Strengthening livestock GHG inventories in Africa: lessons from the NZ CSA Initiative

Webinar
11 June 2026

SOUTH SOUTH NORTH
TOWARDS CLIMATE RESILIENCE

African Climate Action Partnership
Partnering on climate action in Africa

Climate Smart Agriculture Initiative New Zealand

GLOBAL RESEARCH ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES

NZCSA inventory improvement approach and impact across 10 countries

Andreas Wilkes, Independent consultant,
Values for Development Ltd

Why improve livestock GHG inventories?

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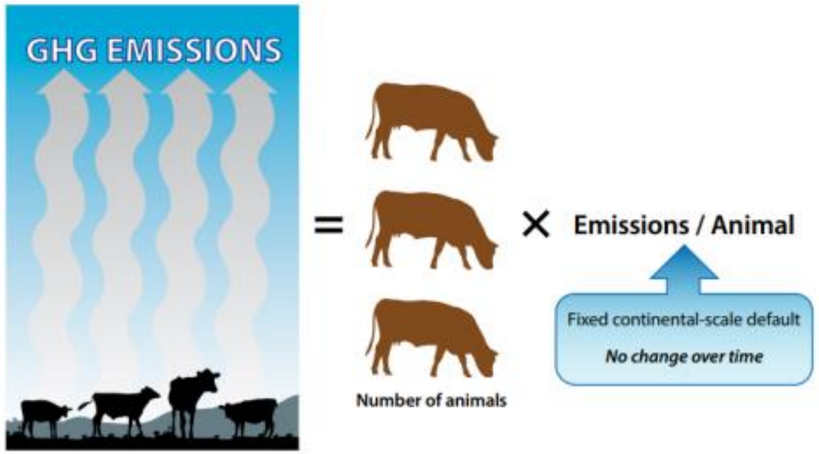
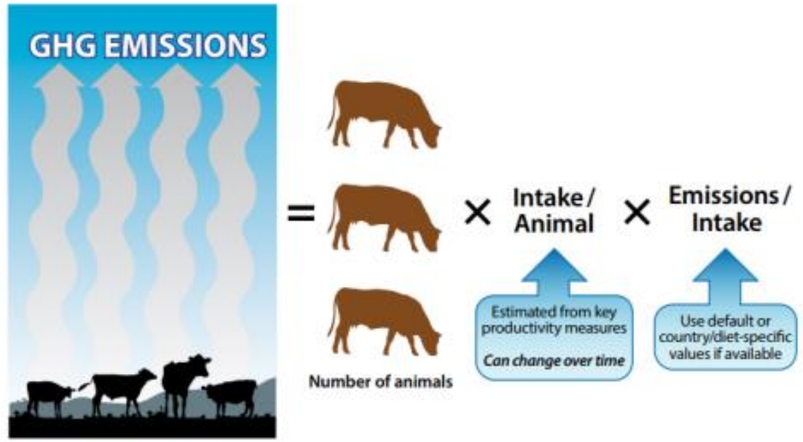
Figure 1: Tier 1 approach to estimating livestock emissions



Source: GRA (n.d.) Livestock development and climate change

Figure 2: Tier 2 approach to estimating livestock emissions



Source: GRA (n.d.) Livestock development and climate change

With Tier 1, reducing animal population is the only way to reduce GHG emissions

Tier 2 can reflect changes in herd composition, animal management and performance

➔ **Tier 2 is more accurate**

➔ **Tier 2 can be used to assess effects of different interventions (e.g. for NDC and sector planning)**

➔ **Tier 2 inventories can track changes in the sector over time (e.g. for NDC or project reporting)**

NZ CSA Initiative Overview

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2021-2025; NZD 4.7 million (ca. US$ 3.2 million) from New Zealand Ministry of Trade and Foreign Affairs (MFAT) and Ministry of Primary Industries (MPI)

Short term

- Improved inventory reporting
- Grow science collaboration
- Identify CSA practices
- Enhance policy and further investment

Medium term

- Robust monitoring and reporting
- Practices adopted
- Increased investment and policy improvement

Long term

- Increased efficiency and productivity
- Reduced emissions
- Improved international commitments

Main activities in Africa

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1) **Country-targeted support:**

- **Kenya:** Tier 2 for all ruminants + data collection methods + NDC scenarios
- **Malawi:** Revise Tier 1 + Tier 2 for cattle
- **Uganda:** Tier 2 for cattle + data collection
- **Zambia:** Tier 2 for cattle + data collection
- **Zimbabwe:** Tier 2 for cattle + data + NDC scenarios
- ***Ghana**: Tier 2 for cattle*

2) **Regional approach to country support:**

- **Botswana**, **Eswatini**, **Lesotho**, **Mozambique**: Tier 2 for cattle

3) **Regional exchange:**

- Support for AfCAP Livestock Community of Practice, bilateral exchanges, policy briefs, manuals…

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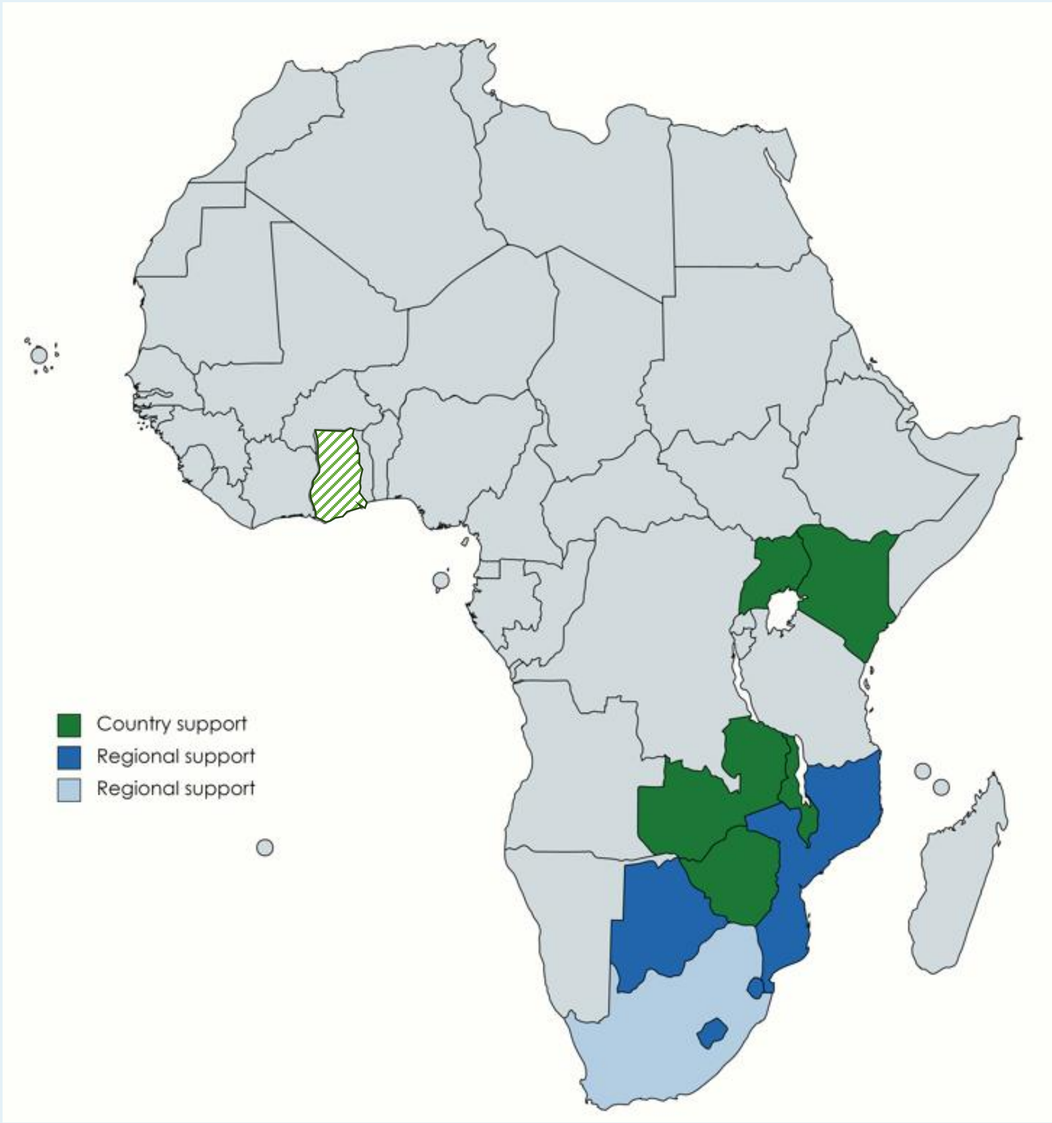

Outcomes

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424 person-days of training & exchanges

21 tools and manuals for inventory management and data collection

10 countries with improved Tier 1 and/or initial draft Tier 2 inventories

2 have reported with improved Tier 1 — Malawi, Uganda

3 have reported with Tier 2 — Kenya, Mozambique, Zimbabwe

4 plan to use Tier 2 in next inventory — Bostwana, Lesotho, Zambia, Uganda

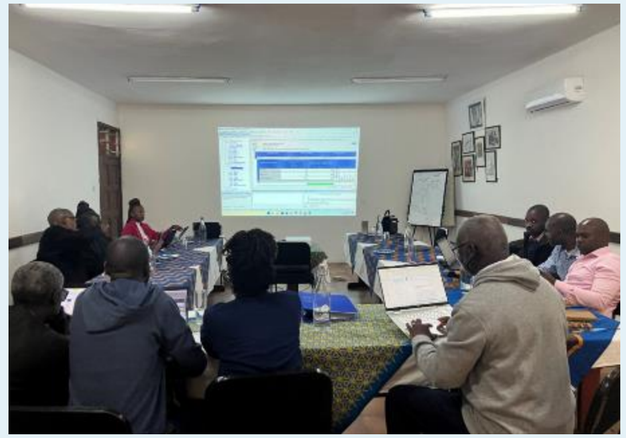
2 countries used Tier 2 to inform NDC updating — Kenya, Zimbabwe

Contributed to $327 million additional investment

e.g., Partnership with ongoing CBIT, FAO, IKI projects; CCAC new projects; key basis for new World Bank investments…

Lessons

1. **People are key:** each country has a group of people now able to engage in a more informed way on livestock GHG inventories, low-emission livestock policy, investment and practice.
2. **Continuous improvement is long-term and multi-faceted**:
    - Capacities of individuals, teams and organisations
    - Coordination between ministries
    - Tools, data collection and management systems…
3. **Agriculture / livestock ministries have key roles**:
    - Mandates for promoting climate-smart livestock
    - Technical knowledge
    - Links with sector stakeholders and related initiatives
4. **Continued donor commitment** and **regional partners** are both needed to sustain progress



Zimbabwe’s progress, policy relevance and regional connections

Walter Svinurai, University of Zimbabwe

Why Tier 2 GHG inventory for livestock in Zimbabwe

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	CATEGORY	GG CO_2 eq	% of Livestock	% of Agriculture	% of Total (without LULUCF)	% of Tota (with LU-LUCF)
3A1	Enteric fermentation	9,067.0	91.2	46.8	23.3	10.9
3A2	Manure management	680.0	6.8	3.5	1.7	0.8
3C6	Indirect N_2O emissions from manure management	193.7	1.9	1.0	0.5	0.2
	Livestock (GG CO_2 eq)		9,940.6	51.3	25.5	12.0
	Agriculture (GG CO_2 eq)			19,365.8	49.8	23.4
	Total (without LULUCF) (GG CO_2 eq)				38,924.5	46.9
	Total (with LULUCF) (GG CO_2 eq)					82,916.8

- Livestock are a major source of GHGs in Zimbabwe (BTR1: 2024)

Enteric methane emissions from livestock in Zimbabwe

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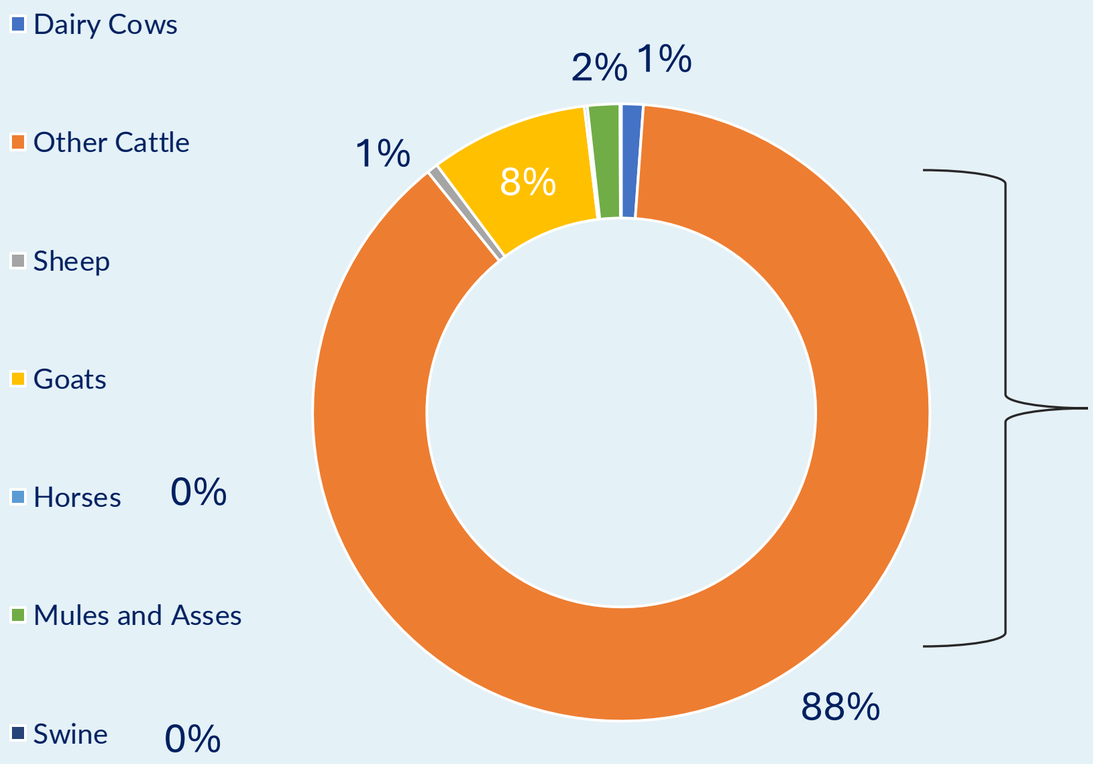
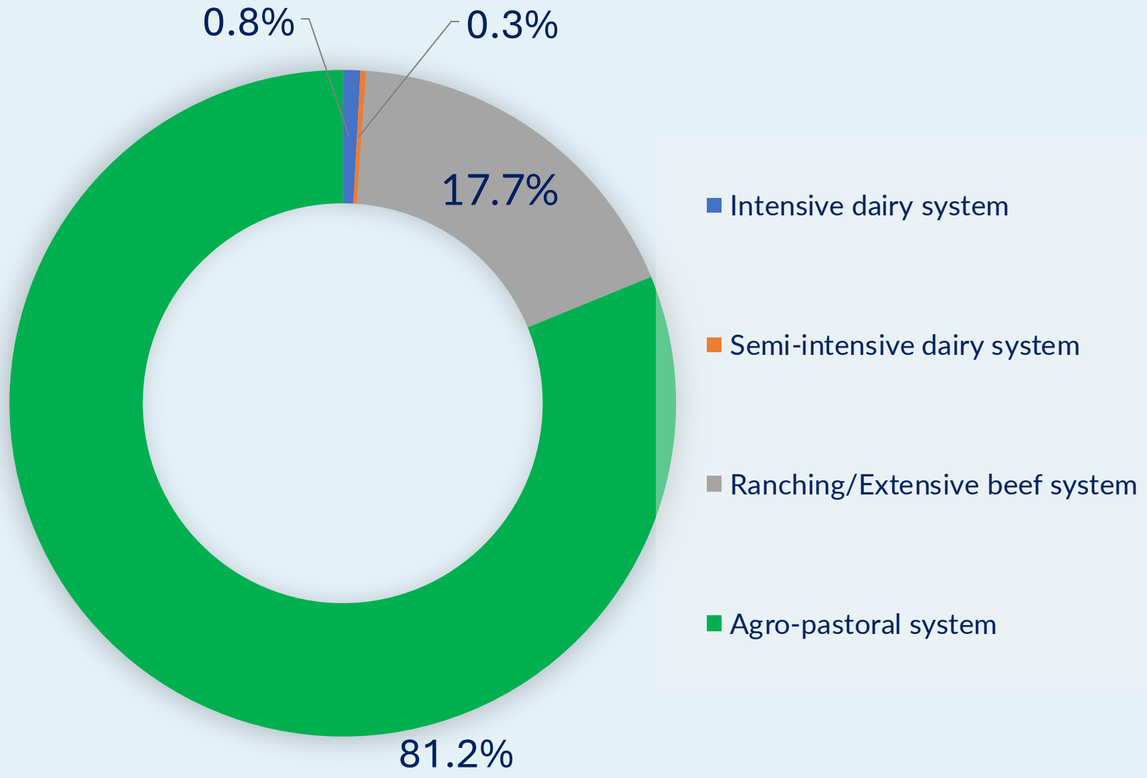
Livestock enteric methane emissions



Cattle enteric methane emissions



Source: BTR1 (2024)

Source: Svinurai et al. (2023)

Institutional Arrangements for Livestock Tier 2 GHG Inventory Compilation

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Climate Change Management Department Min. Environment

Submit inventory

Division of Livestock Research (DLR), MLAFWRD

Agriculture & Forestry GHG Inventory Working Group

Quality assurance, Compile AFOLU inventory

CORE TEAM (6 people)

- DLR Inventory Officer x 2
- CCMD Inventory Officer
- National Experts x 2
- International Experts

Coordinate, Request data, Compile inventory

ADVISORY GROUP (up to 15 people)

- Livestock & related directorates- DLR, LPD, DVS, ARC, CCMD
- Livestock Industry Associations- LMAC, ZADF, ZFU
- Data providers-ZIMSTAT, Dairy Services
- Universities- UZ, CUT, LSU, GZU
- Other Stakeholders

Consult, review, Provide data

National technical capacity building

CBIT- enteric methane EF development trainings (2)

NZCSA- ToT field supervisors Tier 2 inventory SOPs training

FAO-FVC – Tier 2 inventory training

NZCSA- 43 extension officers in 5 districts trained in Tier 2 field data collection

Cattle production systems & population data

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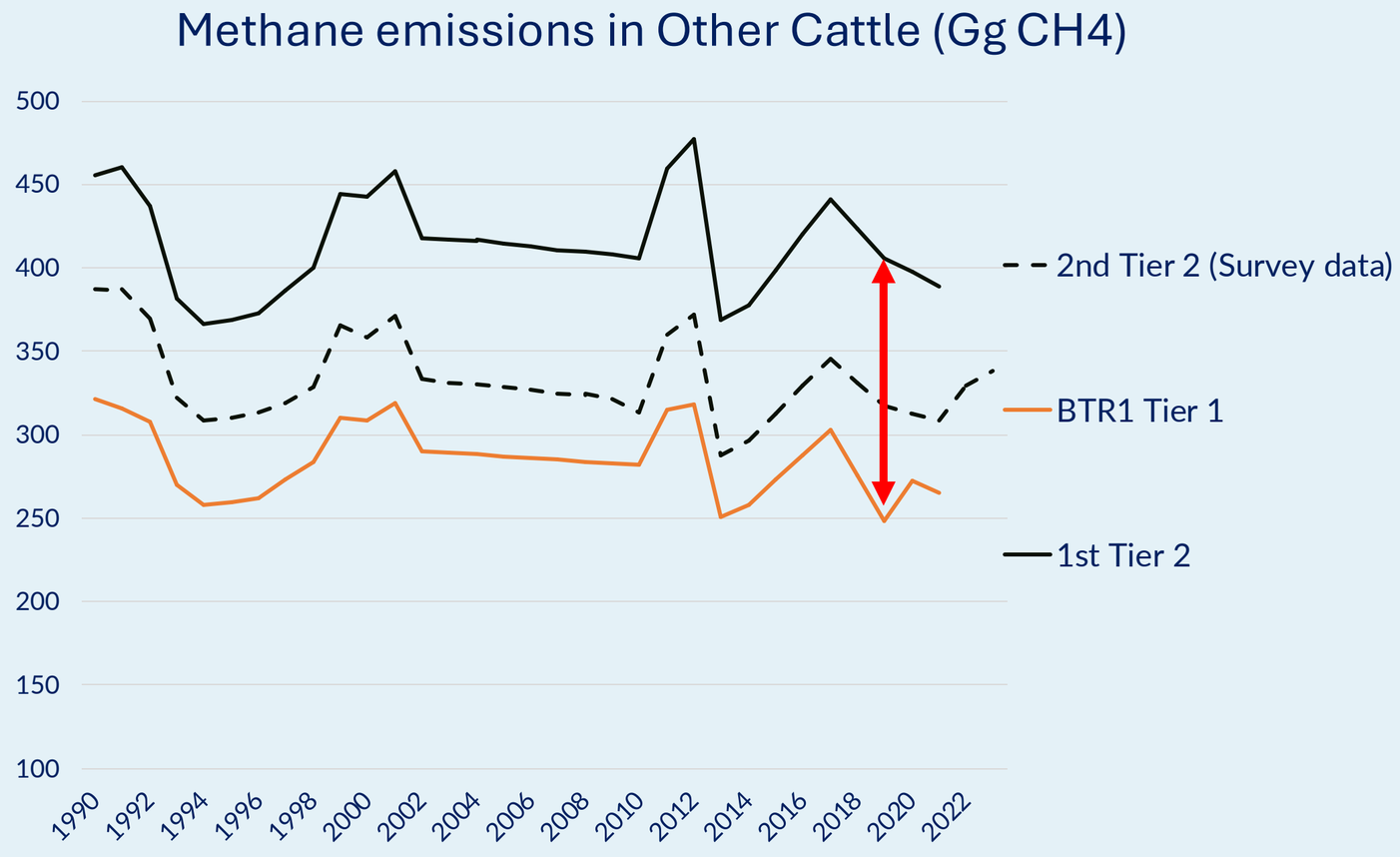
Purpose	Breed type	Age	Production system	Farm types
Dairy cattle	Exotic and/or crossbreds	Adult cows >3 years	Intensive dairy	Large Scale Commercial
		Adult males (Bulls) >3yrs		
		Heifers (1-3 years	Semi-intensive dairy	Small Scale Commercial
		Growing males (1-3) years		New Commercial - A2
		Calves (< 1 years)		
Other cattle - Beef cattle	Exotic and/or crossbreds	Adult cows > 3 years	Extensive/Ranching	Large Scale Commercial
		Adult males (Bulls) >3yrs		Small Scale Commercial
		Heifers (1-3 years)		New Commercial - A2
		Growing males (1-3 years)		
		Calves (< 1 year)		
		Growing males (1-3 years)	Intensive - Feedlot	LSC, SSC, A2
Other cattle - Multi-purpose cattle	Indigenous breeds	Adult cows > 3 years	Agro-pastoral	Communal
		Adult males (Bulls) > 3 years		Old Resettlement Scheme
		Heifers (1-3 years)		New Resettlement - A1
		Growing males (1-3 years)		
		Calves (< 1 year)		

Animal performance data & sources

- Agropastoral systems
  - Survey data for 5,000 cattle
- Dairy cattle & ranching beef systems
  - Scarce literature for LW over regions & time,
    - weights undistinguished for sex
  - No subcategory-specific feed basket due to limited data
    - Expert opinion used, though uncertainty is high
  - No data on MMSs, Expert opinion used

Tier 2 Implications for planning climate actions

Comparison of Tier 1 & Tier 2 enteric methane estimates



Survey data improved Tier 2 estimates from 47 to 20 % more than Tier 1

Implied enteric methane emission factors

Production system	Methane Emission Factor (kg CH_4/head/year)				
	Zimbabwe	Malawi	Botswana	Zambia	IPCC (2019)
Intensive dairy	66.70	-	64.22	86.70	86
Semi-intensive dairy	44.80	54.88	-	55.90	66
Commercial/Ranching beef	74.53	68.58	73.78	72.00	60
Extensive/Agro-pastoral	76.61	74.16	84.58	63.40	48

- Enteric methane EFs for high productivity Dairy < IPCC Tier 1a
- Enteric methane EFs for low productivity Other Cattle > IPCC Tier 1a

doi: 10.3389/fanim.2026.1811608

Using Tier 2 in mitigation assessment for NDCs

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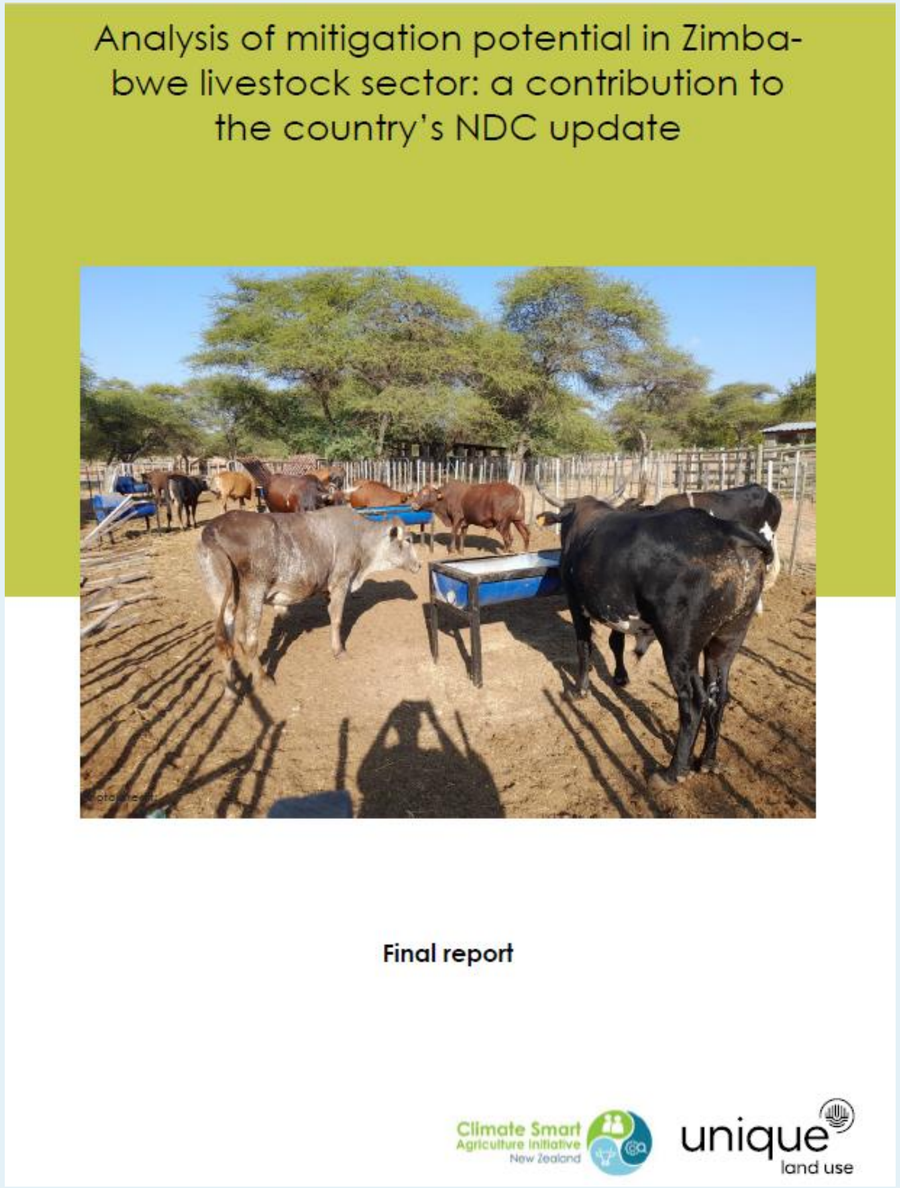

- Tier 2 inventory paved way for assessing mitigation potential of livestock measures & informed NDC 3 update

Scenario	tonnes CO_2e	Gg CO_2e
Semi-intensive dairy (Breed improvement)	-58,773	
Agro-pastoral (Feed improvement)	-177,077	
Agro-pastoral (Feed-Health improvement)	-907,353	
Total	-1,143,203	1,143
Livestock emissions reduction target in Zim's NDC3.0		2,097
Difference from Zim's NDC3.0		**954**

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THANK YOU !!!

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Regional Inventory improvement and bilateral exchanges in West Africa

Séga Ndao, Director of ISRA/CRZ Dahra

INSTITUT SÉNÉGALAIS DE RECHERCHES AGRICOLES

AFCAP West & North Africa Regional Forum for the Livestock CoP (August 2023)

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Space for countries to share their experiences, challenges and opportunities within the livestock sector

- **Country experiences**
  - **Overview** of livestock and CC
  - **Commitments**
    - Need to report on livestock GHG emissions - UNFCCC
    - Emission reduction strategies
  - **Ambitions**
    - Tier 1 to Tier 2
    - Track measures (mitigation & adaptation actions)
- **Addressing the needs of the regions**
  - collaboration (regional effort) in underfunded context
  - role and responsibility to tackle climate change through livestock

PRIORITIZE ACTIVITIES

Obligation/decision making Limited research funding

12 participating countries

34 participants (ministries, research institutions, policy makers)

West & North Africa Regional Forum
Lessons learned

- **Mitigation strategies**:
  - forage cultivation
  - feed quality improvement technique
  - genetics, animal population reduction vs multifunctionality
  - biodigester
- **Research areas and innovative tools (accurate data)**:
  - feeding, rationing (animal nutrition requirements by production systems)
  - sustainable rangeland management (pastoral resources)
  - approaches to collect data on livestock farming
  - GreenFeed system at the regional level
  - applied informatics
- **Next steps**:
  - foster collaboration between countries to produce e.g., specific EF, regional database
  - improve livestock GHG estimation using advancing approaches (e.g., Tier 2 methodology),

Technical exchange visit: Mali – Senegal
(Sept. 2024)

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Expression of interest : **Mali** Technical **Exchange visit** and **AfCAP** decides to **provide support** on GHG improvement (**Tier 2** methodology)

To **support policy makers**
(e.g., Tracking NDC progress, mitigation options)

To **understand/document livestock's efficiency** (e.g., productivity, GHG emissions)

National programmes/projects to **produce specific references on livestock** (e.g., LW, DE%, Milk, Fat, ADG, Hours, etc.)

To **develop monitoring systems** (e.g., data collation, MRV, archiving)

The following points were discussed:

- Existing decision-support tools, meta-analysis
- Active expert networks
- Data collection procedure guidelines for inventory
- Existing databases, previous studies
- Existing data within livestock services and development programs
- Ongoing Tier 2 application initiatives in the region

Mali – Senegal exchange visit:
Lessons learned

- **collate**, **evaluate** and **make available existing data** from research institutes, projects, ministries
- need to use **direct measurement** methods.
- **promote** existing open access information system (e.g., ***Feedipedia***)
- **prioritize** and **coordinate** research activities, e.g., identify data gaps that are common across countries, so data collection can benefit more than one country (e.g., **CaSSECS project** – Burkina Faso, Mali, Mauritania, Niger, Senegal, Tchad)

- Requirements:

Collaboration between **stakeholders** (i.e., researchers, livestock specialist, ministries and GHG inventory agencies)

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THANK YOU

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NEW ZEALAND FOREIGN AFFAIRS & TRADE
MANATŪ AORERE

Regional collaboration in Southern and Eastern Africa and the AfCAP Livestock CoP

Roy Bouwer, AfCAP Secretariat Lead

Regional Collaboration – East & Southern Africa

Identify priorities, share lessons, and align action across stakeholders

- East Africa & Southern Africa regional fora (2023)
- Co-convened FAO regional workshop to scale up national climate actions for livestock sector

Regional Collaboration – East & Southern Africa

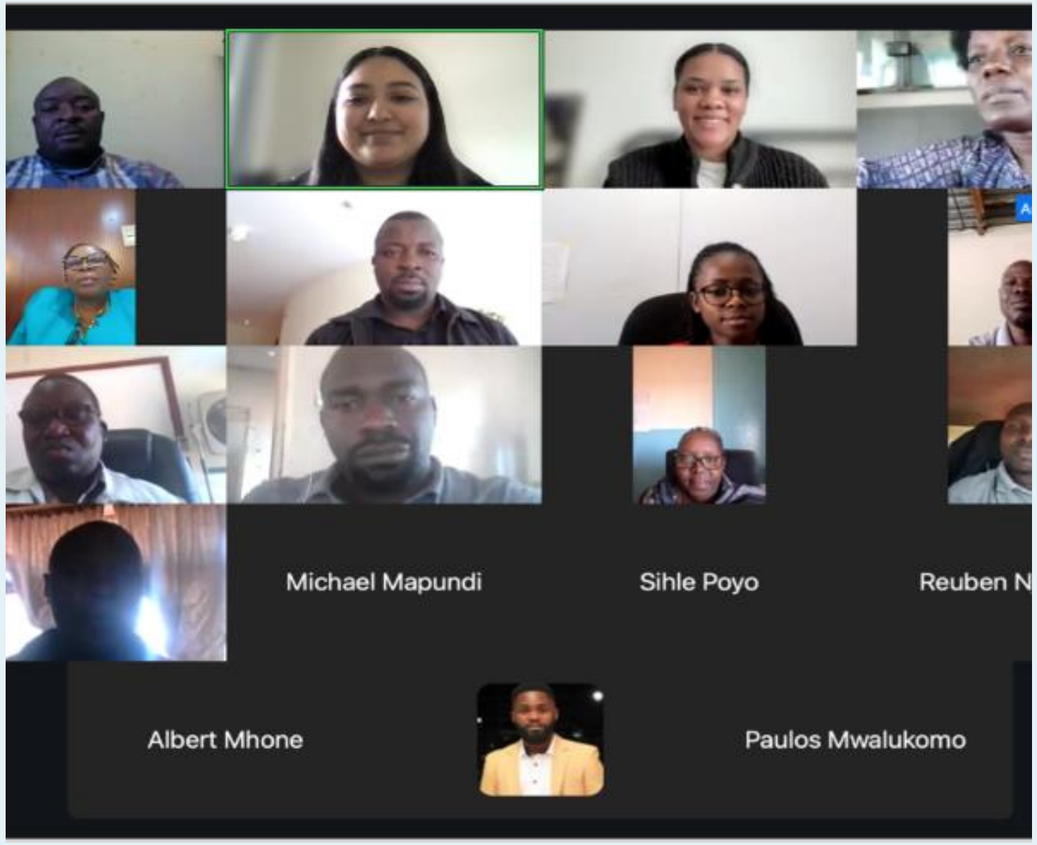
Sharing experiences on developing and improving Tier 2 inventories, raising awareness on emissions, the incorporation of livestock into climate policies and implementation plans.

- Country exchange visit: Malawi-Zimbabwe-Kenya

Regional Collaboration – East & Southern Africa

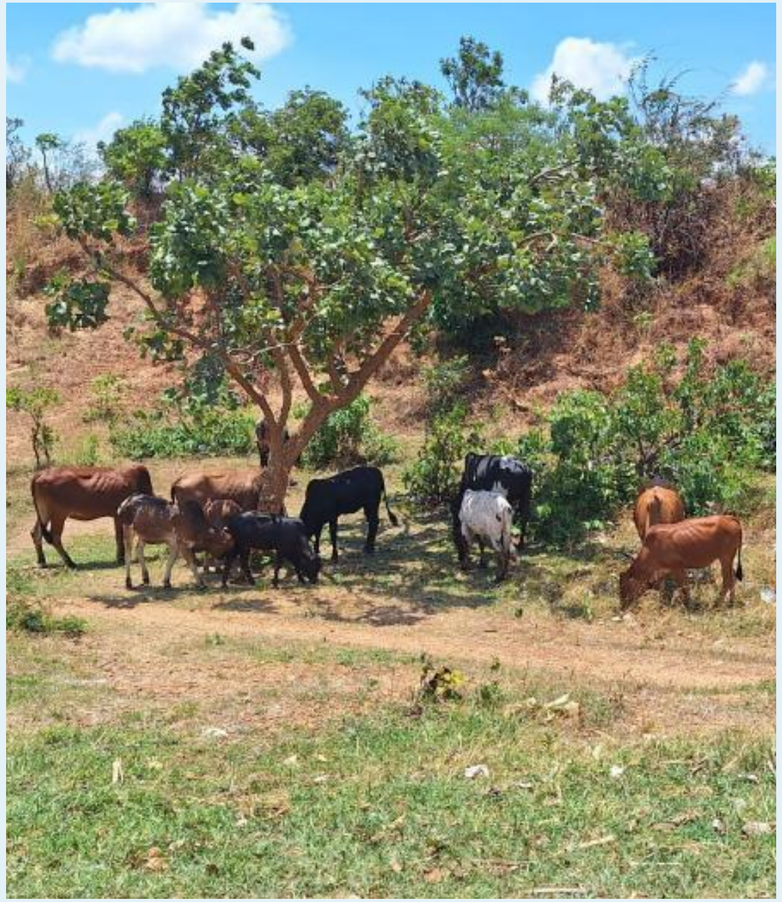
Virtual peer sharing:

- Online training on GHG measurement for Malawi
- UFCCC RCC ESA Webinar: Strengthening Nationally Determined Contribution (NDC) revisions through robust livestock greenhouse gas



Shared Priorities

- Livestock requires greater policy prioritization
- Climate adaptation and mitigation must be addressed together
- Multi-stakeholder platforms are critical for coordination and scaling solutions
- Capacity building is needed at local, national, and regional levels
- Financing gaps remain a major barrier to implementation



Livestock grazing under a tree in Malawi. Credit: AfCAP/SSN

About the AfCAP Livestock Community of Practice

- The African Climate Action Partnership (AfCAP) is a network that fosters collaboration to advance low-emission development strategies
- Communities of Practice:
  - Africa Mini-Grid CoP
  - Livestock
  - Soil Organic Carbon
  - Rice

About the AfCAP Livestock Community of Practice

- Livestock CoP
  - Enhance capacities to design and implement climate action in the livestock sector
  - To increase livestock sector participation in design and implementation of climate action
  - Develop a demand-driven, peer-to-peer learning platform for sharing, engagement and communication in the livestock sector

About the AfCAP Livestock Community of Practice

Planned activities:

- Webinar series – *On-going*
- In-person workshop focused a shared African position for climate smart livestock – Q3/4

Future Ambitions (fundraising on-going):

- Knowledge repository: Best practice in inventory development in Africa
- Further in-country support for inventory strengthening/NDC development
- Climate finance training

Thank you for your attention

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