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County Capacity Building Workshop on GHG Inventory for Kenya's Crop Subsector Report

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Disclaimer

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UNOPS

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Introduction

1. Introduction

Kenya is committed to global climate agreements, including the United Nations Framework Convention on Climate Change (UNFCCC) and the Paris Agreement. These commitments require Kenya to implement measures aimed at reducing emissions and to report on its progress. However, Kenya has faced challenges, particularly with data collection, when preparing its National Communications (NCs) and Biennial Update Reports (BURs). In 2024, the country aims to submit both its NC and the first Biennial Transparency Report (BTR) by December. To achieve this, it is necessary to conduct capacity-building workshops for counties to emphasize the importance of reporting, explain the reporting process, and clarify the types of data required.

The Initiative for Climate Action Transparency (ICAT)-funded project on "Support for the GHG Inventory for Kenya's Crop Subsector" aims to enhance GHG reporting within this sector. This project, implemented by the Alliance of Bioversity International and CIAT in collaboration with the Climate Change Unit of the Ministry of Agriculture, Livestock Development, and Fisheries, has a primary objective of assessing the status of the GHG reporting, identifying the data gaps, and develop tools for collecting activity data that can support the transition to tier 2 reporting. Additionally, the project seeks to strengthen the capacity of both national and sub-national stakeholders, enabling them to better understand the critical data required for GHG reporting and the process of preparing the inventory.

As part of this initiative, capacity-building workshops were conducted in five counties: Taita Taveta, Makueni, Murang'a, Baringo, and Nyamira. The five counties were selected as they were part of another ICAT-funded project that focussed on the development of a climate-smart agriculture reporting platform on adaption. These workshops included a one-day intensive training on the GHG inventory process, the policies governing GHG reporting, and the institutional arrangements currently in place for Kenya's reporting framework. A key component of the training was the introduction of a recently developed tool for collecting activity data for GHG reporting, which was piloted with select farmer groups.

Participants included ward, sub-county, and county agricultural officers, as well as representatives from the livestock, environment, and data units within each county. In total 99 participant (30 women and 69 men) from five counties attended the workshop[1]. The training sessions were led by members of the Kenya Climate Smart Agriculture Multi-Stakeholder Platform (CSA-MSP), representatives from the Ministry of Agriculture, Livestock Development, and Fisheries' Climate Change Unit (MOALD-CCU), and researchers from the Alliance of Bioversity International and CIAT.

1 https://alliancebioversityciat.org/stories/empowering-counties-building-capacity-ghg-reporting-kenyas-crop-production

Overview

2. Overview of the training presentations

Workshop opening remarks

The meetings began with opening remarks from a representative of the Ministry of Agriculture and Livestock Development - Climate Change Unit (MOALD-CCU). The speaker provided an overview of the ministry's responsibilities in reporting greenhouse gas (GHG) emissions for the crop sub-sector. He outlined the current challenges, particularly the lack of sufficient data, which has hindered the transition to Tier 2 reporting. Additionally, he emphasized the importance of the workshop in equipping county agricultural officers with the necessary knowledge and skills to collect the missing data required for accurate GHG reporting in the crop sub-sector.

Introduction of ICAT project & workshop objectives

The presentation provided a detailed background on the ICAT project and introduced the key objectives of the project, which include:

1. Assessing the current status of the national greenhouse gas (GHG) inventory for the crop subsector, with a focus on data requirements, strengths and weaknesses, and institutional arrangements.

2. Developing a data management and analysis system to support national reporting of GHG emissions from the crop subsector.

3. Building the capacity of stakeholders at both national and sub-national levels to compile and manage the GHG inventory for the crop subsector.

In addition, the presentation also highlighted the key activities that the project has carried out so far including, the policy review, county sensitization workshops, and the activity tool development, which involved consultations with a few stakeholders from the pilot counties. The presentation also introduced the overall goal of the training:

1. Conduct training on the sources of GHG in the crop-subsector, the GHG inventory preparation process, data requirements and gaps, policy and institutional arrangements.

2. Train the agricultural officers on a simple tool that can be used for collecting the relevant crop activity for preparing the GHG inventory for the crop sub-sector.

3. Pilot the tool with two farmer groups in each of the participating sub-county and discuss opportunities or mechanisms for integrating the tool within other existing frameworks in the county.

Module 1 - Understanding GHG Emissions

The presentation[2] offered a comprehensive overview of fundamental concepts related to greenhouse gases (GHGs) in agriculture. It outlined the major sources of GHG emissions within the crop sub-sector and identified the specific gases associated with different crop management activities. The concept of global warming potential (GWP) was also explained in simple terms for the workshop participants. Additionally, the presentation covered current trends in GHG emissions from Agriculture, Forestry, and Other Land Uses (AFOLU), providing detailed insights into the contribution of the agricultural sector to emissions both globally and in Kenya. Furthermore, the presentation clarified the key differences between mitigation and adaptation in the agricultural context, with a discussion on specific cropland activities that contribute to mitigation.

Module 2 - Policies and Global Requirement for GHG Reporting

The presentation covered key international and national policies and regulatory frameworks governing GHG reporting in the agricultural sector. It began by explaining the roles of the UNFCCC, the Kyoto Protocol, and the Paris Agreement in setting global standards for GHG reporting, emphasizing Kenya's obligations under these agreements. The importance of accurate reporting was underscored, highlighting its role in ensuring transparency, accountability, and supporting informed policymaking.

In addition to international frameworks, the presentation also highlighted key policies within Kenya, such as the Climate Change Act of 2016, which established a regulatory framework to strengthen the country's response to climate change and promote

2 https://cgspace.cgiar.org/items/6fbb9add-87e2-41ad-a63d-8f017e47f325

low-carbon development. Supporting policies such as the National Adaptation Plan (2015-2030), the Climate Change Act (2016), and the National Climate Change Action Plan (2018) were also discussed.

Participants were introduced to the National Climate Change Council (NCCC), which oversees and coordinates climate change management in Kenya. Further, the presentation outlined the role of the Climate Change Directorate under the Ministry of Environment, Climate Change, and Forestry as the lead agency responsible for coordinating climate change plans, actions, and related measurement, monitoring, and reporting.

Module 3 - Current GHG Inventory Processes

The presentation provided a detailed overview of the current GHG preparation and reporting processes for emissions from the crop subsector in Kenya. It explained the differences between the three tiers of GHG emissions reporting—Tier 1, Tier 2, and Tier 3. Additionally, participants were given an overview of the various data sources used in preparing the GHG inventory, along with the current data flow arrangements. The presentation concluded by highlighting some key data gaps that need to be addressed for improving the inventory preparation process.

Module 4 - Institution Arrangement in GHG Inventory Process

The institutional structures necessary for effective GHG inventory management were listed. The lack of comprehensive data and the need for proper data collection processes, including identifying existing data sources and generating new data through surveys was highlighted. The importance of continuous data flow, improved estimation methods, and the establishment of clear roles and responsibilities among institutions involved in the inventory process was deemed crucial for the reporting.

Module 5 - Data Collecting Tool Overview

A presentation was delivered on the detailed guidelines for using the SurveyCTO App for data collection. Stakeholders were walked through the questionnaire, which covered various agricultural practices. The tool included information on general farm details (such as major crops and acreage), manure usage, fertilizer types, application rates, liming, tillage methods, and crop residue management. It also addressed the use of cover crops and tree coverage. For rice farmers, additional questions focused on irrigation methods, the growing period, and the area under rice cultivation. A hands-on demonstration followed, guiding participants through the process of downloading, filling out, saving, and uploading data forms. By the end of the session, participants reached a common understanding of the type of data required for each question.

Plate 1: **Training section for county official and enumerators (Photo by Angela)**

Piloting GHG

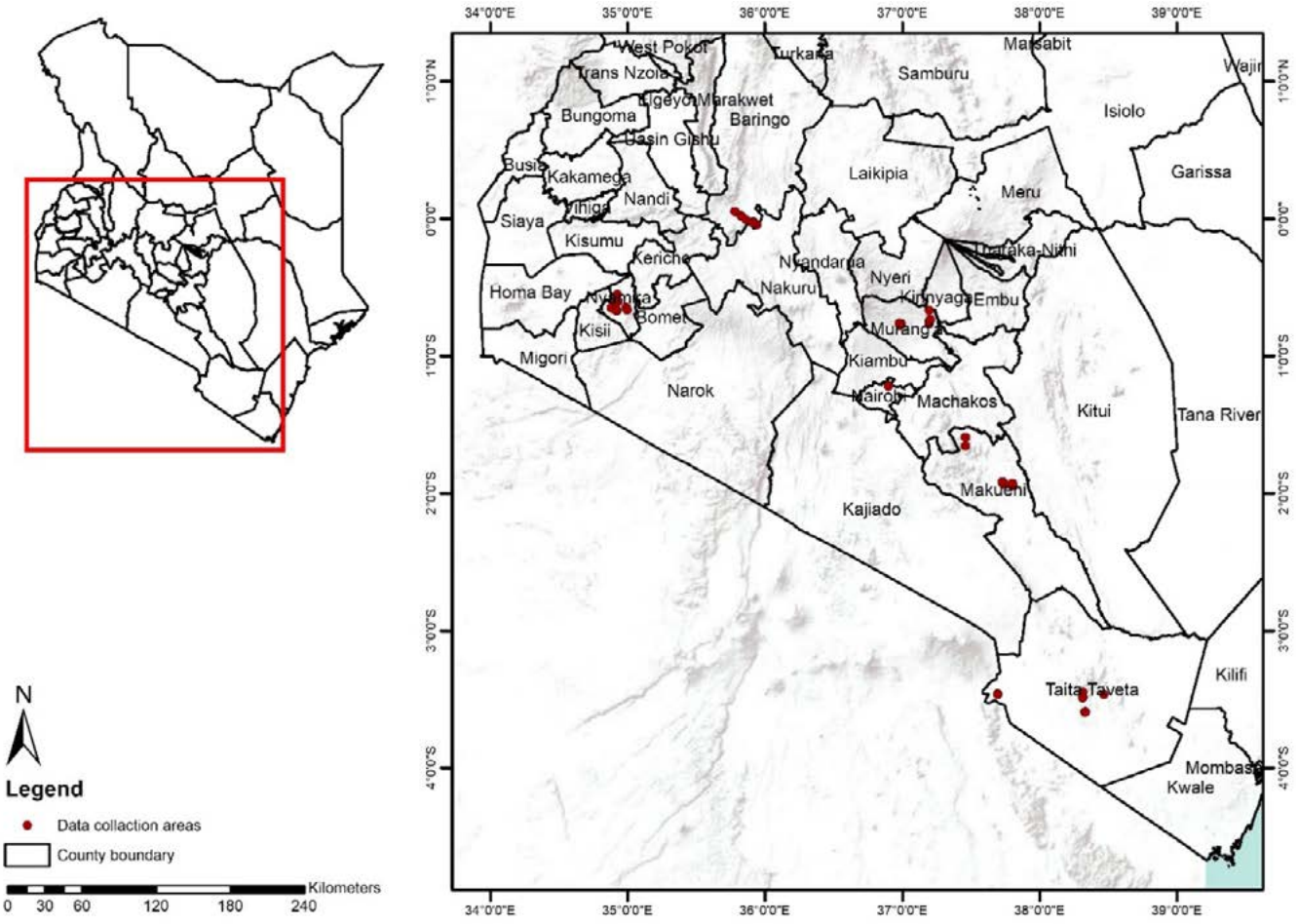
Data Tool

3. Piloting of the GHG activity data tool

Selection of pilot sub-counties and farmer groups

The survey for the GHG inventory was conducted across five counties allowing for the inclusion of farmers from both wet, agriculturally productive regions and dry or arid areas. The choice was made based on their diverse farming practices and crop varieties, which have varying impacts on GHG emissions. These counties were selected intentionally to capture a broad range of agricultural practices. With the support of the county ministry of agriculture and livestock and local ward administrators, two wards from different sub-counties in each county were chosen as focal points for data collection. This selection was further narrowed to the village level to allow for direct engagement with farmers and to gather first-hand information about their farming practices.

Fig 1. **Survey area within the five counties where GHG data collection tool was administered (Source Obadiah)**



Administering the tool among the farmers

The tool was administered in farmers group in each ward. The county ward representative of the ministry of the agriculture introduced the group and the reason behind carrying out the survey. After the introduction, the participants trained in day 1 administered the questionnaire using SurveyCTO app hosted in their android gadgets. Data collection was carried out through face-to-face interviews and using local language to ensure clarity.

Plate 2: **Debriefing section of the farmers at sub-County and enumerator taking data from farmers (Photo by Peter Kuria)**

Table 1: **Number of Farmers who participated in piloting per county.**

County	Sub county	Ward	No. of Farmers
Taita Taveta	Taveta	Mboghoni	57
	Mwatate	Bura, Chawira	25
Baringo	Eldama Ravine	Pekerra, Ravine	20
	Mogotio	Mogotio	15
Nyamira	Nyamira south	Bosamaro, Bonyamatuta	34
	Manga	Manga, Magombo	35
Murang'a	Kahuro	Maragwa	34
	Kiharu	Wangu	30
Makueni	Makueni	Kathonzweni	23
		Kanzokea	20
	Mbooni	Tulimani	20
		Mbooni	18

4. Conclusion

The County Capacity Building Workshop on GHG Inventory for the crop subsector in Kenya provided a foundation for enhancing the understanding of GHG reporting and the associated data requirements among agricultural stakeholders at the county level. Participants gained crucial insights on the importance of GHG inventory processes, particularly for the crop subsector, and were equipped with the tools needed for effective data collection.

The assessment from the five piloted counties revealed a significant gap in awareness among most county stakeholders and agricultural officers regarding their role and contribution towards GHG reporting. While basic data on crop production has been routinely collected, detailed data on crop management activities—critical for accurate GHG reporting—has not been adequately collected. This underscores the need for further capacity building and sensitization efforts across all counties to ensure that stakeholders are well-informed and equipped for GHG data collection.

Further, the piloting of the data tool demonstrated that agricultural officers can easily adopt it for GHG data collection. However, for the tool to have a broader impact, the Climate Change Unit under the agriculture sector needs to establish a clear mechanism for integrating it into existing data platforms, such as the Kenya Integrated Agricultural Management Information System (KIAMIS). This integration will facilitate comprehensive and systematic data collection. Additionally, a well-defined process for regular data collection and aggregation at the national level is crucial to ensure that Kenya meets its GHG reporting obligations and strengthens its climate action efforts.

By addressing these gaps and scaling the initiative to other counties, Kenya will be better positioned to meet global climate commitments, improve transparency in reporting, and enhance informed decision-making in its agricultural sector.

Annexes

Annex 1. Workshop Agenda

Time	Session
8:30 – 9:00 am	Registration
9:00 – 9:15 am	Introduction
9:15 – 9:45 am	Opening remarks
9:45– 10:00 am	Introduction to ICAT project & workshop objectives
10:00 – 10:30 am	Official Opening
10:30 – 11:00 am	**TEA BREAK**
11:00 – 11:30 am	Module 1: Understanding GHG emissions
11:30 – 12:00pm	Module 2: Policies and global requirements for GHG reporting
12:00 – 12:30pm	Module 3: Current process for development of GHG inventory in the crop sub sector
12: 30 – 1:00pm	Module 4: Institutional arrangements in GHG inventory process
1:00 – 2:00 pm	**LUNCH BREAK**
2:00 – 2:30 pm	Overview of tool
2:30 – 4:00 pm	Practical exercise on tool Q&A
4:00 – 4:45pm	Planning for data collection and a brief discussion on synchronization of the data collection with ongoing initiatives
4:45 – 5:00 pm	**TEA BREAK & CLOSE-UP**

Day Two & Three : Tuesday 12th and Wednesday 13th August 2024

Time	Session
8:30 – 10:00 am	Travel to data collection sites
10:00 – 1:00pm	Data collection
1:00 – 2:00 pm	**LUNCH BREAK**
2:00 – 4:30 pm	Data collection
4:30 – 6:00 pm	Travel from data collection sites

Annex 3. Summary of the activity data questionnaire

Introduction	Choice
The aim of the survey is to collect crop management data related to land management practices that can be used for Tier 2 accounting of GHG for the crop subsector in Kenya	
Enumerator's name	
Name of County	Nyamira, Baringo, Makueni, Murang'a, Taita Taveta
Name of Subcounty	
Name of ward	
Name of village	
Name of the respondent farmer	
Under which age category does the respondent lies?	18-25yrs, 26-34yrs, 35-44yrs, 45-54yrs, 55-64yr, 65-74yrs, 75yrs and above
What is the total size of the land used for cultivated?	
Type of cropping and crop grown	
Name the five major top crops grown in your farm?	Maize, Beans, Sorghurm, Groundnuts, Greengram, Pigeonpea, Soyabeans, Coffee, Tea, Cowpeas, Millets, Passion, Sweetpotatoes, Arrow root, Nappier grass, Fresh bean, Cassava, Rice, Cabbage, Kales, Onions, Oranges, Managu, Mangoes, Bananas, Avocado, Other (Specify),
Area in acre under each crop	
intercrop management	
Do you practise intercrop?	yes, No
Which crops do you intercrop	Maize - bean, Maize - Pigeonpea-bean, Pigeonpea - beans, Maize - Pigeonpea, Maize - Groundnuts, Maize - greengram, Maize - Cowpeas, Coffee - Maize, Coffee - beans
What is the area (acres) under intercrop?	
Manure management crop	
Do you use manure in your farms?	Yes, No
What is the type/source of your manure?	Farm yard manure, Compost, Greenmanure
In which crop do you apply manure	
What do you use to carry manure in your farm?	Animal Cart, Tractor, Bucket, Wheelbarrow, Sacks, Lorry, Others
Please state the amount of manure applied in each crop?	
How often do you apply manure in each crop mentioned?	Seasonally (every season), Annually (once a year), Other (Specify)
Do you apply manure in intercrop?	
In which intercrop do you apply manure?	
Manure application per unit in each type of crop?	

How often do you apply manure in intercrop?	Seasonally (every season), Annually (once a year), Other (Specify)
Introduction	**Choice**
Fertilizer management crops	
Do you use inorganic fertilizer?	Yes, No
Which crop do you apply fertilizer?	
Please state the type of inorganic fertilizer you applied on each crop	NPK, DAP, Urea, TSP, SA, CAN, Other (Specify)
What is the amount of each fertilizer (kgs) applied in each crop?	
From the selected intercrop, which do you apply fertilizer?	
State the type of fertilizer applied in intercrop grown in your farm?	NPK, DAP, Urea, TSP, SA, CAN, Other (Specify)
What the amount of each fertilizer(kgs) applied in intercrop?	
How often have you been applying fertilizer in intercrop?	Seasonally (every season), Annually (once a year), Other (Specify)
Lime application	
Do you use lime in your farm?	Yes, No
What area of land do you apply lime on?	
How often do you apply lime in your farm?	Seasonally (every season), Annually (once a year), Other (Specify)
Which crops do you apply lime from the selected options?	
State the amount (kgs) of lime applied in mentioned crops?	
Tillage Management	
What type of tillage do you practice in your land.	Full Tillage, Reduced Tillage, Zero Tillage
What type of tillage do you practice in each crop mentioned above?	Full Tillage, Reduced Tillage, Zero Tillage
Crop harvest Management	
How do you manage crop residues in your farm?	Burning, Plough - In, Mulching , Feed Livestock, Other (Specify)
What percentage of residues do you utilize in each management mentioned above?	
Do you use cover crops?	Yes, No
What type of cover crops do you use?	Alfalfa, Cowpeas, Fava Beans, Soyabeans, Pea, Desmodium, Dolichos, Pumpkins, Sweet potatoes, Brassicas, mucuna, Others (Specify)
On what proportion of your cropping area do you use cover crops?	
Trees coverage	
Have you planted trees in your farm?	Ye, No

What is the purpose of the trees planted in your farm?	Fruit Trees, Timber Tree, Fodder tree, Medicinal Trees
What the averange age of the trees in your farm?	Young (0-5), Mid (6-20), Old (> 20)
Introduction	**Choice**
How many trees are in each age group in your farm?	
Mechanization for the farm activities	
Do you use agricultural machinery/equipment on your farm?	Yes, No
Do you own any agricultural equipment?	Yes, No
Which machines do you own>?	
Which machines do you own?	Tractor, Cultivators and Tillers, Planters and seeders, Manure spreaders , Motorized Sprayers, Irrigation pumps , Harvesters, Grain dryers, Mowers, Balers, Energy generators, Others Motorized Sprayers
Which are the agricultural machine used in your farm?	
What the size of land under mechanization by each equipment mentioned?	
Do you grow rice in your farm?	
What type of management is used for rice cultivation in your farm?	Upland, Intermittent, Rainfed
What is the duration of the growth of the rice in months?	
What is the area under the rice in your land?	
What type of fertilizer do you use in your rice farm?	
How many (Kgs) of each fertilizer do you use in your rice farm?	NPK, DAP, Urea, TSP, SA, CAN, Other (Specify)
Do you apply Farm yard manuare in your rice?	Yes, No
Field GPS	
Thank you for your time.	

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