



EUROPEAN UNION



# The Agricultural Sector in the National MRV System

A Review of gaps, needs and challenges and recommendations at local to national level

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# Foreword

Uganda has summarized its national commitments to reducing greenhouse gas emissions and adapting to climate change in the Nationally Determined Contributions (NDCs). The country set an ambitious goal of achieving a 22% reduction in emissions as her contribution to the goals of the Paris Climate Agreement. To measure precisely emissions of greenhouse gases requires a robust system for Monitoring, Reporting and Verification (MRV) of emissions.

In Uganda, agriculture, forestry and other forms of land use are a major source of greenhouse gases accounting for 86% of total emissions according to the First Biennial Update Report. At the same time agriculture, through climate smart practices (CSA), has the potential to contribute towards achieving climate change mitigation and adaptation. CSA is one of the actions outlined in the NDCs.

This report provides an analysis of the existing MRV approach/system in the agriculture sector in Uganda. It presents completed and ongoing projects, gaps, needs and challenges to the agricultural sector MRV system, and recommends improvements at multi-governance level (local to national). The report provides a concrete basis for how the agricultural sector MRV system can be improved through data collection processes at the district level.

The assessment of MRV approach was conducted in the seven districts of Amolatar, Dokolo, Oyam, Lira, Agago, Kitgum, and Napak, in Northern Uganda. The districts constitute the project area for the Promoting Climate

Smart Agriculture (ProCSA). Stakeholders consulted included the District Local Governments, Civil Society Organisations, universities, and Government Ministries, Departments and Agencies.

The Promoting Rural Development Programme under which GIZ is implementing the ProCSA project, will continue the process of improving the MRV system during the project implementation and hand it over to the District Local Governments. ProCSA is funded by the European Union and the German Federal Ministry for Economic Cooperation and Development (BMZ).

The report was compiled in partnership with the Africa Innovations Institute (AfrII). We extend our gratitude to all stakeholders whose insight and expertise enriched the report. We thank participants from the District Local Governments, Civil Society Organisations, Universities, and Government Ministries, Departments and Agencies for their valuable input.

PRUDEV- ProCSA looks forward to continued collaboration as we work towards empowering smallholder farmers in northern Uganda to embrace the MRV system.

Thank you,



Armin Kloeckner  
Head of Rural Development Programme  
Kampala, Uganda, 25.08.2020



# Executive Summary

Compliance to United Nations Framework Convention on Climate Change (UNFCCC) and Paris Agreement (PA) is a deliberate and structured process driven by a common vision and approach. Uganda's journey to compliance is characterized with numerous policy developments, with the recent being the Climate Change bill 2020 that provides a regulatory foundation to execute climate action. Climate Smart Agriculture (CSA) is one of the recognized climate change measures for agriculture sector, and the ProCSA project of the PRUDEV programme, funded by GIZ, is set out to demonstrate the added value of CSA to the country's climate change commitment under the PA.

The commissioned national assessment of the current reporting structures and process determined a suited approach to reporting on CSA in the framework of the PA. The assessment reveals an existing administrative reporting structure for agriculture, collecting data and information from the smallest administrative unit of government. The study recognizes the challenges influencing data collection at sub-national level, data envisaged for climate change reporting at sectoral level by the Ministry of Agriculture Animal Industry and Fisheries (MAAIF). Capacity limitations along the data supply chain, data quality issues, and data formats not tailored to inform climate reporting are some of the

challenges at local government level. Streamlining the data collection process at the local government level is paramount to establishing a solid sectoral MRV system for agriculture.

The best fit model for data collection should be based on the existing structures. At the National level, there is need to strengthen existing institutional structures to operationalize MRV systems; develop of regulatory frameworks to harmonize responsibility for data collection; support MAAIF to strengthen the existing data management system for data collection; develop local capacity for comprehensive activity data collection and country specific emission factor calculations; and sensitize stakeholders at all levels.

At the local government level, there is need to formulate institutional arrangements between the local governments and MAAIF. There is need to support ministry of local government data management enabling initiatives and define clear roles for the ministry climate change taskforce in implementation of the district MRV. The MAAIF data collection templates should be revised to integrate GHG indicators. The infrastructure for digital data management should be improved. Lastly, the district local government system should be established based on the prototype provided.

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# List of Acronyms

<b>CAO</b>	Chief Administrative Officer
<b>CC</b>	Climate Change
<b>CCD</b>	Climate Change Department
<b>CCTF</b>	Climate Change Task Force
<b>CDM</b>	Clean Development Mechanism
<b>CSA</b>	Climate Smart Agriculture
<b>DEC</b>	District Executive Committee
<b>DLGs</b>	District Local Governments
<b>DPMO</b>	District Production and Marketing Office
<b>LGs</b>	Local Governments
<b>GHG</b>	Green House Gases
<b>IPCC</b>	Inter-Government Panel on Climate Change
<b>IFMIS</b>	Integrated Finance Management Information System
<b>MAAIF</b>	Ministry of Agriculture Animal Industry and Fisheries
<b>MDA</b>	Ministries Departments and Agencies
<b>MOFPED</b>	Ministry of Finance Planning and Economic Development
<b>MOLG</b>	Ministry of Local Government
<b>MoUs</b>	Memoranda of Understanding
<b>MRV</b>	Measurement Reporting and Verification
<b>MWE</b>	Ministry of Water and Environment

# List of Acronyms

<b>NAMAs</b>	Nationally Appropriate Mitigation Actions
<b>NAP</b>	National Adaptation Plan
<b>NEMA</b>	National Environmental Management Authority
<b>NDCs</b>	Nationally Determined Contributions
<b>NRs</b>	Natural Resources
<b>PBS</b>	Performance Based System
<b>QC/QA</b>	Quality Control/Quality Assurance
<b>REDD+</b>	Reducing Emissions from Deforestation and Forest Degradation
<b>TACCC</b>	Transparency, Accuracy, Completeness, Comparability, Consistency
<b>TCCC</b>	Technical Committee on Climate Change
<b>TPC</b>	Technical Planning Committee
<b>UBOS</b>	Uganda Bureau of Statistics
<b>NCCP</b>	National Climate Change Policy
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>ZARDIs</b>	Zonal Agriculture Research and Development Institutes
<b>ProCSA</b>	Promoting Climate Smart Agriculture
<b>PRUDEV</b>	Promoting Rural Development Programme

# Glossary and Terms

## Agriculture

Refers to agricultural practices (e.g. burning of crop residues, fertilizer application, rice cultivation, enteric fermentation in livestock, manure management) on farms that result in only emissions of mainly methane and nitrous oxide

## Climate Smart Agriculture

An approach to developing the technical, policy and investment conditions to achieve sustainable agricultural development for food security under climate change

## Greenhouse gases (GHGs)

“Greenhouse gases include a wide variety of gases that trap heat near the Earth’s surface, slowing its escape into space. Greenhouse gases include carbon dioxide, methane, nitrous oxide and water vapor and other gases. While greenhouse gases occur naturally in the atmosphere, human activities also result in additional greenhouse gas emissions. Humans have also manufactured some gaseous compounds not found in nature that also slow the release of radiant energy into space.” (CARB)

## MRV

Monitoring, Reporting and Verification (MRV) in the context of NDC implementation refers to an integrated framework/accounting system and/or processes which aim to assess and monitor the results of mitigation and adaptation actions, their synergies and/or the support provided (measuring) and to document this information in a transparent way (reporting-national & international), so that it can be examined for accuracy (verification-QC&QA).

## Non-Annex 1

Non-Annex I refers to countries that have ratified or acceded to the UNFCCC but are not included in Annex I of the Convention. This group of countries mainly include low income developing countries and emerging economies. They have no binding commitments to cut their emissions under the Kyoto Protocol, while some are recognized by the Convention as being especially vulnerable to the adverse impacts of climate change, having limited capacity to respond to climate change as well as adapt to its adverse effects such as LDCs. The Convention emphasizes activities that meet the special needs and concerns of these vulnerable countries, such as investments, insurances and technology transfers. (unfccc.int)



# 1

# Introduction



# 1.1 National and international context

Uganda is a signatory to the UNFCCC and ratified the 2015 Paris Agreement of the UNFCCC in 2016 to join the rest of the world to address climate change and its impacts. The United Nations Framework Convention on Climate Change (UNFCCC) requires all Parties to periodically develop and submit national inventories of anthropogenic emissions by sources and removals by sinks of all greenhouse gases (GHGs) not controlled by the Montreal Protocol. The Montreal Protocol signed in 1987, sets out to protect the Earth's ozone layer by phasing out production and consumption of man-made chemicals referred to as ozone depleting substances (ODS) that include Hydrofluorocarbons (HFCs) used in refrigeration systems. The protocol provides for a structured approach and process to assessment and reporting by developed and developing countries on measurable commitments in the different categories of ODS related to ODS trade, import/exports, and national licensing<sup>1</sup>. The UNFCCC builds on the Montreal Protocol Agreement and aims to complement and not duplicate provisions therein. UNFCCC's non-Annex I (NAI) Parties (see definition on Glossary) such as Uganda are required to submit the National Communications (NCs) every four years, and Biennial Update Reports (BURs) every two years complying with the transparency requirements of article 13 of the Paris Agreement (IPCC, 2010).

Uganda's progress towards compliance to UNFCCC and Paris Agreement requirements is demonstrable through national policy developments, and operational mileage achieved as a result of the favorable policy setting. The National Climate Change Policy 2015 is intended to guide implementation of climate action priorities, and is supported by a costed implementation strategy. The Climate Change Bill 2020 was passed and

structured to operationalize the Climate Change Policy. In the broader policy context, the Uganda Vision 2040, National Development Plan III, and the Uganda Green Growth Development Strategy (2017/18 – 2030/31) all address elements of reducing climate change impacts and effects on the population and the environment, increase investments to implement mitigation and adaptation priorities, and mainstreaming climate change in sectoral plans at national and sub-national level. At the operational level; the country has since submitted to the UNFCCC its National Communications (First in 2002, Second in 2014, Third under preparation), Nationally Determined Contribution (NDC) in 2016, First Biennial Update Report (BUR) in 2019, launched the National GHG Inventory in 2016, and drafted the National MRV Framework in 2019.

Climate Smart Agriculture is the cornerstone for the agricultural sector measures for climate change. This is articulated with the National Adaptation Plan for the Agriculture Sector (NAP-Ag) whose vision is “*A climate resilient and sustainable agricultural sector contributing towards achievement of the Uganda Vision 2040*”. National Agricultural Policy 2013 places emphasis on ensuring that key agricultural resources, including soils and water for agricultural production, are sustainably used and managed to support adequate production for the current and for future generations. The National Development Plan emphasizes strengthening ecologically sound agricultural research and climate change resilient technologies and practices for the agriculture sector, while the First NDC focuses majorly on adaptation for the climate change sectors, and for the agriculture and livestock sector, climate smart agriculture is flagged as a priority measure for implementation.

## 1.2 Promotion of Climate Smart Agriculture (ProCSA) Project

GIZ is implementing the project: Promotion of Climate Smart Agriculture (ProCSA) as part of the GIZ Promoting Rural Development Programme in Northern Uganda (PRUDEV). The project is funded by the German Federal Ministry for Economic Cooperation and Development (BMZ) and cofounded by the European Union. The ProCSA Project aims to strengthen resilience of the rural population in seven districts (Amolatar, Dokolo, Oyam, Lira, Agago, Kitgum and Napak) in northern Uganda through climate smart agriculture (CSA), and to contribute to Uganda's climate change commitments under the Paris Agreement. The project focus is on three result areas: (1) Actions of national and local governments and other stakeholders for mainstreaming CSA in local planning processes are enhanced; (2) Gender responsive CSA

practices are applied among smallholder farming communities; and (3) Awareness and capacities on MRV in the agricultural sector are enhanced.

This report supports the implementation of Result Area 3 of the Pro-CSA project, particularly focusing on the review of existing Monitoring Reporting and Verification (MRV) approach/systems in the agriculture sector in Uganda, including completed and ongoing projects; highlight gaps, needs and challenges to the sustainable development of the agricultural sector MRV system, and, provide recommendations for improvement of the MRV system at multi-governance levels (local to national) for development of a district level system for data collection, analysis and reporting.



## 1.3 Objective and scope of the assignment

This assignment was derived from the ProCSA Project Result Area 3; *Awareness and capacities on MRV in the agricultural sector are enhanced*. The objective of the assignment was to conduct a review of the existing MRV approach/system, in the agriculture sector in Uganda, including completed and ongoing projects; highlight gaps, needs and challenges to the sustainable development of the agricultural sector MRV system, and provide recommendations for improvement of the MRV system at multi-governance levels (local to national). The review aimed to generate concrete recommendations on how the agricultural sector can be improved to function effectively in the national MRV system, focusing on data collection processes at district and national levels.

The assignment involved three inter-related tasks as follows:

1. assessment of the existing national MRV approach and related projects to identify strengths, gaps, needs and challenges with specific focus on the agriculture sector;
2. identification of good case studies of MRVs in agriculture from other Non-annex 1 countries with special focus on data collection from lowest level to national and;
3. based on the analysis, provide recommendations and actions for improving the MRV approach for the agricultural sector.

The review covered seven project districts, - Amolatar, Dokolo, Oyam, Lira, Agago, Kitgum, and Napak, in Northern Uganda.

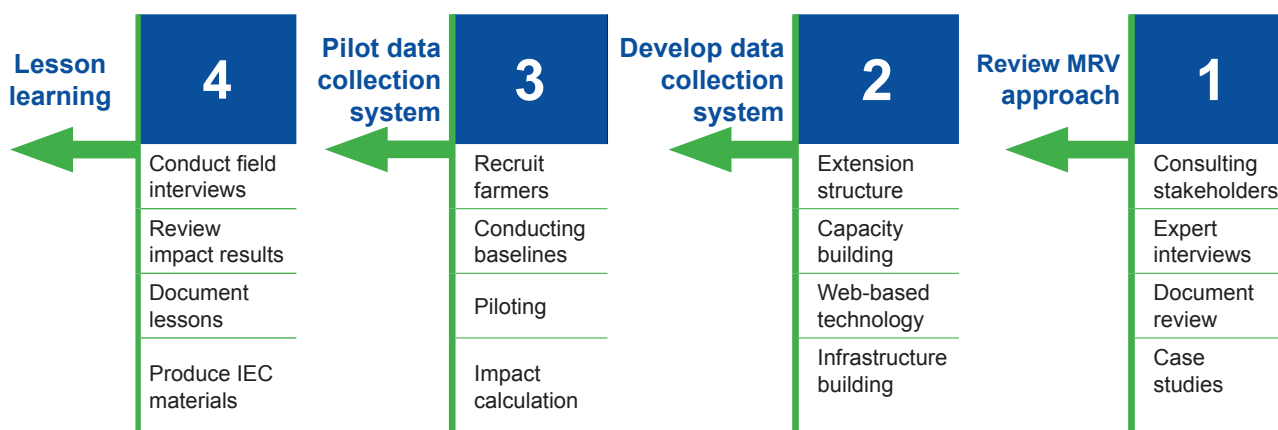


Figure 1





# 2

## Approach and Methodology



## 2.1 Approach and Methodology

The work involved a mixed methods approach that included reviewing existing literature and databases, including any research and projects implemented in support of the MRV system for Uganda. Key informant interviews, focus group discussions and stakeholder consultation throughout the project districts was undertaken. Criteria was developed and used to select the most suitable countries for the MRV case study followed by an in-depth review of the cases selected and presentation of findings and recommendations for approaches and practices which could be of relevance to Uganda.

A sequential approach (FigTable. 2.1) to the delivery of this assignment was necessary and entailed three main activity packages:

1. Assessment of the agriculture sector in the MRV system,
2. Identifying good case studies of MRVs in agriculture from non-annex I countries and
3. Proposing recommendations and actions for improving the MRV approach for the agriculture sector in Uganda. The methodology for each of the main activity package is summarized here after.

Stakeholder categories		Number of participants
1	Government ministries	21
2	Government agencies (NFA, NaFoRI, NARL, Lira ZARDI)	30
3	Academia (Makerere University)	4
4	Civil Society Organisations	13
5	Development Partners	7
6	District Local Governments (Kitgum, Agago, Amolatar, Dokolo, Lira, Napak, Oyam)	112
Total Participants		187

Table 2. 1: Category and number of stakeholders consulted for the assignment

## 2.2 Implementation of the assignment



### Task 1: Assessment of the agriculture sector in the national MRV system

This assessment was based on the

- i.** four elements of the MRV system, namely emissions, mitigation, adaptation, and support;
- ii.** institutional arrangements, policy and legislative environment and;
- iii.** opportunities to develop sectoral MRV systems.

The focus was on understanding the MRV approach being used by the Ministry of Water and Environment (MWE) for the full development of the MRV system; the existing strategic focus and improvement plan. The assessment also focused on understanding the role and contribution of the agriculture sector to the national MRV system, the needs and gaps, and the challenges

to implementing an effective system. Special attention was given to understanding the agriculture sector mechanisms and arrangements for data collection at multi-governance levels, and transmission of the data from the sources to MWE, and the technical challenges therein. A development partners' identification and mapping were carried out to establish the recent past and ongoing projects, and opportunities for future support in the agriculture sector.

Comprehensive assessment methodology and tools were developed to collect the data and information. These included a literature review process based on a list of indicative literature sources, and question guides, check lists and score cards for the engagements

with targeted respondents. The tools are included as Annex 1 to this report. The stakeholder engagement was conducted at two levels; (i) National stakeholders including Government Ministries, Agencies and Departments (MDAs), academia, and civil society. Mode of engagement was primarily focused group meetings based on a tailored check list of questions for each category of the participants. The participants were also requested to self-administer a scorecard designed to assess the status and performance of the national MRV system along key question areas. (ii) District level engagements across the seven districts were structured as interviews with the district leadership, and a technical workshop for the district and sub-county LGs in the fields of crop production, forestry, veterinary, entomology, fisheries and commercial services. In attendance were also the Technical Officers from CSOs and agriculture projects being implemented by the districts. The technical workshop was dual purposed; to raise awareness on the national climate change reporting arrangements, and a self-reflection and assessment sessions for the participants to identify and map the agriculture data collection and transmission from the lower LG to the district LG. The workshops were facilitated by AfrII, and key among the outputs were; a list of primary agriculture data categories being collected and responsibilities therein, the data movement chain from the lower LGs to the district, and through to the MDAs that requested for data, related data chains, and the challenges and gaps in the data collection and movement chain. Table 2.1 presents a summary of the stakeholder categories and number of participants consulted, while Annex 2 provides the details of the institutions and participants consulted for the different engagements).

## **Task 2: Case studies of MRVs in agriculture from Non-Annex 1 countries with special focus on data collection from lowest level to national**

The focus of this activity was to identify and review good case studies of MRVs in agriculture sector from other Non-Annex 1 countries focusing specially on data collection from lowest to national level. The aim is to identify most appropriate and relevant approaches and practices to the agriculture sector in the national MRV system. The review aimed at countries with similar ecological and socio-economic conditions and with functional MRVs, and their best practices to be benchmarked against the Ugandan context. An in-depth review was made of relevant literature on requirements and procedures for setting up an MRV system for developing countries in line with the UNFCCC guidelines and procedures. Preliminary screening of twenty-six Non-annex 1 countries for MRV case studies was done. This was based on a set of objective criteria presented in Table 2.2; and ten likely countries were short listed. The ten short listed countries were then critically evaluated based on their functional MRV system that includes agriculture; and appropriateness and applicability to the Uganda context, particularly the Northern Uganda region.

Countries		Criteria for assessing countries (codes and scores in A-H below)									
	Countries	A - Agro ecology	B- Climate	C - Status of MRV	D - Human Development Index (HDI)	E - Level of development	F - Agric. sector contribution to GDP (%)	G - National GDP per capita	H - Geographical location	Total score (sum)	Rank 1-26 – (highest-lowest)
0	Uganda										
1	Argentina										
2	Zambia										
Codes for criteria											
A- Agro-ecological zone; 4 = savannah grasslands, 3=Rainforest, 2 - arid and semiarid, 1-desert											
B- Climate-4= tropical, 3= subtropical, 2= semi-temperate, 1= temperate - 0- desert											
C- Status of MRV: 4 = excellent, 3 - very good, 2 = good, 1 = poor											
D - Human Development Index (HDI figures) then category - 4=- Low,3= medium, 2 = high, 1 = very high											
E - Level of development - 4 = Least developed, 3 = developing, 2 = developed, 1 = highly developed											
F- National per capita GDP (actual figure)											
G - Significance of the agricultural sector in the economy i.e. % contribution to National GDP (actual figure - %)											
H - Geographical location - 4 = Africa, 3 = Asia, 2 = Latin America, 1 = Others											
Crop insurance											
Improved energy efficiency and renewable energy											

**Table 2. 2: Criteria and scoring system for selecting country MRVs for case studies**

Costa Rica, Thailand, the Philippines, South Africa, Ghana and Kenya were selected for in-depth review of their MRVs in agriculture with special focus on data collection from the lowest to national level. Relevant literature was assembled from online sources including respective websites of the institutions responsible for climate change and GHG emission inventories in each case study country. The assessment was based on a set of guiding elements namely: the policy environment and institutional arrangements for MRV governance, emissions data management systems (data collection, types of data collected), quality assurance (QA) and quality control (QC), resource requirements and

mobilization, and community level engagement in data collection, among others.

These were further synthesized and case examples of suitable MRV/NAMA projects being implemented in each country identified. Parameters assessed include; the approach and tools for emissions data collection, processing and transmission, the governance structure and inter-institutional arrangements therein, data quality, and nature of data collected. A report on findings and recommendations was prepared and validated at a workshop.



### Task 3: Recommendations and actions for improving the MRV approach for the agricultural sector

This activity is Task 3 in the sequence of the activity packages identified for this assignment, and builds on the outputs and outcomes of Tasks 1 and 2 as illustrated with Figure 2-2 below.

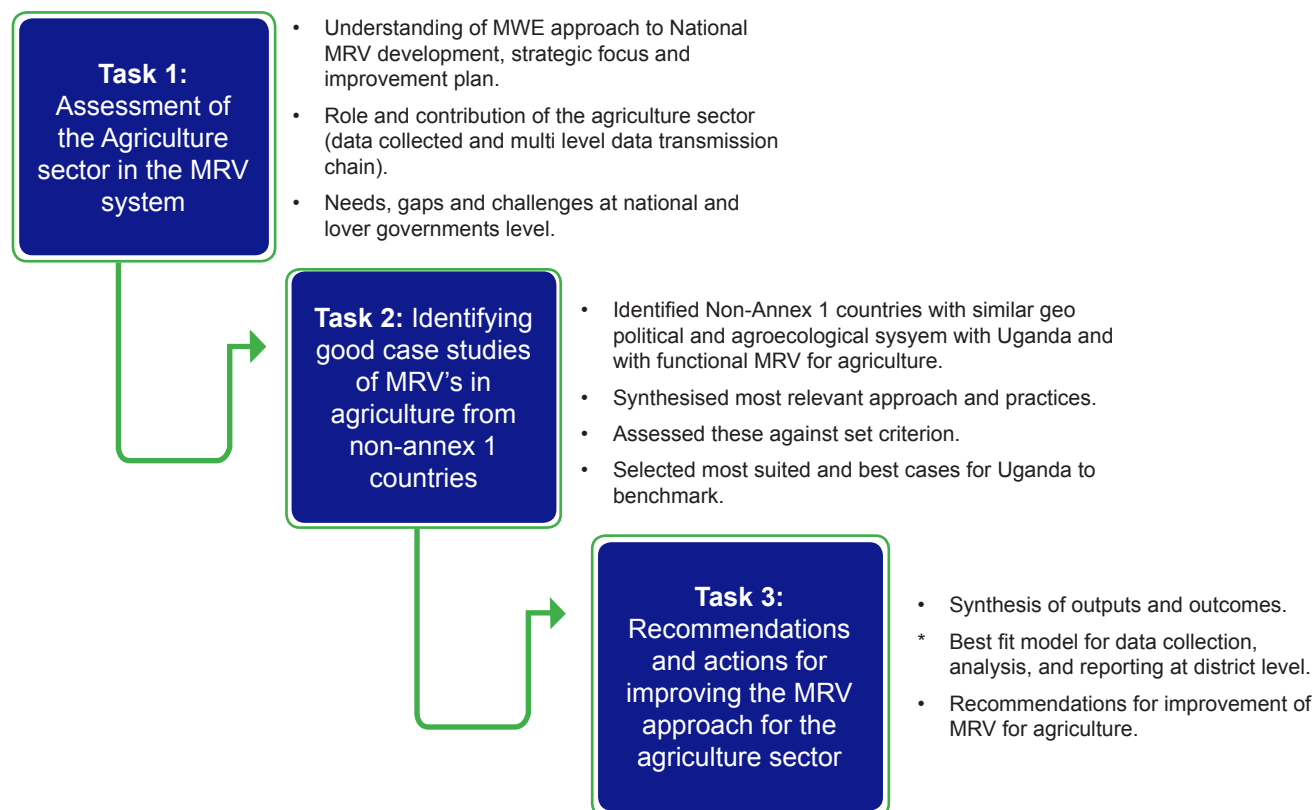


Figure 2- 2: Stepwise study approach employed during this study

A synthesis of findings and recommendations from the two studies (Task 1 & 2) determined Uganda's current situation against best practice in MRV in the agriculture sector from the Non-Annex 1 country case studies. The gaps, needs and challenges to improving and developing a suited MRV system for the agricultural sector for Uganda were identified. Practical recommendations were developed for improving the MRV for the agricultural sector with special focus on data collection at the lower government level. Possible models and best practice guideline for emissions data collection, and these were presented together with the outputs from the earlier tasks undertaken were validated by the key stakeholders.



3

Results

# 3.1 The Uganda National MRV System

## 3.1.1 Introduction

Development of Uganda's MRV system is premised on the desire to achieve "Sustainable development by transforming from a peasant to a modern and prosperous country by 2040". However, this impressive performance is being undermined by the impacts of climate change<sup>2</sup>. Estimates of damage due to climate change in the sectors of Agriculture, Water Infrastructure and Energy collectively amount to 2-4 % of the country's Gross Domestic Product (GDP) for the period between 2010 and 2050<sup>3</sup>. The third National Development Plan ((NDPIII) 2020/21 – 2024/25) , (p.87, para 198) has recognized climate change mitigation and environment management as critical to the achievement of increased household incomes and improvement of quality of life of the population; and aims, among other things, to stop and reverse its effects on economic growth and livelihood security.

Besides national objectives, Uganda is also a signatory to several international commitments such as the UNFCCC and the Paris Climate Agreement, and as such has expressed her ambitions by submitting its Nationally Determined Contributions (NDC). The NDCs includes both mitigation and adaptation measures with an overall target of 22% emissions reduction by 2030. The target is to be achieved through reversing deforestation trend to increase forest cover to 21% by 2030; increasing wetland coverage to 12% by 2030; and adopting climate smart agricultural and livestock practices as part of strategies to reduce GHG emissions by approximately 2.7 MtCO<sub>2</sub>e/a by 2030.

## 3.1.2 Policy and legislative environment

To achieve its development ambitions, the Government of Uganda has put in place several policy instruments and institutional arrangements to accelerate achievement of its national and international objectives. Some of the key policy instruments relevant to climate smart Agriculture MRV objectives include the following;

**The Uganda Vision 2040:** The Vision 2040 aspires the country to attain middle-income status by 2040, which is to be achieved through: (i) increased per capita income from USD788 to USD 1,039; (ii) GDP growth rate from 5.2 to 6.3%, and (iii) reduced poverty rate from 19.7 % to 14.2 %; among other things (NPA, 2015). The agricultural sector is seen as key in achieving this goal through contribution to wealth creation and employment.

**The Third National Development Plan:** ((NDPIII) 2020/21 – 2024/25)<sup>4</sup>. The Plan has been put in place to guide the nation in delivering the aspirations articulated in Uganda Vision 2040. The Plan (p.87, para 198) recognizes climate change adaptation and mitigation as critical to the achievement of increased household incomes and improvement of quality of life of the population. It aims, among other things, to stop and reverse the effects of climate change on economic growth and livelihood security. The Plan commits to reducing climate change vulnerability through building capacity for climate change adaptation and mitigation

<sup>2</sup>in the form of intense and more frequent prolonged droughts, torrential and poorly distributed rainfall and a rise in temperatures, as demonstrated by a significant reduction in the volume of glaciers on Mountain Rwenzori.

<sup>3</sup>Markandya, A.; Cabot-Venton, C.; Beucher, O. *Economic assessment of the impacts of climate change in Uganda: Key results*. Climate Change Department, Ministry of Water and Environment, Uganda (2015) 110 pp.

<sup>4</sup><https://www.fowode.org/publications/research/40-national-development-plan-3/file.html>

<sup>5</sup><https://www.fowode.org/publications/research/40-national-development-plan-3/file.html>



and mainstreaming climate change resilience in programmes and budgets. Agricultural sector is seen as key in the climate adaptation and mitigation actions of the NDP.

**Uganda's Nationally Determined Contributions (NDC):** Uganda submitted her First NDCs to the UNFCCC in 2016 and committed a GHG emissions reduction of 22% by 2030. The country aims at achieving the commitments through set mitigation and adaptation priority actions in different sectors highlighting adaptation as national priority. The country also commits to establish and implement policies and measures aimed at reducing vulnerability and addressing adaptation in the different sectors. Climate Smart Agriculture is one of the key adaptation and mitigation priority actions for the agriculture sector expected to reduce emission by approximately 2.7 MtCO<sub>2</sub>e/a by 2030. Climate-smart agriculture is expected to contribute 14% to achievement of the mitigation target.

**Uganda Green Growth Development Strategy (2017/18 – 2029/30):** aims to ensure that Uganda achieves her social and economic development in a sustainable way. The strategy has three objectives aimed at achievement of a green economy: (1) to accelerate economic growth and rise in per capita income through targeted investments in priority sectors with the highest green growth multiplier effects; (2) to achieve an inclusive economic growth with poverty reduction, improved human welfare and employment creation; (3) and to ensure that social economic transition is achieved through a low carbon development pathway that safeguards the integrity of the environment and natural resources. The strategy focuses on five priority areas, including natural resource management and sustainable agriculture. These have been identified as having the potential

for green growth's contribution to Gross Domestic Product (GDP), employment, resource use efficiency, social inclusiveness and equity, as well as environmental sustainability. Agriculture is the backbone of Uganda's economy and Climate Smart Agriculture practices can contribute to adaptation and mitigation. For example, integrating agroforestry in agricultural lands can increase productivity of the system, sequester significant amounts of above and below-ground carbon and contributing to resilience against extreme weather events.

**National Agricultural Policy (2013):** The National Agricultural Policy (2013) vision is “a competitive, profitable and sustainable agricultural sector”, and its mission is to: “transform subsistence farming to sustainable commercial agriculture.” The policy's main objective is “to achieve food and nutrition security and improve household incomes through coordinated interventions that focus on enhancing sustainable agricultural productivity and value addition; providing employment opportunities, and promoting domestic and international trade”.

The NAP places emphasis on ensuring that key agricultural resources, including soils and water for agricultural production, are sustainably used and managed to support adequate production for the current and for future generations. Sustainable land use and management, many actions of which are climate smart agriculture, is a cornerstone of the NAP, and the policy acknowledges the need to develop capacity (at all levels) for planning and implementation of activities that address climate change and its impact on agriculture. On the negative note, the policy does not comprehensively mainstream climate change, and neither does it provide room for its review to guide climate smart agricultural systems. This implies that climate action is largely voluntary and funding



for activities such as data collection, compilation and climate reporting are not guaranteed.

**National Climate Change Policy (NCCP):** The NCCP was put in place in 2015. It aims to harmonise and effectively coordinate advancement towards a climate resilient and low-carbon development path for sustainable development in Uganda. The policy is to achieve this by ensuring that all stakeholders address climate change causes and their impacts through appropriate measures for a green economy and sustainable development. The Policy encourages 'integration of climate change issues' into planning, decision making and investments in all sectors and trans-sectoral themes through appropriate institution arrangements and legal framework'. The policy identifies and assigns institutional responsibility and obliges stakeholders to regularly submit GHG data to the central repository at MWE, as described below.

**National Climate Change Bill, 2020:** The Bill was put in place to operationalize the climate change policy. The Bill was approved by Cabinet in 2018 and is now before Parliament for enactment into a law. The objectives of the bill are to: (i) provide a legal framework for enforcing climate change

adaptation actions through which Uganda will be able to make adjustments in natural or human systems in response to actual or expected impacts of climate change, in a manner that will reduce harm or exploit potential opportunities; (ii) enable Uganda to pursue its voluntary mitigation targets of reducing national greenhouse gas emissions. Part IV of the Bill focuses on MRV and this is captioned in Box 1 below. The Bill does not specifically mention the way MRV can be achieved at the lower levels. Instead, it highlights the way data shall be handled by the lead agencies. Part V covers institutional arrangement and roles with Clause 17 designating the Natural Resource Department at DLG the duty to oversee climate change matters through the District Climate Change Committee. The District Climate Change Committee is responsible to oversee implementation of the district climate change action plan at DLG and Lower LG. MRV should be imbedded in the district climate change action plan and hence be covered by clause 19 of the bill which mention monitoring and evaluating of climate change risks, adaptation, and mitigation activities; and reporting events/ activities on the implementation of climate change adaptation and mitigation actions and measures as the role of the climate change committee under the District NR department.

**Box 1: Specific provisions on MRVs in Uganda's Climate Change Bill 2020**

Part IV (Clause 9-12) provides for Measurement of emissions, Reporting and Verification of information

Clause 9 provides guidance for measurement of GHG inventory (removal and emissions) of key gases reported by lead government agencies and non-government sources;

Clause 11 provides guidance on preparation and review of the national reports in compliance with article 12 of the UNFCCC, article 8 of the Kyoto protocol and article 13 of the Paris Agreement. The reports include the NC and other required reports e.g. the BUR;

Clause 12 provides for national verification requirements of data and information measured and reported as guided by clauses 9-11. Verification covers data and information on (i) GHG inventory (removal and emissions) of key gases reported by lead government agencies and non-government sources; (ii) mitigation, adaptation and vulnerability to impacts of climate change, (iii) climate change support in financing and expenditure.

The National Adaptation Plan for the Agriculture Sector (NAP-Ag, 2018): The National Adaptation Plan for the Agriculture Sector (NAP-Ag, 2018) contributes to the National Development Plan priority of strengthening ecologically sound agricultural research and climate change resilient technologies and practices. The NAP-Ag vision is “A climate resilient and sustainable agricultural sector contributing towards achievement of the Uganda Vision 2040”; and its mission is “To reduce vulnerability and enhance adaptive capacity of Uganda’s agricultural sector to the impacts of climate change in order to achieve sustainable agricultural development”. The plan also contributes to different government policies and planning frameworks, such as the National Climate Change Policy (2015), Agriculture Sector Strategic Plan (ASSP), Climate Change Bill (2019), GGDS, Vision 2040 and the global SDGs.

The overall goal of the NAP-Ag is to increase resilience of the Agricultural Sector to the impacts of climate change, through coordinated interventions that enhance sustainable agriculture, food and nutritional security, livelihood improvement and sustainable development. The NAP-Ag consolidates different climate actions into a systematic and integrated suite of adaptation responses. Action 2 of the plan, under crop production, is to “promote and encourage conservation agriculture and ecologically compatible cropping systems to increase resilience to the impacts of climate change,” CSA and SLM amongst others., The plan targets to boost production and productivity for all agriculture sub-sectors including crop, livestock, fisheries, forestry, land and natural resources, through gender responsive actions guided by knowledge, evidence and information on climate change for a resilient and sustainable agriculture sector. Effective implementation of the plan necessitates a multi-sectoral and multi-stakeholder involvement including MAAIF,

MWE, MoLG, NARO, Universities, LG, Civil Society and Private Sector. Effective Monitoring, Reporting, and Verification of the key sectoral and stakeholder activities is therefore key to the success of the plan.

The NAP-Ag plans to undertake a climate smart agriculture knowledge mapping, audit and analysis in order to build a climate smart agriculture knowledge warehouse in the future. This objective is part of the knowledge management strategy of MAAIF. Although not explicitly stated, the MRV for CSA should be enshrined in this strategic objective. The stated objective is to “Develop knowledge management and communication systems to support climate resilient agriculture” clear activities of MRV for CSA can be carefully fitted within this objective.

### 3.1.3 Key institutional actors

#### 3.1.3.1. Institutional arrangement for the national MRV

The NCCP embeds a well-laid out implementation structure to facilitate monitoring and evaluation. It focuses on national implementing agencies indicating the roles of different ministries down to district level and civil society organizations. The responsibility for National MRV systems rests with the Climate Change Department (CCD), which will be succeeded by the National Climate Change Commission when the National Climate Change Bill, 2020 becomes an Act. The CCD, a Department within the Ministry of Water and Environment (MWE), is responsible for co-ordination, monitoring and reporting on implementation of national climate change actions. This also include facilitating the development, and

application of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases in all the relevant sectors. It is also responsible for establishing and maintaining national, regional and international cooperation on climate change; and is the National Focal Point for the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol (KP) and Paris Agreement (PA). The implementation role is vested with the MDA and DLG. The Bill provides for the district technical planning committees to be responsible for collecting and integrating plans of lower-local governments in order to allow for bottom-up participatory planning and budgeting for climate action.

The national MRV is still in its early stage of development with structures laid out but not fully operational. Data at the different emitting sectors are provided from different data sources including government MDAs, CSO, NGO, private sector and academia (Fig. 3-2.2a). The data is compiled and archived by the Sector GHG Team/hub/ Sector Working Group lead by the sector Focal Point/Team Leader. The GHG Team is composed of staff at the respective MDAs and performs other roles other than GHG data compilation. The Sector GHG Team/hub/Working Group reports to the Technical Committee on Climate Change (TCCC). The TCCC constitutes of technical representatives of the different sectors in the Government MDAs, private sector, CSO and academia and are responsible for management and coordination of activities from the sectors, as well as QA/QC. The TCCC reports to the CCD at MWE who is National Entity and UNFCCC Focal Point responsible for management and coordination of GHGI, MRV and reporting to UNFCCC.

The overall guidance and oversight of the work of CCD is provided by the National Climate Change Advisory Committee, which also act as the steering committee and is composed of GHG data users and providers (Fig. 3-1.2b). Although the data collection and reporting structure is in place, it is not fully operational. During the reporting period for the NC or BUR, the CCD MWE recruits temporary consultants constituting the National GHG Task Force. The Task force collects data and Information from the sectors hubs, analyses and drafts reports. The reports are reviewed by the TCCC and National Climate Change Advisory Committee (NCCAC) before final approval and submission to UNFCCC by the CCD MWE. Stakeholders are involved in validation of the results.

CCD works with climate change coordination units referred to as sector Hubs or sector teams or Sector Working Groups, in different Ministries, Departments and Agencies (MDAs) to ensure the mainstreaming of climate change in the different sectors of the economy (See Fig. 3.1). The Department (CCD) also works with the National Planning Authority (NPA) to ensure the integration of climate change in the NDP and Sectoral Development Plans; and with the Ministry of Local Government (MOLG) and NPA to ensure integration of climate change in District Development Plans. According to section 14 of the National Environment Act a multi-stakeholder district Environment and Natural Resources Committee is responsible for climate change matters in the district. The District NRs Officer is the District Climate Change Focal Point, and is responsible for ensuring that all departments integrate climate change concerns in the District Development Plans.

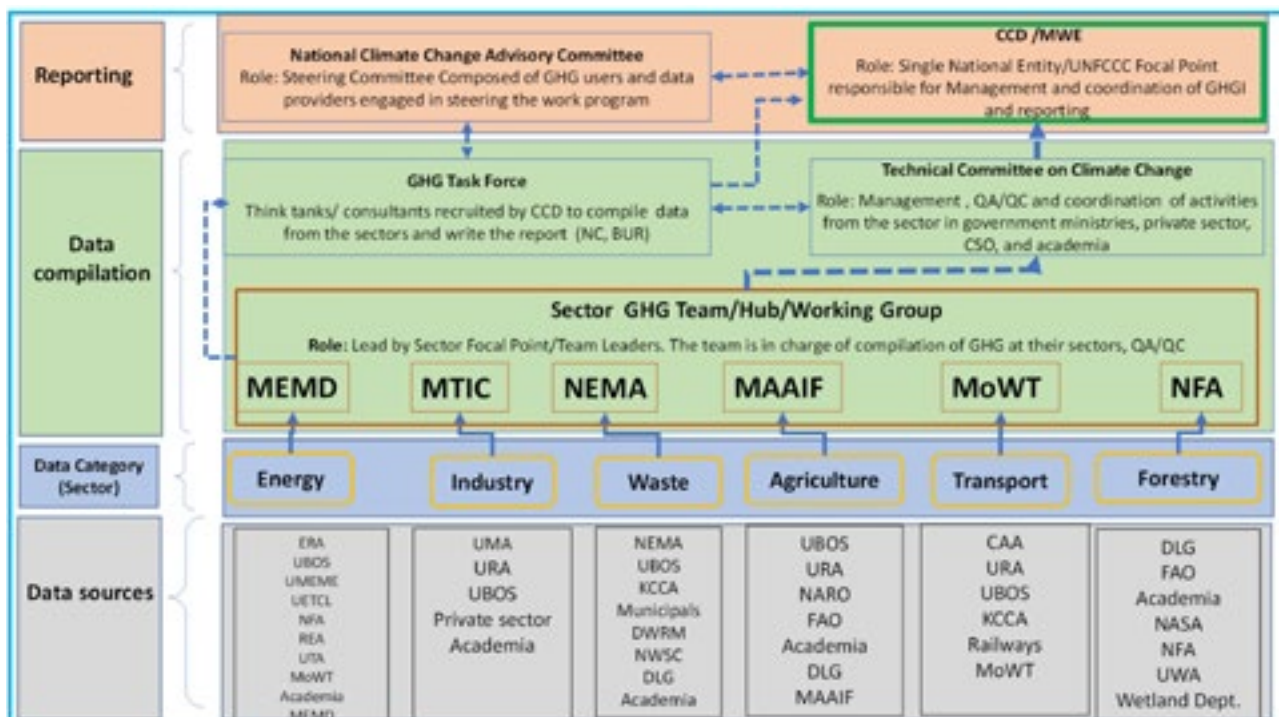


Figure 3- 1: Current institutional arrangement for national MRV indicating data and information flow; dotted lines indicate temporary engagement while filled lines indicate established collaboration

The proposed institutional arrangement for the national MRV is illustrated below as Fig. 3.2; one of the important improvements is the inclusion of a higher frequency timeframe within which reporting has to be done. It will increase on the quality of data collected as opposed to the previous situation where data was sought only when writing the international reports. The challenge with the new arrangement is that only the NAMAs are listed, leaving out other items like the REDD+ actions. Furthermore, the classification follows sector lines, with the role of district local governments limited to data sources/provider in the MRV chain.



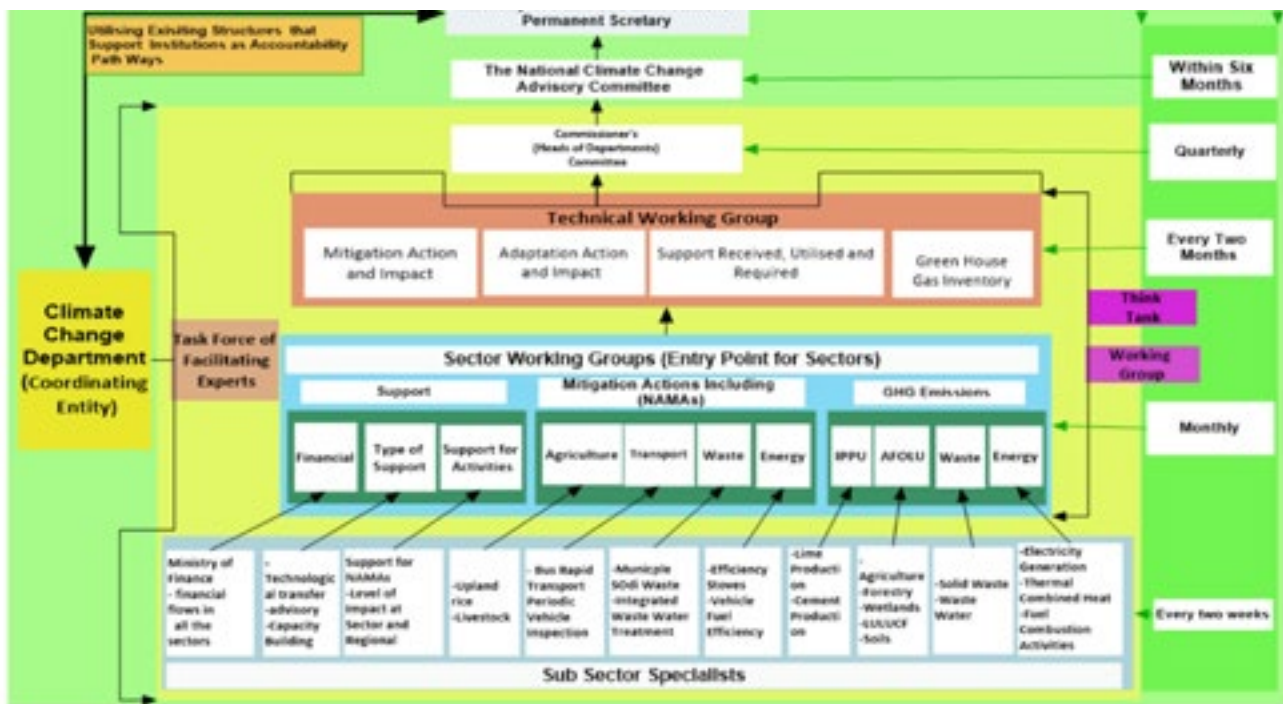


Figure 3- 2: Institutional arrangement for the proposed Integrated National MRV system (Source: MRV Framework 2019).

### 3.1.3.2 Institutional arrangement for agriculture and climate change adaptation

#### Ministry of Agriculture Animal Industry and Fisheries (MAAIF)

The Agriculture sector under the leadership of the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF) has four major subsectors; crop, livestock, fisheries, entomology. There are several semi-autonomous agencies under its supervision namely; Control of Trypanosomiasis in Uganda (COCTU), Cotton Development Organization (CDO), Dairy Development Authority (DDA), National Agricultural Advisory Services (NAADS), National Agricultural Research Organization (NARO), National Genetic

Resource Centre and Databank (NAGRC&DB), Uganda Coffee Development Authority (UCDA), and the Districts Agriculture Sector Departments of LG, and these contribute data and information for agriculture MRV.

MAAIF established a Climate Change Task Force (CCTF) in 2012 to collaborate and link with the climate change lead sector - CCD in MWE. The function of the CCTF are to: Coordinate the development, implementation and review of policies, strategies, laws and programmes meant to mitigate the effects of climate change in the agricultural sector; develop guidelines for climate change proofing and mainstreaming of climate change issues into the agricultural sector

programmes, projects and activities; and to develop climate change training and information dissemination materials, relevant to the agricultural sector. Additional functions are to compile and analyze trends and events on climate variability and climate change and provide information for policy review, planning and intervention; provide technical back-up support and building capacity of MAAIF departments, agencies and District Local Governments (DLGs) on climate change agricultural related issues. The CCTF is also expected to liaise with the CCD and other relevant authorities in the development and dissemination of technologies and practices for adaptation and mitigation of climate change. The Task Force considered that adaptation of the agricultural sector is a critical issue.

The NAP-Ag (2018) gives mandate to MAAIF to support existing institutional structures and strengthen an institutional arrangement that nurtures partnerships and better knowledge management for effective planning, coordination and management of climate change action. MAAIF as agriculture sector secretariat links the DLG with CCD MWE. MAAIF provides data collection templates and aggregates data and information from all agriculture data providers, which is availed to CCD for climate reporting

### **National Environment Management Authority (NEMA)**

NEMA is charged with the responsibility for overall management of environment by coordinating, monitoring, regulating activities in the field of environment. NEMA generates periodic reports on the state of environment at the district and national activities, with the District Natural Resources Office designated as NEMA's focal point for the district. The National Climate Change Policy also assigns the

District's Natural Resources office as the District's Climate Change Focal Point in addition to the other responsibilities. NEMA collects indicators on environmental performance in areas such as rangelands where improved management practices are being implemented. Some of this data can be used for assessing the contribution towards climate smart practices.

### **Ministry of Local Government**

The National Climate Policy (2015) identifies and assigns the Ministry of Local Government (MOLG) the responsibility to provide guidance to districts and ensure the policy priorities are integrated in the district plans and also acted upon through a review of reports from the districts. The MOLG prepared the Climate Change Action Plan (2019/20-2020/21) aligned to the NCCP priorities assigned to the MOLG CC Task Force to deliver on its three main outputs; (i) Strengthen technical capacities for MOLG and LGs, (ii) Create awareness on climate change for MOLG and LGs, and (iii) Strengthen coordination between MOLG and other MDAs and LGs. The CC Action Plan is reinforced with the existence of the MOLG's Strategic Plan for Statistics (2015/16 – 2019/20) that aims to improve the quality of data produced by the Ministry and the LGs by strengthening capacities for statistics production and dissemination. The statistics plan is to have five strategic objectives that it seeks to achieve; (i) Strengthen the coordination and management in the production of local governance statistics, (ii) Increase usability and dissemination of local governance statistics, (iii) "Mainstream quality assurance in the production of local governance statistical information, (iv) Strengthen human capacity for production and management of local governance statistics, and (v) Increase the production of local governance statistical

information. The Local Government Act Cap 243s required that MDAs 'ensure implementation of national policies and adherence to performance standards on the part of local governments. The MDAs are therefore obligated to track and monitor implementation of national policies and priorities, and use the data-information to inform planning and policy formulation.

### Uganda Bureau of Statistics (UBOS)

All national statistics are under the guardianship of UBOS. Data stored by UBOS are useful for estimating GHGs and thereby directly contributing to MRV. Typical examples of the data are in the national livestock census and Annual Agricultural Survey, which UBOS and MAAIF conduct periodically. UBOS largely collects the data almost independently of the district local government with minimal engagement of agriculture officers at DLG. There should be efforts to build capacity of local governments to conduct the survey and share the data with UBOS for national compilation. UBOS can provide oversight roles (quality control).

#### 3.1.3.3 The immediate past and on-going projects

As a member of the non-annex 1 countries, Uganda is expected to generate and submit to UNFCCC a GHG inventory every two years to comply with the requirements of Decision 1/CP.16. (GIZ, 2017) of the UNFCCC. To comply with the above requirements, Government has received support from various agencies to strengthen its capacity and support the development of MRV system in Uganda. Some of these capacity building projects are summarized here below detailed.

- **Low Emission Capacity Building (LECB) Project (2011-2015)** was funded by the European Commission and aimed to 'Strengthen technical and institutional capacity in greenhouse gas (GHG) inventory systems and Nationally Appropriate Mitigation Actions (NAMAs) with in-built (MRV) systems. Through the project, Uganda developed the eight sector based priority NAMAs that include agriculture sector, prepared a status report on Uganda's NAMAs, supported preparation of the INDC and the country's first Low Emission Development Strategy, and together with Global Green Growth Institute (GGGI, developed Uganda's Green growth development strategy.
- **The Clean Development Mechanism (CDM) Project (2010-2015)** was funded by the Government of Belgium to 'Strengthen technical capacity in CDM project formulation and awareness of investment opportunities under the CDM'. Key among the accomplishments was training for government institutions and project developers including financial institutions on CDM projects formulation, the project cycle and project financing, Improved access to information and procedures for CDM project formulation, and supported the development of CDM projects and registration with the CDM Executive Board.
- **Uganda National MRV framework started in 2018** with funding from the Global Green Growth Institute (GGGI). The project aims to guide partners on MRV investment planning across the different emitting sectors, and a draft National MRV framework is a key output of the project.
- **Uganda's Capacity-Building Initiatives for Transparency (CBIT) Project (2018-2020)** was funded by GEF through Conservation International. The project aimed to 'Strengthen the capacity of institutions in Uganda to comply with the

transparency requirement of the Paris Agreement'. Through the project, emissions sector public institutions, including agriculture secured cross sectoral cooperation agreements to provide and share emissions data with MWE. Sector focal points were institutionalized, and strengthened, and over 60 National sector experts trained on GHG inventory management, data analysis and reporting. Six sectoral GHG inventories were prepared, and six sector MRV for inventory established. Five protocols for activity data collection in four sectors were standardized for IPCC TACCC principles, including collection of gender disaggregated primary data. Revision of the national livestock census tool was supported to capture key GHG indicators.

- **NDC Support program (2018 - ongoing)** with funding from NDC Partnership Climate Action Enhancement Package (CAEP). The project is implemented by UNDP and aims to scale up public and private investment in climate change mitigation measures.

The projects are majorly national level interventions, and do not target capacity building at the lower government levels. Only national experts are trained. However, the desired outcome is that these experts undertake training and supervision of lower level managers, e.g. district level technical teams.

The study also reveals ongoing agricultural research related to emissions data collection and CSA;

- **Emissions tracking research projects in agriculture.** Makerere University's College of Agricultural & Environmental Sciences (CAES) is associated with two emissions projects; ISOTOP Project on emissions tracking in Kabale and Mt Elgon areas, and GHG emissions from agroforestry systems project in Eastern Uganda. NARO is also

implementing emission tracking projects in upland rice, and soil carbon monitoring project in pristine and converted areas, and emissions from land conversion (forest to agriculture).

- **CSA related projects.** Makerere University PhD students focusing on Modeling water use efficiency under selected CSA practices in maize, and Modeling crop yield under selected CSA practices were revealed in the consultations. Research in biological pest management systems and fodder trees and crop feeding rations to reduce methane in production of biogas are projects implemented by NARO in collaboration with FAO.

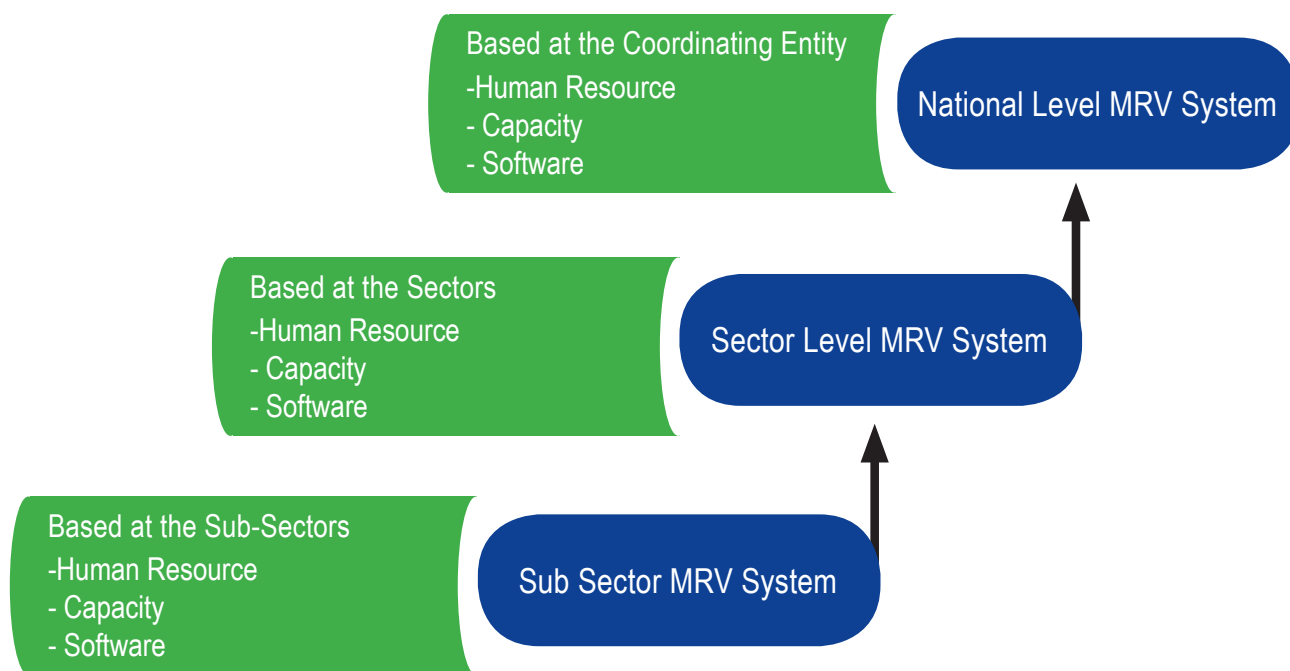
While the above mentioned projects are not being implemented in the study districts, opportunities for knowledge sharing and exchange exist and the districts could also further research partnerships and collaboration in the areas outlined.

### 3.1.4 The draft National MRV Framework

The Ministry of Water and Environment CCD, with support from GGGI developed a draft National MRV framework document to guide operationalization of the National MRV system, and establishment and operationalisation of sector and subsector MRV systems. The draft framework aims to bring into perspective comprehensive understanding and appreciation of the requirements of a desired operational National MRV system. The framework indicates increased capacity, harmonized coordination and functional structures as essential for operationalising MRV systems at all levels. Harmonised coordination would enable effective and accurate tracking and reporting climate change actions at all levels. The draft National MRV framework



proposes a decentralized structure for the MRV system with national, sectoral and sub sectoral levels to support functionality of the MRV practices (Fig.3.3).



**Figure 3- 3: Multi-level structure of MRV system in the draft MRV Framework for Uganda (Source: MRV Framework, 2019)**

In the framework, the different structures will be resourced with the human resource, capacity and software required to function as expected. While the framework has not yet been officially launched, it provides the necessary guidance for strengthening of the National MRV system and to establish and addresses the sectoral and sub-sectoral MRV needs. It should however be noted that the MRV system in Uganda is still in its infancy, and continues to attract development support to achieve the national and international expectations of an MRV system. The current situation depicts development support targeted only to the national and sector level in form of policy and institutional development, capacity

strengthening (training and equipment), and national level reporting. Sub sector level, constituting the local government, have not been adequately supported and engaged in the ongoing GHGI and MRV development and improvement plans, even when the policy (NCCP) provides for their engagement. Capacity building support has been targeted to the national and sectoral level MRV; the subsector and sub-national level e.g. DLGs have not yet received specific attention for MRV establishment. The challenge is on how to expedite the launching of the national MRV framework to support subsequent operationalizing of the National MRV system and development of sub-national MRV systems.

The National MRV framework does not clearly indicate how data at the district level should be handled. It is necessary to have a separate but aligned MRV framework for local governments to fill the gap that remains where climate smart agricultural practise are being implemented but are not part of the national programs such as NAMAs, REDD+. Establishment and support of sub-sectoral MRV at the local level e.g. at district local government, is key for streamlining data flow from the source to the sector national level. MRV at the local government would support effective quality assurance and quality control as well as effective tracking of progress on NDC commitments to support decision-making from the district to national level. To foster implementation of the MRV system, GoU will expedite the launching of the National MRV framework. This will be a stepping stone to trickle down and encourage local governments to consider MRV in their plans and budgets. The development of MRV systems at district level should be closely knit with development of district climate action plans. For CSA, some of the actions that need to be taken should carefully consider the needs of individual district and identify actions that would contribute most to adaptation and mitigation. Staff at the district should be trained to identify relevant data to be collected, be equipped with infrastructure (computers, staffing, etc.) to collect and store this data for later sharing with stakeholders at national level.

### 3.1.5 Agriculture data collection and management

- **Absence of a comprehensive and efficient emissions data management system.** There is no systematic way for collection and archival of emissions data; nor to ensure that subsequent inventories build on previous works. The system depends on data from various ministries and agencies; and the formats used in data collection vary by institutions.
- **Absence of a centralized national database for agriculture data.** MAAIF is the line ministry for the agriculture sector and with responsibility for coordinating and reporting to CCD emissions data and information from the sector. MAAIF collects agriculture data at sub sector level, and this includes data from local governments, and through periodic surveys conducted in collaboration with UBOS. They also supervise the National Agricultural Research Organization (NARO) Secretariat that oversees the National Agricultural Research Institutes (NARIs) and the Zonal Agriculture Research and Development Institutes (ZARDIs). The assessment reveals that there is currently no centralized and national database in place for agriculture data.

- **No formal data sharing arrangements.** There is currently no formal arrangement for inter sectoral data sharing between MAAIF and its agencies, as well as other data supply agencies. MAAIF has used data requisition letters to obtain data on fertilizer imports from Uganda Revenue Authority (URA), and also established a long-term arrangement with UBOS to jointly generate national livestock data to compute livestock emissions. Need to develop formal instruments to facilitate data sharing on a long term basis.
- **Multiple agricultural data collection activity.** It was observed that several actors are collecting data in different forms and volumes that could be useful for reporting GHG inventories. Several projects are collecting activity data, but were unaware that they are collecting data which are used for GHG calculations. Some projects are collecting direct GHG in selected farming systems; these could be useful for developing country-specific emission factors. Gas

analysis of samples is, however, done abroad due to lack of capacity to operate gas chromatographs in the country. Coordinating these data collection efforts from various actors can increase the volume of data collected and improve accuracy in reporting agriculture GHG emissions.

Government and CSOs, mainly through projects, are also collecting activity data on farmers practicing various types of climate-smart activities such as conservation agriculture, agroforestry, sustainable land management etc. Stakeholders such as EcoTrust are collecting data on on-farm biomass stocks in agroforestry. Some routine data is collected at national level by MDAs including MAAIF and UBOS for example, the National livestock census and annual agricultural surveys are collected periodically. NFA collects some remotely sensed data on burning but obtains most of the data from global datasets e.g. NASA. The data required for the IPCC reporting on GHG from the agriculture sub sector is indicated in Table 3.1).

Agriculture Subsector	Requirement (IPCC)	State/what Uganda is currently using
Livestock Enteric Fermentation	Livestock type, breed, numbers, weight, age (annual) disaggregated by key breed categories	<ul style="list-style-type: none"> <li>Estimated from livestock census and the annual agriculture surveys from UBOS and MAAIF, based on numbers and expert judgement. Data not fully disaggregated. Report using IPCC Tier 1 default values</li> </ul>
	Feed type, quality, quantity	<ul style="list-style-type: none"> <li>Feed not disaggregated, Report using IPCC Tier 1 default values</li> </ul>
Livestock Manure Management (CH <sub>4</sub> and N <sub>2</sub> O Direct)	Manure management systems disaggregated by key breed categories	<ul style="list-style-type: none"> <li>Manure management systems based on expert judgement, Report using IPCC Tier 1 default values</li> </ul>
Aggregate Sources Lime Application	Annual amount of lime application	<ul style="list-style-type: none"> <li>Data on Lime not available for previous reporting, but could be explored from export/imports data from URA, Report using IPCC Tier 1 default values</li> </ul>
Aggregate Sources Burnt area	Burnt area data	<ul style="list-style-type: none"> <li>Burnt area estimated based on MODIS 500 × 500 m pixel data on burnt area from Maryland University coupled with expert judgement</li> <li>Burnt area as land management tool is not documented, Report using IPCC Tier 1 default values</li> </ul>
Aggregate Sources Urea Application	Annual amount of urea application	<ul style="list-style-type: none"> <li>Estimated from fertilizer imports \ exports from FAOSTAT coupled with expert judgement. Quantity of annual urea application not documented, Report using IPCC Tier 1 default values</li> </ul>
N <sub>2</sub> O from managed soils (Direct)	Annual organic and chemical fertilizer application (Tones) and N fraction in fertilizer	<ul style="list-style-type: none"> <li>Estimated based on apparent annual fertilizer use based on FAOSTAT coupled with expert judgement, Quantity of annual fertilizer application not documented, and N fraction in fertilizer not quantified, Report using IPCC Tier 1 default values</li> </ul>
N <sub>2</sub> O from managed soils (Indirect)	Annual organic and chemical fertilizer application (Tones) and fraction that volatilizes	<ul style="list-style-type: none"> <li>Estimated from fertilizer imports \ exports from FAOSTAT coupled with expert judgement, Quantity of fertilizer application not documented, fraction that volatilizes not quantified, Report using IPCC Tier 1 default values</li> </ul>
N <sub>2</sub> O from manure (Indirect)	Annual nitrogen excretion and fraction that N that volatilizes	<ul style="list-style-type: none"> <li>Expert judgement , Report using IPCC Tier 1 default values</li> </ul>
N <sub>2</sub> O emissions from crop residues	Annual nitrogen emission from crop residues	<ul style="list-style-type: none"> <li>Estimated based on MAAIF and UBOS agriculture census and annual surveys and verified using FAOSTAT - harvested area and Expert judgement</li> <li>Assumption is made that there is no burning of crop residues because data of burnt residues is not available. Report using IPCC Tier 1 default values</li> </ul>
CH <sub>4</sub> from rice cultivation	Annual rice area cultivated or harvested by flood management , cultivar and agricultural inputs	<ul style="list-style-type: none"> <li>Estimated based on MAAIF and UBOS agriculture census and annual surveys from FAOSTAT - harvested area and NARO Expert judgement</li> <li>Area under paddy rice, water management details, and inputs not fully documented. Data from CSO not captured. Report using IPCC Tier 1 default values</li> </ul>



### 3.1.6 Inventory, emissions calculation, reporting, data and information storage

- **No formal arrangement for agriculture emissions data processing.** There is no formalised measuring, emissions calculation, reporting or specific GHG data archiving by the sector. Data from research institutions and academia is reported mainly in technical reports and peer review publications.
- **Absence of structured cooperation on emissions data processing.** Engagement between CCD and CSOs happens informally through consultations during preparation of the BURs and NC reports. Some institutions such as CARITAS are already using data management software (ODK) for internal and decision-making purposes at the local level. Data from non-state actors are not readily available to MAAIF
- **MAAIF not handling emissions data.** The ministry of agriculture operates an online data management system for routine administrative and technical agricultural data. However, emissions data are not being isolated internally, nor communicated directly to CCD. A lot of agriculture data used for emissions reporting is obtained from FAOSTAT yet derived from agricultural census (UBOS) and annual surveys (MAAIF). The actual transmission of data and information from agriculture data providers to MAAIF and subsequently to CCD MWE is illustrated in section 3.1.4.1 (Fig. 3.1) above.
- **Emissions data processing through projects.** Data compilation, emissions calculation and reporting has been done by consultants engaged periodically by MWE for the preparation of UNFCCC reports (BURs, NCs) as described in section 3.1.4.1. The agriculture sectors' technical teams are, nonetheless, engaged during consultative meeting to contribute to the national reports.

- **Capacity development initiatives.** The sector teams at the national level have received basic training on IPCC tools in the past years, and recently (March-June 2020) been trained on comprehensive GHGI and MRV. The CBIT hands-on training and capacity support for establishing sector GHGI and MRV for GHGI laid a foundation for development of the Agriculture's inventory, archiving and reporting, which will benefit with further support at the sector and sub national levels.

### 3.1.7 Quality control and quality assurance

Quality Control (QC) is a system of routine technical activities to assess and maintain the quality of the inventory as it is being compiled. It is performed by personnel compiling the inventory. Quality Assurance (QA) is a planned system of review procedures conducted by personnel not directly involved in the inventory compilation/development process. Reviews, preferably by independent third parties, are performed upon a completed inventory following the implementation of QC procedures. A QA/QC and verification system contributes to the objectives of good practice in inventory development, namely to improve transparency, consistency, comparability, completeness, and accuracy of national greenhouse gas inventories.

- **Inadequate capacity to comply to TACCC principles.** There is currently limited capacity to comply with IPCC requirements of transparency, accuracy, completeness, comparability and consistency in data collection reporting and verification. The limitation is due to skills gaps for data collection, the tools used are not standardized to conform to IPCC reporting, limited institutional structures and capacity to support comprehensive and timely data collection, verification and reporting.

- **Limited QC and QA mechanisms.** Agriculture, like other sectors in Uganda, has been reporting with Tier 1 methodology using default IPCC emission factors. This is characterised with many uncertainties, and QC and QA is majorly based on expert judgement. Nonetheless effort is made to improve QA and QC through stakeholder consultation and validation at different national levels especially during preparation of the NC and BUR. At the District, agriculture data collected at lower LG is verified by District production officers before sharing with the MAAIF. Section 3.3 is a detailed presentation of the data collection and transmission process at the LG level. Publication of results in peer-review journals from academia and research institutes is a way of ensuring quality of data and information supplied by academia to MAAIF. Some reports from students require public defence, an element of quality assurance. For most local NGOs there is no specific aspect of verification and QA/QC. At the reporting level, QA/QC is ensured through technical reviews of the reports and stakeholder consultations for validation before submission to UNFCCC.

### 3.1.8 Needs, gaps and technical challenges

#### Infrastructure and human resource capacity

There is limited structural and human resource capacity to comprehensively collect, analyse, monitor and verify GHG emissions or removals. Feedback from the various institutions indicates that their capacity to comply to most of the elements required for MRV is either low or moderately adequate (Fig. 3.4). Elements where capacity is largely low include

- a. *institutional structures to operationalise MRV:* This suggests that interventions to improve the MRV

system should prioritize strengthening structure to operationalise MRV, standardisation of data collection tools and procedures, capacity building for skills in data collection, analyses (key category analysis, emission factor calculations), archiving, records and information management and reporting

- b. *lack of formalised staff within the institutions to specifically attend to climate data:* Some of the options may include streamlining staff to ensure that their roles are clearly defined to handle climate change data and information.
- c. *accuracy, completeness and consistency and comparability of activity data collected:* According to the respondents, accuracy of the data is considered generally low because of reliance on expert judgement and use of default IPCC emission factors. The results based on default emission factors are not indicative of the country's true status of emissions/sinks because Uganda is a highly diverse country ecologically.
- d. *MRV methodology, archiving QA and QC:* The methods of collecting agronomic data are usually standard but more data needs to be collected to improve the uncertainty of the estimates.

#### Low-level capacity

Some of the challenges highlighted by stakeholders indicate low-level capacity and include

- (i) limited knowledge of participating communities and data providers on the importance of the data collection process, hence resistance to some data collection procedures; this has resulted in low transparency and inaccuracy of data
- (ii) Low coverage and low frequency of measurements attributed to limited finances, resulting in incomplete and incomparable datasets
- (iii) the data collected is not disaggregated as required for IPCC reporting

- (iv) The tools used to collect the data are not standardised and method for analyses and reporting information are mainly estimation based on individual judgement hence unreliable for tracking of the NDC or to inform effective decision-making
- (v) Data quality is compromised because of reliance on unskilled personnel e.g. some farmers for data collection
- (vi) Lack of information and knowledge of relevant data, which results in gaps during reporting; For example, paddy rice growing is on-going but data is not captured for GHG and reported as missing in the National reports. MAAIF is getting rice production and market data from CSOs but this is not submitted to CCD for reporting
- (vii) Inconsistent data collection formats e.g. many CSOs, data is collected in form of narrative reports, making it bulky and difficult to assemble and use for emission estimation and reporting.
- (viii) There is no clear guideline for the process of data verification and feedback mechanisms as a QA/QC procedure during data collection.

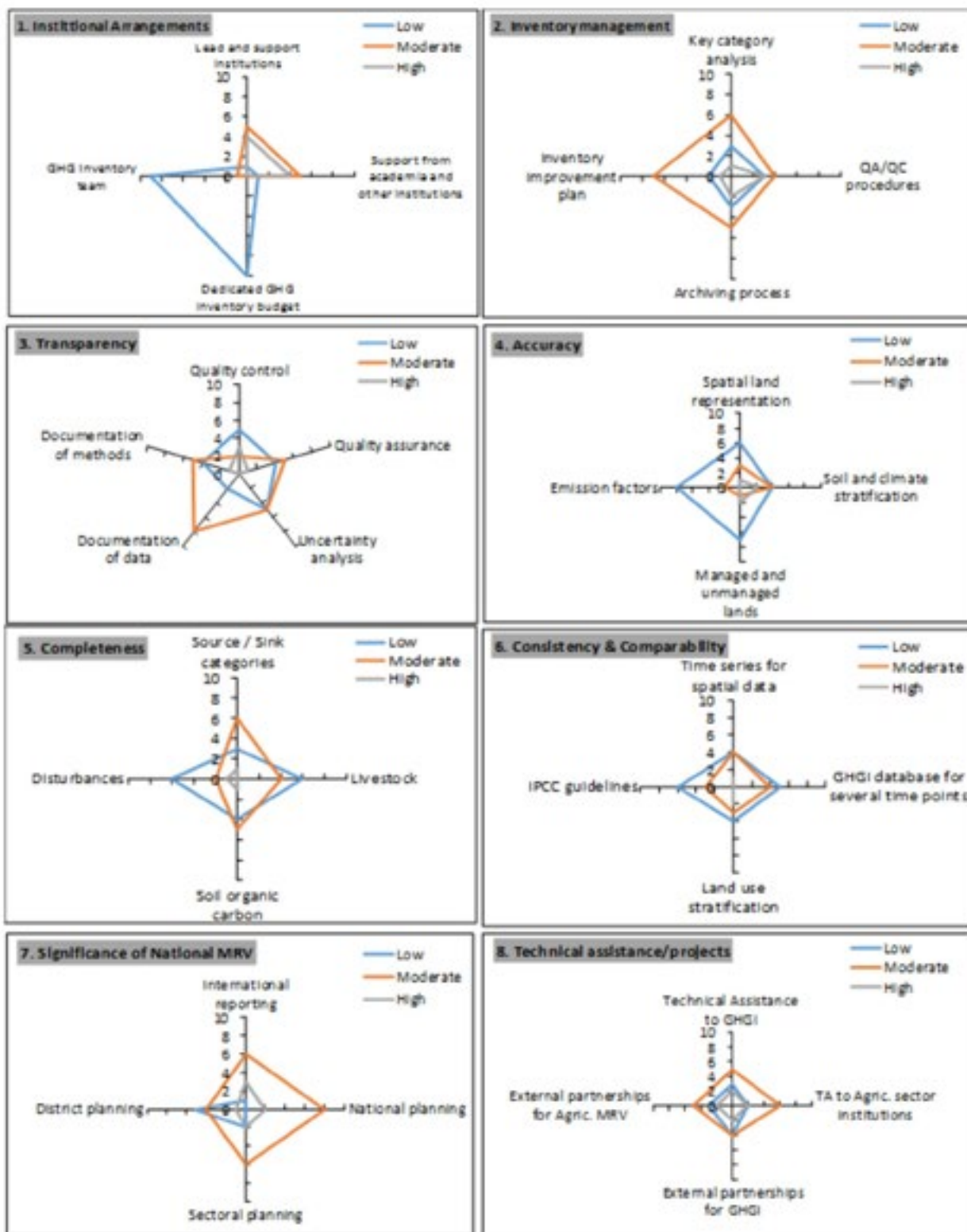


Figure 3- 4: Institutional capacity to comply with various elements of the measuring, Reporting and Verification (MRV) system for greenhouse gas emissions in the agricultural sector at national level. N = 10



## Definition of roles

Estimation of GHG emissions is not clearly defined and the roles for GHGI and MRV not indicated in data collection structures currently employed by MAAIF or MoLG. Currently, there are no formal arrangement for inter and intra-sectoral data sharing though some agreements exist to support data exchange on request. MAAIF has used data requisition letters to obtain data on fertilizer imports from Uganda Revenue Authority, and also established a long-term arrangement with UBOS to jointly generate national livestock data to compute livestock emissions. The MWE with support from CBIT project supported development of an MoU for GHG data sharing between MAAIF and MWE. The MoU and its Technical Guide for data sharing was approved and cleared for signing and use in January 2020. The MoUs and Technical guide for data sharing are to effect smooth inter-ministerial coordination for the national GHGI and MRV.

The data collection tools currently in use especially for crop subsector are not designed or updated to effectively collect GHG data. It is therefore important to note that the data currently collected is not disaggregated and does not conform to the IPCC principles of Transparent, accurate, complete, and comparable for effective GHGI and MRV. The livestock census is carried out at a 10-year interval and the last one was conducted in 2007/8. The next census due in 2018 but was delayed because of limited finances. UBOS had planned to conduct the census in April 2020 but this has been further delayed by the COVID 19 pandemic. There is no centralized data management system and data has to be sourced from different subsector databases at the national level. Linkages between sub sectors and the sector need strengthening at local government and national level for effective MRV. The policies and frameworks for data sharing are not effectively enforced

An MRV for the agriculture subsector should take care of the sources of emissions, effectiveness of mitigation actions and climate change financing flows and expenditures. The four MRV systems i) Inventory (Emissions and removals), ii) NAMAs and NAP, iii) REDD+ and iv) Support (technology, finance) are all relevant for climate-smart agriculture in Uganda. For adaptation actions and NAMAs, two of the NAMAs (Climate-Smart Dairy Livestock Value Chains in Uganda and Upland rice cultivation) touch the agricultural sector directly. Under the REDD+ program, MRV is relevant to Action 1 (Climate-smart agriculture and Action 7 (Livestock rearing in the Cattle Corridor) of the REDD+ program.

## Strengths and opportunities

- There is established national and sector level structures with an enabling policy environment to support GHGI and MRV.
- The MRV Framework document, although not yet launched, is in the pipeline to guide the MRV system development process. The National GHGI and MRV system established at the CCD is in place to strengthen the policy environment for climate reporting. Similarly, the FBUR project has initiated processes for the establishment of MRV systems for NAMAs and support received
- A technical guide on GHG data sharing was developed to operationalise the MoU for GHG data sharing between MWE and MAAIF
- Academia, CSO, Private sector and Development Partners are willing to support government to improve and operationalise GHGI and MRV for evidence-based decision-making
- There is strong will by the leadership at the national, sector levels to support MRV for generation of data and information to inform budgeting and planning

- Some infrastructure already exists at the MAAIF for collecting and sharing information and there is a well equipped data center at MAAIF under the agriculture planning department. MRV systems can easily be integrated into this infrastructure if scaled out and adequately staffed.
  - Research on direct emissions from soil under different management scenarios is already ongoing in research institutions such as Makerere University and NARO Kawanda. This shows existence of interest and home-grown capacity for GHG assessment for CSA.
  - Sector teams have received a series of trainings to build their capacity on IPCC requirement for GHGI, MRV. The CBIT project has further strengthened technical capacity of approximately 60 National GHGI Sector Experts (about 10% from Agriculture sector) for national GHG inventory and reporting by working with the teams through a hands-on training to establish sector GHGI and MRVs for GHG Inventory. This creates a critical mass of experts to design, and implement MRV systems in the country
3. Existing policy and legal frameworks create an enabling environment to support sustainable development and monitor progress on Uganda's national and international commitments. The frameworks support GHGI, MRV and specifically monitoring the impacts of CSA on mitigation and adaptation to climate change. The policies would reap their objectives if effectively enforced.
  4. Support for capacity (skills, equipment, finance) on MRV and GHGI was aimed at the national and sector levels. For effective functioning of national and sector MRV, there is need for capacity support at the sub-national levels targeting data providers. Improved capacity at the sub national level will result in better data collection processing and reporting at all levels
  5. The administrators at all levels and technical personnel at sub national levels have limited knowledge of GHGI and MRV. MRV is mostly known for GHGI and other MRVs are little known. Nonetheless stakeholders acknowledge the importance of GHGI-MRV for UNFCCC reporting on progress of NDC commitments.

## Conclusions

1. The institutional structure at national and sector level is established and enables reporting for national and international commitments.
2. The linkage of sector institutions (e.g. MAAIF) and MWE will improve with the recently developed MoU and Technical Guide on GHG data sharing. Sector (e.g. MAAIF) are linked to data providers including DLG but there are no formal frameworks to support this connection.
6. Improvement of the GHGI and MRV requires a multi-stakeholder involvement from the lowest levels of data collection up to the national level. Although the sectors at the national level still need substantial improvement and support, district local governments should also be supported to collect analyse and provide reliable and comprehensive data and information for evidence-based decision-making at all levels.

The status of national and sectoral MRV is summarized in Table 3.2 and recommendations for improvement indicated.

Area	Status	Proposed action to be taken
Policy and Institutional arrangements	<ul style="list-style-type: none"> <li>• Relevant policies and institutions exist, and coordination arrangements proposed but not enforced.</li> <li>• Sub national level MRV and engagement of some stakeholders are not clearly indicated in the proposed national MRV framework e.g. DLG, CSOs, NGOs, CBOs, Private sector.</li> <li>• There is high-level support for mainstreaming data collection and sharing.</li> <li>• Technical guide on GHG data sharing and MoU between MWE and MAAIF recently developed.</li> <li>• Informal collaboration ongoing between some institutions and DLG e.g. with NARO stations and Napak DLG.</li> </ul>	<ul style="list-style-type: none"> <li>• MAAIF should actively take lead in coordination and management of GHG data in agriculture sector. A GHG data management unit composed of the recently trained national GHG experts should be fully established and hosted at MAAIF to specifically oversee and manage agriculture GHGI and MRV systems. The roles and responsibilities of the staff should be clearly defined to handle climate change data and include amongst other duties, compiling sector GHG data from all data providers including DLG and periodically submit these to CCD MWE.</li> <li>• The objectives of the MoU for GHG data sharing between MAAIF and CCD should be implemented and the roles and responsibilities of all agriculture institutional network at the national levels clarified to all. The linkage and role of DLG should be defined beyond data providers.</li> <li>• Draft legislation to support enforcement of existing policies, guidelines and objectives stipulated in NDC and the MAAIF-MWE MoU on GHG data sharing.</li> <li>• Strengthen the intrasectoral cooperation among agriculture institutions and GHG data providers (including DLG) by signing cooperation agreements on MRV and GHG data collection and sharing.</li> <li>• Foster coordination for data collection, processing, and sharing among different agriculture stakeholders departments, institutions and organizations</li> <li>• Institutionalise GHGI and include MRV activities in the national and sectoral plans and budgets.</li> </ul>

<p>Data availability and data collection systems</p>	<ul style="list-style-type: none"> <li>• Some data is collected, especially on agronomy but archived in different databases and not readily available. Data center at MAAIF has data from DLG but not the agencies, academia or non-state actors</li> <li>• Data collection tools and methods are not standardized, the frequency is not consistent. Livestock census tool was recently standardised (to capture all GHG indices) by UBOS, CCD and MAAIF with support from CBIT project</li> <li>• There are data gaps and data collected is not disaggregated as required for IPCC reporting e.g. data on paddy rice growing, manure management and application to soil as well as fertilizer use are not comprehensively captured for GHG reporting</li> <li>• Data collected by most non-state actors and academia are not shared with MAAIF</li> <li>• Data collection structure exists and with approval and clearance mechanisms</li> <li>• Some information management systems are present for other sectors e.g. IFMIS, PBS, EducMgt System, Health but not for agriculture</li> </ul>	<ul style="list-style-type: none"> <li>• Establish a centralised agriculture data and information management system within existing institutional structures at MAAIF directly linked to CCD MWE for UNFCCC reporting, agriculture agencies e.g. NARO and DLG to support national and LG decision-making, policy and action</li> <li>• Determine status of existing tools and instruments used in data collection, archiving and sharing (Field data measurements templates, questionnaires/data sheets, computers, etc).</li> <li>• Review methods and tools currently used to collect data and identify areas for improvement e.g. data disaggregation, Emission factor calculations to comply with national/international standards. The Annual Agriculture survey and district agriculture data collection templates need standardisation</li> <li>• Support standardisation of activity data collection tools in partnership with MAAIF, UBOS and DLG</li> <li>• Make the revised standardised tools available to government and non-state stakeholders to streamline the data collection and as QC measure at all levels</li> <li>• Document available data and data gaps relevant to agricultural MRV and let this be readily available to all stakeholders in order to guide support for data collection and avoid duplication of efforts</li> <li>• Develop guidelines for mandatory data collection/sharing with key data providers, including frequency of data collection and reporting</li> </ul>
<p>Data Quality</p>	<ul style="list-style-type: none"> <li>• Data based on expert judgement with lots of estimates and high uncertainty</li> <li>• Quality assurance and quality control procedure are adhoc with no clear guideline for the process of data verification and feedback mechanisms</li> </ul>	<ul style="list-style-type: none"> <li>• Develop/review guidelines and protocols for data collection and quality control procedures by data collectors to reduce uncertainty and improve inventory quality</li> <li>• Designate the agriculture sector national GHGI experts as QC/QA officials at sector level and support capacity building for QC/QA at the DLG level</li> <li>• Avail resources for external evaluation for QA</li> </ul>
<p>Capacities &amp; Technical Skills</p>	<ul style="list-style-type: none"> <li>• MAAIF has about five national GHGI experts equipped with skills on GHG compilation emissions calculation and reporting based on IPCC tier 1.</li> <li>• Agriculture GHG data is all analysed based on the default IPCC emission factors</li> <li>• There is limited capacity for emission factor calculation</li> </ul>	<ul style="list-style-type: none"> <li>• Explore further support to strengthen capacity of the national experts to manage GHG data of higher tier reporting including calculation of country specific emission factors</li> <li>• Support MAAIF national experts to train all agriculture data providers including DLG and non-state actors on the basic IPCC principles and requirements for an effective GHGI and MRV system</li> <li>• Support collaboration with academic institutions for a continuous capacity development program on MRV for the key staff in the sector</li> <li>• Facilitating climate change focal persons to integrate capacity building for MRV in sectoral plans and budgets</li> </ul>

Table 3- 2: Recommendations for improving national and sectoral Monitoring Reporting and Verifications (MRV) systems for Agriculture



## 3.2. MRV at district level

### 3.2.1 Introduction

Planning and implementation of climate action in agriculture is the responsibility of MAAIF. Policy priorities are implemented in form of projects by MDAs, direct financing for LG priorities defined in the District Development Plans (DDPs), and projects by non-state actors such as NGOs. MAAIF engagement with LGs is majorly to monitor and track agriculture policy implementation, and coordinate delivery of projects. Data and information collection is a central function for LGs in this role, which is also extended to other MDAs. In this section of the report, we identify the ongoing climate action projects in the study districts, and map the MAAIF agriculture data supply chain from the lower level LG to the district LG.

### 3.2.2 Climate Action Projects

Northern Uganda is a priority region for Government following a prolonged period of insurgency, and the urgent need to re-invest, reconstruct and reintegrate the region into the national economy. The study findings reveal climate change as a focus area for the projects identified in the study districts (Table 3.3). Details of the projects are presented as Annex 3.

*Table 3- 3: Climate action programmes/projects by focus area (A – Adaptation, M – Mitigation) in the study districts*

Project	District						
	AGAGO	AMOLATAR	KITGUM	DOKOLO	LIRA	OYAM	NAPAK
PRELNOR (Project for Restoration of Livelihoods in the Northern Region). 2015-2023. MOLG. Funder: IFAD	A		A				
Sheanut Apiary and Value Enhancement (SAVE). 2018-2020. MOLG. Funder: EU	A		M				
Building Drought Resilience Project. 2018-2025. MWE. Funder: IUCN.	M				M		
Northern Uganda Social Action Fund (NUSAF)3. 2016-2021. OPM. Funder: World Bank.	A	A	A	A	A	A	A
Northern Uganda Resilience Initiative (NURI). 2018-2022. MWE. Funder: Denmark.	A		A				

Project	District						
	AGAGO	AMOLATAR	KITGUM	DOKOLO	LIRA	OYAM	NAPAK
Partners for Resilience (PFR) Project. 2017-2020. DLG. Funder: CARE & Netherlands Embassy.					M		
Farm Income Enhancement and Forestry Conservation (FIEFOC) II. 2016-2021. MWE/MAAIF. Funder: African Development Bank.					A + M	A + M	
Regional Pastoral Livelihoods Resilience Project (RPLRP). 2017-2021. MAAIF. Funder: World Bank.							A
Livestock for Livelihoods (L4L) project. 2018 -2021. Farm Africa & Africa Innovation Institute. Funder: UKAID.							A
Drought & Flood Mitigation Service (DFMS) For Uganda. 2017-2022. RHEA Group UK/ MWE/MAAIF. Funder: UK Space Agency.	A	A	A	A	A	A	A
Operation Wealth Creation (OWC) Projects. NAADS/MAAIF. Funder: Government of Uganda	A	A	A	A	A	A	A
Enhanced water security and sanitation- GIZ Project (2017-2019)							M

Source: District stakeholder consultations and literature review

### 3.2.3 Agriculture data collection

The agriculture data collected from LG by MAAIF is categorised as routine administrative data, and not purposed for climate action reporting. The District Production and Marketing Office (DPMO) is the MAAIF focal point at the district LG, and comprise the subsectors of crop, veterinary, entomology, and fisheries, and commercial services.

These are jointly responsible for oversight and collection of agriculture data from the lowest administrative unit (Household), and transmission through the administrative structures to the DPMO (Figure 3.5).

**Data collected.** Crop, livestock, fisheries and entomology data are collected. Crop data includes crop type by acreage, variety and quantity harvested, pests and diseases, quantity in market stores, market prices, and value addition. Livestock data is in form of number and graded livestock (type/breed, age, sex, health status), milk productivity, price information, diseases and vectors, etc. Not all the data sets required are collected. Reasons cited for the data gaps include capacity limitations in terms of expertise at the district and data collection equipment.

**Data Collection Tools.** The districts use the MAAIF templates to collect data at the different administrative levels. The tools include household crop and livestock questionnaires, crop production and harvest record forms, dairy milk production form, farmer register, livestock disease prevalence form, etc. The extension officers at sub county level are trained on the administration of the tools, who in turn train local data collectors at parish and village level.

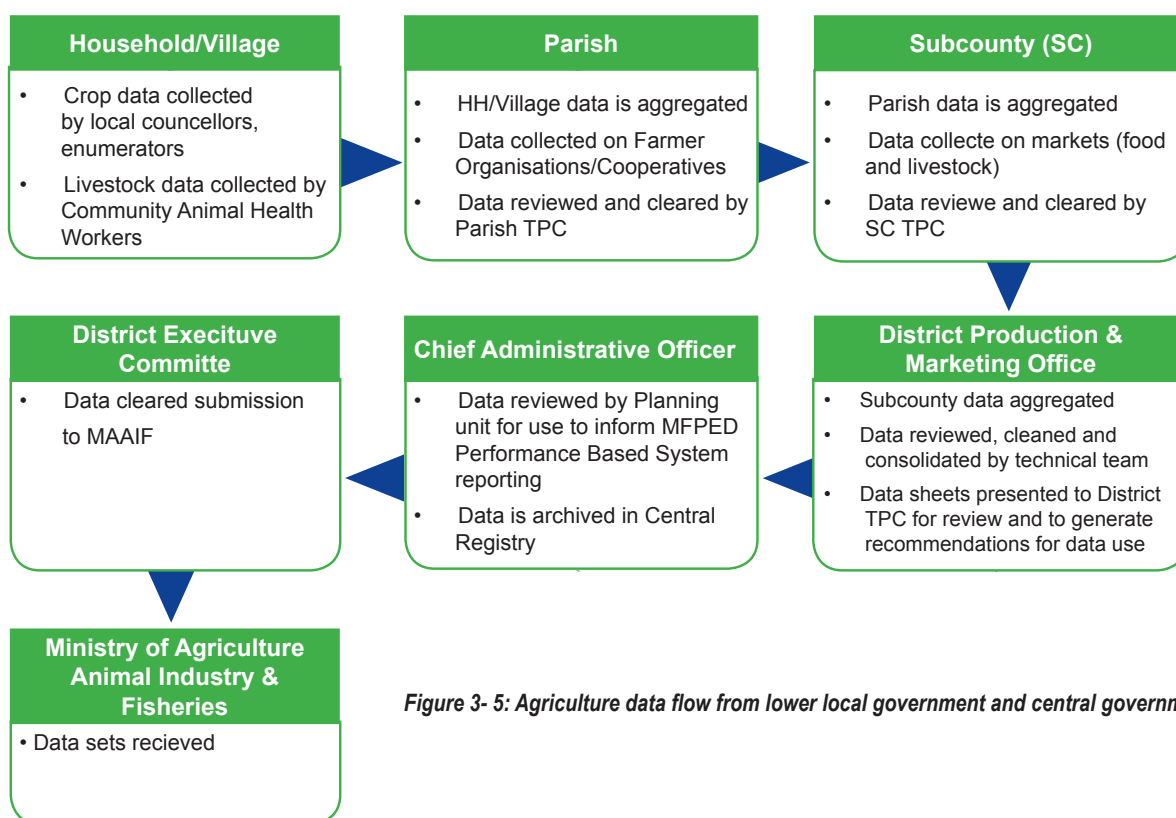


Figure 3- 5: Agriculture data flow from lower local government and central government

**Roles.** The data collection process involves a multiplicity of actors as illustrated with Fig 3.5 above, including district and lower LG staff, as well as external parties such as local councillors and research organisations in the districts. While the roles and responsibilities are aligned to the administrative roles, these facilitate the movement of the data from one stage to another (Table 3.4).

**Table 3- 4 Roles and responsibilities in the agriculture data supply chain**

Function		
<b>DISTRICT LG</b>		
1) Production Coordinator	Oversight for data collection and management	
2) Agriculture Officer	Oversight and support to collect complex crop data	Aggregate, clean and consolidate data received from sub counties
3) Veterinary Officer	Oversight and support to collect livestock data	
4) Entomology Officer	Collecting data on apiary activities through farmer organisations	
5) Fisheries Officer	Oversight and support to fisheries data collection ( <i>aquaculture, wild capture</i> )	
6) District Technical Planning Committee (TPC)	Review data from DPMO, generate recommendations on data use for LG planning and sign-off to CAO	
7) Chief Administrative Officer	Data for planning (Planning Unit and Statistics) and storage (Central Registry)	
8) District Executive Committee	Sign off data to MAAIF, Review, approve recommendations for LG planning	
<b>LOWER LG</b>		
1) Agriculture Extension Office	<ul style="list-style-type: none"> <li>Collect complex data sets (<i>markets, farmer organisations</i>)</li> </ul>	Aggregate Parish data
2) Veterinary Extension Officer	<ul style="list-style-type: none"> <li>Collect data on livestock disease prevalence.</li> <li>Collect entomology and fisheries data</li> </ul>	
3) Community Development Officer	Assist collection of Household data	
4) Sub county TPC	Administrative review and sign off data sets to district	
5) Local Council I (LC1) and volunteers	Assist to collect household crop data	
6) Community Animal Health Workers	Collect household livestock data	
7) Parish Chief	Oversight for village data collection and compile data sets	
8) Parish TPC	Administrative review and sign off data sets to sub county	
<b>EXTERNAL PARTNERS</b>		
Zonal Agriculture Research & Development Institutes (ZARDIs)	Collect complex crop and fisheries data sets through collaborative research engagements	



The more complex data sets such as data on markets, livestock disease prevalence, farmer organisations were collected by the district’s technical teams supported by the sub county extension staff. Complex data was also collected through the districts’ collaborative agriculture research engagements with NARO’s Zonal Agricultural Research and Development Institutes (ZARDIs). Napak District works with Nabuin ZARDI to collect data on ecological parameters for local fisheries, while Ngetta ZARDI has supported Lira District to collect data on CSA practices and feeding resources for livestock management.

The Technical Planning Committees (TPCs) are statutory committees of the LG structure, and exist at district and lower government levels. The TPCs at each level are mandated to support planning activities, and also sign off outputs generated at their level of jurisdiction, including the agriculture data outputs.

### 3.2.4 Natural Resources Data

The District’s Natural Resources Management Department is responsible for the collection of natural resources data on behalf of the National Environment Management Authority (NEMA). The NRs Office however relies on the DPMO to complement their data sets with land use data. The Office consists of experts in the fields of; natural resources, environment, forestry, land management, and land valuation, survey and supervision. The natural resources data supply chain is also aligned to the lower LG administrative structure, but with independent structures for data collection (Figure 3.6).

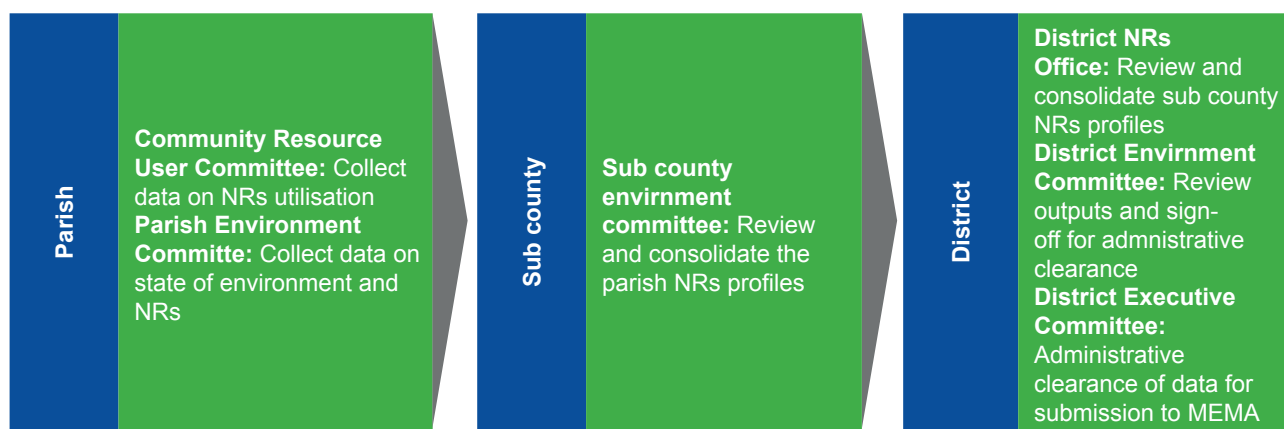


Figure 3- 6: Roles in Natural Resources District Data Supply Chain

## 3.2.5 Assessment of the Local Governments Agricultural data collection arrangement

Assessment of findings reveals capacity gaps and needs, factors influencing data collection and flow at the different levels of governance, and the strengths of the existing arrangements. These have been structured as; Challenges and capacity gaps in form of institutional arrangements, technical capacities, and State of the data and information. For each of these, a set of actions are proposed to resolve the issues identified. A matrix of the challenges, recommendations and responsibilities for implementation is presented in summary as a conclusion to this section.

### 3.2.5.1 Challenges and capacity gaps

**Institutional.** A limited understanding of the purpose for which the MDAs collected the data reveals a communication gap, and portrays a distinction between the district's specific data needs and those for the MDAs. Data ownership issues emerge as the LGs perceived the data as owned by the MDA, and with limited 'use rights' at the LG level. The districts expressed data needs that could benefit from the data collected such as spatial data on land conversions. While the districts contributed to ground-truthing of the data, the data was owned by NFA. Information on water points for livestock for example can be generated from spatial data and is critical to inform district plans and guide communities on water points.

The existing LG's administrative structure presents a basic and yet very clear institutional arrangement for collection and transmission of data and information from the lowest administrative local unit (village and

household) to the district. While the structure is being used to collect data, this function is not accorded the significance nor the budget to perform effectively as a data collection system.

Weak sectoral cooperation undermines the effective collection and transmission of agriculture data across the administrative structure. The LGs are also mandated through the National Climate Change Policy 2015 to mainstream climate change in district level plans and activities. Climate change is a cross cutting issue and calls for strong cross sectoral cooperation to achieve the policy aspirations. A key limitation identified was the limited information and knowledge on climate change concepts and national priorities, and understanding the cross sectoral linkages at LG level.

While data is exchanged between the sectors of agriculture and natural resources, interaction with the district's statistical office was limited. A lack of clarity on the specific roles and responsibilities for data collection was evidenced from the assessment.

Agriculture data was also being generated through collaborative research arrangements between the districts and external parties such as NARO, collecting complex data sets on ecological indicators. The opportunity to collect environmental data through such scientific collaborations exists, which would allow the district to broaden the scope of data being collected to include climate change data. The collaborative projects identified in the assessment included adaptation projects on climate smart agriculture, and data on ecological parameters in the fisheries sub sector.

### Recommended actions:

- 1) **Data cooperation arrangements between LGs and MDAs.** District LGs should be supported

to streamline data cooperation through formal instruments. The cooperation instruments should provide clarity on the data types, and data collection protocols, the data reporting schedules, and data ownership and sharing arrangements. Assistance to LG data collection should also be defined. Targeted for the formalization process is MAAIF and NEMA for agriculture and natural resources data respectively.

- 2) **Dedicated budget for data collection.** While the districts recognized data as a critical management tool, and central government demands that districts create sectoral statistics at LG, there was minimal evidence to support progress on this position. There is an urgent need to make use of existing data sources and translate these into meaningful information products for the district, and this calls for increased investment in district data collection systems. The GIZ assessment reaffirms the importance of streamlined and effective data systems to inform climate reporting. We therefore recommend a strategic road map to guide investments in district statistics, focused on lobby efforts at district level and among partners, and guided by a costed Statistics Strategic Plan.
- 3) **District statistics.** While agriculture and natural resources manage sectoral statistics, overall responsibility for district statistics lies with the Statistics Office in the Chief Administrative Office. Streamlining agriculture and natural resources statistics is of utmost importance, especially with the call by central government to generate sector based statistics at district level. We recommend preparation of District Statistics Strategic Plan as a starting point, including a Statistical Committee to streamline and facilitate intra district data sharing and exchange, and particularly for the agriculture and natural resources sectoral offices and committees. Kitgum District LG affirmed to have started developing a statistics strategic plan, and all the study districts should be supported to start/complete this planning process.
- 4) **Structure for data collection.** The existing administrative structure should be strengthened to function effectively as a data collection structure for agriculture data. Clarity and definition of roles and responsibilities at district and lower local government levels is critical, covering elements of data collection, data quality control and assurance, data validation mechanisms, and data processing and interpretation responsibilities. The refined roles should be mainstreamed in the functions of the technical officers and committees across the administrative structure, and a handbook developed to guide the process. The definition of roles should be accompanied with a clear description of the terms of reference for each role, and training workshops organized for the targeted offices in the structure.
- 5) **Climate Change agenda LG level.** Guided by MWE's Climate Change Mainstreaming Guidelines, conduct a cross sectoral workshop for the districts on roles and responsibilities in the climate change agenda. The workshop should be convened jointly by MWE CCD, MAAIF CCTF and MoLG CCTF. Anticipated outcomes/outputs; Clarity on roles and responsibilities, joint activity workplan based on DDP, and IEC materials including a district handbook on key actors in climate change, and roles and responsibilities.
- 6) **Strengthen scientific collaboration.** The study reveals research collaboration between districts and research agencies that also generated complex data sets of relevance to agriculture planning. Important that the districts identify priority research areas including opportunities to collect activity data for climate reporting and build on existing and new opportunities for scientific collaboration with NARO institutions and other parties to address the identified needs. The districts should in addition monitor and track agricultural research activity, and mechanisms to ensure that the research outputs inform the district's planning and development agenda. This is a statistics and knowledge management responsibility that lies with the CAO, and we recommend that the

office is supported to effectively perform the role. Future collaboration MoUs between the districts and research agencies should clearly articulate the roles and responsibilities, and expected outputs from the engagement.

**Technical capacities.** While the DPMO is charged with the responsibility for managing agricultural statistics at LGs, capacity limitations are identified along the data supply chain. Data collection is mainly at the lower local governments (sub county and parish levels), and these are faced with a unique set of capacity limitations, while at the district level, data processing, integration and interpretation are some of the capacity limitations and gaps.

Data collection by lower governments is limited by the dependence on paper based and manual data collection tools, which reduces efficiency and contributes to poor quality data sets. At the district level, capacity limitations across the sub sectors, with limited abilities and capacity to process the data sets generated from the lower governments. Capacity limitations in form of a lack of appropriate tools and software to process and manage data, and absence of a centralized database for agricultural statistics. The MOFPED requires all districts to produce sectoral statistics, and this includes agriculture sector. This is a recent communication from the central government, and none of the districts had responded to the requirement at the time of the study. Capacity limitations in terms of knowledge and skills, and the requisite equipment were cited.

### **Recommended actions:**

**1) Build skills in data collection skills for lower LGs.** The study findings indicate that MAAIF and UBOS have conducted training on data collection in the past, however these targeted to district LG staff. Extending the training to Lower LG is recommended, and particularly for extension staff at sub-county level, parish chiefs, community development officers, and

selected local community members such as Local Councillors and lead farmers.

- 2) Training for statutory committees,** particularly the Technical Planning Committees, Sector Standing Committees and Environment Committees on aspects of technical review and validation of the data sets, and generating recommendations for planning relevant to each stage of the administrative structure.
- 3) Training on data processing, interpretation and reporting.** We recommend a tailored training package for the DPMO office and the statistics office, aligned to the current data sets, and responsive to the district's data and information needs.
- 4) Equipment/tools for data collection and management.** Need to equip the local governments with tools to improve efficiencies and timeliness of data collected and transferred from the lower LG to the district LG. Smart technologies, software needs and equipment should be considered. The use of smart technologies for data collection is growing, and with demonstrated advantages. Napak, a newly created district had been issued with 'ipads' for MAAIF data collection, and we recommend that all the districts and lower LGs are provided with the smart technologies to increase data collection outreach while providing data quality assurance.
- 5) Need to establish a centralised agriculture database for DPMO.** None of the districts has an agriculture database with information stored on personal computers, limiting data sharing, use and storage. We recommend the establishment of a centralised and integrated system for the district's agriculture data (inclusive of all subsectors).
- 6) Agricultural analytics.** The capacity of LGs to collect complex data sets such as water and soil tests is limited. While some of this data are being collected through collaborative research with ZARDIs, this may not be responsive to the districts' data and information needs. We recommend that the districts are supported to build basic agricultural analytical capacities through a phased approach that allows



for a buildup of technical knowledge and skills, and equip the districts with the necessary testing equipment, and a functional agricultural testing laboratory.

**Data-information:** The assessment focused on the access, state and usability of the data being collected, with particular attention to aspects of; data access and willingness to supply the data, data quality in terms of accuracy and reliability, timeliness, and usability (coherence, interpretability), and relevance to stakeholders.

**Access to data** is influenced by accessibility to the data provider, and their willingness to share or provide the required data. The current LG administration setup enables access to providers and the transmission of the data from the lower LG to the district LG. This process is however constrained by the absence of a comprehensive administrative data set on the providers, namely households, villages, markets, and farmer organizations (MOLG 2015), and human resource limitations, with the current extension staff to household ratio estimated at 1:1200 against the recommended 1:500 (Benor et al. 1984). Low willingness by providers to share data and information in their possession is attributed to, among others; mistrust over the purpose for data collection, with fears that data may be used to target farmers for taxation by government; respondent fatigue caused by frequent stakeholders collecting data from the same community; the lengthy data collection tools (manual/paper based), and a lack of feedback to farmers on data/information collected.

### **Recommended actions:**

1. Assist the LGs to clearly define the data needs for LG and MDAs (MAAIF and NEMA), the data sources at lower LG, and requirements for data access.

2. Raise awareness on the significance of data-information for the district planning and monitoring implementation of priorities. We recommend the use of the existing platforms and processes, particularly the district and lower LG planning sessions such as the budget conference activity to disseminate the information.
3. Design a community feedback mechanism to share information resulting from the data collection exercise.

**Methodology/tools.** The data collection tools available to the districts are majorly paper based, and with a limited use of digitized tools or smart technologies. This is a concern in terms of data collection efficiencies, and respondent fatigue which may impact on efforts to collect data from the same population in future. The MAAIF templates were also said not to be comprehensive enough in addressing the district's data needs, and with limitations in terms of integrating the tools with district tools such as the Agro inputs surveys by Lira District LG. The MAAIF templates are also limited to primary data collection and processing and the data is manipulated by MAAIF offsite. The data collection templates are not comprehensive to capture all the relevant activity data for GHG emission estimates. Non-state actors such as CSO, NGOs and Development Partners have also introduced data collection tools not aligned with the MDA tools, making data harmonization and manipulation a challenge for the district.

### **Recommended actions:**

1. **Update MAAIF templates.** We recommend a revision of the MAAIF data collection templates to enable the capture of activity data to calculate emissions from the agriculture sector, and track the benefits from implementation of climate action at

LG level. MAAIF, CCD MWE and UBOS recently updated the livestock census data collection tool to conform to IPCC requirements, and this should be adapted to the regular data collection by LGs.

- 2. Harmonization of agriculture data collection tools.** Standardize data collection based on the MAAIF template, and integrating the district's data needs currently being captured using different set of tools.
- 3. Introduce data processing tools.** The districts transmitted the data to MAAIF majorly as data sheets, with minimal processing and use of the data at the district LG. The districts should be equipped with the necessary tools to manipulate and interpret the data sets, and generate information outputs for districts' use.

**State of the data.** Quality of data is influenced at source as well as during the data transmission process. While poor quality state of data may be attributed to non-standardized measurement tools and approaches, the absence of a quality management system in form of designated personnel and quality management guidelines is a key contributing factor. Timeliness of the data influences usability. Irregular data collection and late/delayed submission of data was attributed to externalities such as unreliable electricity supply, data stored on personal laptops that may not be available, etc. Usability is also influenced by level of coherence and interpretability of the data sets. The divergence in purpose for the data collected by MDAs limits its use by the LGs. Data use is also limited by; a lack of appropriate data processing tools and equipment, absence of an agricultural database to consolidate and store the data, limited relevance of the data sets to the district data and information needs, and a limited capacity to manipulate and interpret the data into useable formats for the district. The unreliability of the data, characterized with inaccuracies and repeated entries is also cited as a disincentive for the district's planning unit to attempt to use the data.

### Recommended actions:

1. Create a data quality management system aligned to the district and lower LG existing data movement structure, focusing on the key quality control points.
2. Develop a handbook for data quality management for district and lower LGs and Conduct training on data quality management for key personnel and institutions in the data supply chain.
3. There is a need to systemize data collection right from lower government to the district, with clearly defined frequency of collection, validation and submission through the data collection and supply chain. Need to develop and communicate a clear schedule for data collection and this should be one of the elements of the data sharing instruments between the districts and the MDAs (MAAIF and NEMA).

**Relevance to Climate Change:** MAAIF is the primary beneficiary of the data collected, and also the focal point for agriculture data for national climate change reporting. While the data is collected to inform progress on policy implementation, climate change policy priorities in agriculture are also a responsibility of MAAIF. The assessment findings however reveal some key missing data sets for climate reporting, particularly: Crop subsector; Land management practices by farmers including area burnt, differentiated rice production systems, irrigation practices at household level, and fertilizer use by farmers, and under the livestock subsector were feed types, data on breeds and age, and husbandry and manure management.

### Recommended actions

- 1. Streamline climate change reporting in district and lower LG processes.** Raising awareness on the significance and relevance of climate change reporting for LG leadership and technical teams is recommended.

Additional recommendation are indicated in Table 3.5 below

### 3.2.5.2 Conclusions

The assessment of the LG agriculture data arrangement focused on the institutional arrangements, capacity gaps and needs, and state of the data being collected. The institutional arrangement reveals a viable structure for collection and transmission of agriculture data from the smallest administrative unit to the district LG. Factors inhibiting the effective functioning of the agriculture data supply chain were identified and actions recommended addressing the challenges. These include structured cooperation arrangements between DLG and the MDA, need for a dedicated budget for data management activities, strengthening the data collection structure and improving the district's statistics function. Increasing awareness on climate change for LG stakeholders, and strengthening scientific collaboration to address complex data gaps is recommended.

**Capacity gaps and needs** along the data supply chain were found to take two forms; skills and knowledge limitations, and lack of equipment to enable the efficient collection, processing and storage of data at the district. These can be addressed through strategic interventions for the short and long term, also partly addressed through the district statistics strategic plan.

**The state of data-information** reveals a situation that warrants multiple actions to address the issues of data access, methodology and tools, and data quality. The district statistics strategic plan will provide the basis for continuous improvement of the state of data through strategic partnerships, and increased support by district management.

**Table 3- 5: Matrix of key capacity challenges/gaps, recommended actions, and responsibility for action.**

Issue/challenge	Description	Recommended action
1. Institutional	1.1 Unclear terms of engagement between DLGs and MDAs (MAAIF and NEMA)	Formulate data cooperation instruments with clarity on data types, frequency of collection and use of the data
	1.2 No DLGs budget for data collection activities	Roadmap to guide resource mobilization targeting the District Executive Committee and external partners
	1.3 Weak communication between Statistical Unit in CAO office with DPMO	<ul style="list-style-type: none"> <li>• Prepare District Statistics Strategic Plan</li> <li>• Establish Statistical Committee</li> </ul>
	1.4 DPMO data collection structure not clearly defined and roles and responsibilities mixed with administrative functions	<ul style="list-style-type: none"> <li>• Clarity and definition of roles and responsibilities</li> <li>• Handbook preparation</li> <li>• Elaboration of roles and responsibilities</li> </ul>

	1.5 Limited awareness on the climate change agenda across the policy and technical offices	Cross sectoral workshop to raise awareness on climate change and roles and responsibilities for LGs
	1.6 Current research collaborations not aligned to the district priorities	Define priority research areas to address existing agriculture gaps and climate action reporting needs
2. Capacity gaps/ needs	2.1 Trainings conducted by UBOS and MAAIF on routine agriculture data collection targeted to district level personnel.	<ul style="list-style-type: none"> <li>Need to tailor the trainings to the specific needs along the data supply chain i.e. data collection and validation for field data collectors, extension workers, and statutory committees. Training on data aggregation, integration, manipulation and reporting for district level technical teams</li> </ul>
	2.2 District LG personnel lack skills on GHG data collection, processing and reporting.	<ul style="list-style-type: none"> <li>The agriculture sector National GHGI experts at MAAIF should support the DLG and train DLG personnel basic IPCC requirements for agriculture sector and activity data collection, processing and reporting</li> </ul>
	2.3 A lack of effective data collection and processing tools and equipment	<ul style="list-style-type: none"> <li>Supply smart technologies to facilitate data collection at sub-county and parish level</li> <li>Supply equipment to set up a centralized database for the District Production and Marketing Office</li> </ul>
	2.4 Need for analytical equipment for testing key agricultural parameters e.g. soil and water testing	<ul style="list-style-type: none"> <li>Conduct a needs assessment for districts with laboratory facilities</li> <li>Supply critical equipment reinstate the laboratory service for soil and water testing</li> </ul>
3.0 Data-Information	3.1 Low willingness to share data and information at community level.	<ul style="list-style-type: none"> <li>Create awareness on significance of data for district level planning and management activities</li> </ul>
	3.2 Methodology/Tools	<ul style="list-style-type: none"> <li>Revise MAAIF template to enable capture of climate change data and LG data needs</li> </ul>
	3.3 State of data	<ul style="list-style-type: none"> <li>Create a data quality management system for agriculture data at LG</li> <li>Develop and communicate a schedule for data collection and transmission with clear outputs and timelines</li> </ul>

## 3.3 Synthesis of case studies

### 3.3.1 Introduction

This section presents a review of a selection of good practice case studies of MRVs in agriculture from other Non-Annex 1 countries, focusing on data collection from the lowest to national levels of governance. Six case studies were identified in Costa Rica, Thailand, Ghana and Kenya based on a defined set of criteria, and these were assessed on the functionality of their MRV system, and best practice identified to inform the process aimed at building an MRV system for the agriculture sector. The following study domains were used in the assessment of the case studies; Policy and legislative environment, Institutional arrangement for MRV governance, Emission data management, Resource mobilization; and Community level engagement. The UNFCCC guiding principles for development of solid and sustainable sectoral MRVs were also considered, with emphasis placed on clarity of objective and scope, credibility of the emission data, and a strong legal regime.

### 3.3.2 Policy and legislative environment

Policies and legislation provide the basis for operation of national MRV activities. The review reveals that the case countries were at different stages of policy and legislative development, with some more advanced, while others are still in progression. Costa Rica, Kenya and Ghana have been able to translate their environment policies into enabling legislative frameworks to support climate action, and used these to implement a range of activities for MRV. While Thailand does not have a legislative instrument to back their MRV actions, but instead have a Master Plan to deliver on the national aspirations for a functional MRV system (Table 3.6).

**Table 3.6: Climate Change policy and legislation and key milestones registered**

Country	Policy	Milestones
Costa Rica	The National Climate Change Strategy (ENCC), and the Action Plan for Climate Change and Environmental Management.	<ul style="list-style-type: none"> <li>• Calls for public institutions and all levels of government to produce action plans containing clear climate goals;</li> <li>• ENCC is well anchored and aligned to the Regional Strategy on Climate Change and the System for the Integration of Central America (SICA), and the UNFCCC agreements.</li> </ul>
	Presidential Decree (No. 41127-MINAE)	<ul style="list-style-type: none"> <li>• Established the SINAMECC responsible for GHG emissions</li> </ul>
Ghana	National Climate Change Policy 2013;	<ul style="list-style-type: none"> <li>• Developed the National Climate Change Master Plan 2015-2020</li> </ul>



Country	Policy	Milestones
Ghana	EPA Act 490	<ul style="list-style-type: none"> <li>Established the Environmental Protection Agency responsible for Ghana's GHG inventory</li> <li>co-ordinates activities of bodies concerned with the technical or practical aspects of the environment</li> <li>Supports formulation of environmental policy and makes recommendations for the protection of the environment;</li> <li>Ensures compliance with environmental impact assessment (EIA) procedures in the planning and implementation of development projects.</li> </ul>
Thailand	Climate Change Master Plan 2015	<ul style="list-style-type: none"> <li>Builds climate resilience into national development policy by integrating directions and measures in all sectors at both national and sub-national levels to ensure country's adaptability to climate change;</li> <li>Created mechanisms to reduce GHG emissions, and leading to sustainable low carbon growth;</li> <li>Developed database, knowledge, and technology to support climate change adaptation and sustainable low carbon growth.</li> </ul>
Kenya	National Climate Change Response Strategy (NCCRS) 2010	<ul style="list-style-type: none"> <li>National CC Framework Policy 2016 defines broad measures to enhance adaptive capacity and build resilience to climate variability and change.</li> <li>Provides for regulatory framework for reporting and verification of climate related actions</li> <li>Empowers the Climate Change Directorate (CCD) to coordinate adherence obligations and reporting.</li> <li>National Climate Change Action Plans (NCCAPs)</li> <li>National Performance and Benefit Measurement Framework (NPBMF) to monitor, evaluate and report results of mitigation and adaptation actions.</li> <li>Kenya National Adaptation Plan 2015-2030</li> </ul>
	Climate Change Act 2016	<ul style="list-style-type: none"> <li>Created the Climate Change fund</li> </ul>
Uganda	National Climate Change Policy(NCCP) 2015	<ul style="list-style-type: none"> <li>Provides the institutional framework for climate change coordination and reporting,</li> <li>Created the Climate Change Department at MWE</li> <li>National Adaptation Plan for the Agriculture sector 2018</li> </ul>

A strong policy foundation stimulates preparation of strategies and plans to operationalise the MRV as demonstrated with the Kenya case. Uganda's pace in formulating enabling policy for climate change is comparatively slow, with only a handful of climate change strategies and plans in place. Regional policy alignment is also pertinent as illustrated with Costa Rica's case of having the ENCC aligned to the Regional Strategy on Climate Change and the System for the Integration of Central America (SICA). In the context of Uganda is the East Africa Climate Change Policy Framework intended to guide partner states and stakeholders on the preparation and implementation of collective measures to address climate change in the region<sup>6</sup>.

Except for Thailand, all the case countries have established a legal basis to implement the policy provisions put in place. The legal instruments give the entities full power and authority to exercise their functions without fear of favour, and to demand the responsible bodies to comply with the requirements stipulated in the instruments. Uganda's Climate Change Bill 2020 is before Cabinet, and awaiting tabling to Parliament, and this in itself affirms to efforts to conform to international best practice as demonstrated with the case studies. A functional MRV system implies stability across all the functions of monitoring, verification and reporting, and this is only assured with a solid legal standing. In the absence of a climate change bill currently continues to limit stakeholder involvement in implementation of climate change policy priorities, and weak compliance of the key NDC sectors to climate reporting obligations, as engagement and operations are on a relational basis. The entering into force of an Bill will fast track implementation for the NCCP, mandating institutions to plan, budget and

implement climate action activities, and commit to reporting on the country's obligations.

### **Key message and recommendations**

- A combined package of climate change policy and legislation is essential to a functional MRV system as demonstrated with the case of Costa Rica and Kenya. Uganda is in a progressive phase, and with clear indication of conformity to the demonstrated good policy practice. We therefore recommend that MWE advocates for the finalisation of the Uganda's CC Bill 2020 tabling process to enable the operationalisation of the National Climate Change Policy.

### **3.3.3 Institutional arrangements for national MRV**

The institutional arrangements for the national MRV are articulated with the climate change policy. Best practice calls for a separate institution to run the climate change reporting responsibilities to ensure efficiency and effectiveness, and clarity in roles and responsibilities. All the case studies provided for the necessary institutional arrangements, and this is backed by the policies already in place. While all the case studies did designate one institution responsible for climate change coordination, differences are seen in the approach adopted in operationalisation of the MRV (Table 3.7). Costa Rica and Ghana approach is more inclusive, and integrated private sector and academia in range of responsibilities, while the other cases were more centralised and government focused. We also see the creation of independent government institutions to carry out specific roles in Costa Rica and Kenya.

**Table 3.7: Institutional set up for MRV**

Case study	Institution	Role
Costa Rica	Climate Change Department	Overall coordination and reporting
	National System of Metrics for Climate Change (SINAMECC)	Emissions data management and public dissemination
	Cooperation agreements with private sector and academia	Data generation and supply
Thailand	Ministry of Natural Resources and Environment (MoNRE)	Report on climate change activities in the country
	Office of Natural Resources and Environmental Policy and Planning (ONEP)	Improvement of framework conditions for implementing the Nationally Determined Contribution (NDC); national focal point to UNFCCC
	The Thai Greenhouse Gas Organization (TGO)	To provide technical support and services to carbon market actors.
Kenya	National Climate Change Council (NCC)	<ul style="list-style-type: none"> <li>To set targets for the regulation of the Green House Gas (GHG) emissions</li> <li>Approve funding for climate priorities through the CC Fund</li> </ul>
	Climate Change Directorate	Overall Coordination and reporting
	National Climate Change Resource Centre; Integrated MRV system	Central data repository and public information centre
Ghana	Environment Protection Agency (EPA)	Responsible for the preparation of Ghana's national GHG inventory.
	Climate Change Unit	Responsible for the management of the entire inventory process
	Department of Statistics, University of Ghana; Department of Mathematics, Kwame Nkrumah University of Science and Technology (KNUST); and Environment Data and Information Department, EPA	Leads for Uncertainty Management, QC/QA, and Documentation and Archiving.
	Cooperation with research and academia institutions	Data generation and supply
Uganda	National Climate Change Advisory Committee	Provides an oversight on coordination and reporting
	Climate Change Department	Overall coordination and reporting

## Key messages and recommendations

- The MRV system is reliant on an effective and functional data generation and supply institutional arrangement. We see this with Costa Rica, Ghana and Kenya, with sustainable systems for data management and recommend that Uganda adopted a similar approach.
- Delegation of key responsibilities for data generation and supply through tailored cooperation instruments with institutions enables a system for supply of the required data to meet the various reporting needs.
- The inclusive approach to the MRV that allows engagement of both government and non government agencies is demonstrated with Ghana, and we recommend that this is replicated for Uganda.
- Clarity of roles and responsibilities also implies their elaboration. We recommend that MWE elaborates roles and responsibilities defined with the MRV institutional framework under development.

## 3.3.4 Data collection and management; inventory, emissions calculations, reporting and information storage

### 3.3.4.1 Approaches and tools to emissions data collection

In the case studies we see that the type of climate data collected is determined by the project objectives, while also responding to the needs for national and international reporting (Table 3.8). In Kenya, a system to monitor the benefits derived from agricultural adaptation and mitigation actions is underway to inform national planning and reporting (Agri MRV+). All the case studies collected emissions data at the lowest administrative level and involved farmers and extensionists in this process. In Costa Rica and Thailand, farmers, private companies and extension officers collectively engage in data collection and the preliminary data quality checks. Secondary data was used, particularly spatial datasets and existing national statistics, to complement the primary data collected at community level.

**Table 3.8: Data collection approaches**

Country	Data collection Approaches
Costa Rica	A combination of extensive on-farm direct measurement processes by technicians and farmers, and data collection by farmers
Ghana – AFAWA Project	Data generation are decentralized and mainstreamed into routine tasks of sector agencies, research and academic institutions.
Thailand	Smart farmers and local researchers collect activity data with the use of manually operated closed chambers method in the field, and the gas chromatography.
Kenya	<p><b>Agri MRV+ proposed system</b>            Secondary sources e.g. Spatial data and national data sets            Data collection at two levels; Permanent Farm Monitoring (PFM) entirely implemented by the field officers, and Farmer Group Monitoring (FGM) implemented by farmers and farmer groups.            Farmers and technical staff also collect data at the household level.            Data collected is verified and consolidated at Division (Sub-county) level.</p> <p><b>Agricultural Carbon Project</b>            Farmer groups decide from a pool of climate-friendly SALM interventions which practices appropriate for their farms and; develop and implement a farm plans            A pool of community extensionists, including farmers and local community facilitators enrolled and trained as trainer of trainers (ToTs) every year</p>

Uganda has relied majorly on secondary datasets to meet reporting obligations. The agriculture data being collected by MAAIF from the lower government structures is intended for monitoring policy implementation, and not designed to respond to the climate change reporting.

**Key messages and recommendations**

- The collection of Activity data for emissions calculations is done majorly through project based initiatives and not mainstreamed as regular data collection by the governments. It is therefore not a continuous, but rather a spasmodic activity intended to respond to the set project objectives on climate action. The data collected was intended for

the calculation of emission factors, and determine proxy data to quantify progress on implementation of adaptation and mitigation measures. We therefore recommend a project oriented approach that will focus on generation and field testing of the measurement tools at lower government level, and application of the tools to generate the requisite emission factors to compute agricultural emissions.

- Data collection should be construed as a process that results into useable outputs and with quality checks and balances integrated right through the data supply chain. We recommend that the existing agriculture data collection structure in Uganda is reinforced to manage a process to collect data sets for calculation of emissions alongside the ongoing administrative data collection by MAAIF.



Clarity on roles and responsibilities therein is important, and this should be complemented with capacity development to ensure that the right data is collected and conforms to the prescribed data quality at each stage of the supply chain.

- We recommend that an inclusive approach to data generation is used, targeting potential data sources and value adding agencies in private sector, CSOs, NGOs, and academia.
- Capacity development is emphasised in the case studies in terms of training for personnel and availability of equipment for data collection. We recommend that trainings are not limited to technical personnel at the national and district, but should also target community level data collectors, including farmers and community facilitators.
- Secondary data from national and local sources, such as the national and sectoral statistics, and industry associations are used to complement the primary data. In some cases, aggregated data from international agencies such as FAO and the World Bank, or published reports, expert judgment and IPCC default values were used to fill in data gaps. We recommend that the same approach is used to complement and validate the data sets collected.

#### **3.3.4.2 Approaches and tools to emissions data processing and transmission**

A database management system allows for the efficient management of data, and for users to perform multiple

tasks with ease. Access to proper data sets ensures accuracy in decision making. A review of the emission data management processes across the case studies reveals dedicated GHG inventory management systems in Costa Rica and Thailand, while Ghana and Kenya were at different stages of progression towards a fully functioning system. All the cases however adopted a hybrid approach to the GHG inventory (centralised and distributed), and were able to manage and co-ordinate the different MRV functions. Data collection, processing, inventory preparation and compilation are carried out in a centralised manner (i.e. one agency co-ordinates all processes), while sector specific duties such as activity data collection, compilation, and quality control were outsourced to other agencies who submitted their data to the central coordinating agency for processing and inventory calculation, quality control/assurance, verifying and reporting. In Costa Rica and Kenya, we observe the existence of enhanced quality assurance and quality control mechanisms, an important aspect in data management. The two case studies show the existence of national MRV systems as well as sector specific ones. These facilitate enhanced data sets thus providing more accurate data and estimations (Table 3.9). The Costa Rica case particularly presents data outputs through a visualization interface, allowing for a better display of climate action information, providing much more clarity on emissions at the national, sector and local and facility levels.

**Table 3.9: Data processing and transmission**

Country	System	Data Processing and Transmission
Costa Rica	The National System of Metrics for Climate Change (SINAMECC);	<ul style="list-style-type: none"> <li>For emission data management, calculation and information dissemination; Incorporates a robust quality control and assurance QA/QC procedures within the system.</li> </ul>
Ghana – AFAWA Project	MRV systems for Livestock and coffee NAMAs.	<ul style="list-style-type: none"> <li>Data management from all emission sectors</li> </ul>
Thailand	National GHG Inventory;	<ul style="list-style-type: none"> <li>Integrates, calculates and archives data from all emission sectors and produces emission reports; Captures data on sources of GHG emissions by sub-sector (enteric fermentation, rice cultivation, etc); tiered approaches, data providers</li> </ul>
Kenya	National MRV system	<ul style="list-style-type: none"> <li>Quality control and assurance embedded in the system; Extension workers verify and keep records of the data provided by the farmers and farmer groups.</li> </ul>
	The Thailand Greenhouse Gas Emission Inventory System (TGEIS);	<ul style="list-style-type: none"> <li>Bridge the gap between current agricultural monitoring and national level cross sectoral MRV; captures data on farming systems at household level; Tracks the GHG inventory, climate action and finance as well as implementation of SDGs and NDCs</li> </ul>
Uganda	MRV for agriculture sector.	<ul style="list-style-type: none"> <li>Integrates, calculates and archives data from all the key NDC sectors lead agencies</li> </ul>

Currently, Uganda launched a GHGI and MRV system which is not fully operational. A good integrated MRV system enables a country identify national priorities, challenges and opportunities; and ensuring proper policy planning, improving policy coherence, and impact. The absence an operational system brings Uganda to a disadvantage.

### Key messages and Recommendations

- The presence of an Integrated MRV system simplifies climate reporting at various levels (international, national and sub-national), demonstrates progress on implementation of NDCs and sustainable economic development objectives. We recommend that Climate change department pushes the agenda to strengthen an integrated MRV system that can be downscaled to the different sectors and sub-sectors.
- We recommend that integrated QA/QC mechanisms be included in the data collection, processing and transmission process for Uganda.
- A data visualisation interface allows for data interpretation at all level, including utilisation by the public. We recommend that MWE adopts the appropriate data processing tools to enable ‘user friendly’ information outputs for public consumption.

### 3.3.5 Climate Finance

The case studies reveal various sources of project financing, including multilateral donors such as World Bank, Green Climate Fund (GCF), International Climate Initiative (ICI), African Development Bank and governments in Costa Rica, Thailand and Ghana. The Kenya case however stands out with the Climate Change Fund established by the Climate Change Act 2016 to fund priority climate change actions and interventions approved by the NCCC. The fund is resourced from; Government's Consolidated Fund, donations, endowments, grants and gifts, and is downscaled to the County (district) level of governance. The County Climate Change Funds (CCCFs) are managed at county level, and targeted for investment in specific areas such as climate change adaptation mainstreaming in local plans/budgets, and climate change research and innovation. The fund provides grants and loans to business, civil society, academia and other stakeholders for development of innovative climate actions in Kenya.

#### Key messages and recommendations

- The Climate Change Funds (CCCFs) model presents a sustainable approach to financing climate action by government, which also allows for resourcing from other non-government sources.
- While Uganda's Climate Change Bill 2020 also provides for a Climate Change Fund, we recommend that the fund is cascaded to the lower levels of government in form of district climate change funds.

### 3.3.6 Community engagement

Community engagement in the case studies is demonstrated in multiple data collection processes; as data providers (primary and secondary), and also as a supportive network for the continuous field emissions monitoring and assessment activity. Through community engagement, not only farmers are targeted, but also other stakeholders in the agriculture value chain, such as businesses and industry players in the Livestock NAMA case in Costa Rica. The credibility and accuracy of the data being collected is dependent on the community as illustrated with the Costa Rican cases of livestock and coffee.

In the Kenya Agricultural Carbon Project, the field officers enrol farmers each year while the extension officers provide capacity building activities like trainer of trainers (TOT) trainings on carbon sequestering, SALM practices and hold field days to demonstrate practices to farmers. The local community facilitators and farmer trainers are chosen by the farmer groups and trained in a similar way as the field adviser staff. They are trained so that they can provide extension activities in the area, collect farm data necessary for monitoring, and help to transmit project information down to the individual community groups. After a period of time, the external extension services and staff recruitment are reduced based on the consideration that communities would have established their own extension advice network consisting of local research stations, government extension services, input providers and other agricultural knowledge brokers as a sustainable measure.

The role of technicians and extension workers at community level is also evidenced as these supervise the data collection and transmission. In Costa Rica, these assemble the data and pass these to their responsible officers who then submit them to SINAMECC via the National Institute of Statistics.

The case studies also show that sometimes incentives, in the form of cash or in kind, were provided to the farmers, companies and industry groups, to motivate them to collect the required data in the Costa Rica case. The CSA dimension of increased productivity and yields was also used in Costa Rica as an incentive, by promoting CSA practices alongside the emissions monitoring and assessment for coffee and livestock.

In Thailand, GAP Certification was the motivation for the farmers, implying the value attached to the certification process, and the anticipated benefits as a result of attaining the certificates. In Ghana, the women beneficiaries were involved in trainings, which served as a strong motivation to continue to participate in the adaptation project. In Kenya, community facilitators and farmers benefited from the trainings, carbon credits, increased incomes from increased productivity through implementation of SALM practices, all which served as motivation to continue participating in the project.

Below is a synthesis of the different approaches and incentives applied to facilitate community engagement in emissions data collection activities (Table 3.10).

**Table 3.10: Summary of Community engagement approaches and incentives by country.**

Country	System	Data Processing and Transmission
Costa Rica	Data collected by farmers, factory owners as part of regular activity	• Cash provided in project settings
	Data collected under supervision of technical staff	• Share and exchange information and knowledge
Kenya - KACP	Data collected by community facilitators, farmers	• Project benefits (increased productivity, increased incomes, capacity built, and carbon credits)
Ghana – AFAWA Project	Data collection integrated as part of project activities	• Project benefits (increased incomes from enhanced agricultural productivity, energy technology adoption, trainings, etc)
Thailand	GAP Certification for rice producers	• Market access for rice farmers

**Key messages and recommendations**

- Community must be motivated to participate in the data collection activity. The case studies demonstrate that incentives for engagement should not necessarily be monetary, but could also be in form of broader economic and knowledge benefits that must be demonstrated to the communities.
- Building extension capacity at community level is demonstrated with the Kenya Carbon Project, resulting in a build-up of a pool of community extension workers that continued to collect and transmit the data. We recommend the approach for the Uganda extension system, as a long term strategy to support the already stretched extension system.
- Regular training is recommended (in Kenya case this was annually), to ensure new knowledge concepts are passed on, while gaps created with members that may have left are filled.

**Additional recommendations are summarised in Table 3.11 below.**

Table 3.11: Matrix of case summaries as benchmarked against the Uganda situation

Case summaries	Uganda situation	Improvement areas for Uganda
<b>A. Policy and legislation</b>		
A.1: A strong policy foundation stimulates development of strategies and plans to operationalise the MRV system. This situation is evidenced with the Kenya, Costa Rica and Thailand that display a range of climate change policy frameworks.	While the Uganda National CC Policy is in place, this has not stimulated sufficient strategic responses to support the MRV development process.	Need for more enabling strategic frameworks and plans to support policy implementation (Development partners could aid on process)
A.2: Almost all case studies have climate change legislation in place	Uganda's climate change bill in the offing	MWE should expedite policy conclusion process
<b>B. Institutional arrangement</b>		
B.1: Clear description of roles and responsibility for MRV development in all the cases	Draft Institutional framework for the national MRV recently developed but not operational	Need to urgently conclude the policy development process and operationalise the frameworks
B.2: Delegation of roles and responsibilities	Currently majorly centralized for all GHGI MRV functions. However, in the process of devolving responsibility to public sector institutions.	MAAIF should be assisted to build the agriculture intra sectoral networks and systems
B.3: Research institutions with role in data management e.g. Ghana	Research institutions only consulted on adhoc basis by MWE-CCD for data inputs	A mapping of research institutions will be required to establish capacities for MRV support in agriculture.
B.4: National data management is highly profiled in Costa Rica, Thailand and Kenya, with the responsibility assigned to an independent institution	Data management is a responsibility of the coordinating institution (MWE-CCD).	Data management is a complex function and should be assigned to an independent institution with the requisite capacities. Alternatively the CCD should be supported to establish a fully fledged and operational unit to handle national data management for the integrated MRV.
<b>C. Emissions data collection</b>		
C.1: Emissions data collection is majorly project driven. The process is purposed to generate data that will inform the calculation of localized emission factors and establish proxies to determine progression on adaptation and mitigation measures implementation at community level	Tier 1 data collection by MWE is project driven, but focus is on generating the data through secondary data sources. The agriculture data collected by MAAIF serves to complement the Tier 1 data collection process. No project is currently supporting emission factor calculations	We recommend that MWE's strategic focus for data collection changes, from secondary to primary sources of data.
C.2: Data collection involved multi-disciplinary teams (donors, research institutions, funding institutions and governments)	The MWE approach to emissions data collection is limited to country expert teams derived from public institutions, NGOs and research institutions.	Emissions data collection is a complex process. Multi-stakeholder engagement is required to address the various elements related to emissions data management and for a comprehensive assessment from all data sources.



Case summaries	Uganda situation	Improvement areas for Uganda
<p>C.3: Capacity development in terms of training for farmers and extension workers is emphasized across all the cases</p>	<p>MAAIF only trained extension workers on the data collection tools, while UBOS trained the district personnel on statistical management tools. Farmers not included in trainings.</p>	<p>Farmers and community level stakeholders are primary custodians of agriculture data and should be included in the trainings. Capacity building should cover all key stakeholders including government, CSO, private sector and academia for the different types of data collected.</p>
<p>C.4: Inclusive approach to primary data collection and generation. Academia are involved in Ghana based on cooperation agreements, while in Costa Rica it is the industry actors or private sector.</p>	<p>MWE's engagement with non-state actors is adhoc and no cooperation arrangements exist outside the government structures</p>	<p>Need to broaden and formalize engagements with non-state actors and academia</p>
<p>C.5: Secondary data sources used to complement primary data collection</p>	<p>Secondary data sources constitute the main source of data for emissions calculation</p>	<p>Emissions activity data should be primarily collected at field level, and complemented with secondary data.</p>
<p><b>D. Data processing and transmission</b></p>		
<p>D.1: Costa Rica and Thailand with established national centralized and distributed data management systems. Ghana and Kenya cases indicate progression towards a similar model of data management.</p>	<p>MRV approach is a sectoral or distributed data management system managed by CCD MWE, a centralized system established based on secondary data. A training for sectoral GHGHI and MRV experts (CBIT, March-June 2020), to compile data and transmit to the centralized system. The DLGs are data providers in the current arrangement and lack skills. The National Integrated MRV tool (supported by UNDP and launched on 5th June 2020) will strengthen the centralized system at CCD support from UNDP. This was launched on 5th June 2020.</p>	<p>MWE should support the sectors (MAAIF) to develop sectoral data sets based on primary data sets collected by DLG, UBOS and other sources. Transmission of data from source to sector should be mainstreamed</p>
<p>D.2: National and sectoral MRV systems operational in Costa Rica and Kenya</p>	<p>National and sectoral GHG Inventory MRV launched and yet to be fully operational.</p>	<p>Support needed to operationalise the sectoral MRV Lessons from Kenya sectoral MRV could inform development of Uganda's MRV for agriculture</p>
<p>D.3: Costa Rica and Kenya systems with integrated quality management mechanisms</p>	<p>Quality management mechanism are adhoc in MWE's centralized system, and in the MAAIF data collection arrangements at LG level</p>	<p>QA and QC mechanisms required for the current emissions data management arrangement by MWE, MAAIF and LG level.</p>

Case summaries	Uganda situation	Improvement areas for Uganda
<p>D.4: Quality management integrated in the entire data supply and process in the Kenya case, with Extension workers responsible for data verification.</p>	<p>The MAAIF data collection structure includes administrative data clearance mechanisms as the data is transmitted through the different levels of government. This includes checks by extension workers and data sign off by technical planning committees</p>	<p>Develop an Integrated quality management system based on the Kenya case to have data quality mechanisms at all stages of the data collection and movement process.</p>
<p>D.5: Verification in Thailand is conducted by Climate Change Knowledge and Database Sub-Committee, an independent process which then conforms to best practice.</p>	<p>No dedicated institution in place for the verification of the inventory data</p>	<p>Verification responsibility should be assigned to an independent and competent institution. Finalization of the National MRV Framework by MWE should enable this process</p>
<p>D.5: In Costa Rica and Kenya cases, data is processed also for public consumption. Kenya provides a centralized data and information centre accessible to the public, while Costa Rica adopted a Visualization Interface to enable public access and use of the data.</p>	<p>The MWE-CCD data is currently not available to the public</p>	<p>MWE-CCD should adopt tools that enable ease of access and manipulation of emissions data at all levels of government.</p>
<b>E. Climate Finance</b>		
<p>E.1: Financing for the primary data collection projects are majorly from multilateral development institutions such as Ghana's case financed by African Development Bank</p>	<p>MWE's project is from UNFCCC related funding mechanisms such as CBIT Fund and GCF.</p>	<p>Future projects should consider funding compliance to climate reporting from a holistic perspective, addressing all data sources.</p>
<p>E.2: Kenya's Climate Change Fund is accessible at all levels of government, including local government, and also to private sector and academia. The funding mechanism provides certainty for climate financing at local level, and is also open to participation by all Kenyans.</p>	<p>Uganda's draft CC Bill 2020 provides for a climate change fund</p>	<p>MWE-CCD should learn from the Kenya case and ensure that the fund is accessible to lower governments to implement priorities at this level.</p>
<b>F. Community Engagement</b>		
<p>F.1: Communities engaged in multiple activities – as data providers, and participation in the continuous monitoring and assessment activity by extension workers in the Kenya case</p>	<p>MAAIF data collection model only targets farmers at household and through collectives (markets and groups), while the NEMA structure is based on committees, and include Community NRs User Committee. Their primary role however is data supply.</p>	<p>The proactive engagement of the communities is proposed for both the data supply and continuous monitoring and tracking of emissions activity at all levels from up to the lowest</p>

Case summaries	Uganda situation	Improvement areas for Uganda
<p>F.2: Participation not only limited to farmers, but also involved industry players in the agricultural value chain as evidenced with the Costa Rican case</p>	<p>At local government level, data on commercial agricultural activity are captured through the markets and farmer groups, as data supply points.</p>	<p>Strategy for engagement of industry players should be defined at the planning stages of the project.</p>
<p>F.3: The credibility of the data is attributed to the processes at community level.</p>	<p>The role and contribution of LGs, as the interface between national level and communities as relates to data management is not well defined.</p>	<p>Need for clarity on roles and responsibilities in data collection defined in formal cooperation instruments. MAALIF should be assisted to strengthen the current data collection arrangement to support sectoral reporting on climate action, and promote SLM and CSA practices in the long term.</p>
<p>F.4: Technicians and extension workers recognized for their roles including training lead farmers and community facilitators, supervised data collection and support to farmers to adopt CSA practices</p>	<p>While the districts' technical staff and extension workers are expected to undertake similar roles, these are constrained by human resource constraints (ratio 1:1200 households)</p>	<p>Building extension capacity through training of community facilitators is a stop gap measure to address the current capacity constraint experienced by the LG technical teams.</p>
<p>F.5: A range of incentives were provided across all the project cases and integrated in project delivery. The incentive was aligned to the project outcome for example the GAP certification in Thailand with anticipated market access for the rice farmers.</p>	<p>Community participation in project activities is commonly incentivized with monetary packages in form of participant allowances (transport, lunch, sitting).</p>	<p>Incentives are a powerful tool to sustain community interest in project activities. Important that the project outcome is not only achievable but also demonstrable to the farmer.</p>





**4**

**Best-fit model  
for MRV in the  
agriculture sector**

## 4.1 National Level

It was evident that limited climate-smart agriculture is reflected in the various components of the national MRV system. To strengthen the position of the GHG inventory, there is need to establish an Agriculture GHG data coordination program to ensure that all data and information are generated and communicated to relevant actors in a timely and transparent manner. At national level, there is need to establish and strengthen a coordination unit for Agriculture GHG data at MAAIF to emphasise assembly of information relevant to GHG in agriculture.

The sectoral MRV should be comprehensive to monitor and track GHGI, adaptation and mitigation actions and their impacts, as well as support received and its impact. MAAIF could consider institutionalising Coordination unit (Fig. 4.1) for MRV to effectively monitor evaluate and report the impacts of the climate change interventions on increase or reduction of GHG emissions, increase on productivity hence adaptation and resilience to climate impacts, and contribution to mitigation through carbon sequestration e.g. agro forestry. A multi-stakeholder approach is essential for data provision and information flow for the MRV system.

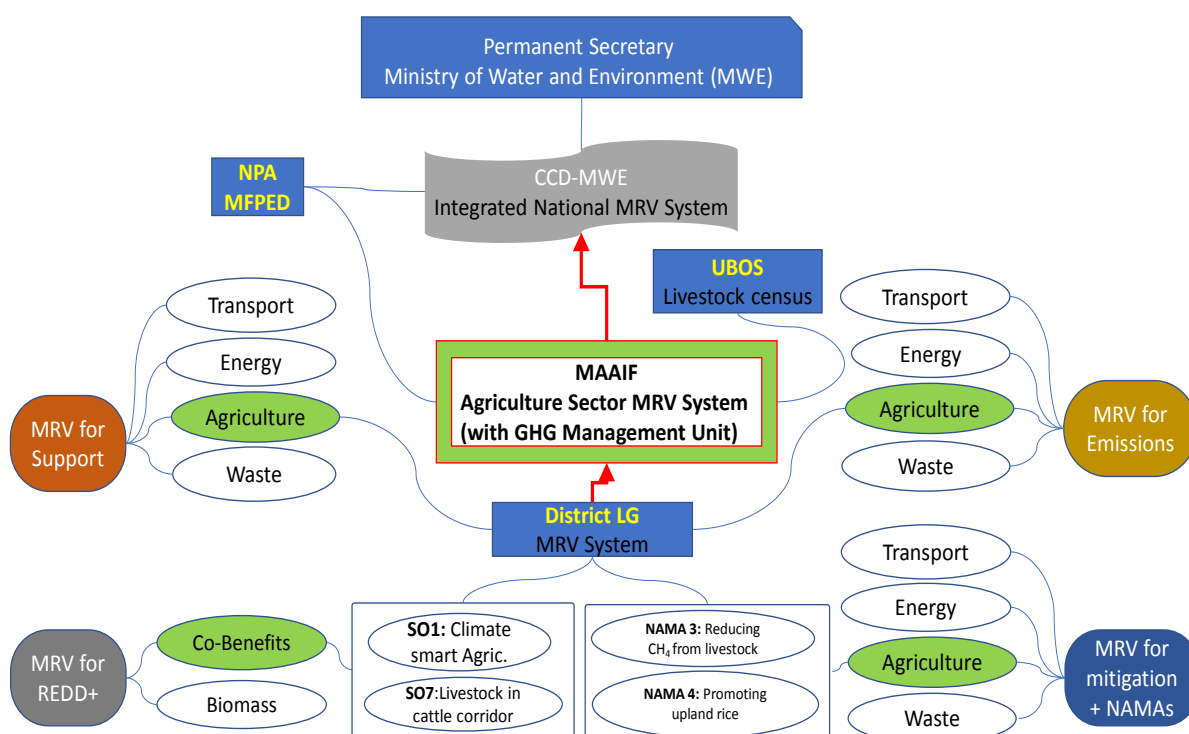


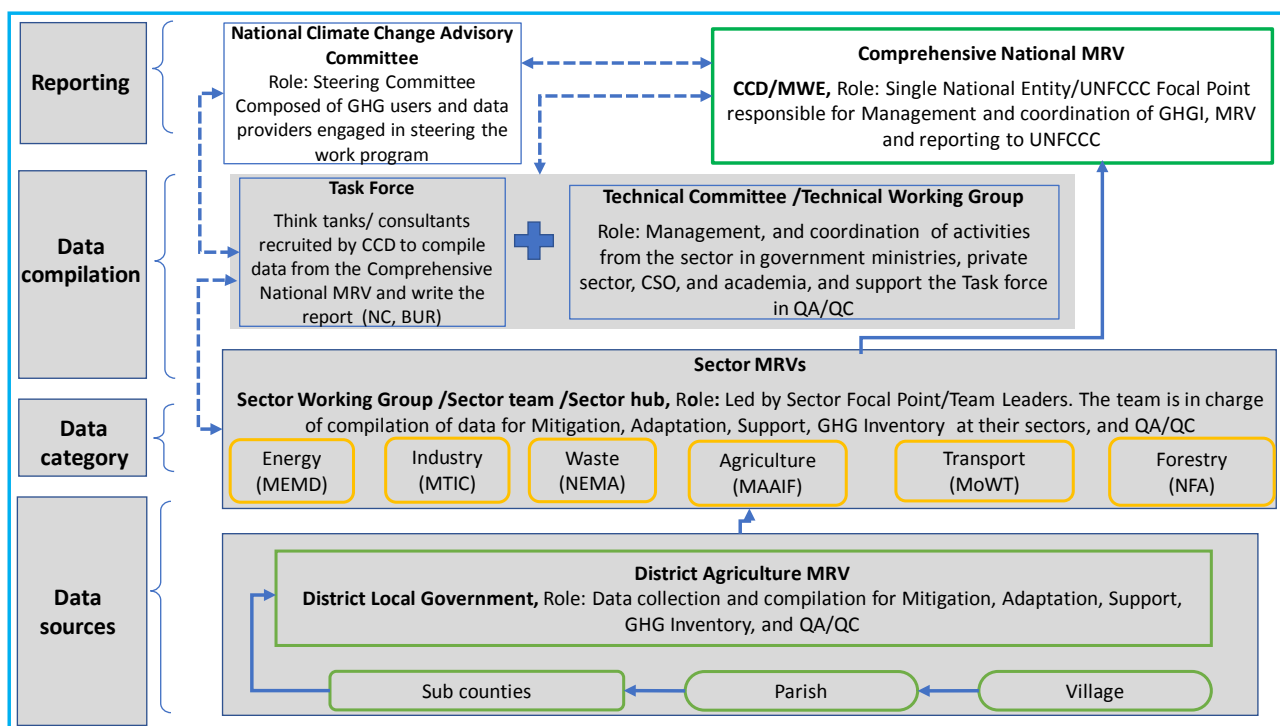
Figure 4.1: Illustration of a proposed comprehensive coordination of the agriculture sector MRV in Uganda



To ensure effective MRV at national level, the subnational level MRVs especially at the district LG should be established to link to the sector MRV system at MAAIF. For example the district agriculture MRVs for inventory, support, adaptation actions and their impacts, mitigation actions and their impacts and REDD+ would link to the respective sector MRV systems at MAAIF (Fig. 4.1 and 4.2). The recently trained National GHGI Experts at the MAAIF sector hub (Sector Team/Sector Working Group) could constitute the GHG data Management Unit for MRV of emissions, mitigation and adaptation actions, and support, and take the responsibility of coordination and monitoring and compilation of the data on mitigation and adaptation actions and benefits, support and GHGI in the agriculture sector. Strengthening the capacity of the sector hubs for continuous data capture, recording, analysis and proper archiving would ensure effective and timely sector level decision-making and timely reporting on international commitments. Data assembly at the sectors should not be a one-time or seasonal event prompted by NC or BUR but should be an ongoing process to also support local decision-making at the sector and national level.

Data compilation at the national level has been done majorly by the Task Force composed of consultants who are temporarily hired by CCD MWE to compile data including GHG from the different sector hubs for the NC or BUR. It is hence proposed that the sector MRVs should be linked to the Integrated National MRV system, such that data and information from the sectors is sent direct to the national MRV at CCD MWE, where it would readily be available for national reporting as well as the routine international reports (BUR, NC). It is further proposed that Technical

Committee or Technical Working groups for the sector should continue the role of management and coordination of activities from the sectors as well as QC and QA. The sector teams or the sector working groups which are now composed of trained National GHGI experts should not just be involved in revision of draft NC and BUR as has been the case, but should be fully engaged in data compilation, analyses, reporting, QA/QC process together with the think tanks who may temporarily be contracted by CCD MWE (Fig. 4.2). The Sector Team engagement in inventory compilation and reporting is especially important since they are the technical personnel responsible for development and improvement of data collection templates, supervision of data collection and ensure QC and QA in the sector. The Sector Working Group/Sector Team should therefore be directly involved in management and coordination of sector GHGI-MRV activities including monitoring data collection, compilation and transmission to the Integrated National MRV system. This would improve uncertainty assessment and QA/QC process for more compliant IPCC reporting. The National Climate Change Advisory Committee should continue to provide oversight and the role of steering the MRV program at the national level. The CCD MWE as national Focal point should continue with their role of management and coordination of National GHGI, MRV and reporting to UNFCCC. The Task Force and Technical Committee should work more closely to deliver national reports and the link between the sector MRVs and National MRV should be a continuous process. The institutional structures for QA/QC at all levels can be maintained e.g. review and validation by sector teams, technical committee/ technical working Group and oversight by NCCAC.



**Fig 4.2: Illustration of a proposed Institutional arrangement for MRV for Agriculture sector in Uganda**

To ensure continuous flow of data and information from the source to the top-most national levels, capacity for district MRVs should be given to district local government to feed into the sectors at the national level. The linkage of national and district MRV should be formalized within the existing government institutions for sustainability. Detailed recommendations are indicated in section 5.

## 4.2 District level

### 4.2.1 Introduction

The district is the primary source for agriculture data and is collected from the lowest farming unit (household), and aggregated and transmitted through the lower LG structures of village, parish and sub county, and to the district LG for transmission to the central government. A Sub national MRV system for agriculture needs to take advantage of the existing structures to build up a system for emissions data collection responsive to the data needs of the sector MRV for agriculture. The assessment however reveals challenges, gaps and needs in the structure and process for data collection that have to be resolved for the proposed sub national MRV system to function effectively.

### 4.2.2 Key challenges, gaps and technical needs for a sub national MRV for agriculture

Lower LG. Responsibility for agriculture data collection lies with the lower LG and data is collected across the administrative levels of village, parish and sub county. The extension workers are trained on the application of the MAAIF data tools, however clarity on roles and responsibilities in the data collection process are not defined or elaborated. Field data collection is carried out by adhoc teams constituted to assist in the data collection exercise, and these range from LC 1s to community volunteers. While this is a gap filling measure adopted to address the challenge, there is no budget allocation available at lower LG for data collection, so the teams are not adequately remunerated. The field teams are also not comprehensively trained

on data collection as these are irregular. Use of manual data collection methods is the norm, and this process is characterized with inefficiencies and data inaccuracies, and is also time wasting. Capacity to supervise data collection at household level is greatly hampered by the low staffing of extension staff (ratio of 1:1200 extension worker to households). There are no data quality checks and mechanisms to for quality assurance in the entire supply chain at lower LG. The technical planning committees at parish and sub county are mandated to review and sign off all data and information, and not necessarily for quality control.

District LG. The challenges at the district level take on two forms; (i) Policy and institutional, and (ii) Technical. The policy level challenges relate to the obligations of the district to the central government and how well these are defined and are being implemented. While some of the obligations are articulated in national and sectoral policies, these are yet to be translated into actionable formats and with a clear definition of roles and responsibilities for the districts and their lower governments. The point in case is the agriculture and climate change policies and strategies. It is important that the districts and MAAIF have a common understanding of the expectations from either side, and assist the districts to operationalise the policy actions.

The technical challenges associate with data management capacities at the DPMO, and cross sectoral linkages related to data sharing. The DPMO multidisciplinary team is expected to process and interpret the data received from the lower LG. Capacity limitations in form of requisite skills and knowledge and equipment is a major constraint. MAAIF data templates are designed to aggregation and consolidation of the data for purposes of further transmission, so no training was provided on data processing, thus demonstrating a

need for the requisite skills and knowledge. No quality management system or quality checks were evident in the data supply process at the DPMO. The DPMO technical teams have also assisted in field data collection, especially where complex data is required. There is also a need to equip the technical teams in this regard. Data is being shared between the Natural Resources Office and the DPMO on a relational basis, to address the data gaps in the different data sets. A clear definition of the data gaps, and mechanisms to further complement each of the data sets may be warranted.

The lack of a centralized data base to enable processing, interpretation and storage of the data is a need for the DPMO. Assessment of the state of the data collected indicated the following data gaps; data to inform the district planning and action, climate change data for calculation of emissions, and indicators for measurement of progress on adaptation and mitigation actions at community level. Analytical data on the state of the productive resources (soil, water, etc) were missing because the district lacked facilities for analysis, and yet the data and information were required to inform district planning and implementation of activities. The quality of the data was also poor, with missing data, data inaccuracies, and untimeliness.

### **4.2.3 Proposed Sub national MRV for agriculture**

The proposed sub national MRV for agriculture will be aligned to the MAAIF Sectoral MRV for agriculture, building on the current structure for MAAIF administrative data collection and transmission from the lower LG, to the district LG. The proposed system is

informed by the findings of the situation assessment at national and district level, and best practice case studies in selected countries (Non Annex 1). The Sub national MRV for agriculture is based on the two administrative structures of Local Government; the Lower LG, and the District LG, and this is designed to link into the sectoral MRV for agriculture at MAAIF. The roles and responsibilities therein for the lower LG and DLG officers are described here below and also illustrated as Fig. 4.3, and are also shown under community level engagement thematic area and the summary recommendations (Table 4.1).

#### **4.2.3.1 Lower Local Governments (LLG)**

The Parish and Sub County constitute the Lower Local Government (LLG) administrative structure and constitutes the primary source for agriculture data and includes data from smallholder farming households, commercial farms, farmer groups and cooperatives and farmer markets, including both crops and livestock. Oversight for data collection process shall lie with the sub county management, and these shall supervise the collection and complication of the data collected at household and village level, and aggregated to the parish and subcounty level data from commercial farms, farmer groups and markets. Two primary data sets are envisaged, basic data from households and consolidated at Parish level, and commercial data from the large farms, cooperatives and markets collected and consolidated at sub county level. Data types at this stage are primarily data on adaptation activity, and data to inform emissions calculations. The specific data types and frequency of collection shall be clearly defined, and the appropriate data collection tools developed.

The responsibility for data collection is aligned to the data needs; with the basic data from households

being collected by local enumerators who will be mobilized into Community Facilitator Teams (CFTs) and operating at Parish level. Membership to the CFTs shall be derived from the local communities, with basic literacy competencies, and familiar with the local communities and landscape such as local councilors, community animal health workers, community development officers, and lead farmers. The basic data collection process will be supervised by the Parish LLG management team that comprises the Parish Chief and administrative staff, and these shall also aggregate the household/village data collected by the CFTs, and check for data quality.

Responsibility for collection of the commercial data sets at sub county shall lie with the Sub county LLG management team that comprises the sub county chief and sectoral extension workers. The Extension workers will collect the complex and commercial data from large farms, farmer organisations and markets, and also check data quality. These shall also aggregate all the data sets (parish and sub county) in preparation for administrative clearance and transmission to the District LG. The technical planning committees (TPCs) at parish and sub county level shall provide quality assurance for the data sets at each administrative level, and provide the required administrative approval for transmission to the next level of administrative hierarchy.

Data on mitigation actions, such as the use of natural resources, plantation establishment and incidence of disasters at community level shall be collected by the Disaster Management Committee, Community Natural Resources User Groups and Environment Committee all located at the LLG level. While this data collection process runs parallel to the agriculture data collection process, synergies exist at District LG level as the data is consolidated and interpreted to inform the mitigation actions for the sub national MRV system.

#### 4.2.3.2 District Local Government

Data processing. The data generated from the LLG will be complemented with data collected at the district, and the data processed for the district MRV system. The following offices are responsible for generation and process of the different data sets;

- (i) **District Production and Marketing Office (DPMO):** The DPMO is the district's hub for agricultural data collected at the lower local governments, and includes crop and livestock data. The DPMO comprises sectoral experts in the areas of crops, veterinary, apiary, fisheries and commercial activities, and these shall receive the LLG data sets and undertake the following functions; compile and aggregate, consolidate, check data quality and generate interpretations of the data. The anticipated data outputs at this stage shall include; adaptation actions and impact at community level, emissions data sets, and policy recommendations for DGL management and leadership.
- (ii) **District Statistics and Planning Unit/CAO.** Based on the planning and administrative data available at the district, and information generated from the sectoral offices (DPMO, NRs), generate data and information on climate actions in form of projects and programmes by Government and development partners. The output is intended to inform a mapping of climate actions at the district, and the data shall be used to establish the support to the district's climate action in form of technical assistance, technology transfer and funding by government and development partners.
- (iii) **Natural Resources Office (NRO).** The NRO shall aggregate the natural resources and environment information data and information generated at parish and sub county level, based on the NEMA templates. Mitigation action data shall be derived based on a defined template, and shall inform the district MRV.



**Data verification and clearance for use.** A District Environment Committee shall serve the function for verification of the data sets (agriculture, disaster, environment and planning), and align the findings to the data requirements of the district MRV system (emissions, adaptation, mitigation and support). The committee shall co-opt members from the DPMO, the District Statistics and Planning Unit, and technical experts from relevant agencies at the district. The committee shall check for data quality, ensure the data responds to the specific requirements of the MRV system and generate recommendations for the use of the data and information at the district level. The data sets and outputs will be cleared by the committee for the following use; (i) Upload onto the district MRV system (ii) transmit the policy recommendations to Chief Administrative Officer for consideration by the District Executive Committee.

**District MRV for Agriculture System.** The district MRV for Agriculture system shall be hosted by the DPMO, under the supervision of the District Production Coordinator, and working closely with the NRs Officer and the District Planner. The cooperation shall be guided by a technical manual, and terms of reference for each of the cooperating parties. The system shall be supported with resources allocated by the District Council, and contributions from partners including MAAIF and NEMA.

**Chief Administrative Office (CAO).** The CAO shall oversee the administrative functions of the District MRV System and mobilise resources required to support operationalization and further improvement of the system. The office shall also assure internal cooperation between the district's technical offices and committee, to support implementation of the MRV system at the district. The CAO shall also manage the cooperation frameworks in place between the district

and MDAs for implementation of the district MRV system.

**District Executive Committee (DEC).** The committee shall review policy recommendations generated by the environment committee to support the district planning and decision making processes. The DEC shall also consider funding proposals presented by CAO for financing the district's MRV system, and lobby partners to support the districts' data collection efforts aimed at enhancing evidence based planning and decision making.

#### **4.2.3.3 Linkage between the District MRV for Agriculture and MDAs**

**MDAs with MoUs with Districts.** MAAIF and NEMA are among the MDAs earmarked to develop MoUs for data collection and sharing. The District LG MRV for Agriculture shall feed into the Sectoral MRV hosted by MAAIF, and guided by the climate change reporting requirement on emissions, adaptation, mitigation and support. NEMA through the MoU shall also have access to mitigation data to inform the national reporting requirements, and also feed into sectoral reporting needs such as the REDD+ MRV hosted by the National Forestry Authority.

**Ministry of Local Government.** The MoLG shall assume a more proactive role in the climate change reporting activities both at national and district LG level. At the district level, members of the MoLG CC Task Force shall be invited to participate in the verification and validation of the district data and alignment of the findings to the four pillars of the district's MRV system by the Environment Committee. At the national level, the MoLG will be the primary interface between the districts and MDAs (besides MAAIF and NEMA with signed MoUs with the districts), to access data from

the MRV system for agriculture. Based on the MoLG Strategic Plan, MDAs may access the data required through the MoLG CC Task Force. MDAs likely to request for data include the National Planning Authority for the NDC reporting requirements, particularly the monitoring of CSA NDC targets.

### PROPOSED LOCAL GOVERNMENT MRV FOR AGRICULTURE



Figure 4.3: Illustration of a proposed Institutional arrangement for the District agriculture MRV in Uganda

Table 4.1: Summary matrix of Sub national MRV for agriculture

Thematic area	Proposed improvements
1. Policy environment and institutional arrangements for data MRV governance	1.1 Streamline data cooperation between the district LGs and MAAIF defining cooperation areas, data types, frequency of collection and tools to be used by all stakeholders. Memoranda of Understanding (MoUs) required.
	1.2 Establish a clear role for the MoLG Climate Change Task Force as an intermediate between the district and other MDAs and stakeholders (national and international) that may not have a MoU with the districts.
	1.3 Define roles and responsibilities for data collection and management at district and lower LG (prepare a Handbook)
	1.4 Streamline the District MRV for agriculture and the proposed district statistic strategic plan process and outputs. District MRV for agriculture should be aligned to the district statistics strategic plan
	1.5 Review data sharing arrangements between DLG and national MDAs; NEMA, MAAIF, UBOS identify the specific data needs for each party, and establish a formal cooperation arrangement to facilitate inter institutional data sharing and intra-sectoral data sharing between DPMO and the NRs Departments at the District.
	1.6 Review other relevant data sources such as Disaster Management Committees to establish data sets of interest and agree on modalities for access and sharing the data collected by the disaster committees at the lower LG
	1.7 Institute a data verification function for the District Environment Committee, and co-opt external technical experts to support on delivery of this function

Thematic area	Proposed improvements
2. Sub national MRV data requirements and management system	2.1 MAAIF in consultation with MWE determine the sub national MRV data requirements; and update the current data collection templates to capture the required data
	2.2 Conduct training on the District MRV system for the district's technicians, including the CAO's office on the different data sets for the MRV system (emissions, adaptation, mitigation and support)
	2.3 Conduct training for lower LG personnel on data collection and supply 'Smart data collection kits' to aid field data collection
	2.5 Build capacities for data processing and establish a centralized database at the DPMO
	2.6 Create inter and intra data interface (with MAAIF and CAO and the district's technical offices respectively)
3. Quality assurance (QA) and quality control (QC),	3.1 Develop an integrated quality management system for the entire data collection and supply chain at sub national level from the village to district
	3.2 Prepare a handbook/manual for quality management
	3.3 Conduct training for targeted quality control and quality assurance persons and committees (technical planning and environment committees)
4. Resource requirements and mobilization	4.1 Districts allocate budget for district MRV system development and operation, and Prepare a Road map for resource mobilisation aligned to the DDP for sustainability
	4.2 MAAIF in consultation with the DLGs prepare a collaborative project (including academia and private sector) to develop emission factors for selected agriculture sub sectors, and proxy indicators to measure progress in adaptation and mitigation actions
	4.3 DLGs review ongoing research collaborations and identify opportunities to expand the areas of cooperation and funding to address MRV data needs
5. Community level engagement in data collection: roles and responsibilities of actors.	<p><b>5.1 Village Level:</b></p> <ul style="list-style-type: none"> <li>• Households; Supply crop data and information on pests and diseases, yield, harvest, etc. The farmers could be supported to collect livestock and crop data sections of the survey templates; <ul style="list-style-type: none"> <li>- General cropping activities at Households Level</li> <li>- Household livestock management</li> <li>- Household-level Aquaculture farming</li> <li>- Aquaculture Harvest monthly</li> <li>- Banana production</li> <li>- Cassava production</li> <li>- Eggs production - daily</li> <li>- Farmers' register</li> <li>- Fruits</li> <li>- Milk-Diary at household</li> <li>- Floriculture</li> <li>- Horticulture</li> </ul> </li> <li>• Local Councils; Mobilise communities to engage in data collection</li> <li>• Community Facilitator Teams (CFTs); Collect household data on behalf of the lower LG</li> <li>• Disaster Management Committee: Share information on climate disasters</li> <li>• Community Animal Health Agents; Support data collection on animal health and state through the CFT</li> </ul>

Thematic area	Proposed improvements
<p>5. Community level engagement in data collection: roles and responsibilities of actors.</p>	<p><b>5.2 Parish Level</b></p> <ul style="list-style-type: none"> <li>• Community Facilitator Teams; Collect household data on behalf of the lower LG including <ul style="list-style-type: none"> <li>- Cropping activities</li> <li>- Household livestock activities</li> </ul> </li> <li>• Parish Chief; Supervise and coordinate village data collection, ensure data quality, aggregate the data.</li> <li>• Technical planning committee (Parish TPC); Administrative review for clearance to the sub county. Ensure compliance to basic quality guidelines, and generate recommendations for LG planning and development.</li> </ul> <p><b>5.3 Sub county level</b></p> <ul style="list-style-type: none"> <li>• Extension workers: Supervise and coordinate data collection by parishes, and collect data on agricultural collective activities (markets, farmer groups, etc), aggregate parish data sets, ensure compliance to quality requirements. Specific data to be collected will include: <ul style="list-style-type: none"> <li>- Large scale cropping</li> <li>- Large scale livestock</li> <li>- Agricultural markets</li> <li>- Farmer group production and marketing activities</li> <li>- Landing site fish catch - daily</li> <li>- Large scale fish hatchery</li> <li>- Slaughter diary</li> </ul> </li> <li>• SC Community Development Officer; Support aggregation of parish data sets and conduct data quality checks</li> <li>• SC TPC; Data validation and quality check, generate recommendations for planning and development, and administrative clearance to the district</li> <li>• SC Chief: Oversight and coordination of data collection activity in the SC</li> </ul> <p><b>5.4 District level</b></p> <ul style="list-style-type: none"> <li>• District Production and Marketing Office; <ul style="list-style-type: none"> <li>- District sub sector technical team; Review data for quality (inaccuracies, gaps, etc), compile and aggregate SC data sheet, integrate and process the data, upload data sets to central server, generate datasets for TPC review and DEC clearance. Specific data at district level will be mainly livestock diseases</li> </ul> </li> <li>• District Production Coordinator; MAAIF focal point for the sub national MRV for agriculture. Key responsibility is to coordinate implementation of the district MRV system for agriculture by overseeing agriculture data collection and processing for the integrated MRV on emissions, adaptation and mitigation activities.</li> <li>• District NRs Office; Share data on collected from the lower LGs on mitigation activities for the MRV system</li> <li>• Chief Administrative Office; Provide data on climate support for the MRV system; spearhead harmonization of data collection and management methodologies, tools and outputs to conform to national standards. Facilitate partnerships and networks to support data and information activities at the district, and lobby the district leadership and partners for funding for the District MRV system,</li> <li>• Environment Committee: Data validation and verification, and generate recommendations for district planning and policy, supported by external experts. The committee shall also serve as the data clearing house for all data for the District MRV for agriculture</li> <li>• District Executive Committee; Support implementation and reporting on climate action, and ensure availability of the required resources for this. Support institutional cooperation and networks to facilitate development and improvement of district statistics.</li> </ul>





# 5

## General Conclusions and Recommendations for action



## 5.1 General Conclusion

The policy and institutional framework for climate action including reporting is well defined with the current national and sectoral frameworks such as: the NCCP, third NDP and climate change bill 2020, as well as agriculture sector frameworks with the National Adaptation Plan for agriculture sector 2018. The policy defines the institutional layout for implementing of climate action, with the national and Local Government roles and responsibilities articulated with the NCCP. For the sectoral responsibilities the NCCP provides for the CCTF at national level however at LG level responsibility remains unclear.

Projects and programs have been initiated at national level building capacity of national stakeholders. The LGs however have remained invisible in this process and vents the urgent need to clearly articulate their role in implementing the climate change agenda

GHG emission research activity is evident with the research organisations including CSA research oriented projects. This information however remains in the custody of the research institutions. The importance of including research organisation in GHGI and MRV reporting is essential to meeting the UNFCCC requirements.

The draft National MRV Framework document is under development and it delayed complexion continues to affect overall reporting and denies other stakeholders such as LG the opportunity to effectively engage in the national monitoring and reporting activities. The situation of agricultural sectoral MRV indicates

an absence of emission data management systems, multiple data collection, capacity limitation and limited compliance to the TACCC principles, all calling for a need to strengthen institutional capacities and related data collection processes.

As the country transcends from Tier 1 to higher tier emission data management approach, the importance of lower level data collection is evident. The situation of the agriculture sector at LG level shows an existing data collection system which however is faced with a multitude of challenges. while the current structure could support the development of a data inventory at sectoral level, there is need to focus more on developing a more comprehensive and integrated data system that will meet the needs of not only MAAIF but also the district and the stakeholders. It was on this premise that a sub national MRV system for agriculture is proposed.

The district MRV system shall help streamline the district's data system (planning, environment, disaster) by providing an integrated and functional data management and reporting system for the district. A prototype is proposed and this could be tested and piloted in the ProCSA project districts. The district MRV shall feed into the sectoral MRV system for agriculture at MAAIF

Based on the evidence from literature, as well as national and district level consultations, a number of proposals for integrating CSA in Uganda's MRV system have been identified. The key ingredients for an effective MRV are highlighted below:

# 5.1 General Recommendations for action

## 5.1.1 National level

- (i) **Strengthen existing institutional structures to operationalize MRV systems:** the Agriculture sector MRV for inventory established by CBIT at MAAIF needs support for improved inventory as well as other MRVs for agriculture sector. This can be done by revising roles and responsibilities of institutions and staff to directly address GHGI and MRV e.g. the agriculture Sector hub/Sector Team/Sector Working Group and Climate change Task force could be supported to constitute a GHG Management Unit at MAAIF to directly coordinate and monitor GHGI, MRV including impact of CSA on emission reduction, adaptation and mitigation action, financial and capacity support received by the sector and their impact at the national level. GHGI and MRV should be incorporated in routine planning and budgeting process for sustainability of the activities
- (ii) **Development of regulatory framework to harmonize responsibility for data collection** between MAAIF, NARO, MoLG, NEMA, UBOS, NFA and non-state data providers. This will include developing data sharing Agreements and guidelines for data collection, processing, and archiving.
- (iii) **Support to the ministry of agriculture (MAAIF) to strengthen the existing data management system** for data collection from the lower local governments and its transmission to the ministry. Support the infrastructure for the information management system being piloted at the MAAIF Data Center. A stakeholder mapping to identify data required and sources especially the non-state actors is key starting point. Standardisation of the data collection templates to conform to the TACCC principles is key for QA and QC
- (iv) **Develop local capacity for comprehensive activity data collection and country specific emission factor calculations.** Data providers from government and non-state actors need training on TACCC principles for comprehensive activity data and information collection, processing, archiving and reporting. Local research institutions and academia need support to conduct direct GHG measurements and emission factor calculation: Direct measurements of emissions/removals through experimentation is the most reliable way to improve accuracy of emissions estimates for various farming practices. Already, graduate students from Makerere University are doing direct gas measurements but can only run a few samples since they are collected and shipped to Germany for analysis. Many more samples and diverse practices can be tested if facilities are established and capacity built to conduct these experiments locally. The ZARDIs and local universities could be supported to effect this need.
- (v) **Mass sensitization of stakeholders at all levels:** Accounting Officers and Planning units at the sector ministries, departments and agencies, and key decision-makers need to be sensitized in order to achieve high-level buy-in for staffing and budgeting for GHGI and MRV. The technical staff need sensitisation on their role in reliable GHGI and MRV systems especially QA and QC principles of TACCC. The politicians, religious/ cultural leaders and general public need sensitisation to cooperate in data collection and also buy-in in climate change actions such as CSA.

## 5.1.2 Local Government

- (i) Formalize institutional arrangements between LGs and MAAIF with intention to streamline understanding between the parties, define roles and responsibilities, and provide clarity on the data types, data collection protocols, and reporting schedules. Data ownership and sharing arrangements should be elaborated, and joint multi-stakeholder projects to collect more complex data sets such as emissions data.
- (ii) Support MOLG enabling initiatives such as implementation of the statistical strategy to improve data quality and to generate an administrative database, and the CC Action Plan priorities to raise awareness on CC for LGs.
- (iii) Define a clear role for the MoLG CC Task Force in the implementation of the district MRV, and as a primary interface between the districts and national partners (MDAs and development partners without data sharing MoUs with districts).
- (iv) Revise MAAIF data collection template to integrate GHG indicators, and broaden the scope of data captured to respond to the CC reporting requirements of MWE, and also to the District LG data needs. Missing data sets and yet relevant for CC reporting include; Land management practices by farmers, differentiated rice production systems, irrigation practices at HH level, and fertilizer use by farmers under the cropping subsector, and for the livestock, mentioned were feed types, husbandry management, manure management and age.
- (v) Improve infrastructure for digital data collection, storage and sharing. This may include provision of counters and Tablets to technical staff and hasted timely delivery of data and supporting the ongoing process of digitizing data and information management system at MAAIF

Table 5.1 below captures the key recommendations and action points for improving MRV in Uganda's agriculture sector.

**Table 5.1: Summary recommendations for improving Measuring, Reporting and Verifications (MRV) systems for Agriculture in Uganda**

Area	Status	Proposed action to be taken
Policy and Institutional arrangements	<ul style="list-style-type: none"> <li>• Relevant policies and institutional structures exist and coordination arrangements proposed but not enforced</li> <li>• Sub national level MRV and engagement of some stakeholders not clearly indicated in the proposed national MRV legislation and guidelines e.g. DLG, CSOs, NGOs, CBOs, Private sector</li> <li>• There is high-level support from leadership at all levels to generate data for planning and decision making but less awareness and indication for support to mainstream GHG data collection and sharing in routine data collection</li> <li>• Technical guide on GHG data sharing and MoU between MWE and MAAIF recently developed but no formal arrangement for data sharing with DLG and other agriculture data providers at all levels</li> <li>• Informal collaboration ongoing between some institutions and DLG e.g. with NARO stations and Napak DLG</li> <li>• MoLG CC Task Force role in district level CC agenda not well defined</li> </ul>	<ul style="list-style-type: none"> <li>• Compile and periodically update a comprehensive list of stakeholder institutions to be involved in the MRV system and clarify the roles, responsibilities and institutional networks from DLG to national level</li> <li>• MAAIF, CCD and DLG to co-design and establish sub national level, District Agriculture MRV system at the DLG</li> <li>• Formalise and Institutionalise the District MRV system in existing DLG and lower LG structures with clearly defined roles and responsibilities</li> <li>• An agriculture MRV system may be established at the DLG under existing structures.</li> <li>• The District Production and Marketing Department with consultation from the Natural Resources Department as is mandated by the climate change policy and draft bill to support climate change issues.</li> <li>• The district MRV should be established in consultation with MAAIF, MoLG, DLG and CCD.</li> <li>• Implementation of the MRV will be by: the District Production and Marketing Office for agriculture data, supported by the Natural Resources Office for environment and climate change data, District Planning Office for finance data and CAO for administration and general oversight.</li> <li>• The district MRV should be directly linked to the agriculture sector MRV.</li> <li>• The district agriculture MRV will support monitoring of CSA NDC targets and also support evidence-based decision making at the DLG and lower levels</li> <li>• The proposed district agriculture MRV system should be linked to the sector MRV at MAAIF to inform sector decision-making and national reporting for the sector</li> <li>• Establish institutional frameworks to support linkages and cooperation of DLG with the sector and national MRV lead institutions (cooperation frameworks with MAAIF and CCD) to support CC policy implementation</li> <li>• Establish intra DLG frameworks to formalise and support MRV with district stakeholders (farmers, farmer groups/cooperatives, CSO/NGOs, private sector e.g. SME, academic and research institutions).</li> <li>• Designate responsibility for overall coordination and management of the District MRV system</li> <li>• Foster coordination and share experience among different departments and organizations</li> <li>• Where possible, draft legislation to ensure enforcement and compliance at DLG and lower levels</li> </ul>

Area	Status	Proposed action to be taken
		<ul style="list-style-type: none"> <li>• Support and lobby for funding of MRV activities in district budgets from the proposed Climate Change Fund in the Climate Change Bill 2020, as well as other national and international sources</li> <li>• MAAIF should actively take lead in coordination and management of GHG data in agriculture sector. A GHG data management unit composed of the recently trained national GHGI experts should be fully established and hosted at MAAIF to specifically oversee and manage agriculture GHGI and MRV systems. The roles and responsibilities of the staff should be clearly defined to handle climate change data and include amongst other duties, compiling sector GHG data from all data providers including DLG and periodically submit these to CCD MWE.</li> <li>• The objectives of the MoU for GHG data sharing between MAAIF and CCD should be implemented and the roles and responsibilities of all agriculture institutional networks at the national levels clarified to all. The linkage and role of DLG should be defined beyond data providers</li> <li>• Draft legislation to support enforcement of existing policies, guidelines and objectives stipulated in NDC and the MAAIF-MWE MoU on GHG data sharing</li> <li>• Strengthen the intra-sectoral cooperation among agriculture institutions and GHG data providers (including DLG) by signing cooperation agreements on MRV of GHG data collection and sharing.</li> <li>• Foster coordination for data collection, processing, and sharing among different agriculture stakeholders departments, institutions and organizations at the DLG as well as communities</li> <li>• Streamline district statistics by development of District Statistics Strategic Plan including a Statistical Committee to streamline and facilitate intra district data sharing and exchange, and particularly for the agriculture and natural resources sectoral offices and committees</li> <li>• Institutionalise GHGI and include MRV activities in the national, sectoral and DLG plans and budgets</li> <li>• A clear role should be defined for MoLG CC Task Force to support the district MRV, and contextualised to the MoLG Statistics Strategic Plan</li> </ul>



Area	Status	Proposed action to be taken
<p>Data quality, availability and collection systems</p>	<ul style="list-style-type: none"> <li>Some data is collected, especially on agronomy but archived in different databases and not readily available. Data center at MAAIF has data from DLG but not the agencies, academia, or non-state actors</li> <li>Data collection structures at DLG are not formalised and roles not defined</li> <li>Data collection tools and methods are not standardized, the frequency is not consistent. Livestock census tool was recently standardised (to capture all GHG indices) by UBOS, CCD and MAAIF with support from CBIT project</li> <li>There are data gaps and data collected is not disaggregated as required for IPCC reporting e.g. data on paddy rice growing, manure management and application to soil as well as fertilizer use are not captured for GHG reporting</li> <li>Data collected by most non-state actors and academia are not shared with MAAIF or DLG</li> <li>Data collection structure exists and with approval and clearance mechanisms but not formalised</li> <li>Quality assurance and quality control procedure are adhoc</li> </ul>	<ul style="list-style-type: none"> <li>Establish a centralised agriculture data and information management system within existing institutional structures at MAAIF directly linked to CCD MWE for UNFCCC reporting, agriculture agencies e.g. NARO and DLG to support national and LG decision-making, policy and action</li> <li>Strengthen existing administrative structure at DLG and lower levels to function effectively as data collection structure for agriculture MRV. Clarify and define the roles and responsibilities of officers at district and lower local government levels to cover elements of data collection, data quality control and assurance, data validation mechanisms, and data processing and interpretation responsibilities.</li> <li>To mainstream climate change agenda in DLG, conduct a cross sectoral workshop for the districts on roles and responsibilities in the climate change agenda. The workshop should be convened jointly by MWE CCD, MAAIF CCTF and MoLG CCTF. Anticipated outcomes/outputs; Clarity on roles and responsibilities, joint activity workplan based on DDP, and IEC materials including a district handbook on key actors in climate change, and roles and responsibilities in MRV</li> <li>Support development or implementation of district climate change plan incorporating data collection on MRV activities</li> <li>Determine status of existing tools and instruments used in data collection, archiving and sharing (Field data measurements templates, questionnaires/data sheets, computers, etc).</li> <li>Review methods and tools currently used to collect data and identify areas for improvement e.g. data disaggregation, Emission factor calculations to comply with national/international standards. The Annual Agriculture survey and district data collection templates need standardisation to conform to IPCC requirements for GHGI and MRV</li> <li>Support standardisation of activity data collection tools in partnership with MAAIF, UBOS and DLG</li> <li>Make the revised standardised tools available to government and non-state stakeholders to streamline the data collection and as QC measure at all levels</li> <li>Document available data and data gaps relevant to agricultural MRV and let this be readily available to all stakeholders in order to guide support for data collection and avoid duplication of efforts</li> <li>Develop guidelines for mandatory data collection/sharing with key data providers, including frequency of data collection and reporting.</li> </ul>

Area	Status	Proposed action to be taken
Data quality, availability and collection systems		<ul style="list-style-type: none"> <li>strengthen collaboration with existing universities and research institution e.g. NARO ZARDIs to improve on data collection and fill existing gaps including emission factor calculations</li> <li>Engage and motivate community participation in data collection to increase data collection and fill data gaps. The level of engagement should depend on capacity and capability for the type of data collected (see proposed structure in Table 4.1 above). The communities should be incentivized by economic benefits of practicing CSA such as Carbon credit for mitigation actions, increased farm productivity and knowledge benefits from capacity building. Communities could be engaged as farmer groups or model farmers for CSA</li> </ul>
Capacities & Technical Skills	<ul style="list-style-type: none"> <li>MAAIF has about five national GHGI experts equipped with skills on GHG compilation emissions calculation and reporting based on IPCC tier 1.</li> <li>Agriculture GHG data is all analysed based on the default IPCC emission factors</li> <li>There is limited capacity for emission factor calculation</li> <li>District statisticians are present in some districts and can support data collection and handling but limited knowledge on data requirements for climate change reporting</li> <li>Records office present in some districts, and no staff are directly recruited to man them</li> </ul>	<ul style="list-style-type: none"> <li>Identify the skills required at each stage of the MRV process and review whether such capacities and skills exist in the district</li> <li>Explore collaboration with research institution to co-develop country specific emission factors with technical staff at the district LG and sector levels MAAIF</li> <li>Support and strengthen capacity of the national experts to manage GHG data of higher tier reporting including calculation of country specific emission factors</li> <li>Support MAAIF National GHGI experts to train all agriculture data providers including DLG, extension and community facilitators, farmers and non-state actors on the basic IPCC principles and requirements for an effective agriculture GHGI and MRV system especially on data collection and QC</li> <li>Support collaboration with academic institutions for a continuous capacity development program on MRV for the key staff in the sector at national, sector and sub-national levels e.g. DLG technical staff for constant supply of trainer of trainers for improved MRV from low levels to national level</li> <li>Facilitating climate change focal persons to integrate capacity building for MRV in sectoral plans and budgets</li> <li>District statisticians should be provided with necessary hardware, software, and skills to digitally archive district data in the district registry</li> <li>Train a critical mass of district level verifiers to act as “Internal Auditors” to ensure compliances with standard procedure of the data collection and sharing processes. Stakeholders should be trained on QC and QA measures all levels of data collection, processing and reporting</li> <li>Facilitating climate change focal persons to integrate CC issues and MRV in district plans.</li> </ul>



# 6

## Annexures

# Annex 1: Assessment Tools Used

## 1A: District Engagement Tools

### ASSESSMENT OF THE EXISTING NATIONAL MRV APPROACH AND RELATED PROJECTS TO IDENTIFY STRENGTHS, GAPS, NEEDS AND CHALLENGES WITH SPECIFIC FOCUS ON THE AGRICULTURE SECTOR

#### Background

GIZ is implementing the Promotion of Climate Smart Agriculture (ProCSA) to strengthen resilience of the rural population in Northern Uganda through climate smart agriculture, and contribute to Uganda's climate change commitments under the Paris Agreement. Result Area 3 focuses on the MRV for the agricultural sector, and GIZ is conducting a study to develop concrete recommendations on how MRV for Agricultural sector can be improved with special focus on data collection. The study aims to assess the existing national MRV approach and particularly identify the strengths, gaps, needs and challenges to data collection for multi-level climate monitoring and reporting (district and national level).

Africa Innovations Institute (AFRII) has been contracted by GIZ to conduct the study, and your organization has been identified as a key player in the climate action agenda, and agriculture sector. We therefore, request that you share your honest views on the different issues identified for discussion, and we assure you that all responses from the study will be used strictly for the intended study purpose and will be treated as confidential.

Date: (dd/mm) | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ /2020

#### Organization / Institution

Location	
Persons Interviewed	1.
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	4.
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	7.
	8.
	9.
	10.
Interviewer Name	

## SECTION A: Local Government Sector

### CAO's Office

Area of Interest	Guiding Questions
Overview of district's statistics and information for agriculture	<ol style="list-style-type: none"> <li>1. What is your source of data/information for district planning?</li> <li>2. What is the structure for data/information governance and management at the District?</li> <li>3. What data and information systems is the district running?</li> <li>4. What are the associated resources (financial, infrastructural, Human)?</li> <li>5. What is the system for data collection for the production department? Does this exist? What are the limitations and how can these be overcome?</li> <li>6. Is the district using the data and information they generate for planning purposes?</li> <li>7. What support is being given by MDAs towards district data management systems – particularly the Production Department?</li> <li>8. What are existing data/information exchange partnerships/ networks with NGOs and non-government agencies?</li> <li>9. To what extent is the data being collected at district level being put in use by MDAs and other non-state actors.</li> </ol>

## TECHNICAL MEETING

### District Technical Team (Production, NRs, CDO) + Selected CSOs operating in the District

Overview CC reporting for the agriculture sector	<ol style="list-style-type: none"> <li>1. Presentation by AFRII on climate adaptation and mitigation in the agricultural sector, and UNFCCC reporting requirements</li> </ol>
Climate Action projects (adaptation/NAMAs, mitigation) for the agriculture sector	<ol style="list-style-type: none"> <li>2. Projects at the district (brief project description – implementing parties, thematic focus, project duration)</li> <li>3. What is the status update for these projects?</li> </ol>



## TECHNICAL MEETING

### District Technical Team (Production, NRs, CDO) + Selected CSOs operating in the District

Data collection	<ol style="list-style-type: none"> <li>4. What are the data being collected? <ul style="list-style-type: none"> <li>- Crop data</li> <li>- Livestock data</li> <li>- Entomology</li> <li>- Fisheries</li> </ul> </li> <li>5. What is the frequency of collection?</li> <li>6. What are the data not being collected and why not?</li> <li>7. What is the data collection structure (data flow from HH to district level, roles and responsibilities, etc)</li> <li>8. What is the methodology/tools being used for data collection?</li> <li>9. What quality controls and assurance mechanisms are in place?</li> </ol>
Data processing, archiving	<ol style="list-style-type: none"> <li>10. What is the level of data processing/cataloging at district level?</li> <li>11. What is the methodology/tools being used?</li> <li>12. What quality control/assurance mechanisms are in place?</li> <li>13. Is the data being stored? What methods are being used for data archiving?</li> </ol>
Data use/reporting	<ol style="list-style-type: none"> <li>14. Is the data being interpreted for use at the district?</li> <li>15. Is the data and information being used to inform district planning processes?</li> <li>16. Who are the other recipients/users of the data/information generated by the district?</li> <li>17. What kind of information/knowledge products have been produced based on this data/information?</li> <li>18. What sectoral networks/partnerships is the district affiliated for purposes of data/information sharing and exchange?</li> </ol>
Challenges/limitations	<ol style="list-style-type: none"> <li>19. Are there any challenges/limitations to effective data collection?</li> <li>20. What are the challenges/limitations to effective data processing and archiving?</li> <li>21. What are the challenges/limitations to effective utilization of the data generated by the district for planning and climate reporting?</li> </ol>
District strengths and opportunities for improving data management for climate reporting	<ol style="list-style-type: none"> <li>22. State new district policy reforms and institutional changes of relevance to climate reporting</li> <li>23. Pipeline projects that could add value to the GIZ initiative</li> <li>24. What partnerships are in place for data sharing and exchange with non-district actors?</li> </ol>
Recommendations for improvement	<ol style="list-style-type: none"> <li>25. What should be done to improve <ul style="list-style-type: none"> <li>- Data collection?</li> <li>- Data processing and archiving?</li> <li>- Integration of climate actions results at the district?</li> <li>- Improve data/information consumption at district level?</li> </ul> </li> </ol>

Program	
8.30 am	Meeting CAO
10.00am	District Technical Meeting
10.15am:	Welcome and introduction remarks (by District leadership, GIZ Representative)
10.30am:	<b>Introduction to climate change reporting</b> (Africa Innovations Institute - AFRII)
11.00am:	<b>Plenary session - Listing of Climate Action Projects</b> (facilitated by AFRII)
11.30am	Coffee/tea Break
11.45am:	<p>Plenary session I: Data collection and management (facilitated by AFRII):</p> <ul style="list-style-type: none"> <li>• District data collection (types, methods/tools, frequency)</li> <li>• Data collection structure (actors, roles and responsibilities)</li> <li>• Reporting at District (data consolidation, synthesis)</li> <li>• Reporting to MAAIF (formats, frequency)</li> <li>• Data use at district (processing, knowledge/information products)</li> </ul>
1.15 pm:	<b>Plenary session II: Constraints and challenges (SWOT Analysis)</b> to effective data/information collection, processing and reporting, and how best the situation can be improved (facilitated by AFRII)
2.00pm:	Closing remarks and break for Lunch

## 1B. Question Guide/Check List – National Consultations

### ASSESSMENT OF THE EXISTING NATIONAL MRV APPROACH AND RELATED PROJECTS TO IDENTIFY STRENGTHS, GAPS, NEEDS AND CHALLENGES WITH SPECIFIC FOCUS ON THE AGRICULTURE SECTOR

#### Background

GIZ is implementing the Promotion of Climate Smart Agriculture (ProCSA) to strengthen resilience of the rural population in Northern Uganda through climate smart agriculture, and contribute to Uganda's climate change commitments under the Paris Agreement. Result Area 3 focuses on the MRV for the agricultural sector, and GIZ is conducting a study to develop concrete recommendations on how MRV for Agricultural sector can be improved with special focus on data collection. The study aims to assess the existing national MRV approach and particularly identify the strengths, gaps, needs and challenges to data collection for multi-level climate monitoring and reporting (district and national level). Africa Innovations Institute (AFRII) has been contracted by GIZ to conduct the study, and your organization has been identified as a key player in the climate action agenda, and agriculture sector. We therefore, request that you share your honest views on the different issues identified for discussion, and we assure you that all responses from the study will be used strictly for the intended study purpose and will be treated as confidential.

Date: (dd/mm) | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ | \_\_\_\_ /2020

#### Organization / Institution

Location	
Persons Interviewed	1.
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	10.
Interviewer Name	

#### SECTION 1: Ministry of Water and Environment

CAO's Office

Area of Interest

Guiding Questions

## SECTION 1: Ministry of Water and Environment

<p>Approach to the National MRV System and status update</p>	<ol style="list-style-type: none"> <li>1. What is your understanding of the strategy envisioned for delivery of MRV services when it was launched in 2016?</li> <li>2. What is the current model and underlying principle governing the national MRV system?</li> <li>3. What is the enabling policy environment for the national MRV system?</li> <li>4. What is the institutional structure in place for implementation of the MRV system?</li> <li>5. What are the thematic areas addressed in the national MRV system?</li> <li>6. What is the status of associated resources (financial, infrastructural, Human, networks)?</li> <li>7. How does the data collected fit in the National Planning Cycle?</li> <li>8. Is the system operating at expected? If not, what are the limitations and how can these be overcome?</li> <li>9. Which other MRV systems are you aware of and what are their strengths and weakness?</li> </ol>
<p>Agriculture sector in the national MRV.</p>	<ol style="list-style-type: none"> <li>1. Which institutions are participating in the national MRV system for the agricultural sector?</li> <li>2. What is the existing data management structure for agriculture sector (i.e. data types, data flow, methods and tools, use of the data, QA/QC procedures)?</li> <li>3. What is the frequency of reporting to MWE from the agricultural sector?</li> <li>4. What are the data gaps and challenges with the existing data management structure?</li> <li>5. What recommendations would you give for a more effective MRV system for the agricultural sector?</li> </ol>
<p>Projects/programmes on climate action</p>	<ol style="list-style-type: none"> <li>1. What is the incremental benefit for the national climate agenda from implementation of the Pro-CSA Project?</li> <li>2. What are some of the projects/programs supporting national and sectoral MRV initiatives in the country?</li> <li>3. What international/regional partnerships and networks are linked or associated with the national MRV?</li> <li>4. What opportunities exist for synergies/collaboration to develop or further strengthen the national MRV system?</li> </ol>

## SECTION 2: AGRICULTURE SECTOR

MAAIF	
Area of Interest	Guiding Questions
<p>Agriculture's Climate Change priorities</p>	<ol style="list-style-type: none"> <li>1. What are the climate change priorities in the agriculture sector? (NAMAs, NAPs)?</li> <li>2. What is the institutional structure for implementation of the CC priorities?</li> <li>3. What is the status of implementation of these priorities?</li> </ol>

## SECTION 2: AGRICULTURE SECTOR

<p>MRV System for agriculture</p>	<ol style="list-style-type: none"> <li>1. What is your understanding of the strategy envisioned for delivery of MRV services when it was launched in 2016?</li> <li>2. What is the role/contribution of MAAIF to the national MRV?</li> <li>3. What is the enabling policy setup and institutional arrangements in place to ensure the expectations of the national MRV are met by MAAIF?</li> <li>4. Is MAAIF currently collecting any climate action data? Who is responsible?</li> <li>5. What is the plan and approach to develop a robust MRV system for agriculture?</li> <li>6. What are the limitations of the current structure?</li> </ol>
<p>Current state of GHG data for national MRV reporting (focused on priorities i.e. livestock and rice production data)</p>	<ol style="list-style-type: none"> <li>1. What is the existing structure for data collection, processing and sharing at district level?</li> <li>2. What are that current data types?</li> <li>3. What are the sources for data and ownership of the data?</li> <li>4. What are the methods/tools used for collection, processing, transfer/sharing, archiving?</li> <li>5. How do you ensure quality assurance and quality control of the data?</li> <li>6. Who is in-charge of the data consolidation process at MAAIF?</li> <li>7. What support is MAAIF giving to the districts towards data collection?</li> <li>8. How is the data collected from the districts being utilized?</li> <li>9. What are the limitations and challenges faced in managing district level data for national MRV reporting?</li> <li>10. What needs improvement to ensure that the system works well?</li> <li>11. What partnerships and collaborations exist in this field of work?</li> </ol>
<p>Projects/programmes on climate action</p>	<ol style="list-style-type: none"> <li>1. What is the incremental benefit for the national climate agenda from implementation of the Pro-CSA Project?</li> <li>2. What other related projects are being implemented by MAAIF (immediate past/ ongoing/ planned)?</li> <li>3. What partnerships/networks (international, regional, national) is MAAIF associated with in relation to capacity strengthening for climate monitoring and reporting in the agricultural sector?</li> <li>4. From the engagements with partners, which countries do you find with MRV models best suited to Uganda's agricultural context, and what are the lessons that could be replicated?</li> </ol>



NARO	
NARO SEC	
Area of Interest	Guiding Questions
Climate action programmes  Contribution to Pro CSA Project	<ol style="list-style-type: none"> <li>1. What are the current NARO initiatives related to the climate action agenda and how are these linked to the national reporting system at MWE? (e.g the NARL information on soil and climate action, the Essential Electronic Agricultural Library)</li> <li>2. What is the enabling policy and the institutional arrangement for research data management and sharing at NARO Sec?</li> <li>3. What is NARO's role/contribution to implementation of the Pro-CSA Project for Northern Uganda?</li> <li>4. What projects or programs (Immediate past/Ongoing/planned) are you aware of supporting development of the MRV for agriculture in the country?</li> <li>5. Which NARO PARIs and ZARDIs are supporting promotion of CSA?</li> </ol>
	NARO SEC - The NARO Information Hub (National Agricultural Research System)
Climate action programmes  Role in data collection/ processing for climate reporting	<ol style="list-style-type: none"> <li>1. What is the intended objective for the NARO Sec Information Hub and what is the state of its implementation?</li> <li>2. Are the ZARDIs linked to the Hub? If not, why not?</li> <li>3. What data currently exists in the NAR system and what are the sources?</li> <li>4. Is data on CSA included in the system?</li> <li>5. For the data collected by NARO, what are the methods/ tools being used to collect, process, and share the data?</li> <li>6. How do you ensure quality assurance and quality control for NARO data and data from other sources?</li> <li>7. Who are the primary users of the data and information from the NAR system, and what are some of the information products generated from the data?</li> <li>8. What is the current data sharing structure (inter and intra sectoral) for the NAR system?</li> <li>9. Does the NAR system link into the MRV system for agriculture in MAAIF and the MWE national MRV system?</li> <li>10. What are the limitations and or challenges?</li> <li>11. What needs improvement to ensure that the system works well? What partnerships and networks (international, regional, national) exist in supporting MRV initiatives in the agricultural sector?</li> <li>12. Which opportunities exist to strengthen linkages with MAAIF for data management?</li> </ol>

NARL	
<p>Information systems and linkage to the national MRV</p> <p>Role in data collection/ processing for climate reporting</p>	<ol style="list-style-type: none"> <li>1. What is the state of implementation of the NARL information on soils database?</li> <li>2. What data currently exists in the NARL system and what are the sources?</li> <li>3. Is data on CSA captured in the NARL system?</li> <li>4. What is the institutional arrangement (district and national level) for data collected for the NARL system?</li> <li>5. What are the methods/ tools being used to collect and process, and share the soil data?</li> <li>6. How do you ensure quality assurance and quality control for data collected?</li> <li>7. Who are the primary users of the data and information from the NARL system, and what are some of the information products generated from the data?</li> <li>8. What is the current data sharing structure (inter and intra sectoral) for the NARL system?</li> <li>9. Does the NARL system link into the MRV system for agriculture in MAAIF and the MWE national MRV system?</li> <li>10. What are the limitations and or challenges to climate data management?</li> <li>11. What needs improvement to ensure that the system works well? What partnerships and networks (international, regional, national) exist in supporting MRV initiatives in the agricultural sector?</li> <li>12. What opportunities exist to strengthen linkages with MAAIF for data management?</li> </ol>
<b>Area of Interest</b>	<b>NaLiRRI - National Livestock Resources Research Institute</b>
<p>Climate action programmes</p> <p>Livestock data collection/ processing for climate reporting</p>	<ol style="list-style-type: none"> <li>1. What are the NaLiRRI initiatives (current/recent past) on climate change adaptation and mitigation?</li> <li>2. Is NaLiRRI collecting climate related data, and what is the nature of data being collected?</li> <li>3. What is the data collection arrangement at district level?</li> <li>4. What are the methods/ tools being used to collect and process the data and information?</li> <li>5. What is the data and information sharing arrangement between NaLiRRI and NARO, and NaLiRRI and partners (national, regional and international)?</li> <li>6. What are the limitations and or challenges to climate data management?</li> <li>7. What needs improvement to ensure that the system works well?</li> <li>8. What partnerships and networks (international, regional, national) exist in supporting NaLiRRI's climate action agenda?</li> <li>9. What opportunities exist to strengthen linkages data collection and processing for national climate reporting?</li> </ol>
<b>Area of Interest</b>	<b>Ngetta ZARDI - Lira</b>

NARL	
<p>Climate action programmes</p> <p>Role in data collection/ processing for climate reporting</p>	<ol style="list-style-type: none"> <li>1. What are the Ngetta initiatives (current/recent past) on climate change adaptation and mitigation? E.g. Sustainable Land Management in The Northern Agro-Ecological Zone</li> <li>2. What is NARO's role/contribution to implementation of the Pro-CSA Project for Northern Uganda?</li> <li>3. Is Ngetta ZARDI collecting climate related data, and what is the nature of data being collected?</li> <li>4. What is the arrangement for data collection at district level?</li> <li>5. What are the methods/ tools being used to collect and process the data and information?</li> <li>6. How is the data and information being shared with NARO, and with partners (national, regional and international)?</li> <li>7. What are the limitations and or challenges to climate data management?</li> <li>8. What needs improvement to ensure that the system works well?</li> <li>9. What partnerships/networks (international, regional, national) exist that support/ or could strengthen Ngetta ZARDI reporting on the climate action agenda?</li> </ol>

Area of interest	NAGRIC
	<ol style="list-style-type: none"> <li>1. Breeds imported with climate dimension consideration</li> </ol>

SECTION 3: Ministry of Local Government (MoLG)	
Area of interest	Guiding Questions
<p>Contribution of MoLG to the agriculture MRV system development and sustenance</p>	<ol style="list-style-type: none"> <li>1. What is the enabling policy and institutional framework for MoLG to strengthen inter-ministerial coordination essential for the development of the agriculture MRV system (finance, technology transfer, information/knowledge, climate action, data collection);</li> <li>2. What is the state of implementation of the MoLG Statistical Plan?</li> <li>3. What are the methods/ tools being used to collect and process the data and information?</li> <li>4. Is the MoLG supporting the district data collection process?</li> <li>5. To what extent does the MoLG Plan address climate data?</li> <li>6. What is the added value for MoLG from implementation of the Pro CSA project (particularly the MRV for agriculture)?</li> <li>7. What are the existing opportunities (e.g partnerships, new policy orientation, etc) to support development of the MRV for agriculture?</li> <li>8. What challenges or limitations (actual/foreseen) to this MRV development process?</li> <li>9. What needs to be improved to ensure that the Pro CSA achieves the intended objective?</li> </ol>

## SECTION 4: CIVIL SOCIETY (CSOs)

Area of interest	Guiding Questions
<p>Role of CSOs in the national MRV process</p> <p>Specific contribution to the national reporting process</p> <p>Relevant partnerships and networks</p>	<ol style="list-style-type: none"> <li>1. What is your institutional contribution to the development of the national MRV system (finance, technology transfer, information/knowledge, climate action, data collection);</li> <li>2. Have you been active in climate change data collection and climate reporting for the agriculture sector?</li> <li>3. What has been your experience with district level stakeholders?</li> <li>4. What are the challenges or limitations to collecting, processing and sharing climate data at the district level for agriculture planning and reporting?</li> <li>5. What needs to be improved to enhance your contribution to climate data collection and reporting?</li> <li>6. What country level lessons and experiences could be appropriate to inform future data collection at district level?</li> <li>7. What are the existing opportunities for partnerships/support to develop the MRV for the agriculture sector?</li> </ol>

## SECTION 5: ACADEMIA

Area of interest	Guiding Questions
<p>Role of research in the national MRV process</p> <p>Specific contribution to the national reporting process</p> <p>Relevant partnerships and networks</p>	<ol style="list-style-type: none"> <li>1. What is your institutional contribution to the development of the national MRV system (<i>finance, technology transfer, information/knowledge, climate action, data collection</i>);</li> <li>2. Have you been active in climate change data collection and climate reporting for the agriculture sector? What are your key accomplishments?</li> <li>3. What has been your experience with district level stakeholders?</li> <li>4. What are the challenges or limitations to collecting, processing and sharing climate data at the district level for agriculture planning and reporting?</li> <li>5. What needs to be improved to enhance your institutional contribution to climate data collection and reporting?</li> <li>6. What are the opportunities for partnerships/support to develop the MRV for the agriculture sector?</li> </ol>

## SECTION 6.DEVELOPMENT PARTNERS

Area of interest	Guiding Questions
Donor mapping, Assessment of MRV process and districts participation Relevant partnerships and networks	<ol style="list-style-type: none"><li data-bbox="746 488 1098 517">1. Who are the actors in MRV?</li><li data-bbox="746 526 1385 584">2. What is your contribution (current and planned) to MRV development?</li><li data-bbox="746 593 1246 622">3. What is the progress on agricultural MRV?</li><li data-bbox="746 631 1422 660">4. What is the guidance on MRV implementation for Uganda?</li><li data-bbox="746 669 1445 698">5. Challenges in development and implementation of the MRV?</li><li data-bbox="746 707 1331 736">6. Suggestions for district based MRV for agriculture.</li><li data-bbox="746 745 1262 775">7. Best case scenarios in agriculture to look at</li></ol>



**ASSESSMENT OF THE EXISTING NATIONAL MRV APPROACH AND RELATED PROJECTS TO IDENTIFY STRENGTHS, GAPS, NEEDS AND CHALLENGES SPECIFIC TO THE AGRICULTURE SECTOR**

**MRV Capacity Assessment – Using a scorecard approach**

Criteria	Indicators	Score (1-3)	Comments on Strengths, Capacity Gaps or Weaknesses and areas that Needs Strengthening
<b>1. Institutional arrangements</b>			
Lead and support institutions	<ol style="list-style-type: none"> <li>Doesn't exist</li> <li>Just adhoc</li> <li>Institutional agreements with clear role description</li> </ol>		
Support from academia and other institutions	<ol style="list-style-type: none"> <li>No support</li> <li>Partly - some structures in place</li> <li>In place, based on agreements</li> </ol>		
Dedicated GHG inventory budget	<ol style="list-style-type: none"> <li>No - only donors funding</li> <li>Leveraging institutional funds</li> <li>Dedicated budget</li> </ol>		
GHG Inventory team	<ol style="list-style-type: none"> <li>No, just adhoc/project based</li> <li>Part of job description of staff</li> <li>Dedicated and permanent staff team</li> </ol>		
<b>2. Inventory management</b>			
Key category analysis	<ol style="list-style-type: none"> <li>Not carried out</li> <li>Partially done</li> <li>Carried out</li> </ol>		
QA/QC procedures	<ol style="list-style-type: none"> <li>None in place</li> <li>General procedures in place</li> <li>Standard procedures in place</li> </ol>		

Criteria	Indicators	Score (1-3)	Comments on Strengths, Capacity Gaps or Weaknesses and areas that Needs Strengthening
Archiving process	<ol style="list-style-type: none"> <li>1. None in place</li> <li>2. General procedures in place</li> <li>3. Standard procedures described and followed</li> </ol>		
Inventory improvement plan	<ol style="list-style-type: none"> <li>1. None in place</li> <li>2. In process of development</li> <li>3. Prioritized list of actions with responsibilities, timelines, budgets</li> </ol>		
<b>3. Transparency</b>			
Quality control	<ol style="list-style-type: none"> <li>1. No routine checks done</li> <li>2. Routine checks in place for GHG inventory</li> <li>3. Routine checks in place for all data sourcing processes</li> </ol>		
Quality assurance	<ol style="list-style-type: none"> <li>1. No external reviews</li> <li>2. Adhoc/project based external reviews</li> <li>3. Structured and periodic reviews by external experts to the GHGI</li> </ol>		
Uncertainty analysis	<ol style="list-style-type: none"> <li>1. Unavailable</li> <li>2. Partly for some key factors</li> <li>3. Comprehensive analysis conducted</li> </ol>		
Documentation of data and methodology	<ol style="list-style-type: none"> <li>1. No clear documentation</li> <li>2. Partial by the sectors</li> <li>3. Comprehensive and transparent documentation by MWE</li> </ol>		
Documentation of methodology	<ol style="list-style-type: none"> <li>1. No detailed documentation of methodology</li> <li>2. Partial at sector level</li> <li>3. Comprehensive documentation by MWE</li> </ol>		

Criteria	Indicators	Score (1-3)	Comments on Strengths, Capacity Gaps or Weaknesses and areas that Needs Strengthening
<b>4. Accuracy</b>			
Spatial land representation	<ol style="list-style-type: none"> <li>1. Not applied</li> <li>2. Partly done</li> <li>3. Fully applied</li> </ol>		
Soil and climate stratification	<ol style="list-style-type: none"> <li>1. Not applied</li> <li>2. Partly</li> <li>3. Fully applied</li> </ol>		
Managed and unmanaged lands	<ol style="list-style-type: none"> <li>1. Not considered</li> <li>2. Partly considered</li> <li>3. Fully considered</li> </ol>		
Emission factors	<ol style="list-style-type: none"> <li>1. Defaults</li> <li>2. Combination of default and primary data for some categories</li> <li>3. County data for all categories</li> </ol>		
<b>5. Completeness</b>			
Emission and removal categories	<ol style="list-style-type: none"> <li>1. Agriculture not included</li> <li>2. Agriculture partially included</li> <li>3. All agriculture sources included</li> </ol>		
Livestock	<ol style="list-style-type: none"> <li>1. Not included</li> <li>2. Partly included (primary data)</li> <li>3. Secondary information included</li> </ol>		
Soil organic carbon	<ol style="list-style-type: none"> <li>1. Stock factors for management systems excluded</li> <li>2. Partially included</li> <li>3. Detailed management systems included</li> </ol>		
Disturbances	<ol style="list-style-type: none"> <li>1. Not included</li> <li>2. Partial inclusion</li> <li>3. All disturbances included</li> </ol>		

Criteria	Indicators	Score (1-3)	Comments on Strengths, Capacity Gaps or Weaknesses and areas that Needs Strengthening
<b>6. Consistency &amp; Comparability</b>			
Time series for spatial data  GHG inventory database for several time points  Land use stratification  IPCC guidelines	1. Landuse maps not available 2. Land use maps available but insufficient 3. Several maps available with same classification		
	1. Data from past GHG inventories not available 2. Data partially available 3. Data available		
	1. No subcategories for sectors available 2. Sub-categories available for some sectors 3. Several sub-categories available		
	1. Inconsistencies with guidelines 2. Consistency with some guidelines 3. Consistency with the most recent version of the guidelines		
<b>7. Significance of National MRV</b>			
International reporting  National planning  Sectoral planning  District planning	1. Not compliant 2. Partially compliant 3. Fully compliant		
	1. No information shared 2. Partial information 3. Fully informs national processes		
	1. No information shared 2. Partial information 3. Fully informs sectoral processes		
	1. No information shared 2. Partial information 3. Fully informs district processes		

Criteria	Indicators	Score (1-3)	Comments on Strengths, Capacity Gaps or Weaknesses and areas that Needs Strengthening
<b>8. Technical assistance/projects</b>			
	Technical Assistance to GHGI	<ol style="list-style-type: none"> <li>1. No support</li> <li>2. Inadequate support</li> <li>3. Support is tailored to current needs</li> </ol>	
	TA to Agriculture sector institutions	<ol style="list-style-type: none"> <li>1. No support</li> <li>2. Inadequate support</li> <li>3. Support is tailored to current needs</li> </ol>	
<b>9. Partnerships and Networks</b>			
	External partnerships for GHGI	<ol style="list-style-type: none"> <li>1. None</li> <li>2. Inadequate</li> <li>3. Sufficient to meet current information and technical needs</li> </ol>	
	External partnerships for Agriculture sector MRV development	<ol style="list-style-type: none"> <li>1. None</li> <li>2. Inadequate</li> <li>3. Sufficient to meet current information and technical needs</li> </ol>	



**List Six Priority and most urgent Areas that require Capacity Strengthening for Agriculture MRV**

No.	Identified Capacity Gaps	Recommendations	Timeframe for Action
1			
2			
3			
4			
5			
6			

# Annex 2: Participant List: 2A; District, 2B; National level stakeholder engagement

## 2A: District level engagement

### Kitgum District at the Kitgum District Hall, 20th January 2020

S. No	NAME	ORGANISATION	GENDER
1	Ocan Bosa	Kitgum DLG - CSA	M
2	Phillip Nyero	Kitgum DLG – Agric Officer	M
3	Oweka Benson	Kitgum DLG	M
4	Awuye Abdallah	Kitgum DLG	M
5	Anywar Martin	Kitgum DLG	M
6	Dr. Kinyera Alfred	Kitgum DLG	M
7	Odong Sunday	NURI Kitgum	M
8	Tabu Ronald	KIDFA	M
9	Opiyo Bernard	Mucwini S/TY	M
10	Opira Alex	PCO - KDLG	M
11	Wany Oyok David	DNRO Kitgum	M
12	Ocira Denish	DAO - Kitgum	M
13	Omony Alfred	Ag. DPO	M
14	Abule Joyce	Ag. DCDO	F
15	Dr. Tusiime Felly Mugizi	AfrII	F
16	Bingi Susan	AfrII	F
17	Dr. Fungo Bernard	AfrII	M
18	Elizabeth Ahumuza	AfrII	F
19	Aggrey Ntakimanye	M	GIZ

### Ngetta ZARDI in Lira, Ngetta Boardroom, 21st January 2020

S. No	NAME	ORGANISATION	GENDER
1	Komakech Alfred	Ngetta ZARDI	M
2	Otim Godfrey	Ngetta ZARDI	M
3	Bingi Susan	AfrII	F
4	Aggrey Ntakimanye	GIZ	M
<b>5</b>	<b>Elizabeth Ahumuza</b>	<b>AfrII</b>	<b>F</b>
6	Graceline Akongo	Ngetta ZARDI	F
7	Okao Moses	Ngetta ZARDI	M
8	Dr. Tusiime Felly Mugizi	AfrII	F
9	Dr. Fungo Bernard	AfrII	M

### Lira District, Lira District Council Hall, 22nd January 2020

S. No	NAME	ORGANISATION	GENDER
1	Adupa Richard	DFO	M
2	Paul Laboke	UMU Ngetta Campus	M
3	Ajwang Evaline	Lira District (AO) Local Gov't	F
4	Obote Bonny Emmanuel	FAPAD	M
<b>5</b>	<b>Okello Thomas</b>	<b>PDMO</b>	<b>M</b>
6	Paul Magira	GIZ - Gulu Office	M
7	Okello Bernard	LDLG	M
8	Opio Oluge R	LDLG	M
9	Anyait Hellen Beatrice	BARR	F
10	Ebong Sammy	Lira S/C	M
11	Okolla James	Lira DLG	M
12	Akaki Bernard	Aromo S/C	M
13	Onika Moses	Lira S/Cty	M
14	Ebonga Rashid	Amach S/C	M

S. No	NAME	ORGANISATION	GENDER
15	Aggrey Ntakimanye	GIZ	M
16	Okolla James	Lira DLG	M
17	Obote Bonny Emmanuel	FAPAD	M
18	Onika Moses	Lira S/Cty	M
19	Michael Ojok	AUSI	M
20	Acio Patricia	LDLG	M
21	Dr. Tusiime Felly Mugizi	AfrII	F
22	Dr. Fungo Bernard	AfrII	M
23	Bingi Susan	AfrII	F
24	Elizabeth Ahumuza	AfrII	F

## Agago District, Agago District Hall, 23rd January 2020

S. No	NAME	ORGANISATION	GENDER
1	Okello Okidi Sam	Agago DLG	M
2	Ocama Morish	ADLG	M
3	Ojok Samuel Kitang	ADLG	M
4	Ojwee Charles	ADLG	M
<b>5</b>	<b>Okwera Robert Kenny</b>	<b>ADLG</b>	<b>M</b>
6	Elem Sam Sammie	ADLG	M
7	Oyema Geoffrey	ADLG	M
8	Ojok Geoffrey Oling	ADLG	M
9	Oryem Edward Basil	ADLG	M
10	Ochen Charles	DANIDA - NURI	M
11	Obong Alfred	ADLG	M
12	Olanya Richard	ADLG	M
13	Nyeko Samuel	ADLG	M
14	Okeny Justine B	ADLG	M
15	George Okot	ADLG	M
16	Joyce Vicky Atimango	ADLG	F
17	Obao Geoffrey	GIZ - PRUDEV Gulu	M
18	Okot Peter Byron	GIZ - PRUDEV Gulu	M
19	Emuron Nathan	GIZ - PRUDEV Gulu	M
20	Dr. Tusiime Felly Mugizi	AfrII	F
21	Dr. Fungo Bernard	AfrII	M
22	Bingi Susan	AfrII	F
23	Elizabeth Ahumuza	AfrII	F
24	Aggrey Ntakimanye	GIZ	M



## Oyam District, Oyam District Hall, 24th January 2020

S. No	NAME	ORGANISATION	GENDER
1	Agong John Mary	Oyam	M
2	Okello Peter	Oyam	M
3	Dr. Ogwal Tom	Oyam DLG	M
4	Adebuason Robert	Oyam DLG	M
<b>5</b>	<b>Enon Alex</b>	<b>Oyam DLG</b>	<b>M</b>
6	Ouma Celestine	Oyam DLG	M
7	Ogwal A Cox	Oyam DLG	M
8	Gira Chris Tom	Oyam DLG	M
9	Adong Angella	WOUNET	F
10	Ayella Jimmy	Oyam DLG	M
11	Odyomo Patrick	Oyam DLG	M
12	Ham Emukule	Oyam DLG	M
13	Ajungsi Benedict	Oyam DLG	M
14	Paul Magira	GIZ - Gulu Office	M
15	Okot Willy	Acwec Omio Farmers Coop Society	M
16	Okello Robson	ACFODE	M
17	Otto Alvin	Oyam District Farmers Association	M
18	Laker Allen Prossy	Oyam DLG	F
19	Gira Chris Otim	Oyam DLG	M
20	Dr. Tusiime Felly Mugizi	AfrII	F
21	Dr. Fungo Bernard	AfrII	M
22	Bingi Susan	AfrII	F
23	Elizabeth Ahumuza	AfrII	F
24	Aggrey Ntakimanye	M	GIZ

## Dokolo District, Dokolo District Council Hall, 27th January 2020

S. No	NAME	ORGANISATION	GENDER
1	Odwongo Ronald	NCBA CLUSA	M
2	Okaka Geoffrey Sam	DLG - DAO	M
3	Opio Quintos	DDLG - DWO	M
4	Omara Charles Dickens	DDLg – Ag. DE	M
<b>5</b>	<b>Otim Bernard</b>	<b>DLG - DFO</b>	<b>M</b>
6	Okello Moses	DLU - DFO	M
7	Otang Isaac Okuma	DDLG - CDO	M
8	Akello Brenda	DDLG – Physical Planner	F
9	Musafiri A Sured	Communication Officer	M
10	Alyenyo O Patrick	DCO	M
11	Ogwal Nam Francis	DDLG - VC	M
12	Ogwal Alfred	DLG – District Planner	M
13	Mbooge Isa	Dokolo DLG	M
14	Atim Moses	Dokolo DLG	M
15	Aggrey Ntakimanye	GIZ	M
16	Dr. Tusiime Felly Mugizi	AfrII	F
17	Dr. Fungo Bernard	AfrII	M
18	Bingi Susan	AfrII	F
19	Elizabeth Ahumuza	AfrII	F

## Amolatar District, Amolatar Education Hall, 28th January 2020

S. No	NAME	ORGANISATION	GENDER
1	Opio Francis Obote	Amolatar District Local Govt	M
2	Ocen Eric	ADLG	M
3	Oryem Tonny	ADLG	M
4	Dr. Olum Peter	ADLG	M
5	<b>Agweg Betty</b>	<b>Amolatar Farmers' Cooperative Society</b>	<b>F</b>
6	Odyek Francis	ADLG	M
7	Oyengo Ambrose	ADLG	M
8	Anach Jerome	Amolatar DLG	M
9	Obong Ronald	Awelo S/C	M
10	Ogwal Francis	ISSD/All Nations Christian Care	M
11	Arum Thomas	Amolatar DLG	M
12	Otira Nickson	Amolatar DLG	M
13	Omara Apollo	ADLG	M
14	Otunga Anthony	ADLG - Fisheries	M
15	Aggrey Ntakimanye	GIZ	M
16	Dr. Tusiime Felly Mugizi	AfrII	F
17	Dr. Fungo Bernard	AfrII	M
18	Bingi Susan	AfrII	F
19	Elizabeth Ahumuza	AfrII	F

## Napak District, Napak Farmer's Hall, 27th February 2020

S. No	NAME	ORGANISATION	GENDER
1	Elizabeth Ahumuza	Afrll	F
2	Okinyom J Peter	DAO - Napak	M
3	Leffumar Titus	Planner	M
4	Chona Shadrack	DIO	M
<b>5</b>	<b>Atiyaun Albert</b>	<b>For DCDO</b>	<b>M</b>
6	Achia Agnes	DTO	F
7	Olupot Stephen	For DVO	M
8	Lokut Paul Miki	IRIIRI Farmers	M
9	Riisa Joshua Jefferson	Napak DLG	M
10	Dr. Tusiime Felly Mugizi	Afrll	F
11	Dr. Fungo Bernard	Afrll	M
12	Akol Lokeris S	Napak DLG	F
13	Lomilo Charles	Napak	M
14	Anyakun Stella	Napak	F
15	Moru Rebecca	Napak	F
16	Acheng Janet	Napak	F
17	Bingi Susan	Afrll	F

## 2B. National Engagements

Date	Name	Gender	Organization	
11th Feb 2020	Mayie Banyenzaki	F	Ministry of Local Government	
	Amutuheire Immaculate	F		
	Mwijukye Charles	M		
	Godwin Mwachan	M		
	<b>Kizito Simon</b>	<b>M</b>		
	Julius Masereka	M		
	Koma Stephen	M		
	Kavendo Rhoda	F		
	Ruth P Gyayo	F		
	Aggrey Ntakimanye	M		GIZ
	Tusiime Felly M	F		Africa Innovations Institute
Susan Bingi	F			
Elizabeth Ahumuza	F			
Bernard Fungo	M			
14th Feb 2020	Najjuko Caroline	F	Climate Change Department	
	Rubayiza Isaac	M		
	Isaac Okiror Orena	M		
	Semambo Muhammed	M		
	Sonja Esche	F	GIZ	
	Aggrey Ntakimanye	M		
	Tusiime Felly M	F	Africa Innovations Institute	
	Susan Bingi	F		
	Bernard Fungo	M		
12th March 2020	Violet Namuyanja	F	National Agricultural Research Organization	
	Kazigaba Dan	M		
	Ronald Kasekka	M		
	Grace Aogola	F		



Date	Name	Gender	Organization
12th March 2020	Phiona Kwaga	F	NARO-NAFORRI
	Susan Nansereko	F	
	Moreen Uwimbabazi	F	
	Bernadette K	F	
	Aggrey Ntakimanye	M	GIZ
	Galima Stephen	M	NFA
	Tusiime Felly M	F	Africa Innovations Institute
	Susan Bingi	F	
	Elizabeth Ahumuza	F	
	Barbra Acola	F	
13th March 2020	Espoir Bagula	M	Makerere University
	Alex Muyingo	M	
	David Matak	M	
	Esther Seluloba	F	
	Bahati Kajunju	M	
	Aggrey Ntakimanye	M	GIZ
	Tusiime Felly M	F	Africa Innovations Institute
	Susan Bingi	F	
	Elizabeth Ahumuza	F	
16th March 2020	Kaganga John	M	Kikandwa Environmental Association
	Byaruhanga Peter C	M	Control CWD
	Oyanya George	M	West Nile Organization Farmers Association
	Nkwanga David	M	Nature Palace Foundation
	Bakalikwira Philip Eric	M	Reed Ecosystems Solutions
	Hamba Richard	M	TEENS
	Kabishanga Emmanuel	M	New Horizons
	Oontho Godfrey	M	Caritas Uganda
	Aggrey Ntakimanye	M	GIZ
	Tusiime Felly M	F	Africa Innovations Institute
	Susan Bingi	F	

Date	Name	Gender	Organization
16th March 2020	Elizabeth Ahumuza	F	Africa Innovations Institute
	Bernard Fungo	M	
17th March 2020	Lwanga Jonathan	M	NARO-NaCRRRI
	Katungisa Arnold	M	
	Kanyesigye Dalton	M	
	Magambo Stephen	M	
	Lwasa James	M	NARO
	Gwokyala Racheal	F	
	Nakasujja Florence	F	
	Irene Barbirye	F	
	Judith Nyiramugisha	F	
	Nadunga Maria Sarah	F	
	Ekokoro Denis	M	NARO/NARL
	Katambira Napoleon	M	
	Jorame Bahati	M	
	Aggrey Ntakimanye	M	GIZ
	Tusiime Felly M	F	Africa Innovations Institute
	Susan Bingi	F	
Elizabeth Ahumuza	F		
Bernard Fungo	M		
Pauline Nantongo	F	ECOTRUST	
Emmanuel Kisakye	M	EMLI	
Sheila Kiconco	F	Climate change scientist	
Gloria Namande	F	UNDP support Program	
Sophie Kutegeka	F	IUCN	
Aggrey Ntakimanye	M	GIZ	
Tusiime Felly M	F	Africa Innovations Institute	
Susan Bingi	F		
Elizabeth Ahumuza	F		
Bernard Fungo	M		

# Annex 3: Northern Uganda Development Projects by Donor and Thematic Area

## 2A: District level engagement

Kitgum District at the Kitgum District Hall, 20th January 2020

Project description	Focus area
Title: PRELNOR (Project for Restoration of Livelihoods in the Northern Region). Funder: IFAD. Coverage: Gulu, Kitgum, Lamwo, Agago, Pader, Amuru, Nwoya, Omoro and Adjumani. Duration: 2015-2023. Implementing Agency (IA): MOLG	Project objective is increased sustainable production, productivity and climate resilience of smallholder farmers with increased and profitable access to domestic and export markets.
Title: Sheanut Apiary and Value Enhancement (SAVE). Funder: Lutheran Federation & EU. Coverage: Agago, Kitgum and Lamwo Districts. Duration: 2018-2020. IA: MOLG	Restoration of degraded areas through tree planting activities and access to low cost solar equipment
Title: Building Drought Resilience Project. Funder: IUCN. Duration: 2018-2025. IA: MWE. Partners: DLGs of Lira, Otuke, Alebtong, Agago and Amuria	To improve the integrity and health of catchment ecosystems in priority catchments and landscapes and the adaptive capacities of communities living in them with focus on Aswa-Agago catchment area in northern Uganda
Title: Northern Uganda Social Action Fund (NUSAF) 3. Funder: World Bank. Coverage: 33 Districts in Northern Uganda. Duration: 2016-2021. IA: OPM	Program seeks to establish a comprehensive safety net for vulnerable groups by creating temporary work opportunities through public works, providing grants to promote income generating activities, and improving organization and monitoring mechanisms to promote transparency, accountability, coordination, and program management.
Title: Northern Uganda Resilience Initiative (NURI). Funder: Denmark. Coverage: Agago, Kitgum. Duration: 2018-2022. IA: MWE. Partners: Danish Refugee Council	The objective of NURI at outcome level is enhanced resilience and equitable economic development in supported areas of Northern Uganda, including for refugees and refugee-hosting communities.
Title: Partners for Resilience (PfR) Project. Funder: CARE and Netherlands Embassy. Coverage: Otuke District in Lango sub-region. Duration 2017-2020. IA: Care Uganda	PfR uses the Integrated Risk Management (IRM) approach to mitigate disaster risk and enhance livelihoods, particularly by addressing climate change and ecosystem management and restoration.
Title: Improving household incomes through irrigation facility development, agribusiness and sustainable natural resources management/Farm Income Enhancement and Forestry Conservation (FIEFOC) II Programme. Funder: African Development Bank, Nordic Development Fund Coverage: Tochi Catchment with 12 districts, including Lira and Oyam. Duration: 2016-2021. IA: MWE and MAAIF	Project objective is to improve farm incomes, rural livelihoods, food security and climate resilience through sustainable natural resources management and agricultural enterprise development.

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## **Photo Captions**

Page 1: Couple chooses a CSA farming practice that they apply in their field.

Page VIII: A local seed multiplication plot from which farmers learn CSA practices.

Page 3: Weeding sim-sim planted in lines

Page 5: Consulting Lira local government officials during the MRV assessment.

Page 7: Consulting local governments during the MRV assessment.

Page 11: Intercropping in practice

Page 61: A tree nursery bed

Page 71: Farmers choosing drawings of CSA practices they employ during the MRV assessments.

Photo Credit: GIZ staff





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