



Division of Global Agriculture and Food Systems

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THE UNIVERSITY of EDINBURGH  
The Royal (Dick) School  
of Veterinary Studies

Global Agriculture and  
Food Systems



**LD4D**  
LIVESTOCK  
DATA FOR  
DECISIONS



**Centre for  
Tropical Livestock  
Genetics and Health**

Scoping Climate-Smart Livestock Systems in Africa (SciCLISA)



**Innovate  
UK**

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## **Background**

Carbon credit schemes can allow producers to attract funding in reward for efforts to reduce greenhouse gas emissions from their production activities. Valid emissions credits (i.e. a certified amount of emissions reduction) can be used by individual producers themselves as an offset or sold into a carbon market where other producers are seeking to offset their own emissions at a cost that is less than they would incur by changing their own practices.

Carbon credit schemes are in different stages of development around the world and are prominent in high emission sectors such as energy generation. They could potentially offer an opportunity to incentivize sustainable practices in the livestock sector. SciCLISA aimed to explore lessons from emerging carbon credit schemes and to foster South-South learning between Brazil, Ghana, and Nigeria. The focus will be on institutional, data and other evidence barriers in relation to future innovation and business engagement in the livestock sector. We sought to explore the evolving role of both public and private sector actors in both certifying and transacting potential livestock sector credits.

The project is led by the Global Academy of Agriculture & Food Systems, University of Edinburgh. It builds on existing collaborations in Brazil (EMBRAPA) and a network of contacts in target African countries developed in two Bill and Melinda Gates Fund projects – SEBI/ Livestock Data for Decisions (LD4D) and CTLGH. Livestock Data for Decisions (LD4D) will draw on the extensive network of experts and organizations within the community. With a proven track record in facilitating knowledge exchange and collaboration across sectors and geographies, LD4D is uniquely positioned to bring together key stakeholders from Brazil, Ghana, and Nigeria.

## **Objectives**

1. To facilitate knowledge exchange workshops on carbon credits for livestock among stakeholders in Brazil, Ghana, and Nigeria.
2. To identify key data challenges and potential solutions to support potential carbon credit schemes in livestock.
3. Identify collaborative strategies to advance carbon credit systems application to livestock production in Ghana and Nigeria, leveraging the Brazilian experience.
4. Explore gender concerns in the implementation of carbon credit schemes.
5. To explore any longer-term industry partnership for foster learning and innovation between the three target countries.

## **Deliverables**

Project partners implemented 2 workshop/webinars over 3 months. The partners (particularly LD4D/SEBI and CTLGH) combined information and contact networks (Brazil and Africa) to mobilize awareness and attendance to develop the meeting programs and post meeting knowledge dissemination.

The webinars sought to explore specific requirements for and barriers to the development of livestock related credit schemes. Presenters included experts from both public and private sectors plus stakeholders from a range of non-governmental organisations and international/multilateral bodies such as the FAO and World Bank. Each webinar attracted more than 100 attendees.

## **Webinar 1: Lessons from Brazil - Carbon Credits and Livestock**

Date: 27 Feb 2025, 14:00 – 15:30 UK time

Duration: 90 minutes

### **Objectives**

1. Examine the current status of land-based carbon credit schemes in Brazil and their application to the livestock sector.
2. Explore feasibility and potential scenarios for implementing such schemes in Nigeria and Ghana.
3. Discuss lessons learned from carbon credit schemes in other sectors, identifying opportunities and risks for livestock systems.

### **Topics for discussion**

- Overview of Brazil's Land-Based Carbon Credit Schemes: Current state, challenges, and data requirements for livestock applications.
- Transferable Insights for SSA: Feasibility and potential scenarios in Nigeria and Ghana based on Brazil's experience.
- Cross-Sector Lessons: Key opportunities and risks from carbon credit schemes in agriculture, forestry, and other land-based sectors.

The webinar recording is now available on our website and YouTube channel: Here is the link <https://livestockdata.org/events/webinar-carbon-credits-and-livestock-lessons-brazil>

### **Key points from webinar 1**

Brazil has made progress in terms of developing institutional and regulatory frameworks for carbon credits, recognised and back up by a gold standard of emissions reduction accreditation. The formal Brazilian carbon credit trading system was introduced in 2024. Agriculture is currently excluded from this system but some livestock producers have been engaging with the voluntary carbon market (VCM). Even so, agriculture and livestock representation in the VCM is low compared to other sectors. This is largely due to challenges associated with monitoring reporting and verification (MRV) of emissions reductions.

VCM compliance is nevertheless backed by several robust methodologies for emissions reduction certification (of beyond business as usual) e.g. the [VERRA](#) standard. These use different monitoring systems usually combining direct measurement, modelling and satellite imagery. EMBRAPA (Luis Barioni) can advise on these methods for potential market participants in Brazil.

Participation by livestock in the VCM globally and in Brazil is currently limited but there is potential for learning from other sectors and the evolving experience with soil carbon measurement for scaling up participation. Nevertheless, there was a shared view of the need to develop better measurement methodologies that appropriately accredit different emissions intensities related to agricultural land uses. Beyond Brazil's VCM there is also merit in exploring credit arrangements in the context of corporate offsetting and in setting. That is, companies involved in livestock supply

chains can potentially seek within chain emissions reductions that can be used to offset emissions arising elsewhere from their operations.

A key challenge highlighted by several speakers is in scaling up emissions measurement and credit worthy reductions. That is, reliable emissions reductions and associated credits need to be at a scale to warrant the MRV expense. In this regard one highlighted successful project example was the Brazil Agriculture Precision project (VCS 4896), which was suggested as a good example of scaling in Brazil by connecting GPS-guided machinery (working with John Deere company), satellite imagery, and AI-driven analytics to optimize farming practices, leading to increased efficiency in soil carbon measurement. The model can potentially be applied in other countries.

Overall webinar 1 was confident that technological developments will lead to a deepening of carbon markets and the further participation of agricultural practices including livestock.

## **Webinar 2: Carbon Credits for Livestock - Opportunities and Challenges for Ghana and Nigeria**

Date: 20 March 2025, 14:00 – 15:30 (UK time)

Duration: 90 minutes

### **Objectives**

1. Understand the workings of Land-Based Carbon Credit Schemes in Ghana and Nigeria
2. Examine market dynamics, including potential buyers, sellers, and certification schemes.
3. Explore social inclusion considerations within carbon credit systems.

### **Topics**

- The current state of land-based carbon credit schemes in both countries
- Market Dynamics: Key players in carbon markets, including buyers, sellers, and certifiers.
- Social Impacts: Inclusion, equity, and gender considerations in carbon credit systems.

The webinar recording is now available on our website and YouTube channel:

<https://livestockdata.org/events/webinar-carbon-credits-livestock-opportunities-ghana-and-nigeria>

## **Key points from webinar 2**

Both Ghana and Nigeria have institutional frameworks in the shape of Nationally Determined Contributions that greenhouse gas mitigation plans. However, agriculture does not yet feature highly in either country's planning. More generally both countries have developed national level policy for carbon credit trading and can count a backlog of projects waiting to have their emissions accredited for potential market participation. Some of these putative emissions reductions are in the land-based sector, but few are directly related to livestock. Ultimately the livestock sector in both countries does not offer reliable credits at scale. We found some evidence of some businesses seeking to promote technical innovations in the sector (e.g. feed additives) but again, the challenge for these companies will be to gain adoption at scale. There is much awareness and dialogue around the potential for credits from land-based projects, but many of the MRV challenges indicated in the Brazilian context apply in Africa. Both countries are seeking to advance the VCM to attract

funding into the sector. International standards for certifying voluntary reductions apply in both countries.

### **Outputs & outcomes**

The main project outcome is a clearer understanding of the barriers to the likely penetration of carbon credits (voluntary and formal markets) in the livestock sectors of all three countries.

Much can be learnt from other sectors (e.g. energy) about the requirement for valid emissions credits, and the livestock sector (and agriculture more generally) faces complex challenges in terms of monitoring verifying and reporting emissions that need to be overcome.

Brazil is clearly more advanced in addressing the regulatory and technological challenges of developing carbon credit schemes for heavy industry, but experience in agriculture is currently limited to activity in the voluntary carbon market (VCM). This means that there are some transactions of certified emissions credits in the land-based sector, but these are outside any government led regulatory or compliance market. The Brazilian experience provides some pointers for the development of credits in Africa, but specific hurdles in relation to regulation and emissions baselines need to be considered carefully.

Through the workshop/meeting preparations and delivery we have established a network of researchers and government stakeholders in three countries focusing on the potential for carbon credits and markets related to national livestock sectors. Fewer industry participants registered for the webinars although some contacts were established with enterprises seeking to develop and market specific emissions mitigation technologies such as animal feed additives and cold chain development for better product storage. We suggest that there is more work to do in terms of explaining the potential advantages of emissions credits as an industrial objective and revenue stream alongside the development of specific technologies.

The outcomes for all participants are largely in terms of improved knowledge about the status of livestock emissions credit development globally.

### **Impact**

Participants have been up skilled in terms of their knowledge of carbon market requirements in agriculture and the potential barriers in terms of:

- Development of certification standards including monitoring, reporting and verification (MRV) of credits from agriculture and livestock
- developing methods (e.g. using AI) to facilitate MRV at different scales
- The needs of credit purchasers
- The potential role of government to facilitate smallholder participation (e.g., by mandating specific benefit sharing models).

The impact of this knowledge will be slow but we anticipate that livestock credit markets will develop in Brazil and in Africa. As mentioned above - the need for mitigation at scales suggests a role AI methods (machine learning) combined with data simulation tools to predict the mitigation potential of grazing areas and different livestock systems. The general evolution of mitigation credits will inevitably improve the both the environmental and financial sustainability of livestock production.