REPORT OF THE TRAINING WORKSHOP FOR GHG DATA PROVIDERS ANDCOMPILERS IN LULUCF SECTOR OF ZAMBIA

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CONSERVATION INTERNATIONAL

CI-GEF Project Agency

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COMESA

REGIONAL CENTRE FOR MAPPING OF RESOURCES FOR DEVELOPMENT

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ACRONYMS AND ABBREVIATIONS

BTR1	1st Biennial Transparency Report
CBIT	Capacity-Building Initiative for Transparency
CI	Conservation International
CIAfD	Conservation International Africa Field Division
COMESA	Common Market for Eastern and Southern Africa
ETF	Enhanced Transparency Framework
FAO	Food and Agriculture Organization
GEF	Global Environment Facility
GHG	Greenhouse Gas
IPCC	Intergovernmental Panel on Climate Change
LULUCF	Land Use, Land-Use Change, and Forestry
MRV	Monitoring, Reporting, and Verification
NDCs	Nationally Determined Contributions
SOC	Soil Organic Carbon
SOM	Soil Organic Matter
UNFCCC	United Nations Framework Convention on Climate Change

1. Introduction

1.1 Background

Parties (countries) to the UNFCCC must periodically compile national greenhouse gas (GHG) inventories and communicate them to the UNFCCC secretariat. To achieve this, GHG inventory systems are critical for developing and regularly updating national GHG inventories that, in turn, are foundational to national and international GHG mitigation efforts. Usually, the data for the GHG inventory development are collected from different stakeholders, including line ministries and the private sector. However, stakeholders need a greater understanding of the type and format of the data required.

Most countries have already received capacity-building support on the different aspects of the GHG inventory compilation, including the 2006 IPCC guidelines. However, capacity gaps and lack of awareness remain among the different stakeholders, including countries' central units coordinating the final inventory, mainly because the inventory compilation is often outsourced to external consultants. Under the Enhanced Transparency Framework (ETF) of the Paris Agreement, all countries must submit their 1st biennial transparency report (BTR1), including their national GHG inventory under the ETF, by 31st December 2024 and every two years after that. The GHG inventory requirements under the ETF are enhanced compared to the current reporting framework, especially for developing countries. In this context, many developing countries are expected to face challenges in developing a GHG inventory that meets the ETF requirements for example use of the 2006 IPCC guidelines and 2019 Refinement, GHG inventory cross-cutting issues, and data collection.

1.2 Context

COMESA in collaboration with Conservation International (a Global Environment Facility Accredited Agency) are implementing a Regional Capacity Building Initiative for enhanced Transparency_(CBIT) in climate change monitoring, reporting and verification (COMESA-CBIT project). The project is being implemented in four (4) COMESA Member States namely, Eritrea, Comoros, Seychelles and Zambia.

The overall goal of the Project is to strengthen, capacity of the four (4) COMESA Member States to comply with transparency requirements as defined in Article 13 of the Paris Agreement through the establishment of an Eastern and Southern Africa Regional framework for Monitoring, Reporting and Verification (MRV) of climate actions, reporting on NDCs and knowledge dissemination.

The Government of the Republic of Zambia requested for COMESA support through the GEF CBIT project to convene a training workshop for data compilers and providers. COMESA in collaboration with CBIT-GSP convened a training workshop in Chita Lodge, Kafue, Zambia between 18th -19th January 2024 to train data providers and compilers from various sectors in Zambia. The training was also informed by the assessment done by the CBIT-GSP programme which revealed that inadequate attention has been given towards building capacity of data providers. Additionally, many countries are in the process of developing institutional arrangements and a legal framework for data-sharing between the ministry responsible for the GHG inventory compilation and reporting and data providers, notably the line ministries. These

arrangements and agreements need to be operationalized through a series of direct engagements and capacity building for the targeted sector-specific data providers. Therefore, the training focused on the land use, land-use change, and forestry (LULUCF) sector of the national GHG inventory. Objectives of the workshop
The main objectives of this training were as follows:

i. To improve the capacity of the data providers and compilers on GHG inventoryrequirements in Zambia

ii. To enhance the knowledge level of GHG inventory compilers and data providers especially on the IPCC requirements

iii. To increase the efficiency of the coordination among the stakeholders involvedin the GHG inventory development.

iv. To enhance the national preparedness level for developing and reporting aLULUCF GHG inventory in accordance with the ETF requirements.

2. Workshop outcomes

The following were the outcomes of the training workshop:

i. Data providers, handlers and compilers trained on data harmonization requirements according to Paris Agreement reporting provisions for the LULUCF sectors.

ii. Enhanced capacity of data providers and compilers in GHG inventory compilation and Improved understanding and application of IPCC methodological approaches.

iii. Awareness created among data providers and compilers on the frequency, formats, and schedule for sharing specific data.

iv. Guiding framework and plan for data collection, updating, and archiving methods for GHG data developed for Zambia.

v. Participants in-depth understanding on how to develop the LULUCF GHG inventory per the 2006 IPCC guidelines and use the 2006 IPCC software for national GHG inventories.

3. Official Opening

The two-day training workshop was officially opened by Ms. Edith Tibahwa, COMESA climate change program manager, who expressed gratitude to all attendees for their commitment and encouraged active participation and contributions from all participants to ensure a successful and productive meeting.

4. Detailed training proceedings:

4.1 Presentations

CBIT-GSP

Ms. Sheila Kiconco, the network coordinator for Anglophone Africa under the Capacity-Building Initiative for Transparency-Global Support Programme (CBIT-GSP) provided

a comprehensive overview of the Biennial Transparency Report content, with examples and lessons learned from other countries. Mr. Lordanis Tzamtzis, a Climate Change specialist at the Food and Agriculture Organization (FAO) of the United Nations, delivered detailed presentations and group exercises covering the following topics:

I. LULUCF GHG Inventory under the ETF

The presentation offered foundational information on Greenhouse Gas (GHG) inventories and their relevance to the national context. A summary of trends associated with national emissions and removals, overview of emissions estimates and trends for source and sink categories, and indirect GHG and precursor gases, was provided. The presentation highlighted the Key Category Analysis (KCA), with flexibility offered to developing countries based on their specific capacities. It touched on provisions introduced particularly focusing on a non-mandatory provision with flexibility provided to developing country parties, tailored to their capacities and needs.

II. Developing and maintaining a robust and sustainable GHG inventoryunder the ETF

The presentation delved into the development and maintenance of a robust and sustainable Greenhouse Gas (GHG) inventory under the Enhanced Transparency Framework (ETF). It also provided insight into FAO Climate Change Knowledge Hub (CCK-Hub); an online portal designed as a comprehensive resource center. Acting as a "one-stop-shop," it consolidates knowledge and resources related to climate change in the agriculture and land use sectors. The CCK-Hub aims to enhance countries' knowledge and capacity, facilitating the achievement of climate and sustainable development goals while ensuring food security. Its interactive features enable users to connect with peers, experts, and capacity-building providers.

Secondly, it covered the FAO Transparency in Agriculture and Land Use Sectors Network; a dynamic and supportive group of experts and practitioners dedicated to meeting the requirements of the Enhanced Transparency Framework of the Paris Agreement. It elaborated on the Modalities, procedures, and guidelines for the transparency framework for action and support as outlined in Article 13 of the Paris Agreement.

The presentation highlighted the GHG inventory, emphasizing the role of institutional arrangements under the ETF and the significance of quality assurance/quality control in ensuring transparency and accuracy.

III. National GHG inventory for the LULUCF sector in accordance withthe 2006 IPCC guidelines

Key take away points included:

a) **Nature of Emissions/Removals:** Emphasis was made on factors influencing emissions and removals in LULUCF being both natural and anthropogenic. Distinguishing between causal factors may pose challenges.

b) **Inventory Methodology:** need for inventory methods to be operational, practical, and globally applicable while maintaining scientific rigor.
c) **2006 IPCC Guidelines:** noted the retention of the 'managed land' proxy in defining anthropogenic GHG emissions and removals. This includes all activities occurring on land.
d) **Reporting Exclusions:** GHG emissions/removals are not required to be reported for unmanaged land in the GHG inventory.
e) **Carbon Pools Dynamics:** explained how Carbon pools exchange GHGs, with emissions occurring through the decay of Carbon stocks and physiochemical processes like fires, noting that photosynthesis facilitates removals.
f) **Carbon Stock Changes Proxy:** highlighted the use of Carbon stock changes as a proxy for estimating GHG emissions/removals for different land categories.
g) **Conversion for Reporting:** Emphasized the necessity of multiplying both positive (Carbon stock gains) and negative (Carbon stock losses) values by -44/12 to convert them into CO2 removals and emissions, respectively. (44 represents the molecular weight of CO2, and 12 is the atomic weight of Carbon.)

This summary encapsulates the essential elements presented regarding the LULUCF sector's GHG inventory, providing clarity on methodologies and principles as per the 2006 IPCC guidelines.

IV. National GHG inventory for the LULUCF sector in accordance withthe 2006 IPCC guidelines (living biomass, dead organic matter andemissions from fire).

The session had a specific focus on living biomass. Biomass constitutes organic matter accumulated in the tissues of vegetation through plant growth processes. There exists a distinction between living biomass and dead organic matter; dead organic matter is because of biomass losses caused by factors such as mortality, harvesting, and disturbances. This dead organic matter includes components like deadwood and litter.

It addressed emissions from fire, characterizing it as a form of disturbance in the carbon cycle within terrestrial pools, noting that these emissions have both natural and anthropogenic causes, underscoring the role of fire as a factor influencing carbon dynamics in ecosystems and highlighted the interconnected processes involving living biomass, dead organic matter, and emissions from fire, contributing to a comprehensive understanding of carbon dynamics in the context of climate change and GHG emissions.

V. National GHG inventory for the LULUCF sector in accordance withthe 2006 IPCC guidelines (soil organic matter and mineral soils)

The presentation primarily focused on the significance of soil organic carbon (SOC). As a major component of soil organic matter and the largest carbon stock in many terrestrial ecosystems, SOC is ranked as the second largest carbon pool globally, after oceans, hence a very critical part of the LULUCF.

Participants discussed the critical importance of SOC to soil health, and fertility and how it directly influences soils' capacity to deliver essential ecosystem services, including food production and biodiversity support. The discussions acknowledged the critical role SOC plays in the global effort to combat climate change and the factors influencing soil organic matter (SOM), encompassing both natural elements such as climate, topography, parent material, and land cover, as well as human interventions like land use, cultivation practices, and types of plants. This dual influence underscored the dynamic nature of SOC, shaped by both environmental conditions and human activities.

VI. National GHG inventory for the LULUCF sector in accordance withthe 2006 IPCC guidelines (soil organic matter and organic soils)

The discussion delved into Soil Organic Carbon (SOC) accumulated in organic soils, primarily originating from partially decomposed plant tissues like dead wood and litter highlighting that accumulation occurs in deep strata due to the anaerobic environment (absence of oxygen), which slowed down further decay. Common examples of organic soils deposits include marshes, bogs, and swamps, although the formation is not strictly limited to wetlands. Organic soils were noted to have the capacity to hold 200-400 percent of their own dry weight in water. The depth of organic soils was highly variable and could reach several meters. The discussions also provided insights into the unique characteristics and formation processes of organic soils, and their significance in different environments beyond wetlands.

VII. National GHG inventory for the LULUCF sector in accordance withthe 2006 IPCC guidelines (forest land)

The training included a session on forest land which is as defined as all land with woody vegetation; This is also in line with the criteria defined by two parameters employed by Zambia for forest classification. Forest land can be further subdivided into managed and unmanaged. The meeting noted managed forest as one that has been subjected to human activities either presently or in the past, and unmanaged, being one that has never been subjected to human activities. This classification system allowed for a clear distinction between areas influenced by human intervention and those in a more natural state.

VIII. National GHG inventory for the LULUCF sector in accordance withthe 2006 IPCC guidelines (cropland, grassland)

A session on grassland and crop land discussed the relationship between cropland and grassland. Agriculture land is classified by the IPCC under two land use categories:

i. Cropland
ii. Managed grassland

When estimating emissions and removals from these land categories, it was observed that they often formed part of a rotation system on the same agricultural land. In such cases, it is important to calculate long-term average Soil Organic Carbon (SOC) stocks that include both phases of the rotation system. This approach allows for the

consideration of any change in land cover associated with emissions or removals without the need to track them over time, as long as the rotation system remains unchanged. The session provided precision on the interconnection between cropland and managed grassland within the context of emissions and removals estimation.

IX. National GHG inventory for the LULUCF sector in accordance withthe 2006 IPCC guidelines (wetlands)

A session on wetlands discussed the wetlands in the context of coverage; Wetlands refers to any land covered or saturated by water for all or part of the year and does not fall under forest, land, cropland, or grassland categories. Managed wetlands were specifically limited to those where the water table was artificially changed (drained or raised) or those created through human activity, such as damming a river. Emissions and removals were highlighted to occur from activities carried out in the following systems:

- Peatlands
- Rewetted lands
- Flooded lands
- Coastal wetlands

The discussions provided a comprehensive understanding of the classification and characteristics of wetlands, emphasizing the importance of managing wetlands in the context of water table alterations and human-induced activities.

X. National GHG inventory for the LULUCF sector in accordance with the2006 IPCC guidelines (Settlements, other land)

The training included a LULUCF session on land which categorized developed land as settlements unless already included under other land use categories. Settlements include herbaceous perennial vegetation. Vegetation management in settlements covers activities such as the removal of branches during pruning or the disposal of turf grass clippings, which could either be left on-site (transferred to waste) or burned. When burned, emissions could occur either off-site (non-CO2 emissions reported under waste or energy sector) or on-site (non-CO2 emissions reported under the land use sector). The session provided insights into the classification of developed land as settlements and the associated considerations in vegetation management practices within these areas.

XI. LULUCF GHG inventory under the ETF (Uncertainty)

Scientists make measurements or estimates on the assumption that readings or measurements are approximate and exact, true, but unknown value in the real world. In essence, experts recognize that there is a margin of doubt concerning the closeness of their measurements or estimates to the true value. The concept of uncertainty in measurements or estimates was described as a quantification of this margin and doubt. This perspective emphasized the importance of recognizing and quantifying the inherent uncertainty in scientific measurements and estimations. Discussions focused on how to deal with uncertainties in the GHG inventories under the ETF regime.

5. Conclusion

The LULUCF training provided valuable lessons into various aspects of greenhouse gas inventories and transparency frameworks thereby enhanced participants' understanding of key concepts related to climate change and greenhouse gas management. Mr. Lordanis Tzamtzis (FAO training expert) and Ms. Edith Tibahwa thanked the CBIT-GSP (Climate change program manager, COMESA) stressed on the importance of FAO and COMESA collaboration in convening the joint workshop and emphasized the need for future partnership on CBIT initiatives to share experiences between COMESA Member States and other countries under the global CBIT platform.

Annex 1

List of participants

	First Name	Last Name	Organization	Gender
1	Sylvester	Siame	Forestry- MGEE	M
2	Cgrispin	Moyo	Ministry of Agriculture	M
3	Frank	Gwaba	MGEE	M
4	Iordanis	Tzautzis	FAO	M
5	Joseph	Simbaya	UNZA	M
6	Deutronomy	Kasaro	CBIT-COMESA	M
7	Beausic	Chongo	MGEE	M
8	Edith	Tibahwa	COMESA	F
9	Nosiku	Walenga	COMESA	F
10	Clayton	Lumwaya	ZEMA	M
11	Muyanje	Chilwana	ZEMA	F
12	Chikumbi	Kasonde	ZEMA	F
13	Mulope	Mubita	MFL	M
14	Lwembe	Mwale	COMESA	M
15	Kanembwa	Mukoma	Forestry-MGEE	M
16	Charity	Nalweya	ZEMA	F