Auditor General
OIB	Open International Bidding
PA	Protected Area
PAU	Provincial Administration Unit
PDO	Project Development Objective
PF	Process Framework
PIM	Project Implementation Manual
PMP	Pest Management Plan
PPCR	Pilot Program for Climate Resilience
PPA	Public Procurement Act
PPI	Predictive Proxy Indicator
PPIU	Provincial Project Implementation Unit
PPR	Procurement Post Review
PPSC	Provincial Planning Sub Committee
PPSD	Project Procurement Strategy for Development
PPU	Provincial Planning Unit
PRAMS	Procurement Risk Assessment and Management System
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
RF	Results Framework
SCREBs	Strengthening Climate Resilience in Barotse Sub-Basin
SNP	Standards, Norms, and Procedures

SORT	Systematic Operations Risk Rating Tool
SPD	Standard Procurement Document
TA	Technical Assistance
TRALARD	Transforming Landscapes for Resilience and Development
TDA	Tourism Development Area
TOR	Terms of Reference
WARMA	Water Resources Management Authority
WDC	Ward Development Committee
ZIFLP	Zambia Integrated Forest Landscape Project
ZMD	Zambia Meteorological Department
ZPPA	Zambia Public Procurement Authority

Regional Vice President:	Hafez M. H. Ghanem
Country Director:	Paul Noumba Um
Senior Global Practice Director:	Karin Erika Kemper
Practice Manager:	Africa Eshogba Olojoba
Task Team Leader(s):	Iretomiwa Olatunji, Nathalie Weier Johnson

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DATASHEET

BASIC INFORMATION

Country(ies)	Project Name	
Zambia	Transforming Landscapes for Resilience and Development in Zambia	
Project ID	**Financing Instrument**	**Environmental Assessment Category**
P164764	Investment Project Financing	B-Partial Assessment

Financing & Implementation Modalities

[ ] Multiphase Programmatic Approach (MPA)	[✓] Contingent Emergency Response Component (CERC)
[ ] Series of Projects (SOP)	[ ] Fragile State(s)
[ ] Disbursement-linked Indicators (DLIs)	[ ] Small State(s)
[ ] Financial Intermediaries (FI)	[ ] Fragile within a non-fragile Country
[ ] Project-Based Guarantee	[ ] Conflict
[ ] Deferred Drawdown	[ ] Responding to Natural or Man-made Disaster
[ ] Alternate Procurement Arrangements (APA)	

Expected Approval Date	Expected Closing Date
14-May-2019	31-Dec-2025

Bank/IFC Collaboration

No

Proposed Development Objective(s)

To improve natural resource management in select districts to support sustainable livelihoods, and in the event of an eligible crisis or emergency, to provide immediate and effective response to the eligible crisis or emergency.

Components

Component Name	Cost (US$, millions)

Component 1: Promoting Diversified, Resilient, Sustainable Livelihoods	65.50
Component 2: Management of Community Forests and Protected Areas	24.00
Component 3: Project Management, Coordination, and Monitoring	10.50
Component 4: Contingency Emergency Response Component (CERC, Standardized)	0.00

Organizations

Borrower:	Ministry of Finance
Implementing Agency:	Ministry of National Development Planning National Project Coordination Unit

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	100.00
Total Financing	100.00
of which IBRD/IDA	100.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Development Association (IDA)	100.00
IDA Credit	100.00

IDA Resources (in US$, Millions)

	Credit Amount	Grant Amount	Guarantee Amount	Total Amount
National PBA	100.00	0.00	0.00	100.00
Total	**100.00**	**0.00**	**0.00**	**100.00**

Expected Disbursements (in US$, Millions)

WB Fiscal Year	2019	2020	2021	2022	2023	2024	2025	2026

Annual	0.00	5.72	9.46	15.39	20.32	22.53	22.59	3.99
Cumulative	0.00	5.72	15.17	30.57	50.88	73.42	96.01	100.00

INSTITUTIONAL DATA

Practice Area (Lead)

Environment & Natural Resources

Contributing Practice Areas

Agriculture, Finance, Competitiveness and Innovation, Social, Urban, Rural and Resilience Global Practice, Water

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

Gender Tag

Does the project plan to undertake any of the following?	
a. Analysis to identify Project-relevant gaps between males and females, especially in light of country gaps identified through SCD and CPF	Yes
b. Specific action(s) to address the gender gaps identified in (a) and/or to improve women or men's empowerment	Yes
c. Include Indicators in results framework to monitor outcomes from actions identified in (b)	Yes

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Rating
1. Political and Governance	Substantial
2. Macroeconomic	High
3. Sector Strategies and Policies	Substantial
4. Technical Design of Project or Program	Substantial
5. Institutional Capacity for Implementation and Sustainability	Substantial
6. Fiduciary	Substantial
7. Environment and Social	Moderate
8. Stakeholders	Low

9. Other	
10. Overall	Substantial

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?

[ ] Yes [✓] No

Does the project require any waivers of Bank policies?

[ ] Yes [✓] No

Safeguard Policies Triggered by the Project	Yes	No
Environmental Assessment OP/BP 4.01	✓	
Performance Standards for Private Sector Activities OP/BP 4.03		✓
Natural Habitats OP/BP 4.04	✓	
Forests OP/BP 4.36	✓	
Pest Management OP 4.09	✓	
Physical Cultural Resources OP/BP 4.11	✓	
Indigenous Peoples OP/BP 4.10		✓
Involuntary Resettlement OP/BP 4.12	✓	
Safety of Dams OP/BP 4.37		✓
Projects on International Waterways OP/BP 7.50	✓	
Projects in Disputed Areas OP/BP 7.60		✓

Legal Covenants

Sections and Description

Institutional Arrangements.

1. The Recipient, through MNDP, shall maintain, throughout the period of implementation of the Project, the National Project Coordinating Unit ("NPCU") with a mandate, composition and resources satisfactory to the Association – Financing Agreement Section I.A.1 of Schedule 2

2. By no later than two (2) months after the Effective Date, the Recipient shall establish and therefore

maintain, throughout the period of implementation of the Project, in each of the Project Provinces, the following bodies: (a) the Provincial Project Implementation Unit and the Provincial Planning Sub-Committee ("PPSC"), with a mandate, composition and resources satisfactory to the Association - Financing Agreement Section I.A.2(a, b) of Schedule 2

3. The Recipient shall maintain, throughout the period of implementation of the Project, in each of the Project Provinces, with a mandate, composition and resources satisfactory to the Association (a) the District Planning Office; and (b) the District Planning Sub-committee - Financing Agreement Section I.A.3(a, b) of Schedule 2

4. The Recipient shall establish and thereafter maintain, throughout the period of implementation of the Project, in each of the Project Provinces, with a mandate, composition and resources satisfactory to the Association, the Ward Development Committee - Financing Agreement Section I.A.4) of Schedule 2

Sections and Description

Participation Agreements.
Prior to financing any Project activities under Parts 1.1, 1.2, 1.3, 2 and 3(b) of the Project out of the proceeds of the Financing, the Recipient shall enter into, and thereafter maintain throughout the period of implementation of the Project, a Participation Agreement with each Project Province under terms and conditions acceptable to the Association- Financing Agreement Section I.B.1 of Schedule 2

Sections and Description

Priority Adaptation Sub-projects.
For purposes of the proper implementation of activities under Part 1.1 of the Project, the Recipient, through the Project Provinces, shall provide Small Grants to Selected Farmers to finance Prior Adaptation Sub-projects in accordance with this Agreement and with the selection criteria, guidelines and procedures set forth in the Project Implementation Manual -Financing Agreement Section I.D.1 of Schedule 2

Sections and Description

Safeguards
1. The Recipient shall ensure and cause to ensure that the Project is carried out in accordance with the provisions of the ESMF, the PMP, the RPF, the PF and all Safeguard Assessments and Plans and the requirements of the Grievance Redress Mechanism -Financing Agreement Section I.F.1 of Schedule 2

2. If any activity under the Project would involve Affected Persons, the Recipient shall: (a) ensure that no displacement (including restriction of access to legally designated parks and protected areas) shall occur before resettlement measures under the relevant Safeguard Assessment and Plan prepared in accordance with the RPF, including, in the case of displacement, full payment to Affected Persons of compensation and of other assistance required for relocation, have been implemented; and (b) provide from its own resources, any financing required for any measures under sub-paragraph (a) above including any costs associated with land acquisition required for the Project - Financing Agreement Section I.F.2 of Schedule 2

3. Without limitation on its other reporting obligations under this Agreement, the Recipient shall collect, compile and submit to the Association on a bi-annual basis (or such other frequency as may be agreed with the

Association) consolidated reports on the status of compliance with the ESMF, the PMP, the RPF, the PF and the Safeguard Assessments and Plans, giving details of: (a) measures taken in furtherance of the said instruments; (b) conditions, if any, which interfere or threaten to interfere with the smooth implementation of the said measures; and (c) remedial measures taken or required to be taken to address such conditions- Financing Agreement Section I.F.3 of Schedule 2

Conditions

Type	Description
Disbursement	Withdrawal Conditions (Financing Agreement Section III, B.1(b, c)) 1. for payments under Category (2) unless and until the Recipient shall have furnished evidence satisfactory to the Association showing that the Participation Agreements referred to in Section I.B.1 of this Schedule 2 have been executed; and 2. for Emergency Expenditures under Category (3), unless and until the Association is satisfied, and has notified the Recipient of its satisfaction, that all of the following conditions have been met in respect of said expenditures: (i) (A) the Recipient has determined that an Eligible Crisis or Emergency has occurred, (B) has furnished to the Association a request to include said activities in the Contingent Emergency Response Part in order to respond to said crisis or emergency, and (C) the Association has agreed with such determination, accepted said request and notified the Recipient thereof; (ii) the Recipient has prepared and disclosed all safeguards instruments required for said activities, and the Recipient has ensured that any actions which are required to be taken under said instruments have been implemented, all in accordance with the provisions of Section I.D of this Schedule 2 to this Agreement; (iii) the entities in charge of coordinating and implementing the Contingent Emergency Response Part, has provided sufficient evidence satisfactory to the Association that it has adequate staff and resources for the purposes of said activities; and (iv) the Recipient has adopted the CERIP, in form and substance acceptable to the Association, and the provisions of the CERIP remain relevant or have been updated in accordance with the provisions of Section I.D of the Schedule to this Agreement so as to be appropriate for the inclusion and implementation of the activities under the Contingent Emergency Response Part.

I. STRATEGIC CONTEXT

A. Country Context

1. Zambia is a landlocked country in Southern Africa, surrounded by Malawi, Tanzania, the Democratic Republic of Congo, Namibia, Angola, Botswana, Zimbabwe, and Mozambique. It has a surface area of 752,618 km^2 and a population estimated at 16.6 million that is growing at an annual rate of 2.8 percent. Zambia is Africa's second-largest copper producer. After a decade (2004–2014) of impressive economic growth, driven by copper prices and production and strong expansion of construction and services in cities, a sharp drop in copper prices in 2015 and El Niño-induced lower seasonal harvest interrupted this trend. Although economic growth improved in 2016 and 2017, efforts to sustain its recovery continue to be made. Poverty in Zambia is high and rural poverty has also remained high and stagnant: with 58 percent of the rural population living in rural areas, 82 percent of the country's poor are rural dwellers. Differences in poverty incidence between regions is also pronounced: Northern, Western, and Luapula Provinces were the poorest in 2015.[1] The Gender Inequality Index for Zambia is 0.517, ranking it 125 out of 160 countries based on 2017 data.[2] While only 25 percent of households are headed by women nationwide, 60.4 percent of households living below the poverty line are headed by women.[3]

2. The country is endowed with rich natural resources including minerals, freshwater, forests, wildlife, and fertile land. Nearly 56 percent, or 42 million hectares, of the total land area is arable. The country is also home to globally significant ecosystems and biodiversity. About 40 percent of freshwater resources in the southern African region are found in Zambia alone. Zambia's economy is heavily dependent on natural resources, particularly mining and, increasingly, forestry resources. Agriculture is largely rain-fed. Rural economies and livelihoods depend almost entirely on renewable natural resources that is, biodiversity, forests, wetlands, fisheries, and water. The Zambian economy, particularly the rural economy, is highly vulnerable to climate change impacts.

3. About 65 percent of Zambian land surface is covered by forests, of which 40 percent constitutes miombo woodland. These productive landscapes play a critical role for rural livelihoods, providing for food, energy, and construction materials. Zambian forests also constitute investment opportunities that hold potential for national socioeconomic development. The country has an array of protected areas (PAs) that include 20 national parks, 39 game management areas, 432 forest reserves, 59 botanical reserves, 42 important bird areas, and 2 bird sanctuaries. The forest lands represent the lifeline of rural economies and daily subsistence. For example, the forest sector currently contributes about 5.2 percent to the nation's gross domestic product (GDP) and provides formal and informal employment to about 1.1 million people.

[1] *Source:* Zambia Country Partnership Framework (CPF), FY19–FY23, Report No. 128467-ZA.
[2] *Source:* Human Development Indices and Indicators: 2018 - United Nations Development Programme (UNDP).
[3] *Source:* U.S. Agency for International Development (USAID) Zambia Country Development Cooperation Strategy 2011–2018.

B. Sectoral and Institutional Context

4. The Zambia Country Partnership Framework (CPF FY19-FY23, Report No. 128467-ZA) emphasizes that the potential wealth from the country's natural environment is not being maximized. High poverty-stricken communities across the whole country rely on the exploitation of natural resources, often as their only source of subsistence. The productive capacity of landscapes nationwide is compromised by such factors as the lack of infrastructure development, unsustainable use of forest resources, improper land use, and energy and mining activities. These drivers of degradation, solely or in combination, reduce the productive capacity and resilience of landscapes and undermine ecosystem services and are compounded by the impacts of climate variability and climate change. The changing climate is altering the structure and function of Zambia's natural resources and poses new challenges for socioeconomic growth.

5. The forest sector is also the greatest contributor to greenhouse gas (GHG) emissions (61 percent of total emissions in 2011). It is a sector, therefore, that holds potential to contribute to national reductions in GHG emissions and equitable sharing of both carbon and non-carbon benefits among stakeholders. However, the forest sector is under increasing pressure. From 2001 to 2017, Zambia lost 2.5 million ha or about 6 percent of total tree cover. This led to the release of 252 Mt of carbon into the atmosphere.[4] According to the Government of the Republic of Zambia (GRZ), current annual deforestation in Zambia is between 79,000 and 150,000[5] ha. Zambia is among the top 10 deforested countries in the world.

6. The proposed project would be implemented in the Northern Region of Zambia (NRZ) which comprises three provinces: Luapula, Muchinga, and Northern (LMN), with a total of 26 districts and a population of about 3.5 million people. The region is endowed with natural resources that include rich biodiversity, natural lakes, rivers, national parks, and waterfalls, among others. The NRZ encompasses over 35 percent of managed lands which contribute to protecting and maintaining large intact natural landscapes. This also includes half of the wetlands of international importance listed under the Ramsar Convention.[6] These wetlands contain habitats for several important fauna and flora species including some endemic and endangered species.[7] The Bangweulu Swamps and other wetlands provide flood mitigation services and are important for groundwater recharge.

7. Notwithstanding these resource endowments, the region ranks poorly in socioeconomic development and is the poorest in the country. Communities lack economic opportunities and rely excessively on natural resources that are barely regulated and poorly managed. Primary economic activities are subsistence agriculture, fishing, and exploitation of forest resources. The NRZ accounts for about 18 percent of annual tree cover loss in Zambia. PAs in the NRZ are vulnerable to the impacts of climate variability and human activities. Rapid population growth increases pressure on the environment

[4] Global Forest Watch 2018.
[5] *Source:* Integrated Land Use Assessment Phase II Final Report (2016).
[6] The Ramsar Convention, also known as the Convention on Wetlands, is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.
[7] For instance, the Bangweulu Swamps provide a breeding ground for birds, fish, and wildlife (for example, the African Elephant *Loxodonta africana*, the buffalo *Syncerus caffer*, Sitatunga *Tragelaphus spekii*, and Black Lechwe *Kobus leche*). It is home to the threatened Wattled Crane (*Grus carunculatus*), and the threatened Shoebill (*Balaeniceps rex*).

amid stagnant infrastructure challenged by climate change impacts. An estimated 16 million ha of 21.4 million ha total land in the NRZ, or about 75 percent of the area, experiences land degradation. Forest lands face serious threats from anthropogenic practices that include human encroachment for settlement, slash-and-burn agriculture, mining activities, charcoal burning and logging, uncontrolled late season forest fires, and poaching. Significant natural resources in the NRZ can provide a solid, lasting basis for socioeconomic development of rural and urban communities and various environmental benefits of national and global interest.

8. The Government has committed to promoting sustainable and environmentally sound practices that minimize negative impacts on the environment. Adaptation to climate change is one of the nation's development priorities. The country already experiences frequent droughts, extreme temperatures and dry spells, and seasonal and flash floods that cost an estimated 0.4 percent in annual economic growth. These trends are expected to intensify in the future. Based on records from 1960 to 2003, the mean annual temperature has increased by 1.3°C. Within the same period, mean rainfall has decreased by an average of 1.9 mm per month (2.3 percent) per decade since 1960.

9. Through its land and forest-related policies, the Government seeks to manage productive landscapes to enhance forest products and services for improved income generation, poverty reduction, job creation and protection and maintenance of biodiversity, and contribute to mitigation of climate change. Relevant legislations include Vision 2030; the Seventh National Development Plan (7NDP, 2017–2021); the Second National Biodiversity Strategy and Action Plan (2015); the National Policy on Environment (2007); the National Policy on Climate Change (2016); the National Climate Change Response Strategy (2012); the Zambia National Forest Policy (2014) and Forest Act (2015); the National Agriculture Policy (2016); the Environmental Management Act (2011); and the National Energy Policy (2008). In the Forest Act of 2015, the Government gave direction on the new configurations of forests to increase people's participation in the management of forests and forest resources and in their ownership of forest benefits at the local level. This new policy forms the basis for socioeconomic and legal engagement in the collective management of forest landscapes to transform landscapes for resilience and development in Zambia.

10. The Ministry of National Development Planning (MoNDP) has the mandate to coordinate all climate change programs in the country. Implementation of these programs is done through relevant line ministries, for example, Ministry of Lands and Natural Resources; Department of Forestry; Ministry of Agriculture; Provincial Administrative Office; and Ministry of Water Development, Sanitation, and Environmental Protection and provincial administration responsible for specific project activities.

11. Zambia is party to multilateral environmental agreements: the UN Framework Convention on Climate Change, the UN Convention on Biological Diversity, and the UN Convention to Combat Desertification. In 2015, Zambia joined the Paris Agreement and submitted its Intended Nationally Determined Contributions. The Government continues to pursue development goals that complement efforts from other development partners for socioeconomic and environmental benefits.

C. Relevance to Higher Level Objectives

12. The proposed project is aligned with the Zambia CPF for FY19–FY23 which puts forward an integrated World Bank, International Finance Corporation, and Multilateral Investment Guarantee Agency

strategy to support Zambia's development as set forth in the 7NDP. The CPF notes that maintaining forest cover and wildlife biodiversity is not only relevant for environmental and hydrological services, including carbon capture, but is central to achieving the World Bank's goals of ending poverty and boosting shared prosperity (the twin goals) and Zambia's economic diversification and inclusive growth objectives. By targeting the poorest regions in the country and promoting diversified livelihoods, the proposed project directly supports the achievement of the twin goals. The project is included under CPF Focus Area 1: 'More even territorial development: opportunities and jobs for the rural poor' and supports all three objectives under this focus area, especially Objective 1.2: 'Selected rural communities become more resilient to climate and environmental shocks'.[8] The project conforms to the recently adopted World Bank Action Plan on Climate Change Adaptation and Resilience, specifically working on reaching the objectives of high-quality hydrometeorological data and early warning systems and supporting interventions through an integrated landscape management approach for avoiding deforestation and promoting landscape restoration for sustainable forest management. In addition, Transforming Landscapes for Resilience and Development (TRALARD) objectives, activities, and indicators conform to the aspirations of the Bonn Challenge and AFR100 initiatives to restore degraded and deforested lands, to the Global Landscape Forum on Sustainable Land Use and to the Reducing Emissions from Deforestation and Forest Degradation (REDD+) program to reduce carbon emissions from deforestation and forest degradation.

13. The project is well aligned with national priorities. Sound management of natural resources and the introduction of alternative non-natural resource-based livelihoods is among the objectives in the 7NDP. The 7NDP underscores the Government's commitment to promote sustainable and environmentally sound practices to minimize negative impacts to the environment and ensure the long-term survival of ecosystems for the benefit of people and nature. The proposed project supports the country's goal to have climate change mainstreamed in the most economically important and vulnerable sectors of the economy.

II. PROJECT DESCRIPTION

A. Project Development Objective

14. To improve natural resource management in select districts to support sustainable livelihoods, and in the event of an eligible crisis or emergency, to provide immediate and effective response to the eligibale crisis or emergency.

15. The proposed project would target 16 of the 26 districts in the three NRZ Provinces: Chifunabuli, Kawambwa, Lunga, Nchelenge, and Samfya (Luapula Province); Chama, Lavushimanda, Mpika, Mafinga, Isoka, and Kanchibiya (Muchinga Province); and Chilubi, Mbala, Mungwi, Mpulungu, and Nsama (Northern Province).

[8] Objective 1.1 relates to the agri-food sector diversification, productivity and market connectivity, and Objective 1.3 relates to resilient infrastructure services.

PDO-Level Indicators

16. The achievement of the PDO will be measured using the following indicators, including corporate results indicators (CRIs). Intermediate results indicators are also laid out in the Results Framework (RF) of this Project Appraisal Document (PAD).

(a) Land area under sustainable landscape management practices (CRI), (ha)

(b) Farmers adopting improved agricultural technology (CRI), (number)

- Farmers adopting improved agricultural technology - Female (CRI), (number)
- Farmers adopting improved agricultural technology - Male (CRI), (number)

(c) Households adopting diversified livelihood activities supported by the project, (number)

- Female-headed households adopting diversified livelihood activities supported by the project, (number)
- Male-headed households adopting diversified livelihood activities supported by the project, (number)

(d) Forest area brought under management plans (CRI), Hectare (Ha)

B. Project Description

17. The development constraints that TRALARD aims to overcome are connected to pervasive poverty of targeted communities resulting in their absolute reliance on the exploitation of natural resources, leading to degradation of landscapes and ecosystems, further exacerbated by the increasingly insufficient capacity of these communities to withstand climate change impacts. Based on the priorities of the Government, the project design will address the following constraints and issues: (a) lack of sound practices in using natural resources sustainably, (b) limited livelihoods options of the most vulnerable communities, (c) vulnerability of communities to climatic shocks, and (d) inadequate management of PAs. This project has the potential to become the first phase of a long-term landscape investment program that will require deepening and scaling up within the LMN Provinces and across the country.

18. TRALARD comprises four components:

- Promoting Diversified, Resilient, Sustainable Livelihoods
- Management of Community Forests and Protected Areas
- Project Management, Coordination, and Monitoring
- Contingency Emergency Response Component (CERC, Standardized)

19. The project design is based on a community-led landscape approach, that is, an integrated approach to sustainably manage land, forest and water resources for multiple purposes and functions. All the project activities, that is, livelihoods, community forest management groups (CFMGs), natural forest regeneration (NFR), and resilience infrastructures are community driven and will be carried out on lands belonging to and owned by communities.

20. The activities in all project components are interconnected and mutually complementary and reinforcing. The livelihoods activities are designed to increase the sustainability of rural livelihoods. They are integral to the efforts to improve infrastructure for resilience and establish a national hydro-meteorological system, facilitate community forest management (CFM) practices through the creation of community-managed forests, alleviate the pressure on PAs and national forests, and strengthen PAs. To complement and multiply the positive effects of more sustainable livelihoods, the project intends to improve small infrastructure helping communities withstand the pressures of natural disasters, harness potential positive effects of adaptation and enhanced resilience, and establish better access to markets. The project also supports national-level institutional support for multisectoral climate change coordination, mainstreaming of climate risk in the development planning process, technical assistance (TA), workshops, and trainings aimed at capacity building and institutional development.

Component 1. Promoting Diversified, Resilient, Sustainable Livelihoods (SDR 46.9 million, US$65.5 million equivalent)

21. This component is designed to create conditions for poverty-stricken communities facing climatic impacts to strengthen their resilience. This component also supports ward-level development planning, TA, workshops, and trainings for capacity building and institutional development.

22. The activities under this component are structured around the following tasks: (a) increase smallholder production and productivity, (b) mitigate farmers' risks through the adoption of new technologies, and (c) facilitate adoption of alternative livelihoods as sustainable and resilient initiatives with reduced reliance on natural resources. They form an integrated approach to alleviating the problem of vulnerability of rural communities to growing climate change impacts and to strengthen their resilience and adaptive capacity. The ultimate aim of these activities would be to elevate the economic well-being of targeted communities.

23. This component also aims to support and improve infrastructure in vulnerable areas suffering from the lack of investments and that are also adversely affected by climate change. Impacts include drastic changes in rainfall patterns resulting in floods (whose durations are becoming protracted) and droughts, shortages in water, changes in wind patterns, and lack of crossing points over streams leaving entire communities cut off from basic services and goods during floods. This increases the likelihood of lack of water and nutrition, spikes in diseases, and livestock loss. In addition, this component helps identify ways to connect primary producers to potential consumers. This component also includes activities to modernize elements of the national hydrometeorological system of Zambia.

Subcomponent 1.1. Diversifying Livelihoods and Improving Farming Practices (SDR 9.7 million, US$13.5 million equivalent)

24. Activities under this subcomponent will be implemented through a program that (a) encourages farmers to adopt diverse and climate-resilent farming practices and (b) advances technologies to introduce more efficient processing and reduce post-harvest loss. These activities will be funded through small grants to strengthen community climate-resilient adaptation. The small grants will fund priority adaptation subprojects identified through the process of participatory community natural resource management and climate-resilient planning. Grants will be available at the ward, community/group, and individual innovators (champion) levels and will be disbursed directly to the beneficiaries. Proposals will have to demonstrate clear benefits for increasing value and introducing sustainable management of natural resources within the ecosystem, reducing degradation, strengthening resilience, and achieving adaptation co-benefits. The subprojects will be largely demand driven but will benefit from external expertise. There will be a special grant window reserved for women to ensure that they have guaranteed access to funding opportunities. At the community/group level, the interventions will specifically target at least 50 percent women-headed households, as well as households classified as very or extremely vulnerable. A detailed description of this mechanism is laid out in annex 3. The subcomponent includes the following groups of activities.

25. **Advance diversity in livelihoods.** One of the factors of rural communities' vulnerabilities is the lack of diversity in their subsistence activities. TRALARD will facilitate the introduction and adoption of diversified activities, including such that are less reliant on the expolitation of natural resources. The roster of alternative livelihoods includes increased rearing of livestock, for example, small ruminants, agroforestry, agroprocessing, aquaculture, fingerlings' production, fish processing, feed production for fisheries, beekeeping, and caterpillars' and mushrooms' production. The project will also support services-based livelihoods such as tailoring, hair dressing, small restaurants, and tourist support businesses and other activities that are acceptable to the communities. These activities will target mostly women and youths to improve the socioeconomic situation, particularly of women whose roles are traditionally associated with lower-value natural resources.

26. **Improve productivity in farming.** This intervention will aim to resolve obstacles in accessing inputs and will help farmers adopt practices to increase productivity and add value to their produce, enabling them to improve returns from their economic activities while reducing pressure on the environment and natural resources. For example, limited access to extension services and limited affordability and availability of inputs impair the quality of fish farming.[9] The project supports measures to facilitate access to improved and diversified inputs such as improved seeds that perform better during droughts and floods, as well as targeted TA and training.

27. **Manage post-harvest losses.** According to estimates, post-harvest losses of agricultural produce in Zambia can reach 40 percent. Most of these losses are further exacerbated by the increasing changes in the climate regimes, that is, prolonged rains and/or late onset of rain and early onset of drought and or

[9] World Bank. 2017. *Zambia Jobs in Value Chains: Opportunities in Agribusiness*.https://openknowledge.worldbank.org/handle/10986/27007.

drought spells. To reduce these losses, TRALARD intends to introduce solutions such as sealed metal silos, hermetic bags, and plastic silos and provide training on managing post-harvest losses to farmers. Other activities will include improved and/or alternative energy-efficient technologies for fish processing and to reduce pressure on forests. The project will disseminate knowledge and best practices for these activities with other communities.

Subcomponent 1.2. Developing Productive Climate Resilient Infrastructure for Sustainable Livelihoods (SDR 26.4 million, US$37.0 million equivalent)

28. This subcomponent is closely related to the task of diversifying livelihoods and foresees the realization of a series of small projects that have been determined in consultations with provincial administrations and national authorities. The list includes rice and sorghum processing facilities; fish farming and fish caging; rearing of poultry, ruminants, and fingerlings; growing of pastures, processing and packaging of non-forest products and farm produce; water harvesting and solar-powered technologies; building of dip tanks; fruit orchards, fruit nurseries, gardening, and farming of high-value crops; beekeeping, propagation of caterpillars, and mushroom growing; and production of tourist souvenirs and curios, photographic tourism, game viewing, tour guiding, and small traditional tourism accommodation.

29. Locations for 27 bulking centers have been confirmed for construction as logistical hubs allowing convenient and efficient storage of farm produce. It is expected that about 300,000 people will benefit directly and indirectly from the bulking centers. The centers will be able to address the issue of volume that is often an obstacle for trade with large buyers. By accumulating larger volumes of produce, the centers will leverage negotiating higher prices and consequently increase the profits of contributing farmers. The selection of locations of the bulking centers is informed by the activities on infrastructure for resilience development to have them constructed near transportation routes.

30. This subcomponent addresses the deficit of resilient infrastructure in the areas most vulnerable to climate change impacts. The districts that are most vulnerable to natural disasters induced by climatic changes and further exacerbated by abject poverty prevalent in the LMN Provinces have been identified jointly with the provincial authorities. To strengthen the resilience of communities to climatic changes and their adaptive capacity, the World Bank team has determined, in consultations with the provincial planning departments and national sector ministries, the most impactful activities which would (a) support and improve basic infrastructure and (b) help address poverty in vulnerable areas. These activities have been aggregated thematically and geographically to implement them in an integrated way. In pursuit of complementarity and the mutually reinforcing effect of the project components, infrastructure for resilience is set to be implemented simultaneously with activities to diversify livelihoods and to support the establishment of community forest management and natural forest regeneration areas (Subcomponent 2.1). During preparation, 104 small-scale infrastructure activities in 16 of the most vulnerable districts were identified and vetted for funding with provincial authorities. It is expected that about 1.2 million people in the project areas will benefit from these activities, both directly and indirectly.

31. The implementation of the works aims to lead to the following:

- Access to markets for agricultural produce by subsistence farmers through improved movement of goods and services (channels, embankments, and crossing points)

- Connectivity to services during natural disasters in sites typically affected by increasingly protracted floods (crossing points, channels, and embankments)

- Water management to improve its availability for domestic use, agricultural irrigation, and for animals (irrigation canals, furrows, and weirs)

32. A portion of the Project Preparation Advance[10] has been set aside for preparing engineering designs, bidding documentation, and site-specific Environmental and Social Impact Assessments (ESIAs) to be prepared for implementation as soon as the project financing becomes effective.

33. **Improvement of water channels** (an estimated 173 km in length) to facilitate rice production and transportation of products to markets as well as people to basic services. The existing channels in all three provinces will be cleaned and their navigation capacity restored with project support. These channels are on average 4 m wide and 1–3 m deep. Clean operational channels create favorable conditions for other sustainable livelihood activities to either reduce the pressure on natural resources or advance their effective use. The channels stretch from Luapula into the adjacent districts of Muchinga and Northern Province, effectively connecting all three project provinces within the same ecosystem. To enhance their functionality and convenience for communities, the channels will be equipped with landing bays where required, for loading/unloading of passengers and goods. To ensure sustainability of the water channels, the Standards, Norms, and Procedures (SNP) Manual developed by the Maritime Department under the Zambia Strengthening Climate Resilience (PPCR Phase II, P127254) will be implemented. The SNP calls for formation of canal users associations for effective maintenance of canals/water channels.

34. **Embankments** (an estimated 63 km) are required to safeguard specific farm and market paths from floods. These paths are normally connected to the crossing points, making these elements of infrastructure interdependent and complementary.

35. **The construction of small weirs** (estimated at 20–30) is required in the most vulnerable districts. The weirs will help regulate water flows and provide water for irrigation purposes.

36. **The installation of crossing points** (estimated at 30–40) to replace temporary makeshift constructions is intended to alleviate the consequences of floods for communities. Crossing points are designed to help avoid the interruption of connectivity during floods between such communities and service providers, including medical and educational services and retail trade.

37. **Construction of earthen irrigation canals** (18 stretches of approximately 92 km) has proven highly effective for agricultural production in all three provinces. This activity will resolve difficulties with access to water resources in drought-prone areas, providing farming households with much needed stability.

[10] The PPA of US$2 million was used for project preparations studies i.e. climate risk vulnerability assessment, preparation of safeguards documents, project feasibility study, gender -analysis, design studies and bidding document preparation for the small infrastructures, setting up of the PIU etc.

Subcomponent 1.3. Strengthening Communities and Expanding Services (SDR 5.4 million, US$7.5 million equivalent)

38. This subcomponent strengthens communities and, in most locations, introduces the concept of savings clubs and insurance against climate change impacts. It will inform, educate, and train communities to assess their natural resource assets and improve planning for their sustainable and effective use. The subcomponent will provide TA and training and will faciliate formalizing community and producer groups for a more inclusive and participatory decision-making process. Activities under this subcomponent build on the Climate Risk Facilitating Team (CRAFT) process introduced in the PPCR.[11] To implement the activities, the project will procure specialized service providers working through nongovernmental organizations (NGOs) and other experienced technical actors already working in the project areas. The following groups of activities are included in this subcomponent.

39. **Introduce and expand access to risk reserves.** This activity will educate households and smallholder farmers about the advantages of establishing savings clubs to pool resources to bargain for better prices, to support acquisition of inputs for agricultural and other economic activities. In addition, the activity will inform farmers and other producers about the benefits of acquiring insurance against the risk inherent in agricultural activity. The project will examine the applicability of the World Bank's Global Index Insurance Facility[12] approaches in Zambia.

40. **Provide targeted TA and training and advisory services.** These activities will be cross-cutting for the entire component. They will include trainings on specific livelihoods and consultations on the ways to receive grants and investments under the project. It would include training of trainers for various project activities, participatory climate risk planning, and community sensitization as well as for district-level planners, ward officers, and government technical services officers. These activities will have a special emphasis on supporting women and other vulnerable groups to fully benefit from the project.

41. **Facilitate and strengthen community planning and decision making.** The project will facilitate target wards and community groups in the process of community participatory forest management planning; climate risk planning; prioritization of livelihood adaptation investments; and preparation, implementation, and monitoring of small grants proposals. This subcomponent will formalize producer groups into cooperatives and community structures and establish within communities the capacity for natural resource management and adaptive processes to regularly assess the natural resource base status and its vulnerability. To enhance transformative impact, it will also integrate lessons learned to improve local planning processes.

[11] The CRAFT process engages experienced services providers to help with preparation, implementation, and monitoring of small grants proposals, as well as facilitate community participatory forest management planning, climate risk planning, and prioritization of livelihood adaptation investments.
[12] https://www.insuresilience.org/global-index-insurance-facility-giif/.

Subcomponent 1.4. Strengthened Climate Hydro-meteorological Information (SDR 5.4 million, US$7.5 million equivalent)

42. This subcomponent is underpinned by the Hydrometeorological Master Plan developed under the now closed Zambia Water Resources Development Project (P114949). The meteorological observation system in Zambia is composed of 41 manual stations (which are mercury based and required to be replaced before 2021 in view of the Minamata Convention) and 85 automatic weather stations. The weather stations cover only 69 out of 117 districts. This number of observation stations is inadequate considering the size of the country (about 752,000 km^2). Moreover, weather and climate parameters are highly variable in space and time, making it difficult to describe accurately micro weather and climate over the country.

43. The activities under this component are required and complementary to the climate information dissemination platform developed under the Zambia PPCR Phase II. It includes activities which together help modernize the hydromet services in Zambia. The purpose is to help create conditions at the national, provincial, district, and community levels for the effective resilience of livelihoods and adaptation of vulnerable stakeholders to the impacts of climate and natural disasters. It has three major focus areas with resources supporting the following activities:

(a) Modernization and rehabilitation of hydromet infrastructure

(b) Improving the delivery of hydromet and early warning services

(c) Institutional strengthening

44. **Modernization and rehabilitation of hydromet infrastructure.** Building on the ongoing efforts to modernize hydromet observation, communication, data management, and forecasting systems, this activity will strengthen hydromet infrastructure by constructing 60 additional hydromet stations to the already established hydromet system of 85 stations. The purpose of this activity is to contribute to the implementation of the Hydrometeorological Service Master Plan for Zambia by addressing infrastructural deficiency and will include the following:

(a) **Upgrading the observation network.** Accurate and frequent observation of the state of the atmosphere and water bodies forms the basis of meteorological and hydrological services. This activity envisages installing and upgrading a manageable number of observing stations, operated by the Zambia Meteorological Department (ZMD) and structures. The decentralization effort is further supported by investments in subnational offices to strengthen their communication links and service delivery functionalities. Equipment to be procured include automatic weather stations, agro-meteorological stations, automatic rain gauges, upper air stations, and automated and manual hydrological and hydrogeological stations. A national and mobile calibration facility will be established to ensure that installed sensors are regularly calibrated and serviced.

(b) **Strengthening the data management, communication, and forecasting system.** The core of any hydromet system is the data management system linking the field observations to a common data system for data processing/forecasting, quality control, and data archiving. It

provides a common entry point for data analysis, generation of information, and data access to the broader user community. This activity ensures the robustness and functionality of the data management system and the efficiency of the dataflow to enable the National Meteorological and Hydrological Service to provide quality data on time and to a broad range of users. Data storage and data management capabilities will be improved at the ZMD headquarters, as well as the catchment and provincial offices. It will also support the establishment of an interface for the catchment offices, which currently do not have access.

45. **Improving the delivery of hydromet and early warning services.** This activity focuses on the delivery of weather, climate and hydrological, and early warning services to ensure users have access, understand, and use these information services for decision making and risk preparedness. The objective is to deliver user-friendly and tailored weather, climate, and early warning services for climate adaptation, resilience, and disaster preparedness. Activities will include the following:

(a) **Improving the delivery of hydromet and early warning services.** Support assessment and strengthen current national climate and forecasting services and help develop a national strategy and framework for generation of specific climate and risk information through engagement of sectoral users and stakeholders including agriculture, water resources management, energy, and disaster risk. Based on the outcomes of user consultations, the ZMD will develop and implement a service delivery strategy to form a basis for development of a series of tailored meteorological products, including radio, smartphone applications, and website enhancements. It will underpin the current early warning system and connectivity to enhance accuracy and reach, including last-mile connectivity enhancement to ensure people in rural communities can access needed hydromet and early warning information.

(b) **Strengthening disaster preparedness and response capacity.** This activity addresses the needs of the country to strengthen its risk and disaster preparedness and response capacity. It includes investments to equip the National Emergency Operation Center (NEOC) under development, strengthening the NEOC's role as the central operational hub in times of emergency. It also includes development of a standard operating procedure for the NEOC, community disaster preparedness strengthening and packaging, and dissemination of newly available hydromet information. Materials will be developed specifically for local communities, through community radio and TV and through social media. Flyers will be designed and printed to reach areas without TV, radio, or internet coverage, in selected high-risk districts.

46. **Institutional strengthening.** This activity will provide institutional support to the National Climate Change Program in the country for better multisectoral coordination and management of climate-related investments. It will also strengthen the capacity of the three institutions responsible for climate information (Disaster Management and Mitigation Unit [DMMU], ZMD, and Water Resources Management Authority [WARMA]) to work together on information generation, sharing, and dissemination. The major activities involved are the following:

(a) **Institutional strengthening support to the National Climate Change Programme.** This includes TA, programmatic monitoring, evaluation, operational, and logistical support.

(b) **Continuation of the social marketing awareness campaigns** launched under the Zambia PPCR Phase II to promote the importance of addressing climate change risks at all levels.

(c) **Institutional support to climate information agencies.** This activity addresses the sustainability of climate information and supports the development of operations and maintenance strategies. It helps develop capacity in the three main agencies and relevant stakeholders, in response to the need for training on technical and managerial topics. Furthermore, the DMMU, WARMA, and the ZMD have identified the need to have standard operating procedures to guide different tasks attributed to each agency and overlapping activities where all three institutions are responsible. This activity will address this need by supporting the development of standard operating procedures for the NEOC and early warning systems, among others. It also funds coordination assessment of overall institutional roles of relevant agencies and institutions involved in hydromet and early warning system service delivery. This will be based on a series of workshops among agencies to assess roles and develop coordination protocols to enhance service delivery.

Component 2. Management of Community Forests and Protected Areas (SRD 17.2 million, US$24 million equivalent)

47. Under this component, the project supports the establishment of CFMGs as well as NFR areas to more effectively manage available forests and to create the minimal necessary conditions for restoring degraded forest areas. The component also adresses the problem of insufficient funding of the established PAs in the LMN Provinces. Main activities include developing basic infrastructure and strengthening capacity and management to protect and preserve biodiversity and ecosystem services. The component design and activities targetted under this component are consistent with the strategy developed by the GRZ for tourism development and support the implementation of the Zambia Tourism Master Plan approved in 2018. The plan focuses on short- and long-term invesment in selected PA tourism development areas (TDAs). The LMN Provinces and their associated PAs are one of the TDAs proritized under the master plan.

Subcomponent 2.1. Community Forest Management and Natrual Forest Regeneration (SDR 8.6 million, US$12 million equivalent)

48. This subcomponent supports the implementation of two types of community-driven sustainable forestry activities. They include identification, adoption, restoration, management, and usage of forest areas. The CFM activity supports the Government to pilot implementation of Statutory Instrument No. 11 of 2018 on community management of forests.[13] The CFM is a small-to-medium-scale effort stipulating the creation of legal entities, development of management plans, and establishment of CFMGs to manage and use specified forest areas at the community level. Simultaneously, this subcomponent intends to promote the establishment of small areas for NFR among communities—a low-cost grassroot initiative

[13] Component 1.1: Statutory Instrument NO. 11 OF 2018. The Forests Act, 2015 (Act No. 4 of 2015), The Forests (Community Forest Management) Regulations, 2018. https://zambialii.org/system/files/legislation/statutory-instrument/2018/11/si_2018_11.pdf.

under the authority of local traditional leaders to create conditions for fast, unimpeded regeneration of forests and their further usage to meet community needs in an environmentally considerate manner.

49. The CFM activity follows the successful completion of the Decentralized Forest and Other Natural Resources Management Program (DFNRMP) in Zambia supported by the Government of Finland (2015–2018). This project resulted in the establishment of 21 CFMs in the Muchinga and North-Western Provinces. The average area for existing CFMs in Muchinga is 234 ha and 3,012 ha in the North-Western Province. Under the CFM activity, interested communities will receive support to implement steps necessary to launch CFM, from decision making to signing a CFM Agreement to forming management bodies and practically managing specific areas. This includes help in the development and dissemination of a manual on community participatory co-management and the establishment of effective interdepartmental structures to organize collaboration at the ecosystem level to enhance integrated approaches to natural resource management and coordinated land-use planning and management. The outputs will focus on (a) integrated approaches for community mobilization; (b) partnerships for sustainable forest landscape restoration; and (c) TA in targeted areas, for example, on models and resource mobilization for sustainable PA management. This combination of objectives is intended to enhance the Government's ability to determine sectors that hold greater promise to transform landscapes for resilience and development and scale up interventions.

50. The NFR activity pursues cost-effective community-based natural regeneration of indigenous forests. It creates conditions for natural reforestation of select, usually degraded and overexploited, forest areas to convert them into 'forests for food'. By using various forms of fencing, communities demarcate selected areas to protect them from grazing. The expectation is that in 12–18 months, the seed stock starts bringing the forests back to life. Communities then will be able to start using the resources of these nascent forests for various livelihoods purposes except for grazing and wood-cutting. This form of restoring and managing forests became popular in Malawi, known for its vastly and severely degraded forest areas.

51. Natural regeneration is a farmer-driven practice characterized by low cost, flexibility, and ease of management. Trees provide many products and uses essential to the lives and livelihoods of farm households, but many smallholders lack the knowledge, land, labor, and inputs to plant and grow trees. Natural trees have well-established root systems adapted to the local ecology with strong tolerance to drought, fire, browsing, pests, and diseases. Regenerated forests contribute to restoring the biodiversity of the natural landscape, protecting the environment and water catchments by reducing water runoff, maximizing rainfall capture and infiltration, and providing a buffer against high winds.

52. While trees have a natural propensity to regenerate in many areas of Zambia, they need basic management and protection. Communities need to demarcate, protect, and manage land for natural regeneration—these are the main costs for implementing this activity. Areas also need to be mapped with global positioning system (GPS) reference points for verification and monitoring. Training is another essential element along with the provision of specific tools for proper pruning and thinning. Subtotal costs are about US$500 per ha. Managing NFRs requires thinning shoots to promote vertical growth while avoiding the development of scrubby bush with low wood yields. Thinned shoots and trimmings may be gathered for fuel or other uses without cutting down or removing any trees. Other products may be collected depending on the species present, for example, fruits, fodder, and various parts of trees for medicinal or other uses.

53. It is estimated that under TRALARD, 30 new CFMs in total (about 10 in each province) will be established, and the NFR activity will adopt up to 12,000 ha (about 4,000 ha in each province).

Subcomponent 2.2. Improved Management of Protected Areas (PAs) (SDR 8.6 million, US$12 million equivalent)

54. This subcomponent supports the effective and sustainable management of two important conservation landscapes, the Nsumbu National Park/Mweru Wantipa National Park (MWNP)/Lusenga Plain National Park/Tondwa Game Management Area (GMA) Landscape (hereinafter the Northern Landscape) and the Lavushi Manda/Bangweulu Landscape/Mpumba Conmmunity Conservancy (hereinafter the Southern Landscape). The broader conservation landscapes include interconnected networks of PAs including (a) national parks, (b) game management areas, and (c) national forest reserves.

55. Activities under this subcomponent aim to establish and/or strengthen basic management systems in select PAs, which at times are managed rudimentarily. Implementing these activities under TRALARD will lay the ground to address PA challenges such as poaching and pursue objectives such as tourism more effectively in the future.

56. This support will include (a) preparation of PA management plans (the plan would support maintaining current forest covers and increasing forest covers in the targeted area for sequestration and conservation); (b) capacity assessment of the staff and analysis of the financial resources required to fully protect PAs; (c) priority park infrastructure such as staff offices and housing nearer to the park, outposts, and rehabilitation and maintenance of roads; (d) equipment including vehicles, GPS, radio equipment, and disruptive technology for monitoring animal populations; and (e) training in anti-poaching and surveillance techniques, use of disruptive technology, fire management, and community extension.

The Northern Landscape (SDR 5.2 million, US$7.3 million equivalent)

57. This part of the subcomponent covers the Nsumbu-Mweru ecosystem, within which TRALARD supports the Nsumbu National Park (2,063 km^2), the Tondwa GMAs (540 km^2), and the Kaputa GMA (3,600 km^2), as well as Mweru Wantipa (3,134 km^2) and Lusenga Plain National Parks (880 km^2). The total area of the Nsumbu-Mweru ecosystem exceeds 10,000 km^2.

58. The Nsumbu ecosystem is characterized by a high number of perennial waterways, varied vegetation ecotypes, and 80 km of Lake Tanganyika shoreline. Nsumbu National Park is dominated by the Lufubu River and Tondwa swamp catchments and drainage systems, both flowing into Tanganyika and unaffected by agricultural runoff and sedimentation. Wildlife populations are currently sparsely distributed throughout the project area with concentrations in the northern section, especially around the Tondwa and Nkamba floodplains. The Nsumbu National Park reportedly contains the last viable population of African elephants in Northern Zambia and the only population along the shores of Tanganyika. Fringe areas are most affected by high levels of poaching. Despite high poaching, the area remains pristine with intact habitat, viable populations for resident mammal species, and little encroachment. The ecosystem habitat has the potential to be extremely productive and has a high carrying capacity of large herbivores. Large stands of Itigi forest are heavily used by large herbivores such

as elephants and buffaloes. It is categorized as an International Union for Conservation of Nature (IUCN) Category[14] II National Park.

59. The MWNP is situated on the northern shore of Lake Mweru Wantipa, a shallow basin lake with a historically rich fishery and dense wildlife populations especially in the large papyrus swamps in the south. The MWNP along with Nsumbu National Park are the only PAs to contain significant stands of Itigi forests, a combretum structure forest historically rich in elephant and rhino populations. The MWNP is largely depleted of large mammals, although the habitat remains primarily intact. Encroachment issues are a concern in the western and northern extremities of the PA. The MWNP is categorized as an IUCN Category II National Park.

60. Lusenga Plains National Park is the smallest of the national parks in the Nsumbu Mweru ecosystem and is characterized by the expansive floodplain in the center of the park and exceptionally high rainfall (1,500 mm per year). The Kalungwishi River forms the eastern boundary and includes significant waterfalls along the park boundary. Wildlife populations are largely depleted but remnant populations of most species exist other than elephants and carnivores. There are no serious encroachment issues. The Lusenga Plains National Park is categorized as an IUCN Category II National Park.

61. The most pressing challenges to the Northern Landscape include (a) intense poaching, (b) ecological threats from development activities, and (c) ineffective management of PAs.

62. The scope of activities to address these challenges has been determined as the following:

(a) Direct resource protection and law enforcement strengthening to enable effective patrols, monitoring, and investigations

(b) Ecological and boundary monitoring

(c) Effective, transparent, and adaptive ecosystem and PA management

The Southern Landscape (SDR 3.4 million, US$4.7 million equivalent)

63. Lavushi Manda National Park (LMNP) of 1,500 km^2 lies adjacent to the Bangweulu Wetlands (6,000 $km^{2)}$ and holds vast stretches of pristine hill *miombo* woodlands, large *dambo* wet grasslands, and gallery forests along the headwaters of the Lukulu and Lulimala Rivers. The park is of major importance for African and Palearctic migrants. Recent visits show that there is still an excellent variety of large mammals present in small numbers, including lions and leopards

64. The LMNP and the Bangweulu Wetlands function as a single ecological system, and therefore it makes sense to support their management jointly under this component. The LMNP would also enhance the attractiveness of the Bangweulu area as a tourism destination with considerable product and activity diversification. Given the almost total dependency of the rural communities on the Bangweulu-LMNP

[14] See classification of PAs by IUCN at www.iucn.org/theme/protected-areas/about/protected-area-categories.

landscape for their livelihoods, one of the greatest benefits of securing this landscape against degradation is to safeguard the system's natural capital as a buffer against climate change.

65. The final element of the Southern Landscape under TRALARD is the establishment of the Mpumba Community Conservancy (MCC) with an estimated area of more than 600 km^2. The proposed MCC would border the eastern boundaries of the LMNP. It will also constitute part of a biological corridor between the LMNP and the Luangwa Valley. Mpumba falls within the Central Zambezian Miombo Woodland Ecoregion (WWF Global 200 Ecoregions). The ecosystem of MCC includes pristine plateau and hill miombo woodland, large dambo wet grasslands, and gallery forests along the headwaters of the Lukulu Rivers. The total number of mammal species in MCC is likely to be well over 100. The area is recognized as an important bird area by Birdlife International due to the presence of many biome-restricted species and threatened species.

66. TRALARD will support efforts to enhance the efficiency of management of the Southern Landscape by financing (a) development of basic infrastructure such as housing for scouts and rangers and fencing, (b) purchase of land transport and field equipment, (c) training of staff and advancing of tourism opportunities, (d) hiring of administrative staff and recruiting scouts, (e) bringing of game from the nearby ranches, and (f) operating costs.

Component 3: Project Management, Coordination, and Monitoring (SDR 7.5 million, US$10.5 million equivalent)

67. This component will finance the establishment and activities of three Provincial Project Implementation Units (PPIUs), TA, works, goods, services, workshops, and operational costs to support the project's day-to-day implementation and management, including procurement, financial management (FM), environmental and social safeguards, and preparation of annual work plans and organization of audit reports. The US$2 million Project Preparation Advance is also included in the component cost. The component further includes the design and implementation of a communication strategy to report on the project results and to raise awareness about land degradation, restoration and climate change impacts, vulnerability, and adaptation. It also supports the monitoring and evaluation (M&E) system to report on the project's expected results (disaggregating by gender, where appropriate) and systematizes the project's lessons learned.

Component 4: Contingency Emergency Response Component (CERC, Standardized SDR 0.0 million, US$0.0 million equivalent)

68. This component had been embedded in the project to finance early recovery and/or specific emergency works, goods, and services in case of eligible emergencies/crises/disasters caused by natural or man-made hazards, including public health crisis. The mechanism is designed to support enhancement of preparedness, early recovery activities, and provision of rapid response to disaster that can be implemented in a relatively short period. This component was considered necessary because of the inherent risks in Zambia's current socioeconomic and climate-related hazards (unexpected flooding or drought, an aggravation of the state of fragility, because of an influx of large groups of displaced people, including both cross-border and internal displacements) that could potentially shift priorities. Reallocation of funds to the CERC can only be done when there is a serious disruption of the functioning of a community or society causing widespread human, economic, or environmental losses that exceed the ability of the

affected community or society to cope using its own resources. Following such a disaster event where both the region and national resources cannot sufficiently and adequately address the situation, the GRZ may trigger activation of the CERC according to national law and subject to the World Bank's activation policy.

C. Project Beneficiaries

69. The main project beneficiaries are the people in the rural communities of the LMN Provinces. They are currently the poorest based on the Zambia Living Conditions Monitoring Survey (LCMS)[15] and the most vulnerable to the increasing impact of climate change. More specifically, the key beneficiaries are the people in rural communities located in the targeted three provinces of the LMN and the 16 districts supported by the project. It is estimated that about 562,800 persons will directly benefit from the project's investments, and at least 50 percent of beneficiaries at the household level will be female-headed households.

70. Communities that are adjacent to PAs, especially around the Nsumbu, Lusenga, and Lavushimanda National Parks, are also targeted beneficiaries. The globally important biodiversity of the parks and forest reserves within the LMN Provinces and surrounding areas will benefit from accrued protection and improved management.

71. At the national level, the direct beneficiaries are ZMD, WARMA, and DMMU while indirect beneficiaries include other governmental ministries and institutions at the national, provincial, district, and local levels involved in providing climate change and climate information dependent services. These institutions would benefit from a variety of capacity-strengthening activities.

D. Results Chain

72. TRALARD's Results Chain is depicted in the Theory of Change (figure 2, see also paragraphs 17-20 in the Project Description section above). Many of the communities in the northern region derive their livelihoods from the renewable natural resource base in the LMN Provinces particularly through subsistence agriculture, fishing, and exploitation of forest resources. All districts experience issues of land degradation, deforestation, declining agricultural productivity, and soil erosion. Thus, unless the value of these natural resources is increased and captured by the local people, these resources will continue to be degraded through neglect, inefficient or illegal use, or replacement by low-value land-use options.

73. The Results Framework (RF) presents the project outcome and intermediate indicators. Project activities have been designed to advance and develop three dimensions of the resilience capacity of the vulnerable communities: absorptive, adaptive, and transformative capacity. This approach will facilitate measuring resilience at the project level with RF indicators being connected to these three capacities.

[15] Zambia LCMS 2017.

TRALARD's central consideration is building up resilience, a term that refers to a heightened systemic capacity to anticipate, respond to, and recover from climatic shocks. Resilience-building involves strengthening three specific capacities.[16]

- **Absorptive capacity.** The ability of people, assets, and systems to prepare for, mitigate, or prevent negative impacts of hazards so as to preserve and restore essential basic structures and functions, for example, through protection, robustness, preparedness, and/or recovery.

- **Adaptive capacity.** The ability of people, assets, and systems to adjust, modify, or change characteristics and actions to moderate potential future impacts from hazards so as to continue to function without major qualitative changes, for example, through diversity, redundancy, integration, connectedness, and/or flexibility.

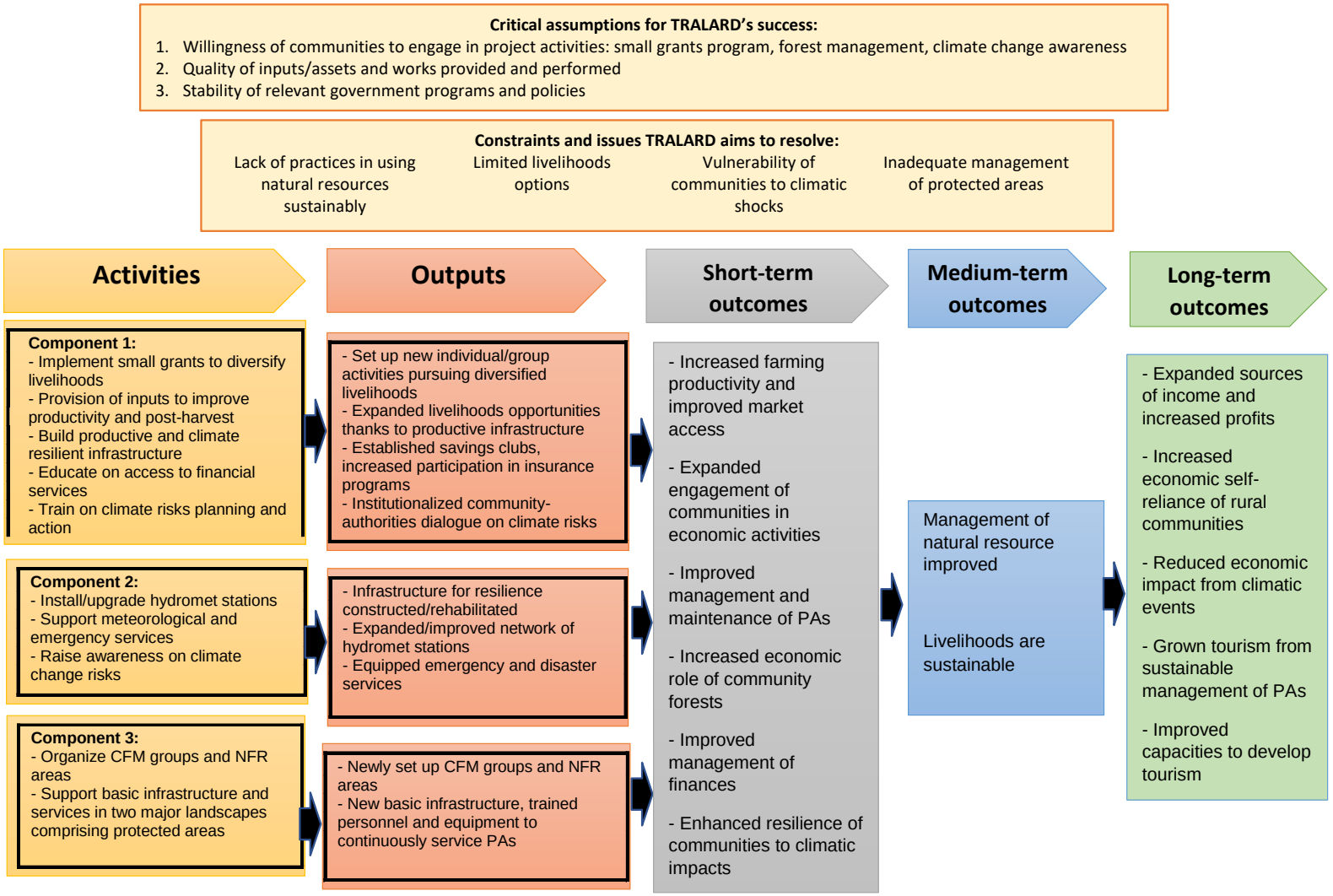
- **Transformative capacity.** The ability to create a fundamentally new system so as to avoid negative impacts from hazards.

74. The project seeks to strengthen these capacities in several ways, including (a) absorptive capacity through developing infrastructure, (b) adaptive capacity through diversified livelihoods, improved farming and managing post-harvest losses, and established management of community forests, and (c) transformative capacity by improving access of smallholder farmers to markets.

75. In addition, the RF includes indicators matching the definition of the Predictive Proxy Indicators (PPI) concept to evaluate the effectiveness of forest-related interventions, as suggested in the Forest Action Plan.[17] While the project does not pursue the complete formation of specific PPI clusters, its indicators directly relate to the poverty, biodiversity, and climate change themes in such clusters as sustainable income, positive environmental impacts related to biodiversity and to climate change, as well as increased carbon stocks. Such indicators include 'land area under sustainable landscape management practices', 'households adopting diversified livelihoods activities supported by the project', 'beneficiaries with access to improved/new infrastructure', and 'area under Natural Forest Regeneration'.

[16] World Bank Operational Guidance for Monitoring and Evaluation (M&E) in Climate and Disaster Resilience-Building Operations. http://documents.worldbank.org/curated/en/692091513937457908/pdf/122226-ReME-Operational-Guidance-Note-External-FINAL.pdf.
[17] World Bank Group Forest Action Plan 2016-2020.

Figure 1. Theory of Change



E. Rationale for Bank Involvement and Role of Partners

76. The World Bank's support to the proposed project is underpinned by the experience and achievements of the ongoing Zambia PPCR Phase II[18] and the potential to scale its implementation approach to address poverty beyond just achieving resilience but to also include addressing resource degradation from a landscape approach. In addition, the involvement is timely because the experience from the Zambia PPCR has successfully demonstrated support for national and decentralized institutional strengthening for decision making on climate risk investment planning and implementation of community, ward, and district-level infrastructure and subgrant-funded microprojects. The Zambia PPCR Project has demonstrated a model for implementing climate adaptation measures, including increased agricultural productivity and diversification to increase incomes, food security, nutrition, and climate resilience. Achievements by the PPCR and linked to this climate adaptation model include on-the-ground investment that supported climate proofing, rehabilitation, and/or building of infrastructure. This has led to diversifying livelihoods through incorporating climate risk considerations to a selection of livelihoods by producer groups, movement from rain-fed agriculture, mono-cropping, and promoting the use of non-tapped resources.

77. The World Bank's involvement is important also because communities in the LMN Provinces, which are most reliant on renewable natural resources, are the poorest and most vulnerable to climate change in Zambia. This project will also be one of several ongoing World Bank Group engagements on climate change in the country that provide the building blocks for a much-needed harmonized, decentralized, and umbrella structure for holistic climate investment that takes an ecosystem approach.

78. The project creates synergies and collaborations with existing interventions and projects. Given that the project area is vast and sparsely populated, collaboration with other key stakeholders such as community organizations, private sector, and NGOs is cardinal for the successful implementation of project activities. The project is expected to contract experienced service providers (NGOs/other development experts) that have ongoing, relevant programs in selected districts. Table 1 presents a summary of key partners working in the project areas with whom it will be critical to work closely.

Table 1. Summary of Donor Interventions in the Project Area

Name of Partner/Donor	Area of Collaboration
Africa Parks	• Conservation and protection of game management areas
Embassy of Finland in Zambia	• CFM
Frankfurt Zoological Society	• Conservation; PA management; law enforcement; conservation education; community-based natural resource management; endangered species conservation (black rhino); ecosystem, park, and GMA land-use policy;

[18] The Zambia PPCR has shown how promoting local adaptive capacity to climate change at the community level can help achieve the Bank's twin goal and at the same time its climate change objective. Studies and reports related to this can be found on:
1). CIF at 10 Reporting 2018. PPPCR Monitoring and Reporting Toolkit. *https://www.climateinvestmentfunds.org/results/ppcr-results*
2). CIF Yearly Reporting on project progress: *https://www.climateinvestmentfunds.org/knowledge-center?field_related_fund_target_id=3&shs_term_node_tid_depth_1=855&vmode=1#bas*

	management, conservation, and business planning; and ecosystem and species M&E
African Development Bank	Through the Lake Tanganyika Development Project, • NRM and community-level support services
World Food Programme	• Market access (potential to look at support of aggregation and post-harvest handling and storage); general food distribution • Financial empowerment through savings for transformation

F. Lessons Learned and Reflected in the Project Design

79. This project builds on the World Bank's experience on climate resilience, particularly through the implementation of projects on resilience and adaptation priorities in Zambia including (a) PPCR Phase II currently under implementation in Western Province, (b) Zambia: Livestock Development and Animal Health Project (P122123), (c) Zambia Water Resources Development Project (P114949), (d) Irrigation Development and Support Project (P102459), (e) Zambia Agribusiness and Trade Project (P156492), and (f) Zambia Integrated Forest Landscape Project (GEF) (ZIFLP) (P161490). Similar World Bank-supported projects in other countries have also provided valuable lessons: Resilient Landscapes and Livelihoods Project (Ethiopia, P163383); Mozambique Conservation Areas for Biodiversity and Development Phase 2 (MozBio, P166802); Development Response to Displacement Impacts Project (DRDIP) in the Horn of Africa (Uganda, P161067); Andhra Pradesh Rural Inclusive Growth Project (India, P152210); and Bahia Sustainable Rural Development Project (Brazil, P147157). Specific lessons include the following:

(a) **Working with local structures and implementation partners to improve and mainstream climate risk into livelihood option decisions.** PPCR II introduced the CRAFT process with its specialists working with local authorities alongside NGOs. CRAFT bridged the gaps in technical expertise because the specialist's experience and skills along with that of district officers play an important role in community facilitation, quality control, and diversification of the subprojects. Also, CRAFT filled the void of the seldom-present agricultural extension workers in rural areas.

(b) **The need to build subnational level capacity and support institutional arrangements that are integrated into existing structures.** Local authority and provincial administration, as implementing units at the lower level, supported by locally based NGOs facilitate the project's acceptability, because local norms and cultural practices are adhered to with consistency. Partnerships of local authorities and communities through Project and Maintenance Committees help mainstream disaster risk reduction and climate change adaptation into local planning processes. The district staff have the technical expertise to build the capacity of the communities in planning, procurement, FM, and implementation of subprojects. Climate change and building resilience is a new phenomenon, so the projects need close monitoring to ensure that the investments are climate smart. Taking it to the ward level is an important lesson because development is owned by the locals.

(c) **Ensuring that interventions are not standalone but integrated into government plans and policies.** The PPCR was anchored in the 6th NDP and 7NDP as well as the Vision 2030 at the policy level, ensuring that, at the lower levels, the interventions were not misaligned with development objectives. All the districts in the project area mainstreamed climate change

in their development plans. Also, the PPCR promoted a cross-sectoral approach to provide multiple benefits: complementary expertise, economies of scale, avoidance of duplication, and fostering of opportunities to complement funds and activities on the ground.

(d) **Transforming structural causes of gender inequality by making climate change interventions gender sensitive and transformative.** Project interventions were guided by activities that tackle the structural causes and power dynamics that reinforce gender inequalities. Integrating gender at all stages of the planning and implementation process was key. This included (i) increasing women's participation in decision making, project development, identification and implementation, financial allocation, and M&E and (ii) ensuring adaptation builds on the strengths of women and men in a way that their skills, knowledge, and capacities are used adequately. PPCR II required that each subproject had at least 50 percent women representation in both the Project and Maintenance Committees. It was later observed that the projects that were more impactful over time were those that were led by women.

(e) **Accessible and locally relevant climate information.** Information disseminated to communities should be simple, relevant, digestible, and applicable to ensure that climate change adaptation tools become part of community life.

(f) **Risk and vulnerability assessment and adaptation planning should come early in the project life** so that subproject identification is informed by evidence. The use of a Gender Climate Risk Assessment coupled with the Community Demand-Driven Approach also enabled the project to identify the real needs of the beneficiary communities.

80. TRALARD also considers key insights from ongoing projects in the Zambia portfolio. These lessons include (a) ensuring that Project Implementation Units are in place once the project is approved and commence implementation immediately; (b) addressing procurement challenges especially with infrastructure projects which require designs, bills of quantities, and supervision of works, and the management of the contracts; and (c) preparation of the Project Implementation Manual (PIM) before project submission to the board (this has been completed), mitigating issues that have slowed down disbursements for projects in the portfolio (project design using advance procurement) and delayed project effectiveness (e.g. legal opinion which is not required again by the Bank legal team, was discussed and agreed at negotiation).

81. As mentioned earlier, TRALARD draws lessons particularly from DFNRMP - Introduction Project, financed by the Government of Finland and implemented in the Muchinga and North-Western Provinces. Some specific lessons will include capturing equitable values through forest product-based value chains and how to transform household livelihood activities from subsistence and barter to cash-based trading with local market access.

III. IMPLEMENTATION ARRANGEMENTS

A. Institutional and Implementation Arrangements

82. The MoNDP has the mandate to coordinate all climate change-related programs in Zambia across sectors and projects to ensure a harmonized approach. The National Project Coordinating Unit (NPCU) currently managing the Zambia PPCR Phase II Project will also be charged with the coordination function for TRALARD and may add more staff as needed. Thus, the MoNDP have overall responsibility for project oversight and coordination through the NPCU in collaboration with relevant line ministries (for example, Ministry of Lands and Natural Resources; Department of Forestry; Department of National Parks and Wildlife (DNPW); Ministry of Agriculture; Provincial Administrative Office; Zambia Meteorological Department; and Ministry of Water Development, Sanitation, and Environmental Protection). The implementation structure will include the establishment of PPIUs in all three provinces, for which staff hiring is already under way and key positions are expected to be filled by project effectiveness. The PPIUs will work with partners and service providers with established track records in PAs, forest reserves, and among communities. The NPCU will provide national oversight, coordination, and support.

83. This institutional arrangement aims to (a) streamline the decision-making process, (b) engender a sense of ownership of and commitment to TRALARD's objectives in provincial administrations, and (c) use the constitutionally mandated decentralization process and governance structures. The NPCU plays a coordination role between the provincial level and all relevant line ministries, departments, and agencies at the national level to fulfill the coordinating mandate of the MoNDP. Detailed information about the implementation arrangements is laid out in annex 1.

84. The Government has prepared a PIM with detailed account of the implementation arrangements at both national and provincial levels, addressing issues related to procurement, FM, M&E, subproject grants, selection of service providers, and other aspects.

B. Results Monitoring and Evaluation Arrangements

85. The TRALARD Project will be supported by a M&E system that is built on the principles and practices of results-based management. In addition, it will lay the foundation for an evidence-based decision-making process as the country moves toward a programmatic landscape investment approach. The M&E system will monitor project outputs and outcomes against the targets set forth in the RF. It builds on the existing management information systems (MIS), where they exist, to include M&E. Furthermore, the project emphasizes the communication and dissemination of the M&E data to the authorities, the public, and the World Bank.

86. The institutional structure for M&E is as follows: at the provincial level, each PPIU will have overall responsibility for monitoring project implementation within the respective districts of their provinces. An M&E officer at each PPIU will work with the Provincial Planning Unit (PPU) and district and service providers to collect data, compiling information, analyzing, and reporting at the provincial level. This will then be aggregated at the national level through support from an M&E specialist at the NPCU.

87. The NPCU and the PPIU will be responsible for regular monitoring and contracting out project assessments. An independent assessment and technical audits will be contracted by the NPCU before

midterm and the end of the project. In addition to regular project M&E, the NPCU will be responsible for compiling and reporting on the implementation progress of the TRALARD Project. The project will support this broader monitoring, as well as dissemination of lessons learned. The overall M&E cost is included in the project management component.

Sustainability

88. At the national level, records and lessons learned from the coordination of the climate change program indicate that there has already been significant increase in real allocations to 'climate-resilient' programs in the national budget, including noticeable investment specifically targeting vulnerable rural communities. This is following the mainstreaming of the 6th NDP that concluded in 2016. The 7NDP under implementation is built on this process, considered climate risk in its development, and eschewed a multisectoral integrated approach focusing on landscape investment. It is meant to ensure long-term program sustainability upon which TRALARD design is based.

89. At the provincial and district level, the project design closely follows Zambia's decentralization trends. Most allocations are directed to vulnerable districts within the targeted provinces, by assisting local-level stakeholders to integrate strengthened climate resilience directly into management plans, Integrated Development Plans, and Local Area Plans which will constitute a basis for decentralized budget allocations.

90. Furthermore, the Government has looked closely at the experience of the Zambia PPCR to inform the upscaling in TRALARD to the national level into a program that can be funded with donor and government funds. The project design considered the need to ensure that critical recurrent costs continue to be funded by the Government, including core operating costs and in-kind beneficiary contributions (including self-help for the sustainability of livelihood sources for the community). Finally, the project's reliance on the experiences of past and ongoing programs that have achieved a measure of success in the country—for example, the Zambia Social Investment Fund and DFNRMP—helps ensure that its design is well rooted in local experience.

91. **Sustainability of the livelihood investments.** The following will be important for the sustainability of investments:

(a) The first key factor for sustainability is that the project is supportive of the National Decentralization Policy of the GRZ which aims to empower provinces, districts, wards, and communities to manage their own fiduciary, natural resources and investments for socioeconomic development. As decentralization is widely implemented and succeeds, locally managed investments and renewable natural resources at the subnational level will be more sustainable.

(b) Third-party technical and capacity support with improvements to the institutional, technical, and implementation capacity at the provincial-, district-, and community-level actors with an emphasis on a participatory cross-sectoral landscape approach.

(c) Tangible and intangible incentives will result from better management of natural resources. Hence, all the project investments are intended to not only better manage resources but

also to generate incremental income for the communities. Where communities can expect to derive benefit, they will be more likely to maintain those management practices.

(d) At the local level, the livelihood investments will only be successful if the participatory process and capacity building are part of the community natural resource landscape planning, ownership, control, and management of their surrounding natural resources. Project investments in these areas will have long-term value for targeted communities with inclusiveness in the process.

(e) Capacity enhancement for smallholders' resilience through increased adoption of climate-resilient agro-practices that include how to exercise prudent risk taking, risk reduction, risk transfer, risk reserves that will have a long-term, sustained, lasting, and multiplier effect.

92. **Sustainability of the climate-resilient infrastructure.** This part of the project design has good prospects for sustainability because of the current focus and interest of the Government to have climate-resilient infrastructure institutionalized. This has led to the push for developing standards and codes for building infrastructure that can withstand the impact of climate change, specifically floods and droughts.

(a) Currently, climate change investments enjoy the support of authorities at the national and subnational level. This support has resulted in the mainstreaming of climate risk consideration and investment in a multisectoral integrated approach in the 7NDP. This is further strengthened by the National Climate Change Policy launched in 2017 which vests coordination of all climate policy, and investment-related programs/projects in a coordinated manner under the council of ministers headed by the vice president.

(b) An important feature of this project is that it helps create the enabling environment that will allow the Government to implement its vision around infrastructures that are climate-proofed.

93. **Sustainability of the PA/forest reserve conservation investments.** The sustainability of these investments is underpinned by the collaboration between the DNPW and the partners engaged in the ongoing concession management of the parks. The DNPW is currently increasing the number of park rangers nationally, which also benefits the project targeted parks. The major constraint has been the lack of housing and basic infrastructure, both of which will be addressed under the project. At a higher and broader level, sustainability of wildlife conservation in Zambia depends on (a) empowerment of community resource boards and other local entities to allow them to derive financial benefits from forests and wildlife under their authority and (b) enhancing the links between national tourism development and wildlife conservation, community conservancy, to allow for more participation of all relevant stakeholders. The project will pilot innovations and investments in this area. Specifically, there is going to be a pilot community conservancy under the project which will later be scaled up. TRALARD will continuously monitor other projects and initiatives supported by the World Bank and partners to exercise coordination, collaboration, and synergy.

IV. PROJECT APPRAISAL SUMMARY

A. Technical, Economic and Financial Analysis

94. **Technical design of the project.** The project design builds on similar projects with a good track record of implementation, and there has been intensive collaboration with the client in the preparation stage to ensure appropriate designs and inclusiveness across all the relevant ministries for strong ownership. In addition, the project structure and components have been designed to ensure complementarities among all the components in an integrated landscape and ecosystem approach to ensure implementation feasibility of each subcomponent by creating cumulative benefit accrual to the beneficiaries, environment, and the country from the different activities financed.

95. **Economic and Financial Analysis (EFA) summary.** A 25-year cost-benefit model is used to assess the ex-ante efficiency of the project investment. The analysis quantifies some of the expected benefits from the TRALARD Project while other benefits are only discussed qualitatively.

96. Without project intervention, beneficiaries in the area will continue to struggle to establish or maintain their livelihoods while putting further pressure on natural resources and households in the area will continue to experience low-income levels and food insecurity particularly due to periods of drought and flooding. To make matters worse, some data indicate that these flood periods are becoming more prolonged. Lack of investments and management capacity will make it difficult to restore degraded forest areas that can also support diversified livelihoods.

97. Project interventions will make beneficiaries more resilient by supporting diversified livelihoods through sustainable use of natural resources. Project interventions through small grants will help female- and male-headed households find alternative livelihoods that can improve their income as well as reduce food insecurity and reliance on natural resources. Small grants will also reduce post-harvest losses and improve productivity and home consumption from agricultural production. Infrastructure investments will help households with increased production, as well as access to markets and services. Modernized hydromet infrastructure and institutional strengthening will provide early warning services. Improved management of community forests and PAs will help restore degraded forest areas, so these can support the diversified livelihoods through sustainable use of natural resources.

98. There is a strong rationale for public interventions as proposed by the project. One of the core functions of the Government is to supply public goods and to correct market failures. The LMN is the poorest region in Zambia and, with its rapid population growth and deteriorated infrastructure, more targeted public investments are necessary to ensure that private sector entities can adopt sustainable management practices going forward. The proposed project would help not only improve agricultural productivity but also establish alternative livelihoods that rely less on natural resources. This in turn builds resilience against extreme or prolonged weather events such as droughts and floods.

99. World Bank involvement will help capitalize on and create synergies with past and ongoing projects. The World Bank's involvement in the TRALARD Project is underpinned by (a) the experience and success gained in ongoing PPCR Phase II; (b) the potential for scaling its implementation approach to address poverty beyond just achieving resilience; and (c) addressing of resource degradation from a landscape approach. The Zambia PPCR Project has demonstrated a model for implementing climate

adaptation measures for increased agricultural productivity and diversification to increase incomes, food security, nutrition, and climate resilience. TRALARD is one of several World Bank engagements in the country that will create synergies and collaborations with existing and pipeline projects.

100. In financial terms, the internal rate of return (IRR) is 13.5 percent and in economic terms, it is 14 percent. When compared to the 12 percent opportunity cost of capital and the recommended 5 percent economic discount rate, the project is expected to be viable. However, risk management will be important to (a) avoid implementation and disbursement delays, (b) ensure beneficiaries receive the necessary support to implement their investments, (c) support beneficiary collaboration to receive and implement community grants in groups, (d) encourage broad use of community infrastructure while also ensuring sufficient maintenance funded by either government funds or user fees, and (e) establish an M&E system to validate results and build knowledge for future projects. The EFA Summary can be found in annex 2.

101. Based on the available data analysis using the Ex-Ante Carbon-Balance Tool (EX-ACT), TRALARD will generate net emissions reductions of around 7 million tons tCO_2eq over 20 years. Project activities will mainly provide emission reductions resulting from the avoidance of deforestation through improvement of management of PAs and forest reserves. Other activities which benefit from enhancement of carbon sequestration include NFR. A detailed GHG Assessment can be found in annex 4.

B. Fiduciary

(i) Financial Management

102. The FM assessment of the NPCU under the MoNDP and the Provincial Administration Units (PAUs) that will be responsible for the TRALARD Project was carried out in April 2018. The NPCU is currently implementing the Zambia PPCR where the FM arrangements have been Moderately Satisfactory. The FM assessment was carried out in accordance with the FM Manual issued by the FM Sector Board on March 1, 2010 and retrofitted on February 4, 2015. The objective of the assessment was to determine whether the implementing entities have acceptable FM arrangements in place that satisfy the World Bank's Policy for Investment Project Financing. These arrangements would ensure that the implementing entities (a) use project funds only for the intended purposes efficiently and economically, (b) prepare accurate and reliable accounts as well as timely periodic financial reports, (c) safeguard the assets of the project, and (d) have acceptable auditing arrangements.

103. The conclusion of the assessment was that the FM arrangements in place in the implementing agencies (NPCU and PAUs) meet the World Bank's minimum requirements under Bank Policy and Directive for Investment Project Financing and are, therefore, with reasonable assurance, adequate to provide accurate and timely information on the status of the project as required by the World Bank. The following main capacity constraints in the NPCU have been identified (included in the action plan under annex 1): (a) the Pastel software is not connected to the Integrated Financial Management Information System (IFMIS) and therefore will not benefit from the strong accountability controls and efficiency provided by the IFMIS and (b) more projects have been appended to the NPCU, hence loading the existing staff with extra workload. Therefore, it is recommended that (a) the project recruit three additional project accountants for the LMN Provinces (this is currently at interview stage), (b) the World Bank conducts training in the World Bank's Financial Management and Disbursement Guidelines for the recruited project's accountants.

(ii) Procurement

104. The MoNDP is already implementing World Bank-funded projects and has reasonable capacity to implement procurement activities. Procurement activities will be based on the 'World Bank Procurement Regulations for IPF Borrowers' dated July 1, 2016, amended in November 2017 and August 2018, and the World Bank Directive - Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants, revised as of July 1, 2016, and as may be revised from time to time. In line with the requirements of the Procurement Regulations, Section IV 'Project Procurement Strategy for Development (PPSD) and Procurement Plan' under paragraph 4.1, with the guidance of the World Bank, a PPSD was prepared by the borrower in November 2018 for the proposed project.

105. For all Open International Bidding (OIB) procedures, the World Bank's Standard Procurement Document (SPD) will be used, while for contracts with cost estimates below OIB threshold, the GRZ's SPD will be applied subject to meeting the minimum requirements set forth in Section V Procurement Provisions; National Procurement Procedures paragraphs 5.3 through to 5.6 and other provisions as further stipulated in Section VI under Market Approach Options, specifically the section, Approaching the national market, paragraphs 6.15 through to 6.18 of the World Bank's Procurement Regulations.

106. The PPSD uses a risk-based approach and addresses how procurement activities will support the project objectives and achieve value for money. The formulation of the PPSD also contributes to an understanding of the market, available market approach, and the preparation of the Project Procurement Plan. The PPSD helps identify activities, the procurement approach, and methods and advocates where possible the use of open competition or use of any new procurement techniques. The PPSD is further supported by the preparation of the World Bank's online Procurement Risk Assessment and Management System (PRAMS), which allows the identification of the client's procurement institutional capacity, staffing, legal, and other considerations.

107. The PPSD is the key document which describes the borrower's procurement capacity-building needs and staffing, funding, consulting services, training, and other actions proposed to address the implementation needs of the TRALARD Project. It also considers specific technical advice and implementation support that may be needed by the MoNDP from the World Bank at a project level.

108. The PPSD is provided as a separate document. Over the life of the project, the PPSD will be subject of review and/or revision as the case may be.

C. Safeguards

Safeguards Policies Triggered

109. TRALARD triggers seven of the World Bank's Safeguard Policies, namely OP 4.01 (Environmental Assessment), OP 4.04 (Natural Habitats), OP 4.36 (Forests), OP 4.09 (Pest Management), OP 4.11 (Physical Cultural Resources), OP 4.12 (Involuntary Resettlement), and OP 7.50 (Projects on International Waterways).

- OP 4.01 (Environmental Assessment) is triggered because of the subproject's potential to cause negative environmental and social impacts in its area of activity.

- OP 4.04 (Natural Habitats) is triggered to ensure that subprojects in PAs and national forests do not degrade natural habitats, be it directly (through the construction) or indirectly (with the human activities caused by the project).

- OP 4.36 (Forests) is triggered because some CFM development activities might involve the use of forest resources.

- OP 4.09 (Pest Management) is triggered because project activities on diversified livelihoods might involve options that may directly or indirectly lead to the use of agrochemicals.

- OP 4.11 (Physical Cultural Resources) is triggered because the project will be implemented across three provinces and the works may unearth assets of cultural and heritage value. The Environmental and Social Management Framework (ESMF) includes provisions to apply 'Chance Finds' procedures in compliance with this policy requirement.

- OP 4.12 (Involuntary Resettlement) is triggered as project activities may cause situations involving involuntary restrictions of access to land and natural resources in PAs or may result in land acquisition for the establishment of priority infrastructure or infrastructure for resilience.

- OP 7.50 (Projects on International Waterways) is triggered as it will be implemented in a catchment area that feeds into the Luapula River which is part of an international waterway.

Environmental Safeguards

110. The project triggered the World Bank's Operational Policy on Environmental Assessment (OP/BP 4.01) and is assigned the Environmental Assessment Category B—partial assessment—because potential direct environmental and social impacts will be minor, site specific, reversible, and easily manageable. Subprojects proposed under Component 1: Promoting Diversified, Resilient, Sustainable Livelihoods and would involve civil works (crossing points, water channels, irrigation canals, and water harvesting structures). Aside from construction-related social and environmental impacts, certain farming-related livelihood activities may directly or indirectly support the use of pesticides.

111. Given that the nature of the proposed interventions with specific microproject designs and geographical locations are not known at the time of project design and preparation, the project adopted a framework approach, as an upstream due diligence measure, to manage environmental and social safeguards risks and impacts. In this regard, framework reports, namely the ESMF and the Pest Management Plan (PMP), have been consulted upon and reviewed by the World Bank and were disclosed in-country and at the World Bank's external website on February 18, 2019. The ESMF and or ESMF/PMP include a generic ESMP template to address construction-related impacts. In accordance with OP/BP 4.01 (Environmental Assessment) and in reference with specific environmental and social sustainability instruments, during the implementation stage, appropriate site-specific safeguards instruments such as ESIAs/ESMPs will be prepared, consulted upon, and disclosed in-country and at the World Bank external website before commencement of any project activities deemed likely to result in any adverse environmental risks and social impacts.

112. Safeguards capacity for implementing preventive and mitigation measures as well as monitoring safeguards compliance competency is relatively satisfactory with this implementing agency, that is, the MoNDP through the NPCU because the NPCU has an environmental and social safeguards officer who is part of the implementation team. The MoNDP has two NPCUs currently overseeing the implementation of the ZIFLP and Zambia PPCR in the Eastern and Western Provinces, respectively. The team has gained sufficient experience in managing environmental and social risks on World Bank-funded projects. The World Bank safeguards team has committed to provide continuous support and supervision to the project through site visits, reviewing and commenting on safeguards reports and offering targeted safeguards training to project staff and other stakeholders engaged in the project.

Social Safeguards

113. Under Component 1, the project will support improvement in small-scale infrastructure that will enhance the resilience of vulnerable communities, create conditions for diversified livelihoods, and contribute to improved market access for locally produced goods using available natural resources. Proposed infrastructure developments will include crossing points, embankments, weirs, water channels, and bulking centers. Though unlikely, there is a small possibility that these activities may result in land acquisition and potential economic and physical displacement. To this effect, the policy on Involuntary Resettlement (OP 4.12) was triggered. A Resettlement Policy Framework (RPF) was prepared and disclosed in the Times of Zambia and Zambia Daily Mail, the Zambia PPCR websites, and provincial centers for the LMN Provinces as well as the World Bank site on February 18, 2019. The RPF provides guidance on addressing potential resettlement impacts that may result from planned civil works. The project will endeavor to avoid adverse impacts; however, when avoidance is not possible, a Resettlement Action Plan (RAP) will be prepared to compensate for physical and economic losses based on RPF guidelines.

114. The project intends to support improved management of three PAs: Lavushi Manda, Lusenga Plain, and Nsumbu National Parks and forest reserves in Northern Zambia with the aim of preserving biodiversity and ecosystems. The three PAs are currently used for harvesting of trees for charcoal and timber, and for agricultural activities. Proposed project activities may potentially restrict community access to some of these natural resources. As such, a Process Framework (PF) was developed and disclosed on February 18, 2019. The PF has also been disclosed at provincial centers in the LMN Provinces. The PF describes how potential restrictions of access to natural resources will be managed and proposes mitigation measures to ensure affected communities are not adversely affected. It further provides guidance on engagement of communities in determining appropriate land and resource management. Affected communities were consulted during the preparation of the PF and will be engaged further during implementation of alternative livelihood activities that will promote sustainable use of natural resources.

115. In the infrastructure-related activities, TRALARD will aim to employ local workforce to the extent possible. As a matter of standard practice, all contracts will include the following: (a) ensuring that the contractors implement robust measures including training, awareness raising, and introducing a worker code of conduct as part of the employment contract; (b) conducting information and awareness-raising campaigns for community members, specifically women and girls; and (c) introducing an accessible Grievance Redress Mechanism (GRM) to report workers' misconduct and complaints of community members.

Other Safeguards

116. The project triggers OP 7.50 on Projects on International Waterways as it will be implemented in a catchment area that feeds into the Luapula River which is part of an international waterway. In accordance with paragraph 4 of OP 7.50 and at the request of the GRZ, the World Bank sent on January 22, 2019, a notification to the Government of the Democratic Republic of Congo about the nature and scale of project activities. No response was received by the World Bank from the Democratic Republic of Congo by the date specified in the Notification Letter, February 21, 2019. The World Bank Regional Vice-President was informed about this in a memo on March 13, 2019; permission to continue project preparation was granted.

Gender

117. As part of the project design, a gender gap analysis[19] was conducted to provide insight into existing gender disparities in the target areas. The analysis identified constraints and opportunities that could potentially impede or facilitate attainment of the project objective to ensure that women's participation in socioeconomic activities is not hindered by gender barriers. In Zambia, almost 72 percent of the population are engaged in agricultural activities, of which almost 65 percent are women. Despite their role in agriculture, women tend to have less access than men to credit, land rights and extension services, impairing their productivity and, most likely, constraining their capacity to adapt to climate change.[20] Decision making at the household level is mostly led by men, except for female-headed households. Similar patterns were noted at the community level where participation of women in community decision making is low.

118. The key gender gap constraints identified in the analysis, which is also supported by literature in this sector, are (a) subordinate status of women to men, (b) women's growing workload leaving less space for their participation in development opportunities outside the home, and (c) access to and control over resources.[21] In addition to these gaps, gender differences among men and women in the context of climate change further amplifies gender inequalities as women are more vulnerable to the negative impacts of climate variability and related shocks due to lack of access to productive inputs (land, finance, climate information, social networks, and so on).

119. Despite these structural inequalities, both men and women expressed similar concerns on changing climatic conditions and resulting impacts on critical natural resources. The most notable impacts include reduction in rain leading to low agricultural productivity, drying up of water sources affecting fish stock, and consequently resulting in low income for households. Increase in deforestation has mostly affected women who are now forced to walk longer distances in search of firewood. The gender gap analysis forms the basis for the preparation of a gender strategy (currently being drafted) to guide mainstreaming of gender in project-supported activities.

[19] Once it is finalized and approved, the gender gap analysis will be submitted to WBDocs to be part of the TRALARD dossier.
[20] Enhancing the Integration of Gender into Zambia's Climate Change Responses. http://www.fao.org/in-action/naps/news-events/detail/en/c/1046585/.
[21] World Bank Group. 2015. *World Bank Group Gender Strategy (FY16–23)*. Washington, DC.

120. The key gender gaps identified as relevant to the project are (a) lack of an enabling environment for women's participation in community groups and (b) limited access to technical services such as access extension. Despite recent efforts by the Government to empower and enable women's participation in economic income-generating activities, women do not have equal voice and power on a national, local, or household level. These include women's comparatively low level of education and lack of financial and other resources. In the LMN project target areas, women are less likely to participate in landscape management process, including forest meetings, forest management groups, or village forest leadership. At the same time, there is a growing body of evidence that women's presence in community institutions of forest governance improves resource conservation and regeneration.[22]

121. While there are limited finance systems in rural areas, men are more likely to benefit because they have collateral security. Less attention is paid to women accessing and having control over productive resources such as credits, agricultural extension services, and inputs compared to men. Generally, Zambian women are falling far behind men in financial literacy. Risk factors for women include their lower earnings and higher economic dependency. Women increasingly tend to outlive their spouses, which exposes them to financial risks later in life, for which many are unprepared. This project introduces the concept of savings clubs and insurance for women. Designed to educate communities in basic financial literacy and numeracy, this activity will help boost women's confidence and improve their decision-making powers. TRALARD design includes a dedicated indicator to monitor the impact of this activity and progress in closing the gender gap in the access to project financing - 'Share of women participants in Savings and Credit clubs.

122. The main livelihood activities in the proposed areas of intervention include subsistence agriculture, charcoal burning, fishing, and exploitation of forest resources. Most rural women are involved in the listed livelihood activities; however, their socioeconomic situation remains relatively lower than their male counterparts, and they are more vulnerable to variations in climatic conditions. Under the subcomponent on diversified sustainable livelihoods, activities will target women and youths that depend on natural resources from their surrounding environment through the use of improved techniques in agriculture, fish processing, and adoption of alternative livelihood activities that promote sustainable use of natural resources. Improved technologies will contribute toward increased productivity and provide women and men with more time to engage in other productive activities that will enhance their well-being. Three TRALARD indicators monitoring the diversification of livelihoods will reflect on the impact on women: 'Female farmers adopting improved agricultural technology' (CRI) (50 percent of women); 'Female farmers reached with agricultural assets or services' (CRI) (50 percent of women); and 'Female headed households participating in diversified livelihood activities supported by the project' (30 percent of women-headed households compared to current 20–22 percent in the LMN Provinces).

123. Existing cultural practices may limit adoption of alternative livelihood activities due to inactive participation of women in decision making and being able to voice their concerns. The project will ensure various interest groups are consulted and their needs considered. The fact that there is some high-level interest and women's motivation to take up natural resource management projects, engage for better design and target projects to women, and improve their access to resources, as well as programs which

[22] Designing gender-responsive forest programs. https://www.profor.info/sites/profor.info/files/PROFOR_Brief_Gender.pdf.

could lift them out of poverty during the analysis, provides for a positive opportunity to address the gender gap. Key forest gender issues include the limited role of women in forest management decision-making bodies and user groups, inequitable access and benefits, and gender-differentiated roles and division of labor and knowledge. To this end, TRALARD design includes an indicator 'Female-led Community Forest Management groups' to ensure literal equality in leading on these activities. When women more actively engage in forestry sector, they can significantly contribute to forest and agroforestry management and usage, which can in turn contribute to household incomes and food security. Closing the gender gap within the TRALARD Project would use and build on the Zambia PPCR 'Gender-sensitive climate risk assessment' approach. This process provided room for women's participation in planning, identification, and implementation of adaptation-related livelihood support activities funded by subgrants.

124. Building on the lessons from the Zambia PPCR CRAFT participatory gender-sensitive climate risk planning process, TRALARD will integrate this as part of the community resource management planning process to ensure equity accrues to all targeted beneficiaries especially women-headed households, their share constituting from 20.6 percent to 22 percent in the LMN Provinces. Activities aim to reach 30 percent of women-headed households which helps close the existing gap.

Citizen Engagement

125. TRALARD seeks to support sustainable landscape management. Achieving this objective will require active citizen engagement (CE) to secure buy-in to project activities and strengthen ownership of the process leading to the desired transformation. The CE will support the engagement of people living in and around project intervention areas including PAs, CFMGs, and NFR areas. The objective is to connect local communities' perception of the interventions' social impact with management decisions. Using this approach, CE will enhance project quality through the integration of various community interests and incorporate local knowledge in project interventions in specific areas. Engaging communities will be particularly important in scaling up implementation of the Statutory Instrument No. 11 of 2018 on community management of forests, as it relates to the development of integrated natural resource management plans.

126. The project will include a two-pronged approach to promote beneficiaries' participation through intertwining strategic communication with CE mechanisms. This approach will help promote transparency and enhance citizens' voice and participation. Intertwining CE mechanisms with communication activities will facilitate beneficiaries' buy-in and, thereby, generate broad stakeholder ownership of project activities. The project will integrate three CE mechanisms: (a) direct consultations with beneficiaries, (b) multi-level arrangements for registering and addressing grievances and complaints, and (c) a community monitoring process that will be embedded at the local level. In addition, an assessment of communities' perception using a suitable methodology will be applied. This is to assess positive and negative social impacts on well-being. This would be participatory in nature and will contribute to enhance community participation in management decisions and to evaluate the potential social impacts of selected activities One of the major mechanisms already in place to engage with beneficiaries of the project and to ensure that the feedback loop is closed is working with the Community Natural Resource Board (CNRB) in every community. The CNRB will be supported by the project; it is expected that it will enhance the participation of communities in strategic decisions of natural resource use and conservation areas based on demand-side social accountability, including social participation.

127. To ensure transparency, accountability, and learning, the CE assessment will be implemented three times during the project life. It will have specific elements of the CE framework, which includes (a) support to communities' engagement and participation, (b) support to the implementation of the Dialogue and Grievance Mechanism, and (c) building of the capacity at local, provincial, and national levels in engagement with target beneficiaries. The procedure and mechanisms for fundamentals of this CE framework is comprehensively described in the PIM. In addition, the quality of these CE mechanisms, its implementation and progress will be continuously assessed during implementation at the individual, ward, district, province landscape, and project level through assessments, supervision, and dialogue.

128. In addition, consultations with communities and other stakeholders conducted during project preparation and development of safeguard instruments will continue throughout project implementation to promote transparency and participation of men and women in decision making as well as sustaining project investments. CE outcomes in the area of natural resource management as prescribed in the Strategic Framework for Mainstreaming Citizen Engagement in World Bank Group Operations will be assessed through indicator 'Beneficiaries reporting satisfaction with key aspects of collaboration process.'

Gender Based Violence

129. A gender-based violence (GBV) risk assessment was conducted as part of the appraisal process to assess prevalence of GBV risk in the project area of influence, identify persons most affected, and determine potential impacts that the project could have in reinforcing GBV risks in surrounding communities. The outcome of the assessment classified the risk of GBV as low. However, the project is also cognizant of risks associated with the presence of any external workers hired to undertake rehabilitation of small infrastructure listed under Component 1. To mitigate this risk, the project ESMP will identify and propose measures to prevent escalation of the risk through the adoption of the ESMP as part of the bidding documents for prospective contractors. Contractors will also be required to prepare labor influx management plans and ensure that workers adhere to the code of conduct. Implementation of the ESMP and monitoring of contract compliance will be undertaken by the PIU.

130. The PIU will ensure that community members are sensitized on the prevention of GBV as part of consultations to be undertaken throughout project implementation. Communities will also be made aware of available reporting structures through the project GRM and the Victim Support Units in the Zambia Police Service which were set up to ensure effective prevention and investigation of GBV cases. Community members will also be encouraged to draw on the services of local NGOs that provide survivor-centered approaches for GBV. While the project does not have a designated GBV expert, a part-time gender consultant has been engaged and will complement the PIU in monitoring GBV risks on the project.

Grievance Redress Mechanisms

131. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank

Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate GRS, please visit http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

132. A GRM has been developed to address grievances arising from project implementation. The GRM outlines the process of registering, resolving, and providing feedback to affected persons. The GRM and project will draw on existing local resolutions methods practiced in the project areas and members of GRM committee will comprise representatives of chiefs, community (men and women), and key project stakeholders. The systematic and transparent handling of complaints will contribute to preventing operational and reputational risks for the project.

V. KEY RISKS

133. The proposed project's overall risk is rated Substantial. The risk ratings are shown in the Systematic Operations Risk Rating Tool (SORT) in the data sheet. The risks rated High or Substantial are discussed in the following paragraphs along with the proposed risk mitigation/management.

134. **Political and governance (Substantial).** The political stability enjoyed before the August 2016 elections has experienced some volatility and sudden policy shifts that could have an impact on the project. Such volatility include policy shifts on tariffs, value added tax, accrued benefits to casual labors all of which are increasing cost of doing business on local and foreign firms. The institutions guarding transparency and accountability also face challenges. The World Bank has played a dual role in governance risk management, (a) supporting the Government's reform efforts with analytical and advisory services and project financing and (b) continuously aligning the World Bank's fiduciary risk mitigation practices to the evolving strengths of country systems. While the project cannot mitigate the political risks, there is some assurance in the fact that climate change policies are being mainstreamed in key sectors and the commitment to more diversified and inclusive growth as set out in the 7NDP. Ongoing high-level dialogue between the Government and the World Bank will continue to promote reforms for enhanced transparency and awareness to governance issues.

135. **Macroeconomic (High).** Achieving fiscal consolidation remains a major challenge for the country, and potential budget imbalances or freezes could trickle down to the project areas and disrupt implementation if the local governments are unable to function due to the lack of funding. The project will finance the operating costs of the NPCU and PPIUs to avoid interruption of project administration activities, which mitigates the risk to a certain extent. Further actions to mitigate the risks of macroeconomic disruption include TA and advisory services to amplify the effectiveness of the Government's efforts to restore macroeconomic and debt sustainability. The pipeline Public Sector Governance for Service Delivery Project (P169384) is one of such support through the Bank.

136. **Sector strategies and policies (Substantial).** Competing sectoral policies can undermine the efforts supported by the project e.g., the climate smart agriculture policy which does not take a total landscape perspective. Collaboration among the relevant sectors is key in the design of strategies and policies. To mitigate this risk, the project, working through the MoNDP, will facilitate strong collaboration

and transparent dialogue at the national and provincial levels as well as with relevant partners, sectors, and communities on better understanding of the trade-offs related to sustainable forest management.

137. **Technical design of the project (Substantial).** The design and scope of the project are based on the successful implementation of the PPCR Project in the Western Province. The lessons learned from the PPCR Project both positive and negative (stated in EFA) have been incorporated into the technical design of TRALARD, which will be implemented in a much larger and more diverse geography covering the whole of the northern part of the country. The negative risk such as lateness in the process for grant approval will be mitigated by using the service provides to review proposal and also remove some additional approving layer such as the PPSC. The added complexity and depth of the technical design pose a risk to implementation that will be mitigated by employing a decentralized implementation structure and through close supervision at the district, province, and national levels.

138. **Institutional capacity for implementation and sustainability (Substantial).** Achieving institutional coordination across natural resource-related agencies (such as the Forestry Department, the DNPW, and the Department of Environement) at the national level and for implementation at the district and provincial levels presents risks associated with transaction costs and delays. The MoNDP will provide the coordination role for all the line ministries. The implementation risk will be mitigated by providing additional human resources in the NPCU and PPIU to support project coordination. The project will also emphasize technical capacity building at the sub-national level to be offered by service providers to be hired to work in the provinces.

139. **Fiduciary risks (Substantial).** The FM risk is Moderate, but the procurement risk is Substantial. Fiduciary capacity already exists at the national level since the project will be implemented through the NPCU which has experience with World Bank-supported projects. The recommendations for strengthening FM include hiring project accountants at the provincial level and conducting specialized training. The procurement risks relate to capacity constraints to prepare adequate technical specifications and terms of reference (ToR), comprehensive evaluations, and other documents. The risks are mitigated through the detailed instructions provided in the PIM, and through fostering close collaboration between the technical and procurement staff and by frequent specialized training.

VI. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Zambia

Transforming Landscapes for Resilience and Development in Zambia

Project Development Objectives(s)

To improve natural resource management in select districts to support sustainable livelihoods, and in the event of an eligible crisis or emergency, to provide immediate and effective response to the eligible crisis or emergency.

Project Development Objective Indicators

Indicator Name	DLI	Baseline	End Target
Improve natural resource management in select districts to support sustainable livelihoods			
Land area under sustainable landscape management practices (CRI, Hectare(Ha))		0.00	75,000.00
Farmers adopting improved agricultural technology (CRI, Number)		0.00	116,914.00
Farmers adopting improved agricultural technology - Female (CRI, Number)		0.00	58,457.00
Farmers adopting improved agricultural technology - male (CRI, Number)		0.00	58,457.00
Households adopting diversified livelihood activities supported by the project (Number)		0.00	27,836.00
Households adopting diversified livelihood activities supported by the project - Females (Number)		0.00	8,351.00
Households adopting diversified livelihood activities		0.00	19,485.00

Indicator Name	DLI	Baseline	End Target
supported by the project - Males (Number)			
Forest area brought under management plans (CRI, Hectare(Ha))		0.00	1,810,000.00

Intermediate Results Indicators by Components

Indicator Name	DLI	Baseline	End Target
Component 1. Promoting Diversified, Resilient, Sustainable Livelihoods			
Farmers reached with agricultural assets or services (CRI, Number)		0.00	292,282.00
Farmers reached with agricultural assets or services - Female (CRI, Number)		0.00	146,141.00
Share of women participants in Savings and Credit clubs (Percentage)		0.00	50.00
Beneficiaries reporting satisfaction with key aspects of collaboration process (Percentage)		0.00	70.00
Beneficiaries with access to improved/new infrastructure (Number)		0.00	668,072.00
Water channels for transportation rehabilitated (Kilometers)		0.00	173.00
Improved hydromet system rehabilitated and/or newly installed (Number)		0.00	60.00
Area provided with new/improved irrigation or drainage services (CRI, Hectare(Ha))		0.00	1,464.00
Area provided with new irrigation or drainage services (CRI, Hectare(Ha))		0.00	732.00
Area provided with improved irrigation or drainage services (CRI, Hectare(Ha))		0.00	732.00

Indicator Name	DLI	Baseline	End Target
Component 2. Management of Community Forests and Protected Areas			
Community Forest Management groups established (Number)		0.00	30.00
Total area of established NFRs (Hectare(Ha))		0.00	12,000.00
Beneficiaries participating in CFM and NFR groups (Number)		0.00	15,750.00
Female led Community Forest Management groups (Percentage)		0.00	50.00
Net greenhouse gas emissions (Metric ton)		0.00	6,832,864.00

Monitoring & Evaluation Plan: PDO Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Land area under sustainable landscape management practices	The indicator measures, in hectares, the land area for which new and/or improved sustainable landscape management practices have been introduced. Land is the terrestrial biologically productive system comprising soil, vegetation, and the associated ecological and hydrological processes; Adoption refers to change of practice or	Annual	PIU Annual Reports, Survey, MIS	Obtain measurement for land area (ha) where sustainable landscape management practices have been implemented and has shown reduced degradation (improved forest cover).	PIU, PPU, forestry department at district level.

	change in the use of a technology promoted or introduced by the project; Sustainable landscape management (SLM) practices refers to a combination of at least two technologies and approaches to increase land quality and restore degraded lands for example, agronomic, vegetative, structural, and management measures that, applied as a combination, increase the connectivity between protected areas, forest land, rangeland, and agriculture land.				
Farmers adopting improved agricultural technology	The household irrigation systems will be used for supplementary irrigation of rained agriculture, for diversification of production or for the transformation from a primarily subsidence agriculture towards the production of one or two marketable products, depending on the regional conditions and depending on the farmers' interests.	Annual	PIU Annual reports, surveys.	Count of farmers adopting CA, diversification, use of drought resistant/early maturing seeds, crop rotation, green manuring, animal manure use, intercropping, integrated pest management, agroforestry, efficiency irrigation systems-drip,	PIU, PPU, Agriculture and livestock.

	Technical assistance will introduce good agricultural practices adjusted to each situation. These are, among other, the use of organic fertilizer, certified seeds, diversification and shifting cultivation and will be identified during project implementation. The indicator evaluates if at least one good agricultural practice transferred during technical assistance is being adopted by the farmer. Municipal staff using their site visits will evaluate use of agricultural practices or improved agricultural technology. One year after the completion of the first systems, an independent evaluation will confirm monitoring results of the municipal staff. If needed, an additional independent evaluation will be realized during mid-term review.			and post- harvest loss management.	
Farmers adopting improved agricultural technology - Female		Annual	PIU reports, surveys.	Count of female farmers adopting CA, crop rotation, green manuring, animal	PIU, PPU, Agriculture and livestock.

				manure use, intercropping, integrated pest management, agroforestry, efficiency irrigation systems-drip, and post- harvest loss management.	
Farmers adopting improved agricultural technology - male		Annual	PIU reports, surveys.	Male farmers adopting CA, crop rotation, green manuring, animal manure use, intercropping, integrated pest management, agroforestry, efficiency irrigation systems-drip, and post- harvest loss management.	PIU, PPU, Agriculture and livestock.
Households adopting diversified livelihood activities supported by the project	Diversification focused on trade for income than domestic consumption and includes non – farm enterprises such as bee keeping, mushroom growing, sustainable caterpillar harvesting and trading, commodity trading, aquaculture, small scale value addition, processing	Annual	Annual reports, surveys.	Count of households adopting diversified livelihoods that are not dependent on climate sensitive sectors such as bee keeping, mushroom growing, sustainable caterpillar harvesting and trading, commodity trading, aquaculture, small scale	NPIU, PCU.

	and marketing, tye and dye, basketry, bamboo by-products making, chikanda growing and making, wild fruit preservations and treatments. These will be complemented by group savings and lending activities to ensure easy access to capital for small businesses. It is expected that 10% of households reached by the project will adopt diversified livelihoods.			value addition, processing and marketing, tye and dye, basketry, bamboo by-products making, chikanda growing and making, wild fruit preservations and treatments.	
Households adopting diversified livelihood activities supported by the project - Females	Number of female-headed households adopting diversified livelihood activities out of total number of households reached by the project. 30% of the 27,836 households adopting diversified livelihoods are expected to be female headed households.	Annual	Annual reports, surveys.	Number of female-headed households adopting diversified livelihood activities out of total number of households reached by the project.	NPCU, PIU.
Households adopting diversified livelihood activities supported by the project - Males	Number of male-headed households adopting diversified livelihood activities out of total number of households reached by the project.	Annual.	Annual report, surveys.	Count of male-headed households adopting diversified livelihood activities out of total number of households reached by the project.	NPCU, PIU.

Forest area brought under management plans		Annual.	CFMG reports, surveys.	Measure total forest area brought under sustainable management and covered by management plans in Northern and Southern Landscapes (ha).	CFMGs, PIU, PPU, NPCU.

Monitoring & Evaluation Plan: Intermediate Results Indicators					
Indicator Name	**Definition/Description**	**Frequency**	**Datasource**	**Methodology for Data Collection**	**Responsibility for Data Collection**
Farmers reached with agricultural assets or services	This indicator measures the number of farmers who were provided with agricultural assets or services as a result of World Bank project support. "Agriculture" or "Agricultural" includes: crops, livestock, capture fisheries, aquaculture, agroforestry, timber, and non-timber forest products. Assets include property, biological assets, and farm and processing equipment.	Annual.	PIU reports, Agriculture department implementation reports, surveys.	Count of farmers that have benefitted from agriculture assets will include bulking centers, irrigation and processing equipment and facilities, inputs for supporting small holder seed multiplication and breeding stock for small livestock.	PIU, Agriculture Department, NPCU.

	Biological assets may include animal agriculture breeds (e.g., livestock, fisheries) and genetic material of livestock, crops, trees, and shrubs (including fiber and fuel crops). Services include research, extension, training, education, ICTs, inputs (e.g., fertilizers, pesticides, labor), production-related services (e.g., soil testing, animal health/veterinary services), phyto-sanitary and food safety services, agricultural marketing support services (e.g., price monitoring, export promotion), access to farm and post-harvest machinery and storage facilities, employment, irrigation and drainage, and finance. Farmers are people engaged in agricultural activities or members of an agriculture-related business (disaggregated by men and women) targeted by the project.				
Farmers reached with agricultural assets or services - Female		Annual	PIU reports, Agriculture	Count of female farmers that have	PIU, Agriculture

			department implementation reports, surveys.	benefitted from agriculture assets will include bulking centers, irrigation and processing equipment and facilities, inputs for supporting small holder seed multiplication and breeding stock for small livestock.	Department, NPCU.
Share of women participants in Savings and Credit clubs	This project introduces the concept of savings clubs and insurance for women. In addition to educating communities in basic financial literacy and numeracy, this activity will help boost women's confidence and improve their decision-making powers.	Annual	Annual reports, surveys.		
Beneficiaries reporting satisfaction with key aspects of collaboration process	Citizen engagement outcomes in the area of natural resource management as prescribed in the Strategic Framework for Mainstreaming Citizen Engagement.	Annual	Annual reports, surveys.		PCU, PPIU.
Beneficiaries with access to improved/new infrastructure					

Water channels for transportation rehabilitated					
Improved hydromet system rehabilitated and/or newly installed	This indicator measures the number of weather stations in ZMD's network providing data ingested to the climate data management system on a single day, computed as a 30-day running average. Weather stations means stations that measure temperature, pressure, precipitation, relative humidity, and wind speed and direction.	Twice annually.	ZMD report with map of the stations that contributed in the previous 30 – day period	The number of stations contributing to the CDMS should be obtained as a 30-day running average, and ZMD would provide also a list of the stations that contributed over the previous 30 days.	PIU, Zambia Meteorological Department (ZMD)
Area provided with new/improved irrigation or drainage services	This indicator measures the total area of land provided with irrigation and drainage services under the project, including in (i) the area provided with new irrigation and drainage services, and (ii) the area provided with improved irrigation and drainage services, expressed in hectare (ha).				
Area provided with new irrigation or drainage services	Measures in hectares the total area of land provided with new or improved irrigation or drainage services in operations supported by the World				

	Bank.				
Area provided with improved irrigation or drainage services	Measures in hectares the total area of land provided with new or improved irrigation or drainage services in operations supported by the World Bank.				
Community Forest Management groups established	Establish an average of 10 CFM groups per province through receptive Chiefdoms. Areas shall be identified based on the status of forests in terms of resource potential, threats to encroachments.	Quarterly	CFMG/NFRG reports, PIU reports.	Count of established CFMs recognized by the Director of Forests and covered by a management plan.	PIU, PPU.
Total area of established NFRs	NFR areas established for restoration/rehabilitation of degraded land areas. NFRs to be established in an average of 3 wards per district.	Annual.	NFRG reports, implementation reports from forestry department at district level.Annjual	Count of established NFR areas.	NFRGs, Department of forestry, PIU.
Beneficiaries participating in CFM and NFR groups	Indicator will measure number of people that will participate in and derive benefits from established CFMs and NFR areas. 30 CFMs and 45 NFR areas	Annual	CFMG/NFRG reports, PIU reports.	CFM and NFR groups to provide numbers of participating people.	PIU, PPU.

	to be formed, each consisting 35 households with an estimated number of 6 people per household.				
Female led Community Forest Management groups		Annually.			PIU
Net greenhouse gas emissions	Carbon stock changes per unit of land, expressed in tCO2-eq per hectare and year as a result of project activities to establish Community Forest Management groups and Natural Forest Regeneration areas.				

ANNEX 1: Implementation Arrangements and Support Plan

Project Institutional and Implementation Arrangements

1. **At the national level**, the MoNDP represents the Government of Zambia. The MoNDP will work through the NPCU to implement the project. The NPCU plays a coordination role between the provincial level and all the relevant line ministries, departments, and agencies at the national level on behalf of the MoNDP. The Government has prepared a PIM, which will be used as a guide in the implementation of the project. The PIM gives a detailed account of the implementation arrangements at both the national and provincial levels; including details related to procurement, FM, subproject grants, selection of service providers, and other aspects.

2. **The NPCU** is directly responsible for project implementation at the national level. Additional staff have been hired to accommodate the incremental workload coming from the TRALARD Project. The NPCU will coordinate and oversee the activity of the PPIUs in the three provinces. It will directly supervise the implementation of Subcomponent 1.5 (Strengthened Climate hydro-meteorological information) that is implemented across Zambia. The NPCU will manage overall project reporting and oversight and will be responsible for managing day-to-day project implementation at the national level. It is headed by a National Coordinator supported by an M&E specialist, finance officer/project accountant, procurement specialist, internal auditor, operation specialist, and the environmental and social safeguards compliance specialist, all of which are already in place to support the TRALARD Project.

3. **The PPIUs** in the LMN Provinces will be responsible for the day-to-day operation of the project. They will be embedded in the provincial administration supported by the provincial technical service staff. Recruitment of the PPIU staff is under way and it is expected that key staff will be in place over the coming months. The PPIU will collaborate with the PPU and will report directly to the Provincial Permanent Secretary. The PPIU will be headed by a Project Operations Officer (PPO) who will act as a Provincial Operations Project Officer within the overall project implementation structure of TRALARD. For overall project progress reporting, the PPO will work with the NPCU coordinator. The PPIUs will oversee the planning; provide operational support; and carry out fiduciary, safeguards, and monitoring oversight of the project in the respective provinces. Within each PPIU, the PPO will be supported by a project accountant, a procurement officer, and an environmental and social safeguards compliance officer. The PPIU will also provide management oversight and will be responsible for technical advice on the subgrants for activities related to agriculture, forestry, and DNPW. The PPIUs will be responsible for preparing the annual work plans and budgets at the provincial level, seeking approval from the Provincial Permanent Secretary before submitting to the NPCU for consolidating, submission, and review by the World Bank.

4. **At the provincial level**, the Provincial Planning Subcommittees (PPSCs) will be established, chaired by the respective Provincial Permanent Secretary and will be responsible for providing guidance to overall project implementation based on the Government's mainstreaming plans to integrate climate project/programs in NDPs. The PPSC will include the chief officers of the relevant provincial line

ministries—Agriculture, Land, DNPW, Forests—as well as representatives of local government, private sector, and civil society. The PPIU will report to the PPSC on progress with project implementation. The PPSCs will also ensure that project activities are incorporated in the respective Integrated Development Plans.

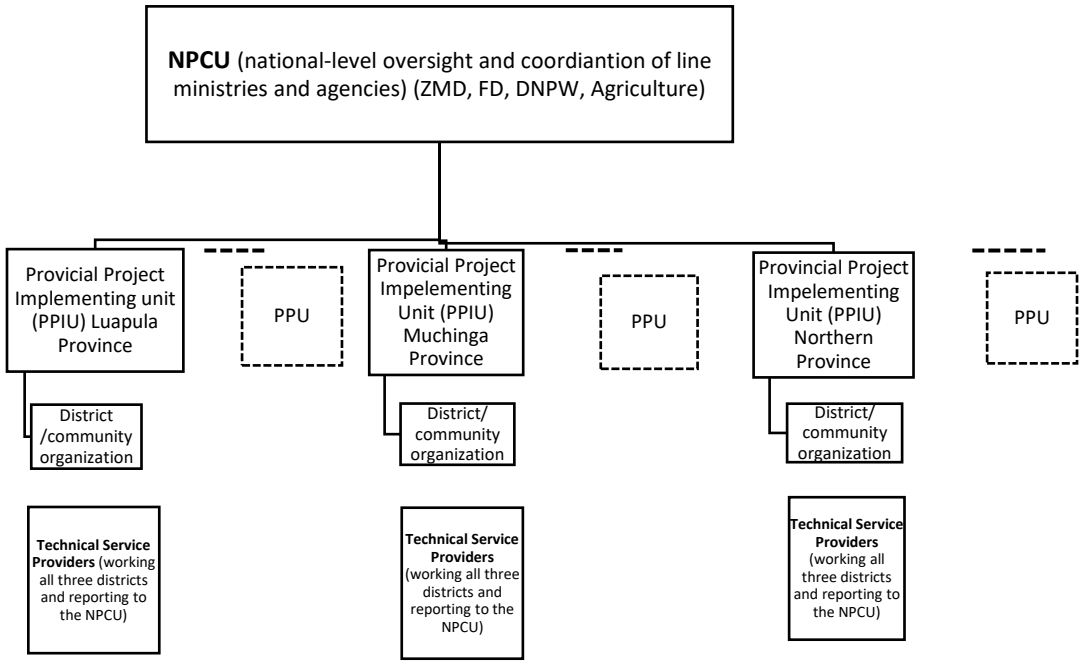
5. **At the district level**, the project oversight structure will be similar, with overall coordinating responsibilities falling under the District Planning Offices, under the guidance of the District Planning Subcommittee consisting of technical staff, private sector, and civil society partners. This will ensure that the project is integrated in existing institutional structures and mandates. The districts will be responsible for oversight and reporting of interventions within their jurisdiction and will provide coordination responsibility over community-level microprojects that cut across several communities. The districts will be supported by a district operations officer hired and embedded into the district local council. The District Planning Subcommittee working with the service providers will be reviewing and recommending for approval the community microprojects to the PPIU.

6. **At the community level,** the overall coordinating responsibilities will fall under the Ward Development Committees (WDCs). The WDCs will consist of community representatives, leaders, civil society partners, and traditional representatives. These are existing institutional structures with mandates in place. The WDCs will be responsible for community mobilization, enhancing community participation, and inclusion of vulnerable members such as the elderly, women, and the youth among others. The WDCs will facilitate implementing their specific interventions with managerial support from the districts and the PPIU.

7. **Ministries, departments, and agencies,** that is, Agriculture, Forest, Lands, DNPW, Local Government, ZMD/DMMU/WARMA will play critical technical role at the subnational level and ensure synergy with their respective ministry at the national level. They will be responsible for regular technical backstopping and ensuring linking of project investment with development plans and policy. When required, they will operate based on the agreed annual work plans with the NPCU and PPIU, against which regular advances will be made and accounted for.

8. **Service providers and partners.** The project will hire and work with technical experts and service providers with specialized technical expertise. They will be involved in community participatory engagement, fill the extension service gap, and bring to bear their expertise and experiences in the project target areas.

Figure 1.1. Implementation Arrangements



FINANCIAL MANAGEMENT

9. In 2018, the World Bank undertook an FM assessment of the NPCU under the MoNDP that will be responsible for the TRALARD Project and the PAUs in LMN provinces that will host the PPIUs. The NPCU is currently implementing the Zambia PPCR (P127254) where the FM arrangements have been Moderately Satisfactory. The FM assessment was carried out in accordance with the FM Manual issued by the FM Sector Board on March 1, 2010 and retrofitted on February 4, 2015. The objective of the assessment was to determine whether the implementing entities (NPCU and PAUs) have acceptable FM arrangements in place that satisfy the World Bank's (Policy and Directive on Investment Project Financing). These arrangements would ensure that the implementing entities (a) use project funds only for the intended purposes efficiently and economically, (b) prepare accurate and reliable accounts as well as timely periodic financial reports, (c) safeguard the assets of the project, and (d) have acceptable auditing arrangements.

10. The conclusion of the assessment was that the FM arrangements in place in the implementing agency meet the World Bank's minimum requirements under the Bank Policy and Bank Directive for Investment Project Financing, and are, therefore, with reasonable assurance, adequate to provide accurate and timely information on the status of the project as required by the World Bank. The following

main capacity constraints in the NPCU have been identified: (a) the Pastel software is not connected to IFMIS and therefore will not benefit from the strong accountability controls and efficiency provided by the IFMIS and (b) more projects have been appended to the NPCU, hence loading the existing staff with extra workload, for a list of recommended actions in para 24.The main constraints identified under the PIUs are that both the provincial accountants and internal auditors have no experience in the World Bank's FM and disbursement guidelines and the audit unit concentrates on preaudits instead of carrying out risk-based auditing and has weak control environment and lacks or fails to follow up on outstanding audit queries.

11. **Budgeting arrangements.** Budget preparation and monitoring will follow procedures as detailed and documented in the PIM.

Accounting System

12. **Staffing.** The NPCU has a Finance Section headed by a financial management specialist (FMS) who is assisted by one project accountant. However, this staffing arrangement is not adequate; therefore, it was recommended that the project employs three project accountants (for LMN Provinces which is now at interview stage), who will be trained in the World Bank's FM and disbursement guidelines. The project FMS will report to the national coordinator while the three project accountants will report administratively to the PPO in collaboration with the project FMS in Lusaka.

13. **FM manuals.** The project developed an FM procedures manual as part of the PIM that documented the accounting policies and procedures to be used for the project.

14. **Information systems.** The project will use manual systems to prepare financial statements until a suitable accounting package is procured or the project is connected to the country's IFMIS and the project module is made functional.

15. **Accounting basis.** The project will use cash-basis accounting in line with International Public Sector Accounting Standards.

16. **Internal auditing.** The NPCU has an existing internal auditor. The internal auditor will work with the MoNDP's internal audit unit headed by a Principal Internal Auditor. The project will also rely on the audit committee in the ministry which is active and meets regularly.

17. **Internal control system.** The existing Financial Management Regulations 2006, operationalizing the Public Finance Act, 2004 (Act No. 15 of 2004) and the Financial Management Act of 2018 will be applicable to the project operations. The regulations define responsibilities for the various officers involved in the accounting processes. The regulations include, among others, control procedures governing expenditures and payments, imprest, accountable documents, safes, loss of public funds and assets, and the audit of accounts by the Auditor General. These regulations and procedures are considered

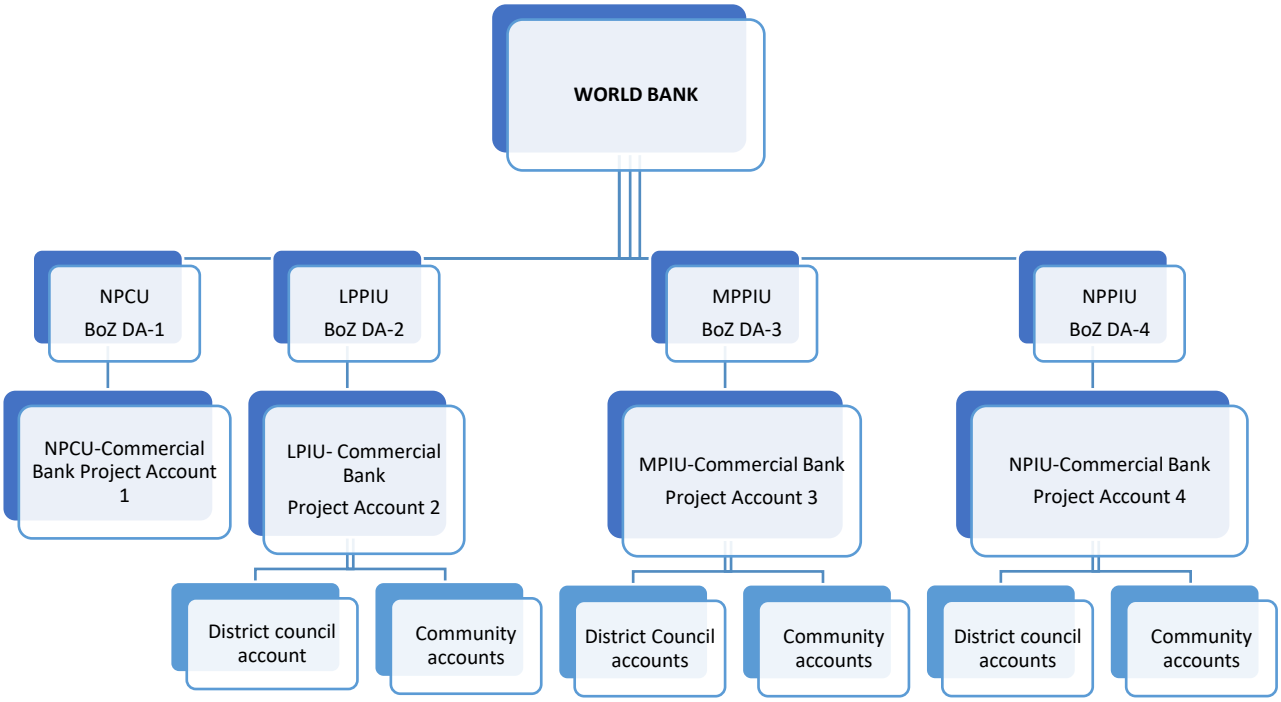
adequate. In addition, the project's PIM includes a chapter that documents the policies and procedures specific to World Bank-financed projects and identifies the eligible expenditures.

Funds Flow and Disbursement Arrangements

18. **Funds flow arrangements.** The project will use a system under which funds will flow from the World Bank to four Designated Accounts (DAs) or holding accounts denominated in U.S. dollars held at the Bank of Zambia (BoZ) and managed by the NPCU and the three PPIUs (details to be documented in the PIM). The project will open DA operational accounts in Zambian kwacha at suitable commercial banks in Lusaka and the LMN Provinces for making payments in the local currency. Funds to other implementing entities will flow from operational accounts to designated project bank accounts at a suitable commercial bank. The flow of funds is depicted in figure 1.2.

19. **Disbursement arrangements.** The project will use the report-based method of disbursements (interim financial reports). Other methods of disbursing to the project will include reimbursements, direct payment, and use of special commitments (for example, letters of credit). Further disbursement details will be provided in the Disbursement Letter.

Figure 1.2. Flow of Funds



Note: MPPIU = Muchinga Provincial Project Implementation Unit; LPPIU = Luapula Provincial Project Implementation Unit; NPPIU = Northern Provincial Project Implementation Unit.

20. **Financial reporting.** The project will produce unaudited interim financial reports on a quarterly basis to manage and monitor the use of the funds. The financial reports should at the minimum show a statement of sources and uses of funds, with the uses of funds analyzed by component and by activities. The quarterly reports should be submitted to IDA 45 days after the end of the quarter.

21. **External audit.** An external audit will be carried out annually by the Office of the Auditor General (OAG), who, as outlined in the Constitution of Zambia Act 1996, is responsible for the audit of all Government funds, though in practice, because of capacity constraints, the OAG frequently appoints private sector auditors acceptable to the World Bank to carry out the audit on behalf of the OAG. The auditor will conduct the audit according to International Standards on Auditing and Terms of Reference (TORs) acceptable to the World Bank. The auditor will express an opinion on the financial statements accounting to the World Bank's audit policy. The World Bank requires that audited financial statements for the project be submitted not later than six months after the end of the fiscal year.

22. The auditor will also be required to prepare a separate report describing significant weaknesses that the auditor came across during the audit that are not reflected in the audit opinion. These may include weaknesses in the internal control systems, inappropriate accounting policies and practices, issues regarding general compliance with broad covenants, and any other matters the auditor considers should be brought to the attention of the Borrower and provide recommendations for improvements. Like the audit report, the Management Letter should be submitted to the World Bank within six months after the year end.

23. The audit arrangements should be based on the 'Guidelines – Annual Financial Reporting and Auditing of World Bank-Financed Activities' issued by the World Bank on June 30, 2003.

24. **FM Action Plan.** The following actions should be taken to strengthen the control environment and to mitigate the project FM risks identified earlier.

Table 1.1 TRALARD Project FM Action PLan.

	Action	Status	Responsible
1	Produce PIM	Prepared	Project
2	Appoint 3 provincial project accountants	In process	Project
3	Train the 3 new accountants in World Bank Financial Management and Disbursement Guidelines	Immediately upon recruitment	World Bank

25. **Supervision plan.** FM supervision will be carried out by the World Bank as part of the overall implementation support for the project. At least two supervision missions are expected a year. The objective is to ensure the continued adequacy of the project's FM compliance with relevant legal covenants of the Financing Agreement and that the proceeds of the credit are used only for the purposes for which it was intended, with due regard to economy and efficiency and to build the FM capacity of the borrower's implementing agency. The actual work will include checking of the unaudited interim financial

reports and the Audit Reports/Management Letters from the external auditors and following up with the project secretariat on all significant accountability related issues.

PROCUREMENT

26. **Procurement** will be based on the application of the World Bank's Procurement Regulations for IPF Borrowers of July 2016 revised in November 2017 and August 2018 (herein referred to as World Bank Procurement Regulations), and the World Bank Directive - Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by the International Bank for Reconstruction and Development Loans (IBRD) and the International Development Association (IDA) Credits and Grants, revised as of July 1, 2016, and as may be revised from time to time. For all OIB procedures, the World Bank's SPD will be used, while for contracts with cost estimates below OIB threshold, the GRZ's SPD will be applied subject to meeting the minimum requirements set forth in Section V Procurement Provisions.

27. Like the PPCR II, the TRALARD Project will be supervised by the NPCU on behalf of the MoNDP. Both will however, be implemented as separate projects.

28. Some of the main provisions that are contained in the World Bank's Procurement Regulations, which will apply to the project in a beneficial way, include the following:

(a) Use of the **standstill period** in line with paragraphs 5.78–5.80 following Notification of Intention to award the Contract in line with paragraphs 5.72–5.77. The use of the standstill period will harmonize the Government's own practices which already included this provision before it was introduced by the World Bank.

(b) Use of the **World Bank Group sanctions framework** which carries with it the possibility or flexibility for the World Bank to accept sanctions that may be carried out by the borrower based on satisfaction by the World Bank that the said sanctions have been preceded by a "relevant judicial or administrative proceeding which afforded the firm or the individual adequate due process" in line with provisions of Section III Governance - paragraph 3.3 (f).

(c) **Use of civil servants or government officials as part of the project implementation support personnel** pursuant to the provisions of the Procurement Regulations - Section VII paragraph 7.32, subject to review and approval by the World Bank.

(d) **Methodology and treatment of Abnormally Low Tenders or Bids (known as ALT/ALB)** has been introduced in the case of works, goods, and non-consultant services as provided for in the Procurement Regulations - Section V paragraph 5.65, with guidance being provided to bidders and borrowers in the SPD. Similarly, the World Bank's Procurement Regulations and the SPD also have provisions to address "seriously unbalanced or front-loaded bids or proposals" in paragraphs 5.65 and 5.66.

(e) **Efficiency of procurement processing has been enhanced** by raising the prior selection method limits whereby the prior reviews by the World Bank of procurement decisions will be infrequent and has passed on the procurement implementation risk to the borrowers. This will enable the World Bank staff to instead support the borrower's capacity building and systems improvement requirements through training and, as needed, formal and informal hand-holding.

(f) **System for Tracking Exchanges in Procurement (STEP).** The NPCU will use STEP whose use is mandatory as of July 1, 2016. The World Bank has rolled out STEP for Zambian projects and has carried out training for all projects. Hands-on support continues to be provided to STEP users. The use of STEP enables online procurement planning and end-to-end tracking of procurement. It also allows users—both Government and the World Bank—to monitor the timeliness and efficiency of procurement.

29. The Procurement Regulations in Section IV - Project Procurement Strategy for Development (PPSD) and Procurement Plan, under paragraph 4.1, requires the borrower to develop the PPSD for each Investment Project Financing (IPF) project. The PPSD, using a risk-based approach, addresses how procurement activities will support the project objectives and achieve value for money.

30. The formulation of the PPSD also contributes to an understanding of the market, available market approach, and the preparation of the project Procurement Plan. The PPSD helps identify activities, the procurement approach, and methods and advocates where possible the use of open competition or use of any new procurement techniques. The PPSD is further supported by the preparation of the World Bank's online PRAMS which allows the identification of the client's procurement institutional capacity, staffing, legal, and other considerations.

31. The PPSD is the key document which describes the borrower's procurement capacity-building needs and staffing, funding, consulting services, training, and other actions proposed to address the implementation needs of the TRALARD Project. It also takes into account the specific technical advice and implementation support that may be needed by the MoNDP from the World Bank at a project level.

32. The procurement approach and methods for all components will follow standard approaches and methods that was in the approved Procurement Plan as approved by the Bank at project negotiation. This include appropriate selection methods and market approach options as provided for in the Procurement Regulations Section VI - Approved Selection Methods for Goods, Works, and Non-Consultant Services and in Section VII - Approved Selection Methods Consulting Services. All procurement activities will be required to meet the policy processing thresholds for the procurement methods and approvals and procurement oversight and review levels.

33. The World Bank supported the MoNDP to carry out the PPSD. The PPSD is provided as a separate document. Over the life of the project, the PPSD will be the subject of review and/or revision as the case may be.

Recommended Procurement Approach for the Project

34. Information of the market or procurement methods taking into account available choices (see table 1.2 below) following the PPSD prepared by the NPCU in collaboration with the World Bank procurement team.

Table 1.2. Zambia Country Thresholds for Procurement Approaches and Methods (US$, thousands, as of June 2016)

Works (including Turnkey, Supply, and Installation of Plant and Equipment and Public-Private Partnerships)			Goods, IT, and Non-Consultant Services			Selection of Consultant (Firms)	Selection of Consultant (Individual Consultants - IC)
Open International > US$10 million	Open National < US$10 million	Request for Quotations < US$0.3 million	Open International > US$2.0 million	Open National < US$2.0 million	Request for Quotations < US$0.3 million	International selection Consulting Services < US$1.0 million	International selection Consulting Services (IC) < US$0.3 million

Source: World Bank Guidance Thresholds for Procurement Approaches and Methods by Country (Section III B).

35. **Prequalification.** None anticipated though bid packages will aggregate requirements where necessary; bidding, evaluation, and contract award will largely be on individual lot basis whose individual contract sum and complexity may not require prequalification.

Proposed Procedures for Community-Driven Development Components (according to paragraph 6.37 of the IPF of the PF).

36. **Reference to Project Operational/Procurement Manual.** A Procurement Manual has been prepared in conformity with the requirements of TRALARD as part of the PIM. It will be used by the Zambia TRALARD NPCU to guide implementation of procurement activities under the project. The Procurement Plan forms part of the PIM.

37. **Any other special procurement arrangements** (including advance procurement and retroactive financing, if applicable) and use of NGOs anticipated for implementation of environmental and social safeguards/resettlement action plans implementation as stated in Section 5, paragraph 5.3 of the procurement regulation.

38. **TORs** for all consultancy contracts as well as all single-source selections, irrespective of the contract value, will be subject to prior review.

39. Short list of consultants will be in accordance with the provisions of the New Procurement Framework (NPF) clause 7.17, not less than 5 and not more than 8. Exceptions are also governed by this same clause.

40. Any other special selection arrangements: None.

Table 1.3. Procurement Approach

Procurement Category, Selection Arrangement	Selection Methods and Arrangements	Market Approach					Contract Value for Selection (US$)
		Open	Limited	Direct	International	National	
1. Goods	Request for Proposals	√	√	X	√	√	≥2,000,000 for international; ≥100,000 and <2,000,000 national; <100,000 national - Request for Quotations
	Request for Bids	√	√	X	√	√	
	Request for Quotations	√	√	X	√	√	
	Direct Selection	X	X	√	X	X	No limits
	United Nations Agencies	According to paragraphs 6.47 and 6.48 of the NPF					No limits
2. Civil Works (including turnkey, supply and installation of plant and equipment and public-private partnerships)	Request for Proposals	√	√	X	√	√	≥10,000,000 for international; ≥300,000 and <10,000,000 national; <300,000 national - Request for Quotations
	Request for Bids	√	√	X	√	√	
	Request for Quotations	√	√	X	√	√	
	Direct Selection	X	X	√	X	X	n.a.
	United Nations Agencies	As per paragraphs 6.47 and 6.48 of the NPF					No limits
	Public-private partnerships	√	√	√	√	√	No limits
	Commercial practices	According to acceptable commercial procurement practices as will be defined in the PIM					
3. Consultant Services	Quality- and cost-based selection	√	X	X	√	√	≥300,000 for international

Procurement Category, Selection Arrangement	Selection Methods and Arrangements	Market Approach					Contract Value for Selection (US$)
		Open	Limited	Direct	International	National	
	Fixed-budget selection	√	X	X	√	√	<300,000 national No limits for Direct Selection of both Consulting Firms and Individual Consultants
	Least-cost selection	√	X	X	√	√	
	Quality-based Selection	√	X	X	√	√	
	Consultants' Qualification Selection	√	X	X	√	√	
	Direct Selection	X	X	√	X	X	
	Individual consultant Selection	√	√	√	X	X	
	NGOs - for RAP implementation	√	√	√	√	√	
4. Non-consultant Services	Request for Proposals	√	√	X	√	√	≥2,000,000 for international ≥100,000 and <2,000,000 national <100,000 national - Request for Quotations No limits No limits
	Request for Bids	√	√	X	√	√	
	Request for Quotations	√	√	X	√	√	
	Direct Selection	X	X	√	X	X	
	Public-private partnerships	√	√	√	√	√	
	NGOs - for RAP implementation	As per paragraphs 6.47 and 6.48 of the NPF					

Procurement Risk Assessment and Management

41. Based on the PRAMS, the main risks and proposed risk mitigation measures are shown in table 1.4.

Table 1.4. Identified Risks and Proposed Risk Mitigation

S. No.	Identified Risk Area and Risk	Risk Rating and Likelihood of Occurrence	Mitigation Measures	Action By	By When
MoNDP, Luapula, Northern, and Muchinga Provinces					
1	**Procurement Manual:** Procurement Manual is adequate on coverage of the changed role that the MoNDP will have following assignment of full implementation responsibilities. Implementation may be slow and or procedures may not be observed by MNDP.	Substantial risk Likelihood is high	The MoNDP to update the manual, widely disseminate the same, and as needed, carry out training for the users	The MoNDP and the various provincial administrations	Resolved
2	**Bidding documents, (prequalification, short-listing, and evaluation criteria):** Given predominance of use of noncompetitive selection and procurement, quality of technical specifications and TORs are in some cases inadequate	Moderate risk Likelihood is low	Training of staff and hand-holding and team work between procurement and technical staff will be necessary	The MoNDP and the various provincial administrations	Throughout the life of the project
3	**Evaluations and awards of contracts:** Reports do not always contain all essential information necessary for approvals, including adequate justification for decisions taken during evaluation such as rejection of bids. Wrong award decision may be made because of inadequate information, and due diligence is not routinely carried out.	Substantial risk Equal likelihood	Quality of evaluations and awards of contracts requires enhancing. Staff to be trained in good evaluation practices which base decisions on predisclosed criteria and includes due diligence verifications of bidders recommended for award of contract.	MoNDP and the various provincial administrations	Throughout the life of the project

S. No.	Identified Risk Area and Risk	Risk Rating and Likelihood of Occurrence	Mitigation Measures	Action By	By When
4	**Procurement staff capacity:** Agency staff have inadequate experience and satisfactory track record in procurement on donor-funded projects specifically. Carrying out competitive bidding and contract management may be a challenge.	Moderate risk Likelihood low	Improve procurement implementation capacity by acquiring the necessary procurement expertise including through the recruitment of a consultant.	MoNDP and the various provincial administrations	Once the project is effective and throughout the life of the project
African Parks					
1	**Assessed.** Being a private sector entity, it is expected that procurement will be based on the use of private sector practices and will not be subject to the application of the provisions of the Procurement Regulations and or the Public Procurement Act (PPA) and its regulations. Therefore, the review is largely to document and assess the institutional capacity and arrangements for procurement as carried out by African Parks.	Moderate risk Likelihood low	Improve procurement implementation capacity by maintaining use of best practices	African Parks	Once the project is effective and throughout the life of the project
Frankfurt Zoological Society					
1	**Assessed.** Being an international NGO, it is expected that procurement will be based on the use of private sector practices and will not be subject to the application of the provisions of the Procurement Regulations and or the PPA and its regulations. Therefore, the review is largely to document and assess the institutional capacity and arrangements for procurement as carried out by the Frankfurt Zoological Society.	Moderate risk Likelihood low	Improve procurement implementation capacity by maintaining use of best practices.	Frankfurt Zoological Society	Once the project is effective and throughout the life of the project

Procurement Post Reviews (PPRs) and Independent Post Reviews (IPRs) by the Supreme Audit Institution

42. Based on the assessed agency implementation risk for procurement, the World Bank will allow for the country's Supreme Audit Institution to carry out PPRs or IPRs for all contracts that are based on the approved Procurement Plan not having been the subject of prior review by the World Bank using a sample of 15 percent. Based on continuing assessment of risk and the success of risk mitigation measures implemented, the sample size will be reduced as risk mitigation measures are successfully implemented. High risk represents a sample PPR/IPR size of 20 percent, Substantial risk represents 15 percent, Moderate risk represents 10 percent, and Low risk represents 5 percent. These changes will be communicated to the MoNDP as outcomes of the PPR/IPR exercise and the World Bank. As needed, such communication will also result in the World Bank revising the procurement methods and prior review thresholds.

Technological Aspects and Improvements in Public Procurement

43. The activities to be supported under the project and the project implementation itself should allow for the use of technical design of the operations that incorporate technological design options currently in place and which represent global advancements in the field, generally including disruptive technologies. The implementation team may take advantage of the flexibilities that may be derived from the use of the Procurement Regulations in this regard.

Basic Information on the e-GP System in Zambia

44. National e-Government Procurement (e-GP) portal (http://eprocure.zppa.org.zm/epps/home.do) of the GRZ is developed, owned, and being operated by the Zambia Public Procurement Authority (ZPPA). The e-GP system is hosted in the ZPPA Data Center. The e-GP system provides an online platform to carry out the procurement activities by the public agencies, procuring agencies, and procuring entities. The e-GP system is a single web portal through which procuring agencies, procuring entities, and bidders and all other stakeholders are performing their procurement-related activities using a dedicated secured web-based dashboard.

45. The interlinked modules that make up the Zambia e-GP system are the following:

- Registration system for procuring entities and other users
- Dashboards - User-specific administrative dashboards
- E-bidding - (covering processes and procurement methods supported by public procurement law and regulations of the country from Annual Procurement Plan to signing of contract)
- Simplified bidding (e-Quoting)

- Complaint-handling and procedures
- Framework agreements and their management
- Contract management
- E-procurement monitoring system - for management and performance monitoring (e-PMPMS)
- Open Contracting Data Standard interfaces and visualization portal
- Audit trail capability - User activities and system audit trails
- Online help

46. Impediments to the registration and use of e-GP include

- Inadequate training in use of e-GP;
- Unreliable Internet access;
- Non -availability of devices such as a smart phone, tablet, and or a desktop or laptop computer;
- Inadequate leadership to guide the procurement entity in the use and benefits of e-GP as procurement entities;
- The ZPPA's inadequate system and client support staff for the deployment and use of the e-GP;
- The ZPPA's limited or inadequate support resources such as transport and administration budget to support the out-of-station potential e-GP and already registered users; and
- The current training in e-GP, which is largely face to face with manual user guides and other training materials. The ZPPA would need to develop and use e-learning modules for the deployment and use of e-GP.

47. The World Bank, as a stakeholder and interested party in advancing the use of IT and disruptive technologies in procurement, will continue to support the rollout and use of the e-GP. The Government initiative toward the introduction of e-GP in Zambia is expected to generate significant improvements in transparency, accountability, efficiency, and procurement management; strengthen documentation, compliance, and performance audit capabilities around the procurement function; and improve good governance in public procurement sector.

48. Zambia was the first country in Sub-Saharan Africa to design, develop, and roll out the e-GP. The Zambia e-GP was one of the front runners of the recently developed e-GP. It incorporates 'Open Contracting Visualization Portal' allowing for releases of data and documents at different stages of the procurement cycle on the basis of the Open Contracting Data Standard. This and other features allow for increased transparency and accountability and third-party monitoring of procurement activities, thereby giving confidence in public procurement activities and decisions. Its use would improve public confidence and reduce the human interface, which is sometimes the source of unethical conduct.

49. Countries like Rwanda have significantly advanced the use of e-GP to a 100 percent compliance. As part of the project implementation, this and other World Bank-funded projects will be required to use the e-GP. The World Bank will require the use of the e-GP and support the TRALARD procurement entities and Procurement Supplies Units (PSUs) in the use of the e-GP. Muchinga Province Provincial Administration was one of the eight original pilot procurement entities but remains as an extremely low user. The support will include allowing budget for devices and/or computers, covering cost for Internet connectivity of the life of the project, covering costs for training in use of e-GP, and covering the cost of ZPPA support. The e-GP can enable procurement audits to be carried out as it has the capability for storage and retrieval of procurement data. They are currently 35 users for e-GP in the system.

50. **Procurement planning and use of STEP.** The compliance rate for the Public Procurement Plan at 22.15 percent is very low. The World Bank requires all borrowers to publish their Procurement Plans in the World Bank's online STEP. STEP is an end-to-end system covering complete procurement processes and cycle. The implication therefore is that the World Bank borrowers will in effect have to use two systems. However, the use of the complete cycle in STEP will only apply in instances where the procurement activity is defined as large, of interest to the internal bidding community and based on applicable prior review thresholds for the project which are risk based and will require the World Bank to review and clear particular stages of the procurement. All procurement activities below the prior review thresholds will not be processed end to end in STEP. For such procurement activities, it is expected that only the initial steps such as procurement item, cost estimate, procurement method, and market approach and determination if or not an activity is subject of the World Bank's prior review or not and in terms of selection of consultants the TOR will be approved by the World Bank in STEP. The rest of the selection or procurement steps will be subject to the PPR, Independent Procurement Review, or Audit by the Supreme Audit Institution of the borrower or any institution that would have been approved by the World Bank. For the procurement post review activities, the use of e-GP will be requested.

Strategy and Approach for Implementation Support

51. Effective support to the NPCU is critical for efficient and effective implementation of TRALARD. The main areas of focus and skills requirements for implementation support to be provided by or through the World Bank are summarized in table 1.5.

Table 1.5. Main Areas of Focus and Skills Requirements for TRALARD Implementation Support

Time	Focus	Skills Needed
First 12 months	• Project effectiveness and • implementation startup • Safeguards instruments • application/compliance • Fiduciary training • provided	• Senior NRM Specialist • Senior Environmental Specialist • Senior Forest Specialist • Hydromet Specialist • Economist • Senior Operations Officer/M&E Specialist • Community and social development specialist • Safeguards Specialists (Social and Environmental) • Fiduciary Specialists (FM and procurement) • Disbursement Officer
13–60 months	• Implementation of planned activities/review of annual work plans and budget • Monitoring and reporting against targets • Implementation support missions conducted • Midterm review (during year 3)	• Senior NRM Specialist • Senior Environmental Specialist • Senior Forest Specialist • Hydromet Specialist • Economist • Senior Operations Officer/M&E Specialist • Community and social development specialist • Safeguards Specialists (Social and Environmental) • Fiduciary Specialists (FM and Procurement) • Disbursement Officer
49–60 months	• Implementation of planned activities/review of annual work plans and budget • Monitoring and reporting against targets • Implementation support missions conducted • Project completion and Implementation Completion and Results Report preparation	Same as above

52. Implementation support missions will be carried out twice a year with the World Bank and GRZ during the life of the project. A midterm review will be carried out to assess the project progress, achievement of the key indicators, risks and mitigation measures, and relevance of activities. The MoNDP will undertake an independent evaluation at midterm and at closing. Implementation support funds for the World Bank team are, and will continue to be, provided by IDA.

53. Significant part of the expertise required can be mobilized locally in the country office, including team leadership. Thus, the task team is decentralized to enhance implementation support. Fiduciary and safeguards support is also provided by the country office. In addition to missions and on-call support, the

task team will hold regular quarterly implementation support meetings, including with team members/experts based outside of Zambia through audio/video conferences.

ANNEX 2: Economic and Financial Analysis Summary

Background

1. **This annex contains the summary EFA of the Zambia TRALARD Project.** The PDO is to improve natural resource management in the NRZ to support sustainable livelihoods, and in the event of an eligible crisis or emergency, to provide immediate and effective response to the eligible crisis or emergency.

2. **The project area includes 16 districts and approximately 562,800 direct beneficiaries across three provinces in northern Zambia: Luapula, Muchinga, and Northern Provinces (referred to as LMN).** The region is endowed with natural resources, but it ranks poorly in socioeconomic development. The primary economic activities include subsistence agriculture, fishing, and other livelihoods reliant on natural resources.

3. **Without project intervention, beneficiaries in the area will continue to struggle to establish or maintain their livelihoods putting further pressure on natural resources.** Without project interventions, households in the area will continue to experience low income levels and food insecurity particularly due to periods of drought and flooding. To make matters worse, some data indicate that these flood periods are becoming more prolonged. Lack of investments and management capacity will make it difficult to restore degraded forest areas that can also support diversified livelihoods.

4. **Project interventions will make beneficiaries more resilient by supporting diversified livelihoods through sustainable use of natural resources.** Project interventions through small grants will help female- and male-headed households find alternative livelihoods that can improve their income as well as reduce food insecurity and reliance on natural resources. Small grants will also reduce post-harvest losses and improve productivity and home consumption from agricultural production. Infrastructure investments will help households with increased production, as well as access to markets and services. Modernized hydromet infrastructure and institutional strengthening will provide early warning services. Improved management of community forests and PAs will help restore degraded forest areas, so these can support the diversified livelihoods through sustainable use of natural resources.

5. **There is a strong rationale for public interventions as proposed by the project.** One of the core functions of the Government is to supply public goods and to correct market failures. LMN is the poorest region in Zambia and with its rapid population growth and deteriorated infrastructure, more targeted public investments are necessary to ensure that private sector entities can adopt sustainable management practices going forward. The proposed project would help not only improve agricultural productivity, but also establish alternative livelihoods that rely less on natural resources. This in turn builds resilience against extreme or prolonged weather events such as droughts and floods.

6. **World Bank involvement will help capitalize on and create synergies with past and ongoing projects.** The World Bank's involvement in the TRALARD Project is underpinned by (a) the experience and

achievements in the Zambia Strengthening Climate Resilience Project (PPCR Phase II), (b) the potential for scaling its implementation approach to address poverty beyond just achieving resilience, and (c) addressing of resource degradation from a landscape approach. The Zambia PPCR Project has demonstrated an effective model for implementing climate adaptation measures for increased agricultural productivity and diversification to increase incomes, food security, nutrition, and climate resilience. It is also beneficial that TRALARD is one of several ongoing World Bank engagements in the country. This can create synergies and collaborations with existing projects.

Methodology

7. **A cost-benefit model is used to assess the ex ante efficiency of the project investment.** Some benefits are captured for all project components—directly or indirectly. All project interventions are considered necessary to obtain the target impact. Project activities in Component 1 include a small grants program for promoting diversified livelihoods and improved farming practices among beneficiaries. Investments also include infrastructure and strengthening communities to facilitate these improved livelihoods. This component also provides investments in other necessary infrastructure including water channels, embankments, weirs, crossing points, irrigation canals, and a hydromet system. Direct benefits can also be attributed to Component 2 activities to improve community forests and PAs. For the project to be successful, Component 3 is necessary to provide project management, coordination, and monitoring. All project activities support development of beneficiary households so that they can adopt sustainable production practices and livelihoods with less reliance on natural resources for the duration of the project and after implementation is complete.

8. **Quantified net benefits.** All project activities are associated with both costs and benefits. Net benefits are benefits or revenue less costs. Incremental net benefits are the difference between the 'with project' and 'without project' situations. A detailed discussion of the benefits is included in the full version of the EFA as part of TRALARD project preparation dossier. The following direct incremental net benefit flows have been quantified in the cost-benefit model.

(a) Net benefits to crop producers, valued by representative crop gross margins

(b) Net benefits to other households, valued by average household income

(c) Net benefits from increased arable area, valued by crop gross margins

(d) Net benefits from reduced transport time, valued by daily labor rate

(e) Net benefits of transport on water channels, valued by cost of household meals

(f) Net benefits from improved food security, valued by cost of household meals

(g) Net benefits from hired labor, valued by daily labor rate

(h) Global value of impact on carbon balance, valued by shadow price of carbon

9. **Other net benefits.** The following incremental net benefit flows are expected but not quantified explicitly in this analysis:

(a) Net benefits from specific alternative livelihoods

(b) Net benefits from infrastructure investments

(c) Net benefits from hydromet investments

(d) Net benefits from management of community forests and PAs

(e) Net benefits from institutional strengthening

(f) Net benefits from future tourism in the project area

(g) Impact on livestock production in the project area

(h) Net benefits from improved access to basic services

(i) Indirect benefits to other sectors and local areas

(j) Improved nutrition

(k) Capacity building and institutional development

10. **Detailed cost and benefit assumptions for each project component are documented in the full EFA report available from the project team.** The overall methodology is based on a 25-year cost-benefit model. Project investment costs plus estimated in-kind contributions and recurrent and reinvestment costs are included in the analysis. This includes US$100 million from IDA, US$17.6 million from GRZ, 3.1 million in-kind contributions less US$17.4 million in price contingencies and less US$16.8 million in taxes and duties excluded from the economic analysis. When all project components are included, total investment cost in the analysis is US$103.4 million in financial values and US$86.6 million in economic values. The foreign exchange rate is set to ZMW 12.2 per U.S. dollar. Financial values are converted to economic values by using import parity prices and economic conversion factors.

11. **The full EFA report discusses results for each of the project components separately, while this summary presents results for the total project only.** Note that, except when discussing the shadow price of carbon, the costs associated with Component 2 are excluded. This is due to the lack of data to quantify costs and benefits from improved management of community forests and PAs. Without Component 2 total investment costs are US$73.8 million (71 percent of total project costs) and annual average recurrent

costs are US$2.7 million in financial values. In economic values, total investment costs are US$61.8 million with annual average recurrent costs of US$2.2 million.

Economic Analysis

12. **The TRALARD Project excluding Component 2 generates an economic internal rate of return (EIRR) of 14 percent with a benefit-cost ratio of 1.65 and an economic net present value (ENPV) of US$55 million with a 5 percent discount rate.** Table 2.1 shows the results of the economic analysis for the TRALARD Project excluding Component 2 costs and therefore excluding value of carbon sequestration. This constitutes 2.9 percent of Zambia's Gross Domestic Product from agriculture.[23]

13. Given that the estimated project returns are based on several assumptions, table 2.1 includes some sensitivity analyses to inform the project's risk management process. The key factors affecting project returns were identified with a comprehensive switching-values and elasticity analysis of all assumptions. That analysis is not reported here but it can be found in the EFA Excel model.

14. **Less incremental income than planned.** As noted in the Zambia PPCR Phase II household survey (MNDP 2018)[24], it is taking time for household incomes to increase after project implementation. Reasons for this include measurement problems as well as delays in grant disbursement and beneficiary support. Table 2.1 shows that if one only achieves 90 percent of the targeted household or farm income, the EIRR falls from 14 percent to 8 percent. With a 12 percent discount rate, the project does not produce a positive return. Project benefits can be increased by avoiding disbursement delays as well as by establishing a strong M&E system that can measure project impact and guide future investment projects.

Table 2.1. Sensitivity Analysis of TRALARD Project Returns Excluding Component 2, Economic Values

Description	IRR, Total (%)	NPV @ 5%	NPV @ 10%	NPV @ 12%
Base case (excluding Component 2)	13.89	55.4	14.6	5.9
Less incremental income				
95% of planned household and farm income effect	10.96	35.6	3.5	−3.2
90% of planned household and farm income effect	7.80	15.9	−7.6	−12.3
Fewer HH achieve food security target				
50% of target HH achieve food security target	13.77	54.6	14.2	5.6
0% of target HH achieve food security target	13.65	53.8	13.7	5.2

[23] GDP data for Zambia shows US$25.9 million in 2017 amounts with 6.7 percent from agriculture sector. This converts to US$1.9 million from agriculture sector in 2019 amounts. World Development Indicators database accessed February 1, 2019.
[24] Strengthening Climate Resilience in Barotse Sub-Basin (SCREBs) House Hold Survey November 2018

Description	IRR, Total (%)	NPV @ 5%	NPV @ 10%	NPV @ 12%
Grants fail to achieve impact				
15% of grants fail to produce any benefit	12.45	44.8	8.9	1.4
30% of grants fail to produce any benefit	10.92	34.1	3.2	−3.2
Fewer beneficiary households per grant				
25% fewer soft (30 hard, 15 soft)	12.36	43.9	8.6	1.1
50% fewer soft (30 hard, 10 soft)	10.71	32.5	2.5	−3.7
75% fewer soft (30 hard, 5 soft)	8.91	21.0	−3.6	−8.6
50% fewer both (15 hard, 10 soft)	8.70	20.1	−4.3	−9.2
25% fewer both (22.5 hard, 15 soft)	11.45	37.7	5.2	−1.6
Incremental income not sustainable				
Benefits decrease by 10% 5 years after grant	10.49	28.3	1.6	−4.1
Benefits decrease by 15% 5 years after grant	8.25	14.8	−5.0	−9.1
Infrastructure use and costs				
Only value of incremental commerce (no time saved)	9.14	23.6	−3.0	−8.4
Only value of time saved (no incremental commerce)	9.71	27.2	−1.0	−6.8
60% of HH use navigation channels (base=50%)	15.55	67.4	21.3	11.4
40% of HH use navigation channels (base=50%)	12.17	43.4	8.0	0.5

Note: HH = Households.

15. **Food security.** Total project returns are less sensitive to benefits from improved food security with table 2.1 showing only a small drop in the estimated EIRR. This should also be seen in connection with the increase in home consumption made possible by productivity increases on beneficiary farms (valued in farm gross margins). On the representative farm, annual home consumption increases by 507 kg or 98 kg per person per year. No assessment is made of the caloric intake or nutritional quality in different home-consumed crops.

16. **Grant success or failure rates.** Ensuring high success rate in the small grants program and avoiding project delays are important to achieve estimated project returns. Analyses show that if 30 percent of the grants fail to provide benefits, the EIRR falls from 14 percent to 11 percent. With a 12 percent discount rate, project returns are negative. Similarly, grant benefits may fall after the five-year project implementation. If original benefits fall by 10 percent after five years, the EIRR again falls to 11 percent. Possible key factors to increase grant success rate include close monitoring and support for target farmers and beneficiary households, focus on community capacity for managing infrastructure, and implement forest/PAs management plans that include all stakeholders. This also includes ensuring that beneficiaries are successful at applying for commercial loans, obtaining the necessary quality inputs and technologies to implement their investments. Project delays can be minimized with close monitoring and by ensuring implementation does not lose momentum.

17. **Fewer beneficiary households per grant.** In the project plan, it is assumed that several households will collaborate to obtain grants. Table 2.1 shows that if the number of beneficiary households is halved, the EIRR falls from 14 percent to 9 percent. As emphasized in the SCReBS household survey (MNDP 2018), it is difficult to encourage groups of households to collaborate and this requires concerted efforts during project implementation.

18. **Infrastructure use and costs.** Benefits from infrastructure include both the value of time saved and incremental improvements to commerce in the region. If only one of these benefit streams are realized the EIRR falls from 14 percent to 9 percent. Conversely, if the assumed share of households that use the water channels increases from 50 percent to 60 percent, the EIRR can increase from 14 percent to 16 percent. Therefore, supporting broad use of the water channels, embankments, weirs, and crossing points is important to achieve the planned benefits. This also requires maintenance costs that take into account extensive use over time.

19. **Infrastructure reverting to disrepair.** If the infrastructure for resilience maintenance undertaken after project has ended is insufficient, the channels may fall into disrepair again. The disrepair may make the channels increasingly non-navigable like in the without-project situation. Assuming the situation reverts to an additional three days per year when channels are not navigable, the EIRR falls from 14 percent to 9 percent. Also, if the maintenance costs prove to be 10 percent higher, the project returns could fall to 10 percent.

20. **Given that the current infrastructure has fallen into disrepair, further analyses are necessary to investigate the sustainability of water infrastructure management relying either on government funds or on irrigation user fees and transport toll charges.** Current water channels and irrigation infrastructure have fallen into disrepair due to lack of rehabilitation and annual maintenance. The current EFA makes an assumption about the size of these costs as described earlier, but no assessment has been made as to who covers these costs. Either the GRZ would have to budget for this cost through government funds, or user fees would have to be charged through forming water user associations for irrigation infrastructure and toll charges on transport channels. Further analyses are necessary to consider the financial and economic viability of these options also considering the need to secure broad use of the infrastructure for maximum communal benefits.

21. **No quantitative data are available to value direct costs and benefits of improved management of community forests and PAs.** For a qualitative discussion of similar project interventions, see Ministry of Foreign Affairs (2018)[25] decentralized forest and natural resource programme report. Instead, GHG

[25] MFAF (2018). Decentralized Forest & Other Natural Resources Management Programme – Introduction Project. Project

emission calculations were performed using the EX-ACT. Results show that the project constitutes a net carbon sink of 6.8 million tCO_2-eq or 4 tCO_2-eq per ha avoided deforestation on PAs and reserves and through NFR.[26] Impact of changes in agricultural practices is excluded. The annual impact on the carbon balance of Component 2 is multiplied by the assumed economic value of US$39 per tCO_2-eq in early years increasing to US$67 at the end of the 25 years. No value is assigned to improved carbon balance in the financial analysis because there are no direct payments of carbon credits to beneficiaries.[27] The resulting EIRR for Component 2 is 90.6 percent with a benefit-cost ratio of 8.3. The ENPV at 5 percent economic discount rate is US$160 million. At a 10 percent discount rate, the benefit-cost ratio is still very high at 5.6.

22. As discussed earlier, the estimated project returns are low because of the nonquantifiable benefits. To summarize, the main expected net benefits which could not be quantified due to lack of data include the following:

(a) Specific alternative livelihoods and associated infrastructure investments including bulking centers—other than what has been valued through increased average farm and household income

(b) Hydromet investments—other than what has been valued indirectly in improved yields on farms

(c) Improved infrastructure and management of PAs and national forest reserves particularly with respect to increased tourism

(d) Impact on livestock production in the project area

(e) Improved access to basic services—other than what has been valued in terms of travel time saved and increased commerce

(f) Benefits to other sectors of the economy that will take advantage of increased productivity and resilience in the agriculture sector and alternative livelihoods

Completion Report 2015-2018. Ministry of Foreign Affairs of Finland. Lusaka. 24 Aug 2018.

[26] The estimation of carbon stock changes was done based on the Intergovernmental Panel on Climate Change (IPCC) Tier 1 default values. The climate is 'Tropical Moist' and the dominant soil type is Low Activity Clay.

[27] Current World Bank guidelines suggest a shadow price of carbon of US$40 per tCO_2-eq in 2020 building up by 2.25 percent per year to US$78 per ton in 2050. World Bank. 2017. "Shadow Price of Carbon." Guidance Note to the World Bank Group staff, Washington, DC.

(g) Benefits captured in neighboring communities through informal dissemination of improved land and forest management practices

(h) Benefits from improved nutrition due to a more varied food production in the area

(i) Value of increasing skill level through capacity building and institutional development both in community and public institutions

23. **In light of an EIRR of 14 percent and an ENPV of US$55 million over 25 years and the additional potential net benefits that could not be quantified yet, the project investment is expected to yield reasonable returns.** The sensitivity analysis has highlighted key risk factors that should be managed during and after project implementation to ensure that project returns are achieved and sustainable.

Financial Analysis

24. **Project interventions are assumed to lead to improved crop margins providing there is long-term maintenance.** In financial values, crop gross margins for a representative farm in the area are expected to increase by 15 percent to 43 percent due to yield increases, reduced post-harvest losses, and savings from reduced unit transport costs. To achieve this, farmers increase their costs both in terms of seeds, labor, and packaging. Farmers are expected to switch from maize production into higher-value crops. They will also be able to bring more land into production, which currently is left fallow. Overall the gross margin in financial terms is expected double on the representative farm with an annual increment of US$29 per farm (US$143 per farm over five years). According to a study of staple food prices in Zambia, annual consumption of major food staples adds up to 345 kg per person per year (Chapoto et al. 2009)[28]. The value of increased home consumption is included and increases by 507 kg per year or 98 kg per person per year (28 percent of average annual consumption), thereby improving food security for farmers. No assessment is made of the caloric intake or nutritional value of this improvement.

25. **When using financial values and a 12 percent discount rate, total project returns without Component 2 yield an FIRR of 13.5 percent, a benefit-cost ratio of 1.08, and an FNVP of US$5.6 million.** This is about 0.3 percent of Zambia's agriculture gross domestic product. In financial terms, the project is viable compared to the 12 percent opportunity cost of capital in Zambia. As noted earlier, there are several unquantified benefits that should be added to this estimate.

26. **There are risks that need to be considered during and after implementation.** Risk management should include avoiding project and grant-disbursement delays; encouraging beneficiary collaboration to

[28] Chapoto, A., J. Govereh, S. Haggblade, and T. Jayne (2009). Staple food prices in Zambia. Prepared for the COMESA policy seminar on "Variation in staple food prices: Causes, consequence, and policy options", Maputo, Mozambique, 25-26 January 2010 under the Comesa-MSU-IFPRI African Agricultural Marketing Project (AAMP).

receive investment grants as well as to implement infrastructure maintenance and forest management; and ensuring that beneficiaries are successful at applying for commercial loans, obtaining the necessary quality inputs, and technologies to implement their investments.

Conclusion

27. **The EFA quantifies some of the expected benefits from the TRALARD Project.** In financial terms, the FIRR is 13.5 percent and in economic terms, it is 14 percent. When compared to the 12 percent, opportunity cost of capital and the recommended 5 percent economic discount rate, the project is expected to be viable. However, risk management will be important to avoid project- and disbursement delays, ensure beneficiaries receive the necessary support to implement their investments, support beneficiary collaboration to receive and implement community grants in groups, encourage broad use of community infrastructure while also ensuring sufficient maintenance funded by either government funds or user fees, and establish a M&E system to validate results and build knowledge for future projects.

ANNEX 3: Community Climate resilient adaptation small grants program

1. This activity will target beneficiaries in 16 districts of the LMN Provinces. The initial tranche of target districts was selected through a participatory manner with provincial and district stakeholders, based on the level of vulnerability to climate risk, hazard, and poverty. Based on the facilitation provided by the service providers, the project will fund priority adaptation investment options identified through simple participatory community natural resource management planning (at the community level). The small grants will be demand driven and are expected to include the following:

(a) **Community- or group-level grants (cutting across 3–4 communities)** of about US$50,000 per ward per year

(b) **Community- or group-level grants** of up to US$10,000 per unit (for natural resource management linked resilience livelihood and adaptation)

(c) **Individual grants** to champion innovators, averaging about US$500–1,000 per person

(d) **Additional small grants** to finance innovations or scale up the work of the best performing beneficiaries

Table 3.1. Grant Distribution

		Estimated Number of Grants Per Year										
Type of Grant	**Value of Grant**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**Total**
Districts targeted - 16 total	50,000	3	3	3	3	3	0	0	0	0	0	16
Community-level grants, big size - 60 total	50,000	11	11	12	12	13	1	0	0	0	0	60
Community-level grants, medium size - 300 total	10,000	—	—	—	—	—	—	—	—	—	—	300
First disbursement		55	56	59	61	64	5	0	0	0	0	300
Second disbursement		0	55	56	59	61	64	5	0	0	0	300
Community-level grants, small size - 900 total	2,500	—	—	—	—	—	—	—	—	—	—	900
First disbursement	—	166	168	176	184	192	14	1	0	0	0	900
Second disbursement	—	0	166	168	176	184	192	14	1	0	0	900
Third disbursement	—	0	0	166	168	176	184	192	14	1	0	900

		Estimated Number of Grants Per Year										
Type of Grant	Value of Grant	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	Total
Champion-level grants - 60 total	1,000	11	11	12	12	13	1	0	0	0	0	60

2. The small grants will be channeled directly to the beneficiaries once they meet the requisite eligibility criteria (see paragraph 4 in this annex) and beneficiaries have a viable proposal this is assessed as fundable. The funds would be provided in tranches appropriate to the size of the subproject (for example, an advance, an intermediary payment, and a final payment upon satisfactory completion, as certified by the service providers).

3. For some adaptation, small grants, which may be completed earlier, payment tranches would be reduced to two tranches i.e at signing of contract and delivery of contract. Individual grants (US$500–1,000 per person) could receive the grant also in two tranches or entirety of the grant, with the proviso that any subsequent support be conditional upon satisfactory performance—particularly in terms of passing on their knowledge and training other community members in innovative techniques and also proven records of their potential to increase their productivity. A specific clause for force majeure would be included in small grant agreements to account for delays outside the control of the beneficiaries. To prevent elite capture, community beneficiaries would be identified first by the service providers using the local poverty assessment and vulnerability and confirmed by the PPIU staff according to the agreed criteria. Individual champions would be selected by the facilitating team as those already engaged in viable and visible transformative or innovative livelihood adaptation practices or 'movers and shakers' capable of inducing change within the communities. Initial intense monitoring would help ensure that both performance and emerging issues are followed up on.

4. Support to the different level of grants to community groups will be provided for an average period of four years (including one year for planning). Proposed small grants would first be screened by the service providers in collaboration with the district officers for completeness, and the cluster of subprojects would then be sent to the PPIU for approval on a regular basis, following which the service providers would help the community sign the small grant agreements. The PPIU will disburse the funds directly to beneficiaries through the Special Account at the provincial level. The small grants agreements would need to be satisfactory to the World Bank and conform to the key provisions of the Grant and Loan Agreements. The service providers, in collaboration with the PPIU, PPU, and the district, will oversee the process through regular technical and financial audits.

5. Eligibility criteria for the small grants will include the following:

(a) The proposed subprojects must demonstrate clear community natural resource value, increased potential, reduced degradation, climate resilience, and adaptation cobenefits[29] and not contribute potentially to maladaptation (for example, have short-term benefits, but increase vulnerability over the long term).

(b) The activity must have been identified as a priority in the process of participatory planning (at the community/group level).

(c) The proposed subproject must be screened for potential social and environmental impacts and must not have been found to require a full-scale ESIA (that is, subprojects of Category 'A' will be ineligible).

(d) A minimum beneficiary contribution of 10 percent is required. The contribution could be in-kind. The project would help ensure that beneficiary contributions are promoted as a measure of community commitment, to prevent discouragement and/or potential coercion of the most vulnerable.

(e) Participatory planning and engagement must have followed the minimum process specified in the Operational Manual and have identified the most vulnerable groups or households.

(f) Community-/group-level small grants should be earmarked for women-headed households, or male-headed households meeting the criteria of highly vulnerable to extremely vulnerable—50 percent of the individual grants should be reserved for women. A certain proportion could be reserved to support innovative community groups who did not meet vulnerability criteria.

(g) Individuals/champions should be recognized as outstanding facilitators within the community/ward, have clearly demonstrated practical innovations that are of benefit to the community/ward, and will be judged as having innovations that will contribute to resilient development. In addition, they have potential to scale up their own investment with project support.

(h) The proposing institution community group individual should meet the minimum fiduciary and registration criteria (as specified in the Participatory Adaptation Implementation Manual).

[29] By (a) directly diminishing impacts of climate change and variability on the beneficiaries and their assets, (b) building the beneficiaries' capacity for response to climate change, (c) incorporating natural resource management and climate hazard risk information into decision making, or (d) reinforcing the capacity of an ecosystem to adapt to the impact of climate change.

(i) Activities under group activities should benefit more than a single family.

Table 3.2. Typology of Indicative Subprojects that Could Be Considered

Type of Grant	Likely Exposure and Climate Impact	Subprojects
Community/group or individuals/champions natural resource management and resilience adaptation activities	Increased incidence of floods, more intense floods, erratic rainfalls, increased temperature, reduced soil moisture, and/or seasonal droughts Projected changes in climate mean increased temperature, decreased precipitation, and extremes (along the lines above) affecting farming production and livelihoods	**Agriculture and livestock practices** • Introducing/scaling up conservation tillage and soil moisture retention—improved management of soil moisture through use of mulch/organic matter and conservation of soil organic matter • Diversifying agricultural practices such as crops/varieties grown including those that can be drought tolerant or grown under water-logged conditions or staggering time of plantings • Changing times for applying agriculture inputs to take advantage of available moisture and rainfall • Diversifying livestock production (animals raised) and when appropriate culturally or land-wise use agroforestry and/or integration of crops and livestock (for example, goats, sheep) in a mixed farming system • Diversifying livelihoods opportunities into sustainable activities that are not climate sensitive and/or moving them to less climate-sensitive locations (such as bee-keeping, crafts using local non-timber material, processing, aquaculture, and livelihood investments in higher grounds) **Medium-term responses** • Accessing improved weather (flood, drought, frost) early warning system • Access to agricultural insurance system using measurements of local rainfall/flood measures for pay-off at appropriate area level and monetary scale **Community forest management** • Support to initiatives that will support forest protection and natural resource management sustainability. • Support to initiatives that will lead to

Type of Grant	Likely Exposure and Climate Impact	Subprojects
		increased forest cover and carbon sequestration
	Increased incidence of livestock diseases	• Facilitate links with microfinance institutions/tools to support livelihoods and livestock diversification • Facilitate/equip local livestock para-vet centers for vaccination and disease control
All of the above		• Other activities demonstrating clear potential to increase value of natural resource management, reduce degradation, and strengthen livelihood resilience and adaptation co-benefits and no risks of maladaptation

6. **Facilitation and strengthening of community decision making.** This activity will build on the Zambia PPCR CRAFT process. The project will contract out experienced services providers, that is, NGOs and other experienced partners—already working in the target districts, wards, forest, and PAs—to help facilitate target wards and community groups in the process of community participatory forest management planning; climate-risk planning; prioritization of livelihood adaptation investments; and preparation, implementation, and monitoring of small grants proposals. The service provider responsibility under this activity will also include facilitation of an approach that promotes building smallholder resilience through increased adoption of climate-resilient market-based farming practices.

7. Facilitation of participatory resilience and adaptation process would start with identification of beneficiaries, grouping, and formalizing producer groups into cooperatives, community structures for CFM, NFR, and so on where nonexistent. It would include specialized training of trainers in CFM, NFR, participatory climate-risk planning, and community sensitization. The project would procure expert(s) with extensive experience in this field to conduct a training of trainers for district-level planners, ward officers, government technical services officers, and beneficiaries; develop a training manual; and provide mentoring support on a regular basis especially to the beneficiaries at the community level. The trainers will then help train and oversee field facilitators to assist target wards and community/farmers' groups in the development of their CFM plans and identify local adaptation priorities. In this process, the NGOs and trainers should work closely together with Government structures, traditional leaders from within the communities, and ward- and district-level technical staff.

8. Through a participatory planning processes, the facilitators will assist communities to assess their natural resources base and identify exposure and vulnerability to climate effects (both disasters as well as long-term trends), taking into account the different impacts on the poorest and most vulnerable members of the community, who would be targeted as beneficiaries. Priority adaptation activities identified through this process should consider both short-term and long-term measures, that is, responses to current climate variability, as well as how projected changes in climate are likely to affect

the future population, including how the landscape natural resources could be effectively managed and utilized in a sustainable manner to increase the value of the natural resources and prevent degradation.

9. This process would also help establish capacity within the community in natural resource management and adaptive processes, whereby community groups could assess their natural resource base status and vulnerability at regular intervals and integrate lesson learned into improving tier plans for a long-term process. The focus here will be on combination of appropriate technologies that support smallholder resilience through increased adoption of climate-resilient market-based farming practices that can be implemented locally with minimum support but assisted by external adaptation knowledge that considers long-term trends—thus raising the likelihood of transformative impact.

ANNEX 4: Greenhouse Gas Assessment

Introduction

1. The World Bank applies EX-ACT developed by Food and Agriculture Organization (FAO) in 2010 to assess a project's net carbon balance. The EX-ACT calculation consists of the net balance of tons of CO_2 equivalent (tCO_2eq) emitted or sequestered GHG because of project implementation compared to the 'baseline' and 'without-project' scenario. EX-ACT thus estimates the carbon stock changes as well as GHG emissions per unit of land, expressed in tCO_2eq per hectare and year. This annex presents an ex ante assessment of the net emissions reduction calculations for the TRALARD Project (P164764) with use of EX-ACT.

Summary of Results

2. The estimation of carbon stock changes was done based on IPCC Tier 1 default values. The project will be implemented over five years and for the calculation of carbon benefits, a capitalization phase of 15 years was used. The climate is tropical moist, the dominant soil types are low-activity clay soils. The project activities that will mainly provide emissions reductions are the avoidance of deforestation through improvement of management of the PAs and forest reserves. Other activities which benefit with enhancement of carbon sequestration include NFR. In total the project will generate net emissions reductions of around 7 million tCO_2eq over 20 years; see table 4.2 for results.

Project Activities

- The project aims to implement 12,000 ha of NFR on degraded and overexploited forest areas, this will lead to a sequestration of around 3.4 million tCO_2eq.

- The project aims to implement effective and sustainable management of the Nsumbu National Park/MWNP/Lusenga Plains National Park/Tondwa GMA Landscape (hereinafter the Northern Landscape) and the Lavushi Manda/Bangweulu Landscape/Mpumba Community Conservancy (hereinafter the Southern Landscape). For land size and dominant vegetation type in each landscape, see table 4.1. In the Northern and Southern Landscape, encroachment is associated with clearing of vegetation for agriculture, bush fires, and illegal subsistence hunting. With the implementation of the project, it will lead to improvement of the management of the areas and support the reduction of current deforestation rate by half during the project period. The activities include disruptive technology for monitoring animal populations, training in anti-poaching and surveillance techniques, fire mitigation management, and community extension. In addition, in the south, the project will establish the MCC with an expected area of about 100 ha. The project activities will lead to around 3.5 million tCO_2eq sequestration.

- The project will also support good agricultural practices in farmlands which may contribute to carbon sequestration such as use of organic fertilizer, certified seeds, diversification, and

shifting cultivation. However, the number of farmers and land size for this activity will be identified only during project implementation and therefore not accounted in this assessment.

Table 4.1. List of the Northern and Southern Landscapes where the Project Will Intervene, Total Land Areas and Dominant Vegetation Type

Northern Landscape	Land Size (ha)	Dominant Vegetation
Nsumbu National Park	206,300	Mainly miombo woodland and munga woodland interspersed with small swamps; also, presence of extensive Sumbu Itigi forests
Tondwa GMAs	54,000	Mostly miombo woodland combined with extensive swamplands independent of miombo
Mweru Wantipa	31,3400	Mostly miombo woodland combined with extensive swamplands independent of miombo; also, presence of extensive Sumbu Itigi forests
Lusenga Plain National Parks	88,000	Mainly miombo woodland, interspersed with small swamps
Kaputa GMAs	360,000	Mainly miombo woodland, interspersed with small swamps
Total	**1,021,700**	
Southern Landscape		
LMNP	150,000	80% miombo woodland, grassland 17% (rest is riparian forest, swamp forest)
Bangweulu GMA	600,000	Grassland and wetlands. miombo, muchitu, and riparian woodlands. Dry evergreen forest (and farmland)
Kasanka National Park	39,000	>80% miombo, mateshe, and munga woodlands; grassland and swamp forest
Total	**789,000**	

Table 4.2. Results of Gross and Net GHG Emissions in tCO_2eq up to 20 Years for Reported Activities of the Project

Components of the Project	Gross Fluxes		
	Without	With	Balance
	All GHG in tCO_2eq		
	Positive = source/negative = sink		
Land-use changes			
Deforestation	6,906,961	3,453,480	−3,453,480
Degradation and Management	1,515,945	−1,863,439	−3,379,384
Total	8,422,905	1,590,041	**−6,832,864**
Per hectare	5	1	−4
Per hectare per year	0.2	0.0	−0.2

ANNEX 5: Project-Related Maps

Districts Selected for TRALARD Activities

- Luapula Province: Chifunabuli, Kawambwa, Lunga, Nchelenge, and Samfya
- Muchinga Province: Chama, Lavushimanda, Mpika, Mafinga, Isoka, and Kanchibiya
- Northern Province: Chilubi, Mbala, Mungwi, Mpulungu, and Nsama

Figure 5.1. Map of the LMN Provinces