COMPREHENSIVE ACTION FOR CLIMATE CHANGE INITIATIVE

CACCI REPORT

An Integrated Results Framework and Key Performance Indicators for Climate Change Initiatives in Zambia

ANAPRI/IAPRI and Zambia CACCI Technical Team

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About CACCI Reports

ANAPRI CACCI Reports are publications stemming from implementation of the Comprehensive Action for Climate Change Initiative (CACCI) pilot project in Zambia and Ghana. CACCI is committed to expediting the implementation of Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs) by addressing the need for data and analytics and bolstering institutional and coordination capacities. In Africa, CACCI collaborates closely with the African Union Commission, the African Network of Agricultural Policy Research Institutes (ANAPRI), AKADEMIYA2063, and climate stakeholders in selected countries. This partnership aims to inform climate planning and enhance capacities for evidence-based policymaking, advancing progress toward climate - related objectives.

ANAPRI's involvement in the CACCI contributes to the provision of technical expertise, strengthening national, regional, and continental capacities for NDCs and NAPs implementation. In close collaboration with its two-member centers, the Indaba Agricultural Policy Research Institute (IAPRI) in Zambia and the Institute of Statistical Social and Economic Research (ISSER) in Ghana, ANAPRI, through CACCI, supported the Climate Change Technical Working Groups within respective countries and the ministries responsible for coordinating these working groups by offering data and analytical support.

Jointly published with ANAPRI member centers (IAPRI and ISSER) and the Country Climate Change Technical Working Group, the CACCI reports catalogue the key deliverables under the project. The data shared through these reports aim to provide evidence based insights to practitioners and policymakers spearheading climate action in countries where CACCI is being implemented. CACCI is generously supported by the U.S. Agency for International Development (USAID) through the Feed the Future Innovation Lab for Food Security Policy Research, Capacity, and Influence (PRCI), led by Michigan State University (MSU). It is important to note that the views expressed in this publication do not necessarily reflect those of the funder but represent the perspectives of the authors.

About ANAPRI

The African Network of Agricultural Policy Research Institutes (ANAPRI) is a network that brings together various agricultural policy research institutes in Africa. It serves as a platform for collaboration, knowledge sharing, and collective action among its member institutes. ANAPRI works towards promoting evidence-based policy formulation and implementation to enhance agricultural development and food security across the African continent. Through research, policy analysis, capacity building, and advocacy, ANAPRI aims to contribute to sustainable agricultural and rural development in Africa.

About IAPRI

Established in 2011, the Indaba Agricultural Policy Research Institute (IAPRI) is Zambia's first indigenous policy research institute dedicated to policy analysis of the agricultural and environmental sectors. IAPRI is a non-profit company limited by guarantee and collaboratively works with public and private stakeholders. The institute's vision is "to be the Centre of Excellence for Agricultural Policy Research and Outreach in Zambia". IAPRI exists to carry out agricultural policy research and outreach activities, serving the agricultural sector in Zambia to achieve sustainable pro-poor agricultural development. IAPRI's mandate is to utilize empirical evidence to advise and guide the Government of Zambia and other stakeholders on agricultural investments and policies.

About ISSER

ISSER was established in 1962 as the Institute of Statistics to provide a programme of teaching and research in statistics. In 1969, it was reorganized and renamed the Institute of Statistical, Social, and Economic Research with an expanded mandate to conduct research in the social sciences to generate solutions for national development. ISSER currently serves as the research wing under the College of Humanities, University of Ghana, and engages

in several policy-relevant research whose findings are intended to help policymakers on the best policy decisions to make for national development.

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Acknowledgments

The Africa Network of Agricultural Policy Research Institutes (ANAPRI) is a consortium of national agricultural and food systems policy research centers in Africa. Our primary goal is to generate high-quality evidence that supports policymaking across the continent. We are committed to developing the capacity of national agricultural research institutes and fostering dynamic collaborations. Through effective outreach, we provide balanced and non-partisan advice to stakeholders at the national, regional, and continental levels.

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Acronyms

BAU	Business As Usual
CA	Conservation Agriculture
CSA	Climate Smart Agriculture
CACCI	Comprehensive Africa Climate Change Initiative
DPO	District Planning Officers
GCF	Green Climate Fund
GHG	Greenhouse Gas
GRZ	Government Republic of Zambia
GWP	The Global Water Partnership
IAPRI	Indaba Agricultural Policy Research Institute
IBLI	Index-Based Livestock Insurance
IF	Implementation Framework
IPCC	Intergovernmental Panel on Climate Change
IPM	Integrated Pest Management
IRF	Integrated Results Framework
KPIs	Key Performance Indicators
MEL	Monitoring, Evaluation and Learning framework
MRV	The Monitoring, Reporting and Verification framework
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NDVI	Normalized Difference Vegetation Index
NPCC	National Policy of Climate Change
SDGs	Sustainable Development Goals
UNFCCC	United Nations Convention on Climate Change

WARMA	Water Resources Management Authority
8NDP	Eighth National development Plan
ZEMA	Zambia Environmental Management Agency

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1. Introduction

Climate change has emerged as one of the most important challenges affecting all spheres of human development and livelihood including social, economic, cultural, and political dimensions among others. According to the IPCC (2023[1]), human activity such as burning fossil fuels as well as unequal and unsustainable energy and land use have led to global temperature rise of 1.1 degrees Celsius above pre -industrial levels, which is mostly responsible for the increased frequency and intensity of extreme weather events. These extreme weather events have caused increasingly dangerous impacts on nature and people in every region of the world. In response to this threat, countries worldwide have agreed to develop coordinated response actions that include both mitigation and adaptation. Zambia like many other countries that are party to the Paris Agreement under the United Nations Convention on Climate Change (UNFCCC), has initiated efforts aimed both at enhancing mitigation and adaptation through the development of the Nationally Determined Contribution (NDC) and National Adaptation Plan (NAP).

Like other countries party to the UNFCCC, Zambia signed up to the Paris Agreement on climate and pledged to contribute to mitigation and adaptation through submission of the NDC. In December 2016, Zambia submitted its first NDC to the UNFCCC consisting of both mitigation and adaptation actions based on the country's circumstances. Pursuant to Decision 1/CP.19, 1/CP.20 and 1/CP.21 of the Conference of Parties to the UNFCCC for countries to enhance their climate ambitions and update their NDCs by 2020, Zambia in July 2021, submitted a revised and updated NDC which included an expanded scope adding transport, liquid waste and coal to bring total sectors under mitigation to nine from six (Government of the Republic of Zambia [GRZ], 2021[2]). The

[1] IPCC, 2023: Summary for Policymakers. In: Climate Change 2023: Synthesis Report. A Report of the Intergovernmental Panel on Climate Change. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, H. Lee and J. Romero (eds.)]. IPCC, Geneva, Switzerland, 36 pages. (in press). Available at: https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf

[2] GRZ. 2021. Nationally Determined Contribution (NDC) of Zambia for the timeframe 2015 – 2030. Government of the Republic of Zambia.

revised NDC thus present a more ambitious set of mitigation and adaptation commitments.

Zambia's NAP is still under development and is slated to be launched in August 2023. The process has a total budget of US$2.1 million which is being funded from the Green Climate Fund (GCF) with the Global Water Partnership (GWP) as the delivery partner responsible for technical support and grant management for the GCF. In the face of climate change, the NAP will help the country to identify and articulate medium and long-term adaptation priorities and actions as well as the different financing options. To ensure effective tracking of progress of the actions proposed in both the NDC and NAP , separate results frameworks for each of the two processes have been developed.

The NDC implementation progress will be tracked through the implementation framework (IF) launched on May 17, 2023. However, the Monitoring, Reporting and Verification (MRV) framework is used as a monitoring and evaluation tool for the NDC. The NDC IF includes actions, targets and performance indicators for both mitigation and adaptation. Under the NAP, a Monitoring, Evaluation and Learning (MEL) framework has been developed as a tool for tracking and evaluating progress of adaptation actions.

The Ministry of Green Economy and Environment (MGEE) is the focal point institution for the day-to-day implementation of the NDC. The NDC is implemented in an integrated multi-sectoral manner with participation from all stakeholders including the Government line ministries, the private sector, civil society and academia. The NDC is also mainstreamed in key national documents such as the Eighth National Development Plan (8NDP) and sectoral policies. However, the NDC and NAP have overlapping actions and indicators which present a risk of double counting, but by streamlining the two results frameworks can help track their direct and indirect contribution and alignment to the higher national goals and development objectives.

The aim of this report, therefore, is to review the indicators and metrics of the existing results frameworks and propose areas of improvement to make the indicators more relevant and manageable in terms of number and data availability.

2. Review of Climate Change Ambitions and Actions

2.1 Goals and ambitions of Zambia's climate change initiatives

Zambia's climate change goals and ambitions are embedded in key national development policies and strategies including the **Vision 2030, National Policy of Climate Change (NPCC) of 2016, the Eighth National development Plan (8NDP) of 2022, NDC and the NAP**. In the Vision 2030 one of the aspirations is for Zambia to formulate and implement development policies consistent with sustainable environment and natural resource management principles. The 8NDP has Environmental Sustainability as one of its Strategic Development Areas, which aims to improve adaptive capacity, reduce vulnerability and enhance resilience to climate change, for both human and biophysical systems. Moreover, the 8NDP outlines the government's commitment to invest in ambitious mitigation actions by promoting low carbon sustainable consumption and production to reduce greenhouse gas emissions and meet the emission reduction targets set out in the NDC.

However, the revised and updated NDC was submitted with a conditional pledge of reducing GHG emissions by 25 percent (20,000Gg CO_2eq.) by 2030 against a base year of 2010 under the Business As Usual (BAU) scenario with limited international support ($15 billion) or by 47 percent (38,000Gg CO_2eq.) with substantial international support ($35 billion).

2.2 Priority actions in Zambia's NDC

Zambia's NDC outlines the key areas of priority for both mitigation and adaptation mostly focusing at the sectorial level. The mitigation actions in the NDC are focused on six areas, namely: i) Sustainable Forest management; ii) Sustainable agriculture; iii) Renewable energy and energy efficiency; iv) Sustainable Transport; v) Liquid waste;

and vi) Coal. Adaptation actions in the NDC are focused on the following programmes: adaptation of strategic productive systems (agriculture, wildlife and water); adaptation of strategic infrastructure and health systems; and enhanced capacity building, research, technology transfer and finance for adaptation.

Zambia's NDC actions are aligned with the key national development policies whereby the NDC has 157 indicators to be tracked while the NAP draft has 221 indicators. However, NAP focuses on adaptation and responds to adaptive capacity and resilient building, with some actions and indicators already covered under the NDC. Zambia's NDC covers adaptation, mitigation and resilience, however, there is limited scope on community and household level actions and programmes. Yet, communities and households, particularly those in rural areas are more vulnerable to climate change impacts given their low adaptive capacity. This outline the need to develop actions and indicators that are specifically addressing household and community level outcomes.

3. Zambia Climate Change M&E System

3.1 The Zambia MRV framework

The government of Zambia has an established integrated national Measurement, Reporting and Verification (MRV) system and registry to track progress of its NDC implementation. The MRV is a web-based destination that everyone can get to and is generally designed for a broader audience. The main aim of the developed MRV system is to assist government to create track the implementation of the Paris Agreement so as to scale up climate change adaptation and mitigation action in support of the National Determined Contributions (NDCs). The system is applied to mitigation, adaptation actions and cross cutting issues to help determine the impact of actions and implementation challenges, as well as facilitate evidence-based decision-making.

The MRV further provides a vital governance tool to assess performance against set targets and to update action plans accordingly. This means by demonstrating Zambia's progress toward climate resilience and emission reduction goals, the MRV approach will further contribute to attracting climate finance.

Below shows a section of the web-based MRV which includes different climatic themes;

Table 1: Main themes and tracking parameters of the Zambia's web-based MRV

Emissions	Mitigation	Adaptation	Finance	Technology Transfer	Capacity Building
Tracking parameters	Tracking parameters	Tracking parameters	Tracking parameters	Tracking parameters	Tracking parameters
Activity data for following sectors • Energy • IPPU • AFOLU • Waste	• Mitigation action • Nature of action and coverage • Methodologies and assumptions • Progress indicators • Objectives of the actions • Status of implementation • Estimated emission reduction • International market mechanisms • Activity data	• Key Performance Indicator • baselines • Key Activities • Enhanced adaptive capacity • Strengthened Resilience • Reduced Vulnerability • Outcome • Output	• Category of funder • Name of funder • Type of finance • Area of support • Financial instrument used • Amount • Name of projects funded	• Area of application • Type of technology • Name of Products/ innovations • Patent • Licensed • Publications associated with product/innovation	• Description of capacity building • Number of persons trained • Number of professional certification issues • Number of Academic Scholarships received • Number of centers of excellence established • Number of Experts/Trainers deployed

3.2 Zambia adaptation MEL framework

The Monitoring, Evaluation, and Learning framework provides for Monitoring and review of NAP implementation that will involve tracking and reporting the progress of adaptation measures. The country takes measures towards reducing climate change vulnerabilities, strengthened adaptive capacity, and improved resilience in Zambia's economic systems, its people's livelihoods, and its ecosystems. This adaptation data will be regularly collected using the key performance indicators derived from the climate change adaptation measures identified as detailed in the MEL framework. Monitoring will be done at both National and sub-national levels. It is the work of MGEE to aggregate the reports from provinces and sectors and share the consolidated reports with both national and international stakeholders.

3.3 The need to revise the MRV and MEL indicators

Based on the review and analysis of Zambia's climate change action indicators both in the NDC and NAP, a number of areas for improving indicators are proposed. The key proposals are as follows:

- MEL framework for the NAP also has adaptation indicators some of which are already captured in the MRV under the NDC, e.g., similar agricultural productivity indicators.

This creates an overlap of indicators and complicates the tracking of adaptation actions and progress.

- The MEL framework has a long list of indicators which may be difficult to track and report on. There is a need to prioritize indicators and only consider those that are key indicators given the data availability, cost, and practicality of its tracking.
- Some indicators are focusing on output and less on the activity or outcome. For example, the MEL for NAP has a number of indicators which can specifically be captured with one or two indicators, i.e., number of farmers using irrigation and hectarage under irrigation.

4. An Integrated Results Framework

The analysis of the MRV and NAP MEL framework shows that most of the indicators are at the activity level and few measure the outcome results. However, monitoring outcome results is important as it helps guide climate actions that respond to the country's climate goals and ambitions as outlined in key climate change documents including the NDC, NAP and the National Policy on Climate Change and the 8NDP. An integrated results framework (IRF) can help establish a result reporting architecture that is inclusive of the key outcome results and their linkages to the climate ambitions and goals.

The current separate M&E systems (the MRV and MEL) have limited scope of the goals and ambitions. For example, the NDC focuses mainly on emission reduction as the ambition, while the MEL for adaptation is limited to adaptation ambitions, and yet mitigation and adaptation are complementary. Thus, it is important to develop a harmonized framework, the IRF in this case, that links key result areas at different levels to progression towards national climate goals and ambitions. In developing the proposed IRF, we follow three main steps as discussed below;

First, we review the existing key national climate change and development documents including the NDC, the NAP, the 8NDP and Vision 2030. All these documents contain

the country's climate change and development ambitions and goals. **Figure 2, under annex 1,** summarizes a number of climate change ambitions and goals which are needed to be achieved. Achievement of these ambitions and goals is expected to result in a **resilient and low carbon economy**.

Second, we identify and prioritize key programmatic actions which if implemented will result in the achievement of intermediate results. The actions are mainly drawn from the NDC, NAP and from the key sectors which are considered significant GHG emitters and most vulnerable to climate change. **Figure 2, in annex 1,** summarizes the priority program actions. Achievement of these objectives is expected to culminate in **sustainable and inclusive development**.

Third, we review Zambia's climate governance and coordination mechanisms. Based on this review, we summarize and prioritize three key system level and cross-cutting actions that will result strengthened **institutional and implementation capacity** which has been summarized in **figure 2, in annex 1,** These system level actions and objectives are expected to support effective implementation of programmatic actions leading to achievement of ambitions and goals and the overall development objective.

5. Key Performance Indicators

Zambia's MRV for the NDC has 157 indicators while the MEL framework for tracking the NAP has 221 indicators[3]. This long list of indicators will be costly to track. Further, data for many of them might be a challenge as a number of them do not even have baseline data available. Besides the long list of indicators, there are overlaps in indicators for the MRV and MEL frameworks especially on adaptation. Therefore, streamlining and integrating overlapping indicators would help reduce the list.

Further, some indicators in both the MRV and MEL frameworks are measuring the same indicators separately while some indicators measure activity outputs rather than results or outcomes. A good example is agroforestry and irrigation indicators, which

[3] Based on the version shared with stakeholders during a review meeting in May, 2023

are both mitigation and adaptation indicator. This can be captured in one integrated framework, for example an extended MRV rather than having an NDC MRV and the adaptation MEL framework.

5.1 Proposed key performance indicators

The proposed IRF has 12 result areas across three levels; three systemic results, five programmatic results, and four outcome results. **Table 3 under annex 2,** presents the proposed indicators for tracking the integrated climate actions results. A total of 34 indicators are proposed to track the progress of the three result levels, with the programmatic level having the highest number of indicators at 17, followed by the outcome level with 9 indicators and lastly the systemic level with 8 indicators. Compared to the total of 378 indicators for the NDC (157) and NAP (221). The IRF indicators (34) represent less than 10 percent, and yet captures the key indicators to be able to track Zambia's climate change actions and how they are linked to national development goals and ambitions.

The proposed indicators for IRF are drawn from the MRV and MEL frameworks while some are new. **Table 3, under annex 2,** shows the source of each indicator (MRV, MEL or new). In addition, some indicators are a modification of those from the MRV or MEL framework – these are labeled MRV+ or MEL+. Majority of the modified indicators are for outcome and intermediary levels. The new indicators are mostly index measurements such as vulnerability, resilience, export diversification, and crop diversification. Other are perception index to measure governance and coordination, financing, capacity, and knowledge management (systemic level). Out of the 34 proposed KPIs for the IRF, ten (10) – representing 29 percent -- are new and the remaining 24 are drawn from the MRV or MEL or both the MRV and MEL.

5.2 Metrics of key performance indicators

The IRF indicators proposed in **Table 3, under annex 2,** represent a diverse range of data required to measure and be able to track the indicators. Metrics for some

indicators such as land cover are well established but for others such as resilience index, governance and coordination effectiveness index are not straightforward and will require computation from survey data and stakeholder perceptions and expert opinions.

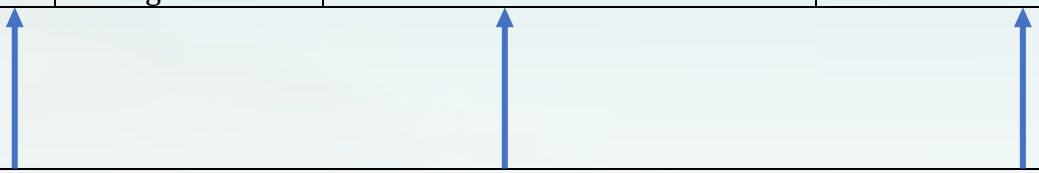
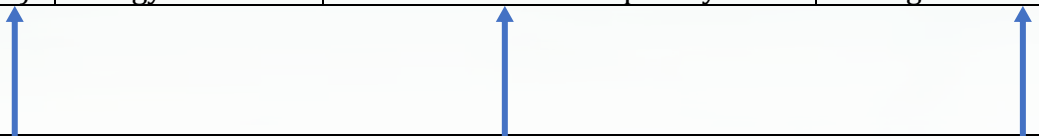
6. Summary and Conclusion

This report set out to review Zambia's climate change and environmental and natural resources management initiatives, with particular focus on the M&E systems. The report reveals existence of several climate change initiatives in the country done by the NDC, NAP and various stakeholders with MGEE playing a coordination role with an aim of improving climate change adaptation, mitigation and resilience, feeding into the country's ambition and goals of developing a low carbon, resilient and green economy.

The NDC and NAP have each developed separate M&E systems, with the NDC linked to the MRV while the NAP proposes to use the MEL framework. Although the two processes have different points of focus, they have common areas, especially in terms of adaptation actions and indicators. However, some indicators in the NAP are at output level and can be combined to create outcome indicators and thus reduce the list of indicators without losing relevant information. Thus, there is need to revise, refine and streamline the two systems to avoid duplication and overlap of actions and indicators. Further to ensure the existing actions and initiatives align with the country's ambitions and goals, there is need for a structured M&E system that streamlines the various objectives and results from different actions into an integrated results framework.

Annex:1: Integrated Results Framework

Table 2: Proposed Integrated Results Framework

Outcome result	**Level 1: Climate resilient and low carbon economy (development objective)**				
	1.1 Sustainable production and consumption, and GHG emission reduction	1.2 Resilient ecosystem and sustainable environmental management	1.3 Enhanced economy-wide resilience	1.4 Enhanced adaptive capacity and resilience of communities and households	
					
Intermediate result	**Level 2: Sustainable and inclusive socioeconomic development (intermediate objective)**				
	2.1 Resilient productive systems (agriculture, wildlife, water)	2.2 Renewable and sustainable energy	2.3 Sustainable transport system	2.4 Sustainable land and forestry management	2.5 Enhanced social protection
					
Systemic result	**Level 3: Strengthened institutional and implementation capacity (strategic objective)**				
	3.1 Effective governance and coordination system	3.2 Enhanced climate Investment and finance	3.3 Strengthened technical capacity & knowledge management		

Annex: 2: IRF key Performance indicator information

Data for measuring and tracking the proposed indicators varies based on indicator type. Some indicators will be measured using geophysical data (e.g., land cover change), others using household and enterprise level data from surveys (e.g., adoption of CSA, crop divarication index), while others will be measured using national aggregate data (e.g., GHG emissions) and lastly perceptions or expert opinions (e.g., governance and coordination effectiveness). To ensure timely availability of accurate data, the indicators data sources are grouped into data clusters based on the data type required to measure the indicator. The first cluster "1" is for geophysical data such as remote sensing, NDVI from institutions such as the National Remote Sensing Center; second cluster "2" is for micro-level data from surveys such as adoption of CSA, this data will be obtained from ZamStats and IAPRI surveys. Where additional data will be required, targeted snapshot surveys will be undertaken; third cluster "3" is concerned with national aggregate data such as budget allocations to climate change programs and will be obtained from government departments and Ministries; and the fourth cluster "4" pertains to perception or expert opinion data to be obtained from sector experts.

Table 3: Proposed key Performance Indicators for the proposed IRF

Codes	Proposed KPI by result area	Source	Cluster
Level 1:	**OUTCOMES: Climate resilient and low carbon economy**		
1.1	**GHG emission reduction**		
	GHG emissions	MRV	3
1.2	**Resilient ecosystem and sustainable environmental management**		
	Land use and cover	MRV	1
	Normalized Difference Vegetation Index (NDVI)	New	1
	Extent of surface temperature deviation from historical average	New	1
	Rainfall deviation from historical average	New	1
1.3	**Enhanced economy-wide resilience**		
	Projected change in economic growth due to climate change	MRV+	3

	Export diversification index	New	3
1.4	**Enhanced adaptive capacity and resilience of communities and households**		
	Climate change vulnerability index	New	2
	Resilience measurement index	New	2
Level 2:	**PROGRAMMATIC Sustainable and inclusive socioeconomic development**		
2.1	**Resilient productive systems (agriculture, wildlife, tourism, water)**		
	Percent of farmers adopting CSA	MRV/MEL	2
	Crop diversification index	New	2
	Percent of farmers purchasing agricultural insurance	MEL	2
	Hectares of land under irrigation within defined water resource user groups	MEL+	3
	National wildlife adaptation strategy in place	MEL	3
	General Management Plans developed for National Parks	MEL	3
	Number of water catchment management plans developed	MEL+	3
	Number of water resource protection areas gazetted	MEL	3
2.2	**Renewable and sustainable energy**		
	Share of renewable (solar, wind, geothermal) energy in total energy supply	MRV+	3
	MW generated from hydropower	MRV+	
	Percent of households adopting efficient cooking technologies and fuels	MEL	2
	Percent of households using renewable energy for cooking, lighting and heating and other uses	MEL	2
2.3	**Sustainable transport system**		
	Share of budget allocation towards the construction of climate resilient transport infrastructure	MRV/MEL	3
	Kilometer of road maintained in accordance with the climate resilient standard codes	MEL+	3
2.4	**Sustainable land and forestry management**		
	Hectares of land under reforestation/afforestation	MEL	3
	Hectares of forest land under community forest management systems	MEL+	3

2.5	**Enhanced social protection**		
	Budget allocation to social protection programs	MEL	3
Level 3:	**SYSTEMIC: Strengthened institutional and implementation capacity**		
3.1	**Effective governance and coordination system**		
	Climate governance and coordination perception index	New	4
	Climate change action decentralization perception index	New	4
	Climate change Bill enacted	New	3
3.2	**Enhanced climate Investment and finance**		
	Amount of climate finance from domestic sources	MRV	3
	Amount of international climate finance by source	MRV	3
	Value of climate change investment by source	MRV	3
3.3	**Strengthened technical capacity & knowledge management**		
	Spending on climate change research and development	MRV+	3
	Climate change awareness and education perception index	New	4

Annex:3

Table 4: Proposed adaptation/mitigation actions -- Agriculture (crops, livestock and fisheries)

Sector: Agriculture, Livestock, and Fisheries	
Climate Change Impact	**Adaptation/Mitigation Measure**
Crop loss and declining productivity	Promote irrigated agriculture under water user right groups
	Promote drought tolerant crop types and varieties.
	Promote of Climate-Smart Agriculture
	Promote uptake of crop insurance among smallholder farmers
	Up-scaling on dissemination of climate services
	Increase access to mechanization for smallholder farmers
	Increased access to extension services
	Encouraging precision agriculture/ use of ICTs
	Promotion of Integrated Pest Management (IPM)
	Conservation and commercialisation of indigenous crop varieties
	Promoting agroforestry/conservation agriculture (CA)
Food and nutrition insecurity	Promote agricultural diversification
	Enhancing agricultural market linkages
	Promote improved post-harvest and preservation and value addition technologies
	Improved grain storage facilities for produce at the national level.
	Promote health education on how to prepare, preserve and use available foods
	Promote cultivation of fortified food crops (orange fleshed sweet potatoes and maize)
	Accelerated implementation of Food Security Pack Programme
	Upscaled access to social cash transfer by the vulnerable farmers.
Increased livestock mortality	Promotion of the use of locally adapted livestock strains/breeds
	Livestock farmers utilize breeds resilient to climate change
	Use of good animal husbandry practices promoted among livestock farmers
	Promotion of improved pastures
	An index-based livestock insurance (IBLI) scheme is enhanced
	Improve access to animal health services
Reduced livestock productivity	Promote crop-livestock integration
	Degraded pasture restored and vegetation cover with different drought tolerant perennials increased

Sector: Agriculture, Livestock, and Fisheries	
Climate Change Impact	**Adaptation/Mitigation Measure**
	Water points (weirs, dams and boreholes) for livestock management established and are functional
	Sustainable forage seed production programme with private sector participation
	Promotion of efficient reproduction capacity
Declining fish stocks in natural water bodies	Utilization of fishponds and fish cages
	Strengthen community sensitization
	Enforcement of fisheries regulations including fish bans
	Promote aquaculture development and other forms of alternative livelihood in fishing communities (utilization of fish cages and pens)
Fish habitat destruction and disease outbreaks	Protection and restoration of critical habitats (Fish breeding areas)
	Strengthen bio-safety measures and disease controls
	Strengthen monitoring among fishers and fish farmers
	Sensitize communities towards sustainable fish farming practices
	Rehabilitate aquatic environments around river mouths

Table A 1. Zambia NDC MRV Indicators

Sector	Outcomes	Output	Performance Indicators
Banking & Finance - Fiscal Policy	**A1. Fiscal policies improved to foster low-carbon and resilient sustainable development**	A1.1. Climate Finance Resource Mobilization Strategy developed	A1.1.1. Climate Finance Resource Mobilization Strategy developed
		A1.2. Climate change Fund established and launched	A1.2.1. Climate change bill to establish and pass the fund
		A1.3. Climate change mainstreamed into socio-economic planning, budgeting and public financial management	A.1.3.1. Guidelines for assessing integration of climate adaptation and mitigation in macroeconomic and microeconomic policies
		A1.4. Climate Change Public Expenditure Reviews conducted	A1.4.1 Comprehensive climate change public expenditure and budget reviews conducted
		A1.5. Budget Tracking Tool for climate change investments strengthened	A1.5.1. Functional climate change budget Tracking System and Tools in place
		A1.6. Climate proofing manual for public financial management policies developed and is operational	A1.6.1. Climate proofing final manual for integrating climate change into Public Financial Management policies developed and operationalised
		A1.7. Capacity Building for national and sector working groups conducted	A1.7.1 National and sector working groups trained in mainstream climate into sectoral and national development plans
		A1.8. Private Public Partnership Infrastructure on Adaptation and Mitigation Projects promoted and implemented	A1.8.1 Private Public Partnership infrastructure projects implemented
Banking & Finance - Financial sector	**B2. Financial stability and supervisory policy and procedures improved to foster low-carbon and resilient sustainable development**	B2.1 Green Finance Guidelines and Green Loans Guidelines developed by the Bank of Zambia reviewed and strengthened	B2.1.1 Green Finance Guidelines developed
			B2.1.2 Green Loans Guidelines developed

		B2.2 Capacity building program and virtual peer exchange for BoZ staff, selected Government officials, and financial institutions on green finance and the operationalization of the guidelines (covering TCFD, TNFD, and Basel recommendations on sustainable finance)	B2.2.1 Manual updated and trainings delivered by April 2024
		B2.3 Regulatory and supervisory instruments to operationalize the guidelines (in line with the country context and international best practices such as TCFD, TNFD, and the Basel recommendations on sustainable finance)	B2.3.1 Regulatory and supervisory instruments developed by April 2024
		B2.4. Climate Taxonomy for the financial sector developed	B2.4.1. Green Finance taxonomy for Zambia developed by December 2024
		B.2.5 Incentives for Green Bonds developed	B.2.5.1 Tax incentives provided for green bonds
		B.2.6 Green Bond Market Development	B.2.6.1 A Sectoral Green Bond Taxonomy for Zambia developed
			B.2.6.2 An online Green Bond Investment Portal (for pipeline projects) for Zambia developed
			B.2.6.3 Technical Assistance services for potential green bond issuers, including capacity building
		B.2.7 Green Finance Policy and Implementation Plan	B.2.7.1 A Green Finance Policy for Zambia's financial sector developed

		for Zambia's financial sector	B.2.7.2 An Implementation Plan for the Green Finance Policy for the financial sector.
		B.2.8 Green Finance Tagging and Reporting System (to report on financial flows related to climate change, biodiversity conservation and green finance) for Zambia's financial sector	B.2.8.1 A green finance tagging/reporting system under the BoZ regulatory framework
			B.2.8.2 A green finance tagging/reporting system under the PIA regulatory framework
			B.2.8.3 A green finance tagging/reporting system under the SEC regulatory framework
AFOLU – Agriculture	**C3. Strengthened climate resilience of Agricultural production and productivity**	C3.1. Promotion of irrigation and efficient use of water resources.	C3.1.1. Number of farming households surveyed using efficient irrigation system disaggregated by gender & age
		C3.2. Increase the use of technologies for soil fertility improvement and moisture storage (including soil conservation measures).	C3.2.1 Number of farming households surveyed adopting technologies for fertility improvement and moisture storage disaggregated by gender and age
		C3.3. Increased use of indigenous and scientific knowledge on drought tolerant crop types	C3.3.1 Number of farming households surveyed adopting drought resilient crops disaggregated by gender and age
		C3.4. Upscaled access to social cash transfer by the vulnerable farmers.	C3.4.1 Number of male and female headed HH of vulnerable farmers covered by social cash transfer schemes
			C3.5.1 Number of farmers (by season) under weather indexed insurance
		C3.6. Accelerated implementation of Food Security Pack Programme	C3.6.1 Number of beneficiaries segregated by age and gender receiving food security packs
		C3.7. Value addition in agriculture production and productivity promoted	C3.7.1 Number of enterprises involved in agro - processing and value addition
		C3.8. Conservation and commercialisation of indigenous crop varieties	C3.8.1 Number of community seed banks established

		C3.9. Gender sensitive agriculture technologies implemented	C3.9.1 Number of female farmers trained in gender sensitive agricultural technologies
Multi-sector - Climate Information	**D4. Enhanced early warning systems with a focus on agriculture, livestock and fisheries implemented**	D4.1. Strengthening of Legal Framework for Meteorological Services	D4.1.1. Enactment of Meteorology Bill
			D4.1.2. Meteorological Policy
		D4.2. Increased awareness and information about climate change risks and early warning systems	D4.2.1 Climate Information Products and Services tailored to each sector by year
			D4.2.2 Crops covered with climate and weather information services
		D4.3. Strengthened coordination and information exchange processes to optimize and potentiate climate actions and build community resilience	D4.3.1 Number of technical meetings with stakeholders on the impacts of weather, climate, climate variability and climate change with each sector annually
		D4.4. Internet bandwidth expanded	D4.3.2 Internet bandwidth expanded
		D4.5. Applications for accessing weather and climate products developed	D4.5.1. Digital Platforms for accessing weather and climate products tailored at the sectoral level developed
		D4.6. Paper records digitised	D4.6.1. Number of hard copy records digitized
		D4.7. Access to modernised computing infrastructure	D4.7.1. Number of computing infrastructure for weather and climate modelling acquired
			D.4.7.2. TB of Cloud based Storage and processing
		D4.8. Linkages with radio stations established and operational	D4.8.1. number of linkages with community radio stations
		D4.9. Oriented stakeholders on the development of a user-oriented weather and climate services trained.	D4.9.1 Number of agricultural extension officers trained in the development of user-oriented weather and climate services
		D4.10. Mapping of sectors and locations specific areas receiving weather and climate products, services and early warning conducted.	D4.10.1 Mapping report of sectors and locations specific areas generating data and receiving weather and climate products, services and early warning produced

		D4.11. Socio-economic value of meteorological services documented	D4.11.1 Assessment report on the importance of meteorological services for society and the economy made
		D4.12. Demonstration of the value of weather and climate services implemented.	D4.12.1. One pilot project per priority sector enhancing provision of weather and climate services implemented
		D4.13. Community-based workshops to enhance awareness and participation in voluntary rainfall observation established,	D4.13.1. District-based workshops to enhance awareness and willingness to participate in voluntary rainfall observation conducted annually
		D4.14. Research collaborations with learning institutions locally established.	D4.14.1. Number of MoU's with research and higher learning institutions established
		D4.15. Joint international Resource Mobilization and implementation projects promoted	D4.15.1. Number of projects undertaken to enhance meteorological service provision
		D4.16. Staff trained in project writing and resource mobilization	D4.16.1. Number of staff trained to synthesize and feature weather and climate information in sectoral project reports
		D4.17. Expansion and Modernisation of weather and climate observation infrastructure	D4.17.1 Items procured for the expansion and modernisation of weather and climate observation infrastructure
AFOLU – Forestry	**E5. Reduced vulnerability and strengthened resilience of livelihoods among forest communities**	E5.1. Forest under the management of communities	E5.1.1. Hectares of forest put under community forest management (additional to baseline)
		E5.2. Increased natural forest regeneration	E5.2.1. Hectares of forest put under assisted natural regeneration interventions in degraded forest ecosystems
		E5.3. Tree planting upscaled	E5.3.1. Hectares of trees planting using suitable tree species
		E5.4. Increased capacities of forest professionals to enhance their ability in responding to climate change.	E5.4.1. Number of forestry professionals trained on climate change response disaggregated by gender
		E5.5. Fire Management Training conducted	E5.5.1. Trainings in fire management delivered to CF Management Groups
		E5.6. Early forest burning clearing practice promoted.	E5.6.1. Hectares of forest burnt early

		E5.7. Alternative Sources of Livelihoods at Household level in forested areas promoted	E5.7.1. % of households reporting taking up alternative livelihoods in forest areas (disaggregated by gender)
		E5.8. Awareness campaigns on impacts of climate change on forests conducted	E5.8.1. CFMG community awareness campaigns on the impacts of climate change on forests (disaggregated by gender)
		E5.9. Improved forest fire management at national and subnational levels	E5.9.1. Forest fire management plans developed (CFMG)
		E5.10. Forest Early warning and rapid response systems for fire using electronic channels established	E5.10.1. Forest early-warning and rapid-response systems for fire using electronic channels established
		E5.11. Research on vulnerable forest ecosystems in Zambia conducted	E5.11.1. Research reports on vulnerable forest ecosystems in Zambia conducted
		E5.12. Law enforcement operations conducted in gazetted forest and protected areas	E5.12.1. Number of law enforcement operations conducted in gazetted forests and protected areas
	F6. Increased gender equity and inclusiveness for both women and men in Community Forest Management Groups (CFMG)	F6.1. Policy Paper on gender, climate change and forestry developed and disseminated	F6.1.1. Development of policy paper, including sector baseline diagnostic, on gender, climate change and Forestry developed and disseminated
		F6.2. Database on participation in forest management established	F6.3.1. Database of disaggregated information with respect to gender, forest and climate change issues developed
		F6.3. Increased participation of women in Community Forest Management Groups	F6.4.1. Female representatives trained in Community Forest Management Groups (CFMG)
		F6.4. Lesson learnt materials produced and published	F6.6.1. Materials on lessons learned developed
Energy	**G7. Increased share of Renewable Energies in the national grid and increased Energy Efficiency upscaled**	G7.1. Increased solar energy contribution to the national installed electricity generation capacity	G7.1.1. Megawatts of solar electricity supplied in the grid
		G7.2. Low carbon based hydro-electricity supplied into the grid	G7.2.1. Megawatts of hydroelectricity supplied
		G7.3. Wind Electricity supplied into the grid	G7.3.1. Megawatts of wind electricity supplied into the grid

		G7.4. Geothermal electricity generates and supplied into the grid	G7.4.1. Megawatts of geothermal electricity generated and supplied into the grid
		G7.5. Biomass based electricity generated and supplied into the grid	G7.5.1 Megawatts of electricity generated through biomass and supplied into the grid
		G7.6. Nuclear based electricity assessed as future source of energy	G7.6.1. Feasibility study for nuclear power development
		G7.7. Increased generation in renewable energy for Off-grid supply	G7.7.1. 15 RE off-grid projects
		G7.8. Increased number of businesses connected to mini grids	G7.8.1. Businesses connected to mini grids
		G7.9. Public and Private Entities connected to mini grids	G7.9.1. Public and private institutions connected to mini grids
		G7.10. Energy efficiency and conservation promotion	G7.10.1. % of surveyed household using alternative cooking solution
		G7.11. Improved cook stoves produced and distributed across the country	G7.11.1. Improved cook stoves distributed
		G7.12. Incandescent bulbs replaced with LED/CFL	G7.12.1. Number of Incandescent bulbs replaced with LED/CFL
		G7.13. Legal framework in renewable energy and energy efficiency updated	G7.13.1 Legal framework for renewable energy amendment
			G7.13.2 Legal and implementation framework for renewable energy developed
		G7.14. Stakeholders in the energy efficiency and renewable energy sub-sector (province & district) mapped	G7.14.1 Sub-sector energy efficiency stakeholder mapping report done
		G7.15. Training of personnel in data capture in energy efficiency and renewable energy technologies	G7.15.1. Institutions/persons trained in data capturing in energy efficiency and renewable energy
		G7.16. Data capturing hardware and software tools in energy efficiency and renewable energy procured and adopted	G7.16.1. Functional focal points with data capturing hardware and software tools in energy efficiency and renewable

Buildings & Infrastructure	**H8. Enhanced adaptive capacity and Strengthened resilience of infrastructure to climate shocks**	H8.1. Capacity building among staff in design, setting building codes and standards for climate smart infrastructure	H8.1.1. Number of staff personnel (Engineers, Architects, Surveyors etc.,) trained in the design, setting building codes and standards for climate smart infrastructure
		H8.2. Climate sensitive land use planning guidelines developed (Urban and Rural)	H8.2.1. Climate sensitive land use planning guidelines developed (Urban and Rural)
		H8.3. Revised National Construction codes and standards developed	H8.3.1. Revised National Construction codes and standards developed
		H8.4. Compliance visits on building codes and standards undertaken frequently (annually) in construction stage	H8.4.1.4 NCC compliance visits on building codes and standards undertaken annually in construction stage
		H8.5. Demonstration Decent Climate Resilient Housing constructed in Urban and Rural areas	H8.5.1. Climate resilient housing units constructed in Urban and Rural areas
		H8.6. Climate resilient roads constructed	H8.6.1 Km of climate resilient roads constructed
		H8.7 Climate proofed PPP (buildings, Bridges etc) infrastructure constructed	H8.7.1. Climate proofed civil infrastructure units constructed through PPPs (buildings, Bridges etc)
		H8.8. Kilometers of Canals dredged	H8.8.1. Km of Canals dredged
		H8.9. River/Canal Harbors climate proofed	H8.9.1 Quays constructed at harbors
		H8.10. Maintenance and upgrade to climate resilience standard of public infrastructure (Roads, Bridges, Housing, Water, Drainage) conducted	H8.10.1. % of national budget allocated towards maintenance and upgrade to climate resilience standards of public infrastructure (Roads, Bridges, Housing, Water, Drainage)
Waste Management	**I9. Enhanced Waste Management and Resource Recovery**	I9.1 Waste Management regulatory and policy framework strengthened	I9.1.1 Waste Management Policy finalization and Implementation Plan review
			I.9.1.2 Finalization of Waste Management Regulations by 2023
		I9.2. Improved solid waste management and resource recovery	I9.2.1. Number of material recovery facilities established
		19.3. Establishment of Lusaka Waste Management Company	I9.3.1. Lusaka Waste Management Company established

		I9.4. Awareness campaign programmes at national and subnational levels conducted	I9.4.1. Number of awareness programmes/campaigns on waste management conducted at national and sub-national level
			I9.4.2. Mass-media and social media campaign at the national level
		I9.5. Waste disposal following sustainable guidelines increased	I9.5.1. Number of Waste disposal facilities complying with waste disposal guidelines
		I9.6. Installed power capacity (MW) of waste to energy projects	I9.6.1. Installed power capacity (MW) of waste to energy projects
		I9.7. Commercial aerobic composting plants installed and functional	I9.7.1. Pilot commercial aerobic composting plants installed and functional
		I9.8. Increased methane capture capacity through landfill development	I9.8.1. Number of newly constructed landfills
		I9.9. Increased capacities for data reporting on waste management	I9.9.1. Number of waste management sites reporting to Zambia's MRV system
Health	**J10. Increased resilience of the Health sector to climate change**	J10.1. Strengthened policies and institutional capacities to manage climate change risks in the health sector	J10.1.1 % of districts with functional public health emergency preparedness and response systems for climate sensitive diseases
		J10.2. Availability of EH policy that clearly defines the strategies that include climate change for the Ministry of Health	J10.2.1 Environmental Health policy enacted
		J10.3. Availability of surveillance tools that aid in early warning against climate variability and extreme weather events with a focus on the health sector	J10.3.1 % of districts with functional surveillance systems for climate sensitive diseases
			J10.3.1 % of districts conducting environmental health surveys
		J10.4. Climate change is mainstreamed across programmes to enhance resilience of the health sector	J10.4.1. % of health care facilities implementing mitigation and adaptation measures to climate change
Water	**K11. Water security of all Zambians is promoted and protected, via gender-responsive and climate-smart water infrastructure**	K11.1. Investment in climate resilient water sources infrastructure increased	K11.1.1. Number of climate resilient water sources infrastructures constructed
			K11.1.2 Number of climate resilient water sources infrastructures rehabilitated

			K11.1.3 Number of climate resilient water sources infrastructures maintained
		K11.2. Ground water aquifer resources mapped and protected	K11.2.1 Number of aquifers mapped and protected
			K11.2.2 Number of exploratory boreholes drilled
			K11.2.3 Number of well fields identified and developed
		K11.3. Capacity building in Aquifer mapping, groundwater exploration and protection	K11.3.1 Trainings in Aquifer mapping, groundwater exploration and protection (disaggregated by gender)
		K11.4. Relevant water technologies adopted based on the assessment results and potential implemented	K11.4.1. Number of beneficiaries trained on the use of climate resilient water technologies disaggregated by gender
		K11.5. Ground and surface water monitoring systems established	K11.5.1. Number of functional ground water monitoring systems installed
			K11.5.2. Number of functional surface water monitoring systems installed
		K11.6. Water deficit/availability assessments in the three agro-ecological regions conducted	K11.6.1. Number of water sources assessment conducted in catchment areas on yearly basis
			K11.6.2. Volume of water impounded in constructed dams and desegregated by size in each of the six catchment regions
AFOLU – Livestock	**L12. Livestock farmers able to cope with climate change through adoption of improved practices that enhance livelihoods;**	L12.1 Livestock farmers utilize breeds resilient to climate change	L12.1.1. Number of livestock units procured for pass-on scheme
		L12.2 Water points (weirs, dams and boreholes) for livestock management established and are functional	L12.2.1 Livestock keeping households with enhanced access to water points
		L12.3 Use of good animal husbandry practices promoted among livestock farmers	L12.3.1. Livestock farmers trained in effective practices disaggregated by gender
		L12.4 An index-based livestock insurance (IBLI) scheme is enhanced	L12.4.1. Farmers registered for IBLI disaggregated by gender
		L12.5 Livestock Early Warning Information	L12.5.1. One LEWIS operational

		System (LEWIS) operationalised.	
	M13. Sustainable systems for improved smallholder livestock production and productivity operational	M13.1 Degraded pasture restored and vegetation cover with different drought tolerant perennials increased	M13.1.1. Ha of degraded rangeland restored
		M13.2. Sustainable forage seed production programme with private sector participation	M13.2.1. Farmers receiving improved pasture seeds
		M13.3. Diversification and strengthened livelihoods and source of incomes for rural populations.	M13.3.1. 4 skin and hides manufacturing plants established by private sector
		M13.4. Technical and business capacity developed for construction of biogas plants for livestock farmers	M13.4.1. Livestock farmers trained in the construction and use of biogas digesters disaggregated by gender
			M13.4.2. Biogas Digesters constructed
Industry	**O15. Sustainable Industrial Products and Product Use**	O15.1. Clinker content in cement reduced	O15.1.1. 3 pilot projects implemented with large cement manufacturers for clinker reduction
		O15.2. Use of fluorinated GHGs reduced	O16.1.1. National Program for the reduction of fluorinated gases in intensive industries implemented
Transport	**P16. Sustainable Transportation Infrastructure**	P16.1 Lusaka Tramway System Developed	P16.1.1. KM of Tramway Constructed
		P16.2. Electrified Railway Systems developed	P16.2.1. Km of Power lines connected
		P16.3. Railway transport Infrastructure rehabilitated and modernised	P16.3.1. Km of railway Lines rehabilitated
		P16.4 Urban Mobility Policy and strategy developed	P16.4.1. Electrical Mobility Policy/Implementation and Investment Framework developed
Climate Institutional Capa	**Q17. Strengthened Institutional**	Q17.1. Green Growth Strategy Developed	Q17.1.1. Green Growth Strategy launched

	Capacity for Coordination Climate Change Projects and Programmes in Zambia	Q17.2. National Policy on Green Growth and Climate Change Developed	Q17.1.2. National Policy on Climate Change and Implementation Plan revised and launched
		Q17.3. NDC Revised	Q17.3. NDC Revised
		Q17.4. NDC Implementation Framework developed and launched	Q17.1.4. NDC Implementation Framework launched
		Q17.5. NDC Investment Strategy and Plan designed	Q17.1.5. NDC Investment Strategy and Plan launched
		Q17.6. Climate Change Act developed	Q17.1.6. Climate Change Bill enacted by Parliament
		Q17.7. Biennial Transparency Report/4th National Communication report produced	Q17.1.7. BTR1/NC4 finalized and submitted
		Q17.8. Capacity building in Green Growth and Climate Change for key NDC sectors	Q17.8.1. Number of people trained in Green Growth and Climate Change for key NDC sectors
		Q17.9. NDC Communication strategy developed	Q17.9.1 NDC Communication strategy developed and launched
		Q17.10 Capacity building of District Level Staff and communities	Q17.10.1 Number of multidisciplinary district level staff trained in risk analysis for climate change
			Q17.10.2 Number of multidisciplinary district staff trained in environmental and adaptation proposal appraisal for micro projects
			Q17.10.3 Number of communities trained in community livelihood adaptation action plans and micro project proposal development
		Q17.11 Women and men equally participating in the development of local area plans	Q17.11.1 Percentage of men/women participating in the development local climate change adaptation plans
Climate Transparency	**R18 Enhanced transparency for efficient GHG accounting and climate reporting in place**	R18.1 National Enhanced Transparency Framework (ETF)/Measuring Review and Verification (MRV) Portal operationalized	R18.1.1 MRV launched and operationalized with integrated ETF/MRV portal

		R18.2 National GHG Inventory	R18.2.2 2016 - 2022 National GHG Inventory
Multi-sector - Environmental issues	**S19 Enhanced Environmental Sustainability**	S19.1 Greening Environmental Tools and Processes	S19.1.1 Number of guidelines for Greening of Environmental, Tools and Processes {Environmental Management Strategies, Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA's), Life Cycle Assessments (LCA), Research and Development, Environmental Fund}
		S19.2 Revised Waste Management Strategy	S19.2.1 Revised Waste Management Strategy
		S19.3 Guidelines for Extended Producer Responsibility	S19.3.1 Number of Guidelines for Producer Responsibility developed
		S19.4 Electrical and Electronic Waste management regulations and guidelines	S19.4.1 Hazardous Waste management Regulations
			S19.4.2 Electrical and Electronic Waste management regulations

Table A 2. Metrics and data sources for the IRF KPIs

Codes	Proposed KPI by result area	Unit	Description	Frequency	Data Type	Proposed Cluster Lead	Disaggregated by
Level 1:	**Climate resilient and low carbon economy**						
1.1	**GHG emission reduction**						
	GHG emissions	Giga grams	The net amount of CO_2 equivalent emitted into the atmosphere after deducting the amount of carbon sequestered compared to the projected emission under business as usual (BAU).	Annual	Geophysical	Zambia Environmental Management Agency (ZEMA)	Main types of GHG including Carbon dioxide, Methane, Nitrous oxide
1.2	**Resilient ecosystem and sustainable environmental management**						
	Land use and cover	Hectares/percentage	Amount of land under different land uses including agriculture, forest, national	Every 4 years	Geophysical	National Remote Sensing Center (NRSC)	Type of land use and land cover and province

Codes	Proposed KPI by result area	Unit	Description	Frequency	Data Type	Proposed Cluster Lead	Disaggregated by
			parks, game management areas.				
	Normalized Difference Vegetation Index (NDVI)	n/a	A dimensionless index that describes the difference between visible and near-infrared reflectance of vegetation cover and can be used to estimate the density of greenness on an area of land, a measure of vegetation health and density	Annual	Geophysical	NRSC	Appropriate geographical region
	Extent of surface temperature deviation from historical average	Percentage	A measure of temperature deviation from the long-term average, which is considered normal	Annual	Geophysical	Zambia Meteorological Department	Appropriate geographical region and years/months
	Rainfall deviation from historical average	Percentage	A measure of rainfall deviation from the long-term average, which is considered normal	Annual	Geophysical	Zambia Meteorological Department	Appropriate geographical regions and year/months
1.3	**Enhanced economy-**						

Codes	Proposed KPI by result area	Unit	Description	Frequency	Data Type	Proposed Cluster Lead	Disaggregated by
	wide resilience						
	Projected change in economic growth due to climate change	Percentage	Annual change in GDP per capita from projections under business-as-usual and climate change scenarios	Annual	Aggregate	Ministry of Finance and National Planning (MoFNP)	Economic sectors
	Export diversification index	n/a	A measure of how a country's export commodity/service are distributed. It indicates whether exports are concentrated among a few sectors or are spread across several sectors.	Annual	Aggregate	ZamStats Ministry of Commerce Trade and Industry	Sector
1.4	**Enhanced adaptive capacity and resilience of communities and households**						
	Climate change vulnerability index	n/a	The Climate Change Vulnerability Index evaluates the vulnerability of human	Annual	Microdata and aggregate data	Disaster Management and Mitigation Unit (DMMU)	Rural and Urban

Codes	Proposed KPI by result area	Unit	Description	Frequency	Data Type	Proposed Cluster Lead	Disaggregated by
			populations to extreme climate events and changes in climate over long-term periods (30 years minimum). It combines exposure to climate extremes and change with the current human sensitivity to those climate stressors and the capacity of the country to adapt to the impacts of climate change.				
	Resilience measurement index	n/a	An indicator of household resilience to shocks such as climate change	Annual	Microdata and aggregate	ZamStats DMMU IAPRI	Rural and urban
2.1	**Resilient productive systems (agriculture, wildlife, tourism)**						
	Percent of farmers adopting CSA	Percentage	It will provide an indication of the level of uptake and implementation	Annual	Micro data	ZamStats MoA	Gender, province

Codes	Proposed KPI by result area	Unit	Description	Frequency	Data Type	Proposed Cluster Lead	Disaggregated by
			of CSA practices among smallholder farmers. It helps assess the progress and effectiveness of initiatives aimed at promoting climate-resilient and sustainable farming systems, and it highlights the extent to which farmers are incorporating climate change considerations into their agricultural practices.			Conservation Farming Unit (CFU) IAPRI	
	Crop diversification index	n/a	A measure of the composition of crops planted or harvested within a defined geographic boundary.	Annual	Micro data	MoA/ZamStats NRSC	Gender and province
	Percent of smallholder farmers purchasing agricultural insurance	Percentage	A measure of adoption and usage of agricultural insurance products among smallholder farmers.	Annual	Micro data	MoA/ZamStats	Gender Province

Codes	Proposed KPI by result area	Unit	Description	Frequency	Data Type	Proposed Cluster Lead	Disaggregated by
	Hectares of land under irrigation within defined water resource user groups	Hectares	It provides a quantitative measure of the extent of agricultural land that is utilizing irrigation techniques to support crop production.	Annual	Aggregate Microdata	MoA Water Resources Management Authority (WARMA)	Province
	General management Plans developed for all national parks	n/a	A measure of how government and stakeholders plan on managing national parks in a sustainably and viable manner	Annual	Aggregate	Ministry of Tourism Department of National Parks and Wildlife (DNPW)	National Park
	Wildlife adaptation plan in place	n/a	A plan outlining the sustainable management and adaptation of wildlife in the country	n/a	n/a	Ministry of Tourism (DNPW)	n/a
2.2	**Renewable and sustainable energy**						
	Percent share of renewable energy in total energy supply	Percentage	Measures the proportion or percentage of renewable energy sources in the overall energy supply mix. It indicates	Annual	Aggregate data	Ministry of Energy	n/a

Codes	Proposed KPI by result area	Unit	Description	Frequency	Data Type	Proposed Cluster Lead	Disaggregated by
			the contribution of renewable energy, such as solar, wind, hydroelectric, geothermal, and biomass, compared to non-renewable sources like fossil fuels (coal, oil, natural gas) and nuclear energy.				
	MW generated from hydropower	Mega watts	Measure of electricity supply from hydropower sources. Hydro power is Zambia's largest source of renewable energy and its generation capacity is an important indicator of energy supply in the country	Annual	Aggregate	Ministry of Energy	n/a
	Percent of households adopting efficient cooking technologies and fuels	Percentage	It will track the progress and impact of efforts to promote and encourage the adoption of efficient cooking	Annual	Aggregate Micro data	Ministry of Energy	Province

Codes	Proposed KPI by result area	Unit	Description	Frequency	Data Type	Proposed Cluster Lead	Disaggregated by
			technologies and fuels				
	Percent of households using renewable energy for cooking, lighting and heating and other uses	Percentage	It will provide an indication of the adoption and utilization of renewable energy technologies among domestic consumers	Annual	Micro data	Ministry of Energy	Province
2.3	**Sustainable transport system**						
	Budget allocation towards the construction of climate resilient transport infrastructure	ZMW 'million	A measure of resources allocated to construction of climate resilient transport infrastructure including, road, bridges, waterways, airports etc.	Annual	Aggregate data	Ministry of Finance and National Planning Ministry of Transport and Logistics	n/a
	Kilometer of road constructed maintained in accordance with the climate resilient	Km	A measure of the length of road infrastructure maintained following the climate resilient standards to ensure that maintenance is	Biennial	Aggregate data	Ministry of Transport and Logistics Ministry of Infrastructure, Housing and Urban	n/a

Codes	Proposed KPI by result area	Unit	Description	Frequency	Data Type	Proposed Cluster Lead	Disaggregated by
	standard codes		compliant with set standards			Development (MIHUD)	
2.4	**Sustainable land and forestry management**						
	Hectares of land under reforestation/ afforestation	Hectares	It will be used to track and quantify the progress made in restoring or creating new forested areas.	Annual	Aggregate data	MGEE/Forestry Department Ministry of Local Government and Rural Development (MLGRD)	n/a
	Hectares of forest land under community forest management systems	Hectares	A measure to quantify amount of forest under community management system	Annual	Aggregate	MGEE/Forestry Department	n/a
2.5	**Enhanced social protection**						
	Number of people benefiting social protection	ZMW 'million	It will provide a quantitative measure of the financial resources dedicated to providing social	Annual	Aggregate	Ministry of Community Development and Social Services (MCDSS)	

Codes	Proposed KPI by result area	Unit	Description	Frequency	Data Type	Proposed Cluster Lead	Disaggregated by
			protection to cushion the vulnerable population from livelihood shocks such as climate change and socioeconomic shocks			Ministry of Labour and Social Security ZamStats	
Level 3:	**Strengthened institutional and implementation capacity**						
3.1	**Effective governance and coordination system**						
	Climate governance and coordination perception index	n/a	It provides a measure of the extent to which stakeholders perceive the strength of governance and coordination mechanism of climate actions in the country	Biennial	Observation/expert opinion	MGEE MoFNP	Sector
	Climate change action decentralizati	n/a	A measure of the extent to which stakeholders	Biennial	Observational/expert opinion	MLGRD MGEE	Sector

Codes	Proposed KPI by result area	Unit	Description	Frequency	Data Type	Proposed Cluster Lead	Disaggregated by
	on perception index		perceive climate governance and coordination is decentralized				
	Enactment of the Climate Change Bill	n/a	Enactment of the Climate Change Bill that will provide the legislative framework for climate actions in the country	n/a	n/a	Ministry of Justice National Assembly of Zambia MGEE	n/a
3.2	**Enhanced climate Investment and finance**						
	Amount of climate finance from domestic sources	ZMW 'million or USD 'million	Refers to local, national financing—drawn from public, private and alternative sources of financing—that seeks to support climate actions	Annual	GoZ sector specific annual reports and project reports	MoFNP MGEE/National Designated Authority (NDA)	Sector
	Amount of international climate finance by source	USD 'million	Refers to financing drawn from international financial institutions and donor countries that seeks to	Annual	Sector project annual reports	MoFNP MGEE/NDA	Sector

Codes	Proposed KPI by result area	Unit	Description	Frequency	Data Type	Proposed Cluster Lead	Disaggregated by
			support climate actions.				
	Amount of climate investments made	USD 'million	A measure of private related climate change investment made	Annual	Aggregate data	MoFNP Zambia Development Agency	By domestic and international sources
3.3	**Strengthened technical capacity & knowledge management**						
	Spending on climate change research and development	ZMW 'million	A measure of expenditure on climate research and development as well as capacity building to support climate research.	Annual	Aggregate data	Ministry of Technology and Science/National Science and Technology Council	Sector
	Climate change awareness and education perception index	n/a	A measure of extent to which climate awareness and education has changed	Biennial	Observational/ expert opinion	MGEE Ministry of Education Ministry of Information and Media	Sector

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