A framework for identifying country-specific MRV improvement needs in the livestock sector

Lessons from Kenya, Ethiopia and Nigeria

Working Paper No. 346

CGIAR Research Program on Climate Change, Agriculture and Food Security (CCAFS) and the Global Research Alliance on Agricultural Greenhouse Gases (GRA)

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Abstract

The working paper presents a framework for assessing country-specific needs, opportunities and priorities for improving measurement, reporting and verification (MRV) of livestock greenhouse gas (GHG) emissions and emission reductions. The framework consists of 13 guiding questions that are implemented in an eight-step assessment. The steps are:

Phase 1: Clarify the context

Step 1: Assess current and future expected trends in the livestock sector and their GHG emissions implications.

Step 2: Identify policies and measures that are expected to impact GHG emissions.

Step 3: Assess how livestock sector trends, policies and measures may affect GHG emissions

Phase 2: Assess current MRV arrangements and stakeholders' demands for MRV improvement

Step 4: Build an overview of current MRV arrangements and performance.

Step 5: Identify stakeholders' specific needs for information from MRV systems and gaps between current MRV performance and stakeholders' information needs.

Step 6: Identify specific constraints affecting MRV performance.

Phase 3: Identify options, priorities and a roadmap for MRV improvement

Step 7: Identify options for MRV improvement.

Step 8: Involve stakeholders in developing a roadmap for MRV improvement.

This working paper explains the steps and guiding questions in each phase of the assessment and provides illustrative examples based on supporting MRV improvement processes in Kenya and Ethiopia as part of the CCAFS' Enhancing capacities for MRV of sustainable livestock actions in East Africa' project. The results of a scoping exercise for livestock MRV

improvements in Nigeria were conducted as part of GRA's support to the Climate and Clean Air Coalition's work on short-lived climate pollutants in Nigeria.

Keywords

Livestock; MRV; needs assessment; methodology; Africa.

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Contents

Acronyms

AFOLU	Agriculture, forestry and other land use
APP	Agricultural Promotion Policy (Nigeria)
ASGTS	Agriculture Sector Growth and Transformation Strategy (Kenya)
BUR	Biennial update report
CBIT	Capacity Building Initiative for Transparency
CCAFS	CGIAR Research Program on Climate Change, Agriculture and Food Security
CRGE	Climate Resilient Green Economy Strategy (Ethiopia)
CSA	Climate-smart agriculture
GEF	Global Environment Facility
GHG	Greenhouse gas
GRA	Global Research Alliance on Agricultural Greenhouse Gases
GTP	Growth and Transformation Plan (Ethiopia)
IPCC	Intergovernmental Panel on Climate Change
KCSAIF	Kenya Climate Smart Agriculture Implementation Framework
KCSAS	Kenya Climate-Smart Agriculture Strategy
LEDSGP	Low-Emission Development Strategies Global Partnership
MRV	Measurement, reporting and verification
M&E	Monitoring and evaluation
NAIP	National agriculture investment plan
NAMA	Nationally appropriate mitigation action

NDC	Nationally determined contribution
NLTP	National Livestock Transformation Plan (Nigeria)
REDD	Reducing emissions from deforestation and forest degradation
SDL	State Department for Livestock (Kenya)
SLCP	Short-lived climate pollutants
UNFCCC	United Nations Framework Convention on Climate Change

Introduction

Existing assessment frameworks and guidelines for identifying improvement needs related to measurement, reporting and verification (MRV) start from international MRV requirements and map gaps with existing national systems (UNFCCC 2014; Marr et al. 2018; Abdel-Aziz et al. 2018). These frameworks typically examine some combination of legal arrangements, institutional arrangements and procedural arrangements and then proceed to capacity assessment, intending to improve countries' ability to meet international MRV obligations (Abdel-Aziz et al. 2018). However, lessons from the forestry sector demonstrate that a country-centric assessment process can capture national variations in the scope of mitigation actions and MRV and ensure that the identification of MRV improvement needs is grounded in the national institutional context (Mora et al. 2012). This can result in national MRV improvement roadmaps that reflect national priorities and circumstances within the international context.

Country-centric processes for identifying MRV improvement requirements are needed in the livestock sector for several reasons:

- In many countries, the existing status of livestock statistics is weak (Pica-Ciamarra et al. 2014).
- Engagement of the livestock sector in greenhouse gas (GHG) issues and sector-specific MRV resources has been limited in many countries.
- The diversity of the livestock sector in many developing countries highlights the need to prioritize resource use.
- To date, global scientific expertise in livestock GHG emissions has had relatively limited engagement with national and UNFCCC policy processes, leaving a gap in guidance on how to support countries to improve MRV in the sector.

This working paper draws on initial experiences of supporting MRV improvement processes in Kenya and Ethiopia as part of the CCAFS' Enhancing capacities for MRV of sustainable livestock actions in East Africa' project and the results of a scoping exercise for livestock MRV improvements in Nigeria conducted as part of the GRA's support to the Climate and Clean Air Coalition's (CCAC) work on short-lived climate pollutants in Nigeria. Here, a framework is presented for assessing country-specific MRV needs, opportunities and priorities in the livestock sector.

The assessment framework consists of 13 guiding questions that can be implemented in eight steps clustered into three main assessment phases (Table 1). The phases are:

Phase 1: Clarify the context for MRV in the livestock sector

Phase 2: Assess the status of existing MRV arrangements and stakeholders' current and future demands for improved MRV

Phase 3: Identify options and priorities and develop a roadmap for MRV improvement.

This working paper explains these phases and the steps involved. Illustrative examples from recent experience in Kenya, Ethiopia and Nigeria, and additional useful information are provided in the numbered boxes.

It is intended that this framework should be useful for practitioners working on similar issues in other countries and regions.

Box 1. The scope of MRV in this working paper

Article 13 of the Paris Agreement established an enhanced transparency framework for action and support (UNFCCC 2018). In the current UNFCCC framework, MRV relates to GHG emissions, emission reductions in relation to targets in nationally determined contributions (NDCs), adaptation, and financial, technology transfer and capacity-building support provided and received.

This working paper focuses on MRV of actions relating to GHG emissions and emission reductions. Here, MRV includes tracking of policies and measures with GHG effects and GHG emissions and emission reductions. Synergies with MRV of adaptation are relevant in many countries but are not considered in detail here.

While international MRV obligations are relatively well established, there is considerable diversity in how national systems report statistics and other data relevant to GHG quantification and how they track the progress and impacts of national policies and measures. Yet, together with internationally funded projects that support their implementation, these national policies and measures are often key to the achievement of national goals and targets for GHG emission reductions. Therefore, the approach proposed in this working paper pays considerable attention to the links between MRV systems that serve international reporting obligations and national systems for monitoring the effects of policies and measures. Thus, the approach set out here aims to improve countries' capacity for MRV within the context of the UNFCCC as well as national capacities for monitoring, evaluating and learning for domestic policy implementation.

Table 1. Steps and guiding questions in the phased approach to the assessment of livestock MRV improvement needs

Phase (P)	Steps (S)	Guiding questions (Q)
P1: Clarify the context	S1. Assess current and future expected trends in the livestock sector and their implications for GHG emissions	Q1: What are the current and future expected trends in the livestock sector and how will they affect GHG emissions? Q2: Which livestock GHG emission sources are key categories in the national GHG inventory?
	S2: Identify policies and measures that are expected to impact GHG emissions	Q3: What current and planned policies and measures are expected to impact GHG emissions?
	S3: Assess how livestock sector trends, policies and measures may affect GHG emissions	
P2: Assess current MRV arrangements and stakeholders' current and future demands for MRV improvements	S4: Build an overview of current MRV arrangements and performance	Q4: How is MRV currently implemented?
	S5: Identify stakeholders' specific needs for information from MRV systems and gaps between current MRV performance and stakeholders' information needs	Q5: What are stakeholders' specific needs for information from MRV systems? Q6: To what extent do current MRV arrangements meet stakeholders' current and future information needs?
	S6: Identify specific constraints affecting MRV performance	Q7: What are the gaps between stakeholders' information needs and information available from current MRV systems? Q8: For available information, what are the main gaps in the quality of MRV performance? Q9: What institutional, technical or procedural factors contribute to information availability or quality gaps?
P3: Identify options, priorities and a roadmap for MRV improvement	S7: Identify options for MRV improvement	Q10: What institutional, technical, procedural or capacity-building options are there to fill information availability or quality gaps? Q11: How do ongoing developments in national MRV systems relate to the improvement options identified?
	S8: Involve stakeholders in elaborating a roadmap for MRV improvement	Q12: Which MRV improvement options are priorities on what timescale?
		Q13: What sources of support are available or planned to implement MRV improvement priorities?

Phase 1: Clarify the context for MRV in the livestock sector

Livestock GHG emissions in developing countries have been rising faster than agricultural emissions, which have been rising more rapidly than emissions from the whole agriculture, forestry and other land use (AFOLU) sector (Tubiello et al. 2015). This is one reason for increased attention to livestock GHG emissions worldwide. However, understanding current and future GHG emissions trends, their drivers and response policies and measures must be specific to each country's context. From the perspective of MRV, to understand the national context, key questions to answer are:

Question 1: What are the current and future expected trends in the livestock sector and their GHG emissions implications?

Question 2: Which livestock GHG emission sources are key categories in the national GHG inventory?

Question 3: What current and planned policies and measures are expected to impact GHG emissions?

The basic rationale for starting with these questions is that investment in improved MRV will make the most sense if efforts focus on sub-sectors within the livestock sector where GHG emissions are large, and emissions are expected to change. These changes may be driven by ongoing or projected trends in the livestock sector as a whole or may be driven by particular policies or measures. These questions can be assessed through the following three steps.

Step 1: Assess current and future expected trends in the livestock sector and their implications for GHG emissions

Economic growth is often associated with an increase in the livestock population's size and changes in the livestock population structure, production practices and supply chains and in the economics of livestock production (Steinfeld et al. 2006). For example, the United Nations projects expect that the population in Sub-Saharan Africa will double by 2050, and the share of the population living in urban areas will increase by almost 20% (UN DESA 2018). Rising incomes and urbanization are associated with increased demand for both meat and dairy products, and often also with changes in how livestock are produced, processed and marketed to meet these new demands (Reardon et al. 2015). In any particular country, the recent historical and projected trends should be assessed to understand disaggregated trends in the livestock sector better. Key questions include:

- How have the population of each livestock species (e.g., cattle, sheep, goats, pigs, chickens), sub-sectors (e.g., meat, dairy or egg production), and production systems (e.g., intensive, extensive, commercial, smallholder) changed?
- How are future socio-economic development projections for the country expected to affect trends in the livestock sector?
- What are the possible implications of these trends for GHG emissions?

In most countries, analysis of recent historical trends in the livestock sector is readily available from existing literature. Some countries' national communications to the UNFCCC present projections of the sector's GHG emissions and related analysis. A detailed analysis may have been undertaken during the preparation of national climate change policies or plans, specifically for the country's NDC. The analysis that underlies projected livestock sector GHG emissions in NDC scenarios have often been undertaken at a basic level (e.g.,

using simple projection of historical growth rates). Additional analysis may need to be undertaken to gain a disaggregated view of ongoing and projected trends. Other useful sources of information include livestock sector foresight studies, describing possible socio-economic drivers of change in the livestock sector (e.g., www.fao.org/in-action/asl2050/en).

The purpose of analyzing recent historical and projected trends is to identify which components of the livestock sector (in terms of livestock species, animal sub-categories, production systems or regions) are expected to change in ways that increase or decrease GHG emissions. This analysis should highlight where GHG emissions are expected to undergo future change. Since MRV is about tracking and reporting change, areas within the livestock sector expected to change may be priorities for future improvement in MRV. Box 2 gives an example from Kenya explaining why the dairy sector was selected as a focus for MRV improvements, even though it is not the biggest source of that country's livestock GHG emissions.

Box 2. Identifying key drivers of change in Kenya's livestock sector

Kenya's Second National Communication to the UNFCCC estimated that, in 2010, agriculture contributed about 61% of total national GHG emissions, of which more than 50% are from livestock. Dairy cattle, which are defined in national statistics as cattle of specialized dairy breeds, account for about 22% of the total national cattle herd. Most cattle are raised in arid and semi-arid regions where dairy production has limited potential. Therefore, GHG emissions from dairy cattle are not the majority of national livestock GHG emissions. However, several factors together contributed to a consensus that the dairy sector should be a priority for MRV improvements, including:

- National policy support for implementing mitigation actions in the agriculture sector that have synergies with adaptation (MoALF 2017);
- Clear economic drivers of productivity increase in the dairy sector and strong investor interest in the sector (Makoni et al. 2014);
- Availability of an internationally recognized methodology for quantifying GHG emission reductions from productivity increases (FAO and ILRI 2016); and

- A relatively well-organized sub-sector with clear objectives as stated in the National Dairy Master Plan (MoLD 2010) and broad stakeholder support for a nationally appropriate mitigation action (NAMA) (SDL 2017).

The prospect of attracting significant investment in the Dairy NAMA highlighted the need for robust MRV systems to estimate emission reductions due to the NAMA implementation. Quantification of GHG emissions in the NAMA would use a Tier 2 approach, making it clear that the national GHG inventory (which is also the basis for developing scenarios in national climate change action plans and the country's NDC) also needed to adopt a Tier 2 approach. In parallel, activities were undertaken to estimate baseline emissions for a nationally appropriate mitigation action (NAMA) (Wilkes et al. 2019) and to compile a Tier 2 GHG inventory for the dairy sector (SDL 2020). Once the experience has been gained in estimating dairy cattle emissions, attention may turn to MRV improvements in livestock sub-sectors with larger emissions.

It may also make sense to focus MRV improvements on key categories in the national GHG inventory. These are emission sources that significantly influence a country's total GHG inventory in terms of the absolute level, the trend, or the uncertainty in emissions (IPCC 2006). Analysis by absolute level identifies key categories as those that add up to 95 percent of the total level when summed together in descending order of magnitude. In many developing countries, enteric fermentation and manure management are key categories. These cattle emissions are often key categories, but in both Nigeria and Ethiopia, analysis suggests that small ruminants' emissions may also be key categories (Box 3).

Some national GHG inventories include tables reporting key category analysis results, but not all country inventories include this. Inventory reports also vary in the degree to which disaggregated emission sources are presented. For example, enteric fermentation may be presented as one emission category, but enteric fermentation from different livestock species is often not presented. In this situation, it may be possible to use the population data and emission factors reported in the inventory to estimate how much of the reported key category emissions are due to dairy or other cattle and other species. Where the inventory does not report the results of key category analysis, a simple method to roughly estimate

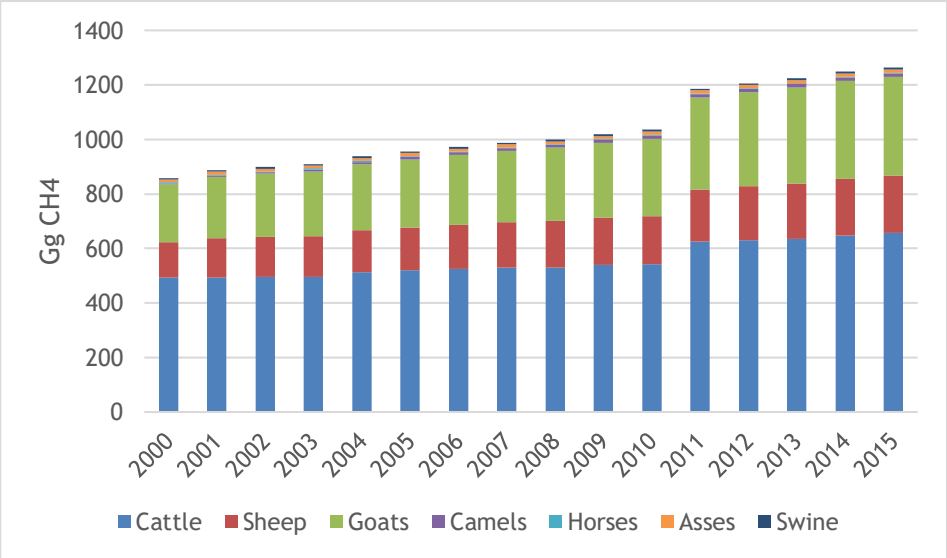
the contribution of different livestock emission sources to total inventory emissions is to obtain Tier 1 emission estimates for each emission source and each species from FAOSTAT (www.fao.org/faostat/en/#data) and compare the species-specific totals with total emissions reported in the last available national inventory.

Box 3. Identifying key categories of livestock emissions in Nigeria's national

GHG inventory

Nigeria's first Biennial Update Report (BUR) to the UNFCCC (FME 2018) estimated livestock emissions using population data from FAOSTAT and IPCC Tier 1 emission factors (Figure 1). The BUR identifies key categories as those with an emission level of more than 6,169 Gg CO_2e in 2000. Enteric fermentation is listed as a key category based on its 2000 level. Using the FAOSTAT emissions data, the contribution of different species to enteric fermentation emissions was quantified. Species exceeding the key category threshold of 6,169 Gg CO_2e include other cattle and goats. Analysis of the emissions trend from 2000 to 2015 showed that the proportion of emissions from cattle in total emissions decreased from 57% to 51%, while that from goats increased from 25% to 30%. Therefore, it is likely that in 2015 enteric fermentation by goats was a key category. Manure management methane emissions reported in the BUR were not high enough to meet the key category threshold.

Figure 1. Trends in enteric fermentation from livestock in Nigeria, 2000-2015



In Nigeria's case, dairy and other cattle are a major focus of national livestock development strategies. Therefore, it may make sense to focus initially on MRV improvements related to

GHG emissions from cattle and to then transfer the experience gained to small ruminant emissions in a later stage.

Step 2: Identify policies and measures that are expected to impact GHG emissions

The overall question to answer in this step is:

Question 3: What current and planned policies and measures are expected to impact GHG emissions?

Change in the livestock sector, including trends in livestock GHG emissions, may be driven by policies and measures in a number of sectors, including agriculture, food security and rural development; livestock, land use and natural resources management or biodiversity conservation; industry; energy; environment and climate change. Analysis can help develop an understanding of how various government policies aim to shape trends in the livestock sector and identify policies and measures for which GHG effects are relevant to stakeholders' information needs. It can also help identify existing monitoring systems that can be linked with national MRV systems and stakeholders relevant to MRV in the livestock sector. For analysis of policies and plans, Box 4 suggests some potentially relevant information sources. In some countries, although government policies set a general framework for livestock sector development, there may be only a few specific policy measures able to bring about intended policy changes (e.g., due to limited government finances or extensive privatization in the livestock sector). International donor projects, which are often aligned with government policy frameworks, may be an important type of measure to support change in the sector.

Box 4. Potentially relevant information sources on policies and measures in the livestock sector

- Medium- and long-term national development plans (e.g., Vision 2030)
- National agriculture investment plans (NAIPs)
- Agriculture development or food security policies and plans
- Livestock and livestock sub-sector (e.g., dairy, meat) industry policies and development plans
- Climate-smart agriculture policies, plans or programs
- Nationally determined contributions, climate change adaptation and mitigation action plans
- Multilateral and bilateral project design documents
- Private sector and industry investment and development strategies

Specific questions to help identify and characterize relevant policies and measures include:

- What policies and measures are listed in national development plans agricultural and livestock sector development plans or policies and plans developed in other related sectors?
- What specific changes in the livestock sector do these policies and measures aim to bring about, and what could be their effects on GHG emissions?
- Are agriculture or livestock sector policies and measures reflected in climate change policies or action plans and the country's NDC?
- Which ministries or government agencies and non-government entities (e.g., industry associations) are key stakeholders in each relevant policy or plan?
- Do these policies, plans or measures have specific monitoring and evaluation (M&E) or national reporting systems?

In some countries, relatively little work has been done to explicitly integrate livestock sector and climate change policies or plans. Box 5 describes the linkages between policies and plans in Kenya for the livestock sector and climate change. As this example shows, improvements

in MRV are relevant to climate-specific policies and the ability of government to track progress in implementing national development and livestock sector policies. This illustrates that MRV improvement is not just about meeting international reporting obligations.

Box 5. An overview of livestock sector policies and measures in Kenya

The livestock sub-sector is critical to achieving Kenya's development objectives, including the Agriculture Sector Growth and Transformation Strategy (ASGTS, 2019-2029), which provides the framework for the National Agricultural Investment Plan (NAIP, 2019-2024). The prioritization exercise that informed the ASGTS highlighted dairy, beef, sheep and goat, poultry and camel as value chains with high potential for agricultural transformation. Livestock development is central to achieving the ASGTS goals of increasing small scale farmers' incomes and increasing agricultural output and value-added. The NAIP proposes specific targets for related flagship programs:

> **NAIP Flagship 1:** Target ~1 million farmers in ~40 zones served by ~1,000 farmer-facing SMEs.
>
> **NAIP Flagship 2:** Shift nationwide subsidy program focus to empower ~1.4 million registered high-needs farmers to access a wider range of inputs from a variety of providers, enabled by digital service delivery.

Kenya's first NDC mandates adaptation and mitigation actions in line with the Kenya Climate-Smart Agriculture Strategy (KCSAS) and Implementation Framework (KCSAIF). KCSAIF sets out generic adaptation and mitigation actions in line with livestock sector development objectives. With the exception of the dairy industry, where some progress has been made in defining specific climate-smart investments, few specific measures have been set out to implement KCSAIF in other livestock sub-sectors. Moreover, agriculture is a devolved function under Kenya's constitution. The livestock sector is largely deregulated, so implementing specific measures depends significantly on the private sector (including farmers), county governments, and international cooperation or civil society projects. These investments will also be the main investments through which the NAIP objectives are achieved.

Specific investments include some large loan projects implemented by the government in partnership with multilateral banks, bilateral donor projects, and many civil society and private sector initiatives. The lack of a systematic database of livestock sector investments was identified as a constraint on national agencies' ability to monitor progress towards national livestock sector development and climate change policy objectives.

Step 3: Assess how livestock sector trends, policies and measures may affect GHG emissions

Having identified livestock sector trends, policies and measures in the preceding step, the

objective in Step 3 is to characterize their likely effects on GHG emissions from the livestock sector. It is unnecessary to quantify the GHG effects of the identified livestock sector trends or policies and measures in great detail. It is sufficient at this stage to list the emission sources in the sector that are likely to affect and the likely direction and scale of effects on GHG emissions. By the end of this step, it should be clear which livestock species, sub-sectors and production systems or regions are likely to undergo a significant change that affects livestock GHG emissions. Box 6 provides some general guidance on how changes in the livestock sector may affect GHG emissions. Box 7 provides an illustrative example from a rapid assessment in Nigeria.

Box 6. How a change in the livestock sector may affect GHG emissions

In general, changes in the livestock sector may affect GHG emissions through changes in:

- livestock population and the numbers of different species (i.e., the structure of the livestock herd);
- the distribution of livestock of each type between different production systems;
- the distribution of livestock in different agro-ecosystems or differences in livestock growth rates between regions;
- change in the use of different feed resources;
- change in productivity per head (e.g., milk yields, live weight, fertility), possibly also related to changing genetics (e.g., exotic breeds); and
- change in management of manure (e.g., if feeding or animal housing systems change).

Among these trends, changes in livestock population and herd structure are likely to have the biggest direct impact on GHG emissions. For a given livestock population, shifts in livestock distribution between different production systems are likely to have a bigger impact on GHG emissions than changes in management practices or animal performance within each production system. There may, however, be exceptions, such as when there are rapid changes in the availability of different feedstuffs or in animal genetics. Policies or programs with nationwide impacts are likely to have greater effects than specific projects or investments. However, because production systems are often concentrated in specific regions (e.g., due to agroecological conditions, population densities and market access, or feed and forage availability), sub-national policies and programs may also have a significant impact on particular sub-sectors.

Box 7. Assessing the effects of future trends, policies and measures on cattle GHG emissions in Nigeria

Demand for animal-source foods in Nigeria is expected to increase significantly by 2050. However, future trends are highly uncertain, depending on the overall economy and governance and how they affect population growth, urbanization and consumer demand. About 82% of cattle are currently raised in pastoral areas, 17% in agro-pastoral areas, and 1% in commercial systems. Depending on economic and governance scenarios, there could be major changes in the cattle population in each production system and dairy and beef cattle productivity in the agro-pastoral and commercial systems.

Government support to the livestock sector is currently guided by the Agricultural Promotion Policy (APP, 2016-2020) and the National Livestock Transformation Plan (NLTP Strategy, 2019-2028). These propose to promote a ranching system with more intensive production, supported by strengthening fodder production and output market value chains. The National Action Plan to reduce Short-Lived Climate Pollutants (SLCPs) proposes two measures to reduce livestock methane emissions: biogas (anaerobic digestion) for livestock and poultry manure, targeting a 50% reduction in methane emissions from these sources by 2030; and improvements in animal genetics and husbandry to reduce the GHG emission intensity of cattle production, targeting a 30% reduction in emission intensity of livestock production by 2030. The Cattle Breed Improvement Program and Dairy Development Program are two private-sector implemented and government enabled initiatives relevant to these policy objectives. A large-scale, multilateral investment is also under preparation, in which increases in beef and dairy cattle productivity are key results indicators.

Overall, this assessment suggests that improvements in MRV systems should capture both changes in the cattle populations in different production systems and change in cattle productivity in each system, particularly in those targeted by specific development programs. National policies and plans imply significant GHG emissions changes. Whether these can be achieved will depend on how policies and plans are implemented and the wider economic and governance environment.

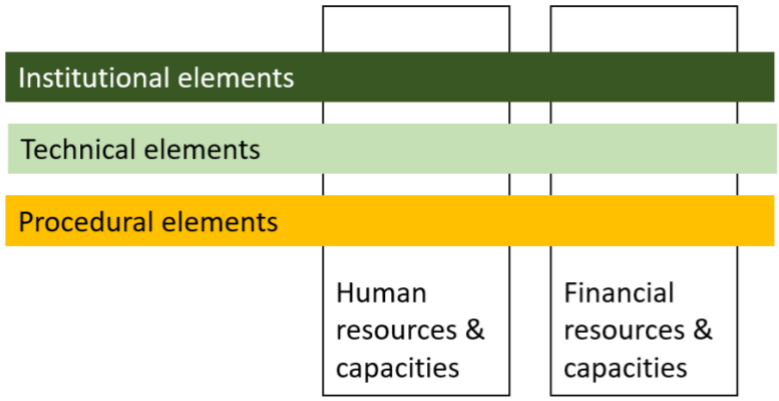
Phase 2: Assess current MRV arrangements and stakeholders' current and future demands for MRV improvements

Understanding the sector and policy context for MRV developed in Phase 1 is used to inform a more specific assessment of existing MRV arrangements and engage stakeholders in discussing their specific needs for improvements in MRV in the livestock sector. In general, MRV arrangements can be thought of as comprising three main elements (Abdel-Aziz et al. 2018):

- Institutional aspects (e.g., mandates, roles and responsibilities for MRV activities);
- Technical aspects (e.g., methodologies for GHG measurement and accounting, scenarios);
- Procedural aspects (e.g., data management systems).

Capacities support these elements in terms of financial and human resources (Figure 2). Although international MRV requirements are relatively uniform, in any particular country context, the outputs from MRV systems required by stakeholders depend on stakeholders' specific information needs, which are shaped by the national policy context. Therefore, understanding stakeholders' information needs are critical for identifying gaps between the current and desired performance of MRV systems.

Figure 2. Elements and pillars of MRV



Phase 2 of the MRV improvement needs assessment involves answering the following questions:

Question 4: How is MRV currently implemented?

Question 5: What are stakeholders' specific needs for information from MRV systems?

Question 6: To what extent are current MRV arrangements and performance are able to meet stakeholders' current and future information needs?

Question 7: What are the specific gaps and constraints affecting MRV performance?

These issues can be assessed through the following four steps.

Step 4: Build an overview of current MRV arrangements and performance

Step 4 focuses on understanding how MRV arrangements currently work in terms of their institutional, technical and procedural aspects. At this stage, it is critical not to focus solely on MRV operations that meet international reporting requirements but also (where relevant) to understand how MRV is linked to domestic arrangements for tracking the implementation and effects of relevant policies and measures. Box 8 illustrates how this understanding of domestic policies and their M&E systems can help identify MRV improvement needs.

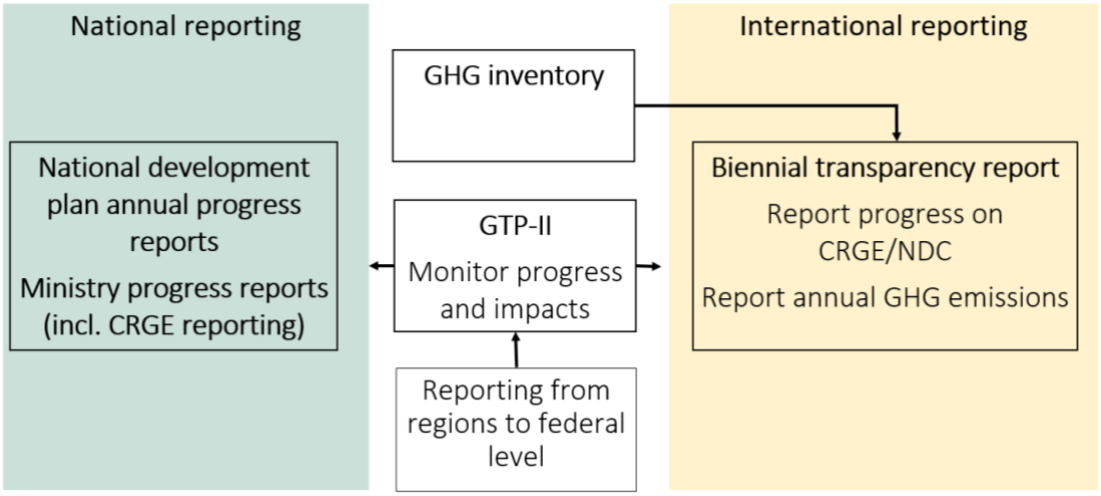
Box 8. Linkages between international MRV and domestic M&E systems in Ethiopia

Ethiopia's long-term development objective is to become a middle-income country by 2025. In the national planning system, medium-term plans are implemented in line with this goal. Ethiopia is currently implementing Phase II of the Growth and Transformation Plan 2016-2020 (GTP-II), which follows from previous medium-term plans (FDRE 2016). In 2011, Ethiopia began outlining a Climate Resilient Green Economy Strategy (CRGE), which is also oriented to enable the country to achieve its long-term goal (FDRE 2011). The CRGE screened and selected priority interventions that contribute to both GHG mitigation and adaptation. In the livestock sector, four priority intervention areas were identified:

- Improve cattle value chain efficiency;
- Increase the share of poultry & other lower-emitting animals;
- Promote mechanization to replace oxen;
- Improve rangeland management.

Following the adoption of the CRGE strategy, the strategy was mainstreamed into GTP-II. Not only are the CRGE measures integrated into GTP-II but monitoring indicators to track progress towards CRGE objectives are also integrated into the monitoring and reporting system used to track progress in the implementation of GTP-II. Since GTP-II implementation is the responsibility of government agencies at both federal and regional levels, the GTP-II monitoring system also provides the basis for monitoring progress towards the CRGE. Moreover, the CRGE formed the basis for Ethiopia's First NDC (FDRE 2015). The livestock sector interventions set out in the CRGE strategy have been further refined in the recent Livestock Master Plan (Shapiro et al. 2015). Therefore, MRV of GHG emissions and GHG mitigation not only serves international reporting needs but also relates to monitoring of domestic policies and measures, for which government officials are accountable (Figure 3).

Figure 3. Schematic diagram illustrating links between national and international monitoring and reporting mechanisms in Ethiopia



Useful guiding questions to understand current MRV arrangements and performance include:

Institutional aspects:

- Which agencies are involved in current MRV activities in the climate sector in general and the agriculture and livestock sectors in particular?
- How are official mandates, roles and responsibilities distributed?
- Which agencies are involved in providing data that is used in MRV activities?
- Who are the main users of outputs from MRV systems?
- How do different agencies coordinate their MRV activities?
- What are the key dates for domestic and international reporting cycles, and have reports been timely?
- Are the agencies with official mandates appropriately staffed and/or able to draw on external expertise to support the tasks required of them?

Technical aspects:

- What methods and data sources are used to estimate livestock emissions in the national GHG inventory?
- What methodologies, key indicators and data sources are used for tracking activity data related to the national GHG inventory and systems for MRV of national climate actions?
- What methodologies were used to develop scenarios and for quantification and accounting for livestock GHG emissions in the NDC (or other systems for MRV of national climate actions)?
- Are the methodologies and data sources used in the national GHG inventory and NDC/national climate action scenarios capable of reflecting the types of change expected from general developments or policies and measures in the livestock sector?
- Are existing methods and data sources used for GHG measurement and accounting transparent, accurate, comparable, complete and consistent?

Procedural aspects:

- Who does what, when and how in data management processes that support MRV, including data collection, storage, processing, quality control and reporting?
- Are the people tasked with these roles supported by institutional capacities, such as clear roles and responsibilities, clear working procedures to follow (e.g., guidelines, templates) and available budgets?

Questions that will help to understand and assess existing MRV arrangements will vary depending on the national context and the links with national policies in the livestock and climate sectors. By developing appropriate questions, the aim is to gain an overview of how MRV is currently performed and some of the key constraints faced in implementing MRV

activities and shortcomings in existing MRV performance. Box 9 illustrates how a rapid mapping of administrative data availability and procedures was useful to identify improvement needs in Kenya's dairy GHG inventory. Box 10 illustrates how an assessment of administrative data collection methods in Ethiopia was useful for identifying MRV improvement options.

Box 9. Mapping of administrative data collection methods in Kenya

Kenya developed a Tier 2 dairy cattle GHG inventory in 2018. The inventory is structured around three dairy cattle production systems: zero-grazing (i.e., stall feeding), grazing only and mixed grazing and stall feeding. Emission factors were estimated for cattle in each production system, mainly using literature values. Administrative data is available to estimate the total cattle population in each county and milk yields.

To assess the quality of the administrative data, a rapid assessment was made of how administrative data on livestock is collected. Livestock production officers in four locations were interviewed to understand the specific methods used to estimate livestock populations and milk yields. In the four counties, different methods and data sources were used:

- In county A, dairy cattle numbers at the county level are compiled from sub-county reports, which assume a 5% annual increase, using the last census as a benchmark;
- In counties B and C, sub-counties with active cooperatives obtain dairy cattle population and milk yield estimates from these cooperatives, while other sub-counties get this information from NGO or donor projects, but not all projects share their baseline or monitoring reports with the sub-county.
- In county D, total milk output is estimated based on the volume of milk collected processors and dairy cooperatives, which is then assumed to represent 33% of the county's total milk output. Milk yields per cow are estimated by dividing the total milk output by the county's number of cows.

The rapid assessment identified considerable variation in data sources and methods used to estimate livestock populations and milk yields. For the inventory, it was decided to use administrative data for dairy cattle populations as this is the only complete nationwide dataset. But for milk yields, data were taken from published literature so that milk yields could be estimated using a consistent method in all counties. The rapid assessment highlighted the need to develop standardized administrative data collection methods and validate these methods before promoting nationwide adoption. Given limited local staff numbers and cost constraints, some form of sampling might be useful to ensure that data is based on observations, not guesses, while limiting the data collection cost.

Box 10. Mapping of MRV procedures in Ethiopia

The Environment and Climate Change Directorate (ECCD) of the Ministry of Agriculture (MoA) is responsible for collating data for the national GHG inventory and CRGE reporting related to the livestock sector and other land-use sectors. ECCD has an MRV unit responsible for monitoring and reporting GHG emissions in the livestock sector.

The main activity data source for CRGE MRV is agricultural administrative data collected by local and regional governments. Data collection, management, and reporting start at the kebeles, the lowest government administrative level. All kebeles collect livestock population (considering species, breed, age, sex), yield (milk, egg, meat) and feed production data and send it to the livestock bureau at the woreda (the second-lowest administrative level). The Woreda Agricultural Office aggregates the data and sends it to the livestock bureaus at the zonal level, who send it on to the regional level, which compiles a regional report to send to the federal level (ECCD, MoA). However, this data collection procedure only covers the rural households and excludes urban/peri-urban and commercial livestock populations.

To assess how these procedures are operating in practice, four individuals at each administration level (region, zone, woreda, kebele) in Amhara, Oromia, and Afar Regions were interviewed. These individuals were either team leaders of dairy, beef and rangeland units or government experts in the livestock sector. The three regional bureaus indicated that they have a monitoring and evaluation unit with the mandate to collate and report livestock data. The availability of data on the key parameters listed in official guidance varied between regions. Officials at each level indicated that they lack human and technical capacities to monitor and report key indicators related to livestock GHG emissions. Contributing factors included: lack of standardized data collection protocols and reporting procedures; lack of funding for quality control activities; staff turnover, leading to many staff with data management tasks who had not received formal training.

Step 5: Identify stakeholders' specific needs for information from MRV systems and gaps between current MRV performance and stakeholders' information needs

Most MRV assessment frameworks focus on the extent to which MRV institutions, methodologies and procedures can fulfill international MRV requirements. However, stakeholders in MRV – especially users of the outputs of MRV systems – often have other information needs. When these information needs relate to stakeholders' abilities to plan, finance, implement, and monitor the domestic livestock sector's effectiveness and climate

policies and measures, meeting stakeholders' information needs can also strengthen capacities for taking climate action.

The main questions to answer in this step are:

Q5: What are stakeholders' specific needs for information from MRV systems?

Q6: To what extent do current MRV arrangements meet stakeholders' current and future information needs?

Using information from previous steps, compile a list of stakeholders involved in MRV and identify which stakeholders are likely to use information from MRV processes. Obvious stakeholders include the agencies that compile national communications and other reports submitted to the UNFCCC. In addition, where mandates for national climate action in the livestock sector have been devolved to agencies within the agriculture ministry or to sub-national governments, these agencies (and their superiors) are likely to be users of MRV information as well as having roles in implementing MRV activities. Civil society organizations, such as those involved in Climate-Smart Agriculture (CSA) forums, and international donors may also have strong interests in using MRV systems' outputs.

Useful guiding questions to discuss with the stakeholders identified include:

- How do they use the information from MRV systems, and for what purpose (e.g., planning, budgeting, progress monitoring, information exchange, etc.)?
- What indicators are they particularly interested in tracking (e.g., activity data, GHG emissions, GHG emission reductions, etc.)?
- Does the MRV system provide the information they need to the quality required and in a timely way?
- To what extent does the existing MRV system meet their information needs (e.g., not met at all, partially met, fully met)?

- What priorities and suggestions do they have for MRV improvement?

Box 11. Stakeholders' diverse needs from MRV systems in Ethiopia

During the compilation of Ethiopia's Tier 2 livestock GHG inventory, a workshop was held with diverse stakeholders to discuss data availability and data gaps and to prioritize which data gaps should be filled on short-, medium- or longer-term time frames. One discussion involved each stakeholder identifying which inventory improvements would have value for their work (i.e., beyond GHG inventory compilation). The following benefits of addressing data improvements were identified:

- Better data can inform national-level platforms and dialogues
- Data can inform policy scenarios and pathway development
- Data can be used for planning purposes (e.g., vaccination campaign budgeting)
- Data can support NDC revision
- Better data can help prioritize interventions and investments
- Generate up-to-date data for different stakeholders and investors
- Help to define future research topics on dairy, feedlot farms, and establish food safety programs (HACCP)
- Data can be used for research purposes for post-graduates, internship
- Better data can be used to formulate research questions on rangeland management and other related issues
- Better data can help to validate research findings.

Here, it is worth bearing in mind that MRV systems are still evolving in many countries, and gaps may be identified that are not due to shortcomings in current MRV systems but to newly emerging needs as MRV systems evolve (Box 12). Therefore, it may also be relevant to assess stakeholders' future information needs. Other stakeholders with specific MRV needs may include major investment programs in the livestock sector. Investment projects financed by the World Bank Group are beginning to require that agricultural investments track their GHG effects (Box 13). In both Kenya and Ethiopia, large ongoing World Bank investment projects require that GHG emissions are monitored. Coordinating with these investment projects can be one potential source of support for national MRV system improvements.

Box 12. Kenya's evolving national MRV system highlights gaps in the

Livestock sector

Kenya's NDC supports agricultural mitigation actions in line with the Kenya Climate-Smart Agriculture Investment Framework (KCSAIF, 2018-2027) (MoALFI 2018). The KCSAIF document provided a logical framework for the strategies outlined, and a specific M&E Framework was later developed (MoALFI 2019). The M&E Framework specifies indicators and targets for the four main outcome areas in KCSAIF:

(1) Institutional coordination

(2) Mainstreaming CSA actions in production and value chains

(3) Actions to promote resilience and reduce GHG emissions

(4) Strengthened communication systems.

Specific indicators related to each outcome area are relevant to the livestock sector, including indicators tracking the MRV system's development, change in GHG emissions relative to business-as-usual emissions and emission reductions in the sector. The State Department for Livestock (SDL) has specific mandates for implementing the KCSAIF M&E Framework, including:

- Setting departmental specific targets for climate change
- Developing strategies to achieve the targets
- Coordinating CSA M&E at the departmental level
- Developing departmental indicators and baselines
- Compiling and submitting CSA M&E reports to Climate Change Unit of the Ministry.

To operationalize the framework in the livestock sector, it will be necessary to

(1) Further specify sub-indicators for the livestock sector, ensuring that they are relevant to priorities of interest to livestock sector stakeholders;

(2) Align CSA M&E with M&E of other livestock sector and climate change reporting requirements;

(3) Set baseline and target values based on SDL and stakeholders' plans in the sector;

(4) Develop practical procedures for data collection, management and information sharing; and

(5) Allocate responsibilities within SDL and among stakeholders and, where necessary, build the required capacities to implement CSA M&E in the livestock sector.

Box 13. Overview of GHG accounting in World Bank agriculture sector projects

GHG emissions accounting has been introduced in the World Bank's agriculture sector investment lending operations since 2015. The World Bank's Climate Change Action Plan (2016-2020) states that: "The World Bank will screen all projects for climate risks and account for the social cost of carbon emissions in project evaluations; the World Bank Group (WBG) will move toward accounting for climate and carbon risks in its operations. In addition, the impact of WBG operations on GHG emissions will be calculated and reported" (World Bank Group 2016). GHG accounting enables the WBG to assess and report its overall net emission impact. At present, this means that all projects should calculate the expected GHG emissions and emission reductions due to project activities so that actions to mitigate climate change can be included in project design. It is not yet required to monitor GHG emissions during project implementation.

However, some livestock sector projects have included GHG emissions (or emission intensity) in the project results frameworks, meaning that the project must quantify and track change in GHG emissions or emission reductions. For example, the Kenya Climate-Smart Agriculture Project results framework requires that the GHG emissions per unit of milk are tracked, and the Livestock and Fisheries Sector Development Project in Ethiopia requires the implementation agency to monitor and report a change in the GHG emissions per unit of protein in milk, red meat and eggs due to productivity increases. In addition to their project-specific data needs, both projects have components that aim to strengthen national-level MRV by supporting data collection, data analysis and data management systems.

Step 6: Identify specific constraints affecting MRV performance

Gaps in MRV performance may be due to institutional, technical or procedural aspects of current MRV systems, or they may relate to capacities for implementing existing institutional roles or technical or procedural tasks (see Figure 2). Key questions in this step are:

Question 7: What are the gaps between stakeholders' information needs and information available from the current MRV system?

Question 8: For available information from existing MRV systems, what are the main gaps in the quality of MRV performance?

Question 9: What institutional, technical or procedural factors contribute to information availability or MRV quality gaps?

Identifying MRV needs that are not met because of information gaps is often relatively straightforward (e.g., if reports are not compiled, or reports do not include the information that stakeholders require). Stakeholders may directly state that certain types of information are unavailable, or analysis of data categories available in statistical or administrative data may indicate that data on certain parameters are not collected.

In some cases, however, stakeholders may not be clear on the specific information needed to fulfill their MRV-related mandates (e.g., if responsible staff are not familiar with Tier 2 methodologies or accounting methodologies for estimating emission reductions). In this case, it may be useful to list the MRV system outputs required by stakeholders and the parameters required to provide the information in each output and assess the availability and quality of data for each parameter.

In addition to data availability, stakeholders may perceive gaps where information is available but is not of sufficient quality or not available in a timely way. Assessing data quality gaps may require more in-depth engagement with actors involved in collecting, managing and reporting data. For assessment of the quality of available data, the Livestock Activity Data Guidance (FAO and GRA 2020) presents a data quality assessment framework based on the IPCC principles and the UN Statistics Quality Assurance Framework and provides a spreadsheet-based tool that can be used to assess the quality of available data for specific parameters required in Tier 2 national GHG inventories.1

Box 14 summarizes findings from stakeholder discussions in Ethiopia on gaps in GHG quantification methodologies, data and data quality and their causes.

[1] https://www.agmrv.org/knowledge-portal/resources/template-spreadsheet-for-assessing-the-quality-of-tier-2-livestock-activity-data/

Box 14. Constraints affecting MRV system performance in Ethiopia

Initial stakeholder consultations identified demand to:

(1) Compile a livestock GHG inventory using a Tier 2 method to reflect changes in productivity targeted by the Climate Resilient Green Economy (CRGE) strategy, which the current Tier 1 inventory cannot do; and

(2) Enable both regional and federal level agencies to monitor and report the effects of CRGE interventions; and

(3) Improve coordination between federal and regional governments in livestock MRV.

Subsequent assessments identified the following constraints:

GHG inventory:

- Methodology: While some national stakeholders knew about the IPCC Tier 2 method and its data requirements, there was insufficient familiarity with implementing the Tier 2 method in IPCC-compliant ways.
- Data availability and quality: Annual national statistical surveys covered livestock in rural households, but not on commercial farms or urban and peri-urban areas and had incomplete coverage in some pastoral areas. No data source for manure management activity data was identified. An assessment of administrative data collection identified variability between regions in the coverage of data available, the methods and capacities of staff to collect and manage data, and the quality of data collected.
- Institutions and procedures: Regional level plans for administrative data collection do not always map to national data requirements; M&E tasks are not consistently written into lower-level staff job descriptions; no manuals for consistent data training are available; agreements for data sharing between regional and federal levels are ad hoc and not always implemented; quality assurance activities for administrative data were not always implemented due to budget constraints.

MRV of CRGE interventions:

- Technical aspects: A monitoring matrix had been issued for national and regional agencies to follow for CRGE monitoring. Data collection for CRGE indicators at a regional level is of variable completeness and quality. The mandated indicators include indicators of the GHG effects of livestock sector interventions, but neither regional nor federal agencies have a methodology to turn activity data into GHG emission reductions estimates. The GHG accounting methodology used in the original CRGE strategy had never been published and was not known to the agencies

responsible for MRV. Consequently, CRGE implementation reports did not contain estimates of emission reductions, and the distribution of reports was restricted to within the responsible ministry.

- Procedural aspects: The responsible national agency had produced a checklist of data needed for CRGE measurement in the livestock sector, but the use of the checklist to guide data collection and reporting was never mandated or included in intergovernmental data sharing agreements. Consequently, there was no regular flow of data to support MRV of CRGE interventions.
- Institutional arrangements: Data collection at the regional level did not follow clear guidelines and procedures. At the national level, staff in different ministry directorates were not clear on their roles and responsibilities in data management.

Phase 3: Identify options and priorities for MRV improvement

This phase consists of two steps. The first step is to identify specific options to improve MRV and understand how these improvement options relate to related national MRV systems' ongoing development. The second step is to engage stakeholders in prioritizing MRV improvement needs and outlining a roadmap for implementing MRV improvements.

Step 7: Identify options for MRV improvement

The purpose of this step is to involve stakeholders in systematically assessing all relevant options for MRV improvement. Previous phases and steps are likely to have identified several options for MRV improvement. For example, Step 5 asked stakeholders about information gaps and collected their suggestions on how to improve MRV, and the assessment of information gaps and data quality in Step 6 may also have identified options for MRV improvement.

The main questions to answer in this step are:

> **Question 10: What institutional, technical, procedural or capacity building options are there to fill information availability or quality gaps?**
>
> **Question 11: How do ongoing developments in national MRV systems relate to the improvement options identified?**

Stakeholder workshops and interviews with technical experts can be used to identify a list of options for each MRV gap identified. In some cases, gaps may exist because existing national regulations, procedures or methods are not followed. In this case, either these regulations, procedures or methods could be updated, or capacity building would be required to enable stakeholders to implement them better. Often, however, there may be no prior national

experience with addressing the challenges identified. In this situation, it may be useful to examine other countries' experience to identify potential options. Useful resources may be found on the Agriculture MRV website (www.agmrv.org).

It is also important to look beyond specific improvement options and understand how the identified gaps and options in the livestock sector may relate to ongoing MRV improvement processes at the national level. Many countries' MRV systems are still evolving, in addition to which NDCs need to be updated on a 5-yearly cycle. Furthermore, MRV-related capacity building initiatives supported by different donors are often implemented in parallel. National statistical agencies may also have a Strategic Plan for Agricultural and Rural Statistics, which may indicate options relevant to MRV that are already under consideration in that sector. Ongoing national MRV capacity building initiatives, NDC update or implementation roadmaps, and other developments may all have some bearing on livestock sector MRV improvement options. Understanding these initiatives can help identify MRV improvement options and provide an understanding of the context for their implementation. This knowledge will also be useful when engaging stakeholders in elaborating a roadmap for MRV improvement in Step 8.

Step 8: Involve stakeholders in prioritizing options and elaborating a roadmap for MRV improvement

This step's output should be a roadmap (i.e., outline plan) for implementing MRV improvements that stakeholders in livestock MRV processes have prioritized. It is important to facilitate the relevant stakeholders to elaborate this roadmap so that there is ownership by the stakeholders responsible for its implementation. Stakeholders include users of MRV system outputs, actors involved in implementing MRV tasks, as well as potential supporters,

such as multilateral, bilateral or non-government agencies that are engaged in supporting livestock-related MRV.

A roadmap can be elaborated through one or more participatory workshops. It is likely that there will be a large number of potential MRV improvement options and that not all options can be simultaneously implemented. MRV improvement is conceived of as a process (e.g., as set out in a roadmap), not a shopping list, because:

- Different stakeholders may have different priorities;
- The feasibility of different options will vary and some options may depend on other gaps already being filled;
- Resource constraints will inevitably imply that not all options can be implemented at once; and
- MRV improvement in the livestock sector must also consider the broader evolution of national MRV systems.

The key questions that need to be answered to produce a roadmap are:

Question 12: Which MRV improvement needs are priorities on what timescale?

Question 13: What sources of support are available or planned to implement MRV improvement priorities?

There are many possible ways to prioritize MRV improvement options. Potential criteria to consider are listed in Box 15. MRV improvement options can be ranked or scored against multiple criteria to identify priority actions. The roadmap should also indicate a rough sequencing of improvement activities. Box 16 shows an example of a GHG inventory improvement roadmap drafted with Ethiopian stakeholders that consider the sequencing of improvements based on readiness to implement each option, the availability of resources and the logical links between different improvement options.

Box 15. Potential criteria for prioritizing MRV improvements

Readiness indicators:

Lead agency support: The agency that would lead in implementing the improvements strongly supports the implementation of the improvement.

Technical capacities available: Technical capacities to implement the improvement are available.

Financial resources are available: Financial resources are available to implement the improvement.

Impact indicators:

Size effect: Making the MRV improvement is expected to improve MRV relating to measures or emission categories with a major impact on total GHG emissions.

Effectiveness: MRV improvement is expected to significantly improve the availability or quality of MRV.

Systemic value: The improvement would make other MRV improvements possible (e.g., institutional changes that enable existing data to be used more effectively).

Synergies with other MRV initiatives: Making the improvement supports the implementation of other MRV developments in the sector or at the national level, or other ongoing MRV developments enable the improvement.

Benefits beyond MRV: Making the MRV improvement would benefit stakeholders beyond the MRV system itself (e.g., improvements that would also enable better planning or monitoring of mitigation measures).

Barrier indicators:

Systemic barriers: Implementing the improvement would require other elements of the MRV system to also change (e.g., institutional changes that are required imply legal or regulatory changes that are complex).

Technical barriers: There are technical barriers to implementing the improvement (e.g., research to establish appropriate methodologies is first required before the technical solution can be decided).

Resource barriers: Significant resources would be required that would take time to generate.

Box 16. A roadmap for GHG inventory improvement in Ethiopia

The roadmap was discussed in a stakeholder workshop. Improvement options were identified and allocated into three categories:

Short-term: MRV improvements for which the relevant stakeholders' readiness is already high and few resources are required, or the required resources are readily available;

Medium-term: MRV improvements that, if they proceed, will enable a number of other MRV improvements to be put in place, but the implementation of which may require capacity building and dedicated resources.

Longer-term improvements: Improvements help build the national framework for livestock MRV across multiple areas that need improvement but require other MRV elements to be put in place and require additional resources.

Outline roadmap for livestock GHG inventory improvement in Ethiopia

Objective	A continual improvement process is implemented for the livestock GHG inventory
Short-term (1-6 months)	• Fill missing data for commercial dairy, feedlot and pastoral/agro-pastoral population data • Design and test manure management data collection tools in different production systems • Test methods to fill missing data, consult with stakeholders for missing data on pastoral areas
Medium-term (6-18 months)	• Collect data on manure management systems • Develop institutional arrangements based on the data sources used • Capacity building for data providers and data users
Longer-term (18 months +)	• Collect livestock population data for pastoral areas using aerial survey • Develop automated data management systems

When developing the roadmap, it is useful to consider related ongoing initiatives that livestock MRV improvements should align with or contribute to or that might be able to provide resources to support livestock MRV improvements. Box 17 indicates some international programs supporting MRV capacity building that might be relevant in different country contexts. As noted in Box 13, large scale investment projects in the livestock sector may include components related to livestock sector data management in general or GHG emissions in particular. Many countries also have a Strategic Plan for Agricultural and Rural Statistics, which may include livestock statistics and data management improvements.

Box 17. International initiatives supporting MRV capacity building

General MRV:

Global Environment Facility (GEF)[2]: The GEF is one of the Paris Agreement's financing mechanisms. The GEF Trust Fund has supported projects that include support to MRV and related capacity building.

Capacity Building Initiative for Transparency (CBIT)[3]: CBIT is a GEF-managed fund that aims to build capacities for MRV in developing countries. FAO is implementing one CBIT program in nine African countries[4].

NDC Partnership[5]: The NDC Partnership is actively engaging with 19 African countries to support climate and development actions, including MRV.

Livestock-specific MRV:

Global Research Alliance on Agricultural Greenhouse Gases (GRA): The GRA has two working groups relevant to livestock MRV, the Livestock Research Group (which is active on GHG measurement as well as MRV) and the Integrative Research Group (which convenes an Inventories and NDC Network)[6]. GRA has 17 member countries in Africa.

Low Emission Development Strategies Global Partnership (LEDSGP)[7]: The Africa LEDS Partnership's AFOLU working group facilitates a community of practice focusing on livestock and climate change, including MRV-related topics.

[2] https://www.thegef.org/topics/climate-change

[3] https://www.thegef.org/topics/capacity-building-initiative-transparency-cbit

[4] https://www.cbitplatform.org/projects/global-cbit-afolu

[5] https://ndcpartnership.org/

[6] https://globalresearchalliance.org/

[7] https://africaledspartnership.org/2020/07/17/concept-note-afolu-community-of-practice-2020/

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An Roinn Gnóthaí Eachtracha agus Trádála
Department of Foreign Affairs and Trade

Ministry of Foreign Affairs of the Netherlands

NEW ZEALAND
FOREIGN AFFAIRS & TRADE
Aid Programme

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Agency for Development and Cooperation SDC

UKaid
from the British people

USAID
FROM THE AMERICAN PEOPLE

IFAD
Investing in rural people