



## ActionNs for Innovative climate change Mitigation & Adaptation of Livestock Systems (ANIMALS)

Initiative Lead and Co-Lead	Primary CGIAR Action Area	Estimated 2022 - 2024 Budget
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### Challenge

Low- and middle-income countries (LMICs) urgently need RLE livestock solutions to respond to climate change that won't threaten nutritional security, livelihoods and food systems, won't leave vulnerable people behind, and won't accelerate climate change through greater GHGe and threats to land, water and biodiversity. Strategic and well-targeted action research can provide answers to these tough choices and trade-offs as well as 'investable' solutions that attract policy attention and climate finance. Facing a climate emergency, research must provide proven adaptive measures that safeguard and capitalize on livestock benefits (<https://bit.ly/3sjOxwk>). Livestock are essential to the income and livelihoods of almost 930 million poor Africans and South Asians (<https://doi.org/10.1017/S1751731112001954>). Consuming animal source foods (ASF) has positive impacts on our cognitive development (<https://doi.org/10.1038/531S12a>) and growth (<https://doi.org/10.1093/advances/nmz018>). However, livestock production is highly vulnerable to rising temperatures, erratic precipitation and increasing extreme events (<https://doi.org/10.1038/nclimate2754>). About 994 billion USD in livestock value (~55% of total) are exposed to various climate hazards, especially climate variability (198 billion USD) and heat stress (130 billion USD) (<https://hdl.handle.net/10568/113289>).

Research must also provide innovations that mitigate livestock climate impacts. Livestock cause ~15% of human-induced GHG emissions (<https://bit.ly/3dMWTY3>) largely due to low feed efficiencies (<https://doi.org/10.1073/pnas.1308149110>), land use change (<https://doi.org/10.1038/s41586-020-03138-y>), land degradation (<https://www.ipcc.ch/srccl/>) and deforestation (<https://doi.org/10.1038/s41559-021-01417-z>). Nearly 50% of LMICs prioritize livestock-actions in their Nationally Determined Contributions (NDCs)--the national blueprints for climate action (<https://bit.ly/3myy06n>), and some are developing livestock-based Nationally Appropriate Mitigation Actions (NAMAs) (<https://hdl.handle.net/10568/56828>), but implementation lags. Governments need substantial technical support to access finance, implement programs and report mitigation achievements (<https://doi.org/10.1038/s43016-020-0042-9>). These challenges apply equally to the private sector where large-scale production changes landscapes and supply and demand shifts can provide major benefits and influence consumer behaviour.

Despite this urgency, research on climate-smart options for livestock in LMICs is scarce (<https://doi.org/10.1088/1748-9326/abc278>), so policy makers, investors and producers face gaps that limit their abilities to select policy and commercial leverage points, attract climate finance, measure progress and actually adapt or mitigate their activities to the climate emergency.

### Objective

ANIMALS aims to enable 300,000 producers (at least 40% women) in five countries to better prepare for and manage uncertain futures by adopting management practices that enhance their climate-related adaptive capacities (livestock assets) while ensuring household equity and reducing GHGe intensities. The initiative will also work with producers on adaptation initiatives and practices that restore degraded landscapes (100,000 hectares) while offsetting enteric methane emissions by 25 percent.

The initiative aims to stimulate inclusive and market-driven adaptation and mitigation pathways along ten value chains. It will promote ten interventions, new business models, and products that benefit producers, input suppliers, market actors, and consumers, help to adapt livestock value chains in five countries, and encourage private livestock enterprises to increase their commitments to sustainable production. These interventions will expand business opportunities, increase access to bundled climate information, insurance and credit services, and provide economic opportunities for women and youth in areas like fattening operations, feed and forage production, input markets and advisory services.

More broadly, the initiative aims to stimulate sustainable finance by providing evidence to five climate investors about how livestock production can be climate resilient, reduce climate emissions and be profitable. Five governments will use our tools to plan livestock climate interventions through policy and investment support from farm to landscape levels. Governments will also be supported in their national adaptation and mitigation reporting capacities to meet UNFCCC targets, helping to leverage more climate finance for the livestock sector.

### Theory of Change

Facing enormous exposure to climate hazards and contributing substantially to global greenhouse gas emissions (GHGe), the livestock sector urgently needs to adapt to climate change while reducing its impact on the global climate system. The ActionNs for Innovative climate change Mitigation & Adaptation of Livestock System (ANIMALS) initiative will partner with public and private actors to develop and deliver actionable innovations that measurably help producers, businesses, and governments adapt livestock agri-food systems (AFS) to climate change and reduce GHGe from livestock production. ANIMALS will contribute to sustainability and development goals across a range of livestock systems in low and middle income countries (LMICs).

By 2024, with the Sustainable Animal Productivity for Livelihoods, Nutrition and Gender inclusion - SAPLING and Building Systemic Resilience against Climate Variability and Extremes- ClimBeR IDTs, 300,000 producers will apply already-tested resilient and low emissions (RLE) technologies, practices, and climate risk management strategies across five countries. Leveraging NDC commitments and climate finance, governments and the private sector will employ initiative tools and business models to climate de-risk investments in at least 10 livestock value chains (with ASPIRE - building integrated agro-silvo-pastoral food systems resilient to climate change and other crises and ClimBeR). Across twenty landscapes, the initiative will provide evidence and systems for environmental restoration and reduced GHGe in livestock production (with Transforming food systems from net GHG sources to sinks IDT). Tailored decision support tools and robust data to assess interventions and trade-offs will influence government priorities in five countries.

By 2030, our farm, value chain, landscape and policy innovations will be widely used across fifteen countries (with Latin America & Caribbean and East & Southern Africa regional IDTs), reaching 2 million producers and attracting 200 M USD of investment into solutions that provide win-win-win social, environmental and economic benefits for people and the planet. Ten countries will use our tools to demonstrate progress on their UNFCCC mitigation and adaptation commitments.

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### Highlights

**Thinking global, acting local**This will be the first initiative to simultaneously address climate change adaptation and mitigation in diverse livestock sectors across in the Global South under one umbrella. It creates a coherent global agenda that addresses pressing local climate concerns and accounts for South-South learning and pro-poor rural development.

**Climate finance for livestock**Climate investors have ignored tropical livestock production systems with critical livelihood and environmental implications. This initiative will demonstrate how livestock production can be an attractive and viable climate investment opportunity, unlocking and directing large amounts of climate finance toward livestock AFS.

**Accelerating commitments towards action**Our work will directly influence and boost commitment from large multinational meat and dairy companies for climate mitigation (e.g., net-zero emissions by 2050). The initiative will accelerate measurable progress reducing environmental hoofprints through identifying specific private and public entry points for actions.

**Making livestock count**Robust adaptation tracking protocols for livestock livelihoods will be implemented at scale, building on earlier pilots across East Africa. These are the first protocols developed specifically for different livestock production systems, including indicators that have been validated with both local producers and national governments.

**Partnerships for climate smart policy impact**Our initiative will develop multi-dimensional tools to evaluate policy and technology interventions' impact (household profitability, food security, GHGe, etc.) and identify trade-offs and scalable incentives. This will enhance national capacities and establish a coalition of public and private users of our outputs to develop social inclusive investment plans and strategies.

### Work Packages

	Scope of Work	3-year Outcomes
Farm-level technologies to adapt to climate change and reduce GHGe	WP1 will co-develop new technologies and scale out proven socially-inclusive and gender-equitable practices that adapt household livestock production to climate stresses such as temperature extremes and variable water availability, while quantifying and promoting practices that offer mitigation synergies from e.g. feed production or manure management.	150,000 livestock producing households will implement climate-smart technologies appropriate to their production system, improving their adaptation to climatic stresses while reducing GHGe intensities by 10% against Business as Usual. Within households, distribution of labour and benefits associated with climate smart technologies will be gender equitable.
Tailored climate risk management (CRM) services	WP2 will co-design and deploy digitally-enabled services that bundle climate information, risk transfer and credit strategies in livestock AFS. These public-private partnerships will build capacities to use the bundled services; the digital platforms will facilitate rapid scaling.	300,000 livestock (45% women and youth) producing households in 5 countries access climate information, insurance and credit products and services delivered through public-private partnerships, including national HydroMet services and local communities. Social and gender barriers to digital technologies will be identified and reduced to ensure that women and youth will access the information services.
Climate finance	WP3 will co-design and implement tools, business models and other market-based innovations that crowd-in climate finance that incentivizes adaptation and delivers verifiable GHGe reductions by livestock agri-food market system actors.	Climate finance investors commit 100 Million USD for climate-smart livestock interventions that reduce GHGe intensities and enhance climate risk management. Five private companies and meat processors commit to changing their business practices in order to reduce GHGe and manage climate risk.
Livestock landscape solutions	WP4 will identify and implement interventions that offset GHGe and land degradation through land use planning and governance, restoration, and avoided deforestation. It will assess the contribution of farm level livestock adaptation and mitigation interventions to sustainable landscapes.	Land managers implement measures (e.g., land use plans, tree planting scheme) that will increase landscape health (e.g., tree cover, soil health) of 100,000 ha through avoided deforestation and land restoration in both rangelands and forests. leading to both mitigation and adaptation benefits.
Tools for policy impact	WP5 will develop analytical tools and produce evidence to understand the sectoral political economy and enhance national capacities to plan, monitor and report progress toward adaptation and mitigation targets. These tools will also enable public and private sector decision makers to understand and act on trade-offs and synergies between socio-economic and environmental outcomes and incentives.	Policies, livestock master plans and climate change reporting systems (e.g., UNFCCC National Communications) in 5 countries include RLE livestock evidence and outputs from ANIMALS tools to prioritize and guide socially inclusive livestock and land management investments to achieve both adaptation and mitigation goals.

**Actions for Innovative climate change Mitigation & Adaptation of Livestock Systems (ANIMALS)**

**Impact Area Contributions**

<b>Nutrition, health &amp; food security</b>	RLE livestock AFS will safeguard affordable access to AFS by the poorest and most vulnerable people. ASF provide essential protein and micronutrients, critical during pregnancy and early childhood. Appropriate management of AFS can also help curb the spread of zoonotic diseases and foodborne illnesses.
<b>Poverty reduction, livelihoods &amp; jobs</b>	RLE livestock AFS will buffer the livelihoods of livestock-producing households against climate variability, enabling them to better manage risks and generate more reliable income from their livestock. More productive value chains will extend youth employment, address gender inequalities, expand economic opportunities for businesses and households.
<b>Gender equality, youth &amp; social inclusion</b>	RLE livestock AFS will promote and ensure more equitable participation of women in decision-making, widen ownership and control of productive assets, and expand economic and employment opportunities for women and youth.
<b>Climate adaptation &amp; greenhouse gas reduction</b>	RLE livestock AFS will equip producers with adapted solutions, practices, and capacities so they can deal with climate shocks and risks. Increased on-farm production efficiencies and sustainable land management will reduce GHGe. investments and national policy interventions will help countries meet emissions reduction commitments and adaptation goals.
<b>Environmental health &amp; biodiversity</b>	RLE livestock AFS will reduce GHGe that contribute to global warming. RLE livestock AFS will help restore soil and rangelands and reduce deforestation, promoting sustainable landscapes, maintaining and/or increasing biodiversity and providing ecosystem services. They will reduce deforestation by decreasing land pressure and by extension reduce a major driver of biodiversity loss.

**Impact on SDGs**



**Regions**

Global East and Southern Africa (ESA), Latin America and the Caribbean (LAC), South East Asia and the Pacific (SEA), West and Central Africa (WCA)

**Countries**



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### Innovations

Improved forage feeding systems that include grasses, legumes, forage shrubs and supplements improve animal nutrition across seasons. This increases animal productivity, improves household resilience in dry seasons and reduces or off-sets farm emissions.

A satellite-based agri-climate risk scoring and digital advisory system is used to compile targeted financial service bundles for livestock producers. The service bundles credit, agricultural advisories, and insurance for producers, enhances score reliability and reduces transaction costs for service providers, therefore enhancing sustainability and efficiency.

Inclusive traceability tools co-designed with meat packers, ranchers, and NGOs increase trust - and thus motivate investments - in livestock value chains. They are adapted to cover important climate-related attributes and to include smallholders, undocumented deforestation and ranch management practices.

Agroecological zone and livestock-species guidelines for landscape restoration provide options that facilitate adaptation (e.g., appropriate feed and forage and shade tree species: silvo-pastoral systems) and sequester carbon. They guide national and programmatic climate change responses, while accounting for biodiversity, soil and water co-benefits from restoration and land management.

Ex-ante climate smart planning tools for the livestock sector incorporate socio-economic and environmental models to assess policies, incentives, and trade-offs in terms of their environmental, economic and social outcomes will help identify adaptation/mitigation synergies, trade-offs and leverage points to support better decision making.

### Key Partners

<b>Demand</b>	Government	Ministries of Agriculture and Environment of Kenya, Ethiopia, Uganda, Vietnam and Colombia demand our support to design, acquire funding and implement dairy and beef NAMAs and adjust NDCs respectively.
	Multilateral	Investors need assistance to prioritize and target climate smart investments in the livestock sector. We plan to intensify work with key partners such as Food and Agriculture Organization, the African Development Bank, the Inter-American Development Bank, and World Bank to guide their investments through support to business cases and tracking impact on key climate change targets.
	Other	Financial institutions are key to develop a climate finance strategy for this initiative and for up-scaling and sustain in time Climate-Smart solutions. The International Finance Corporation is keen to work with us to develop new business models along AFS systems. The Green Climate Fund and the NAMA Facility are currently evaluating proposals from our national partners for NAMA implementations in Africa and Latin America.
		Producer organizations are working to help their members make livestock production better adapted to climate change and they need information about practices and incentives for adoption. Youth climate change networks seek information about climate change and agriculture.
	Private Sector	National and multinational companies that produce and commercialize meat and dairy products for local and export markets. For example Minerva Foods has expressed interest to partner with us to achieve their sustainability plan, that includes traceability tools for zero deforestation beef.
<b>Innovation</b>	Academic, Training and Research	CIFOR-ICRAF, Wageningen University, IRI Columbia University, ETH, Aberystwyth University are examples of international research institutions and universities that provide upstream innovation ideas to ANIMALS. National universities are key innovation and capacity building partners, including Makerere University, University of Nairobi, Sokoine, National University of Colombia and Bahir Dar universities. Preference will be given to female students for thesis associated with ANIMALS.
		Kenya Agriculture and Livestock Research Organization (KALRO), NaLIRRI (Uganda), TALIRI (Tanzania) implement climate smart agriculture projects and are important co-developers of initiatives across geographies. National HydroMet (IDEAM-Colombia, NMA, Kenya Meteo) services are crucially important for the co-production of climate information services.
	International NGO	SNV, Send a Cow, Environment Alert are all NGOs with whom we collaborate to pilot and refine interventions with farmers across East Africa.
	Other	Colombian Federation of Cattle Ranchers (FEDEGAN) brings together, as affiliates, local livestock organizations linked to the national livestock industry and therefore are key providing information to develop and up-scaling best-suited Climate-Smart solutions at farm and landscape levels.
Private Sector	Almacenes Éxito (multinational beef retailer in South America) will work with us on selling certified deforestation-free beef through its channels, facilitating market-based climate action. VanDerSat is a leading global provider of daily satellite observed products with an aim to reduce food and water crises. Financial Access is a financial services firm for emerging markets.	
<b>Scaling</b>	Academic, Training and Research	Global Research Alliance on Agricultural Greenhouse Gases (GRA) is a key partner for ANIMALS for scaling technologies for GHG emissions intensity reduction and increasing carbon stored in soils at scale. Various actions (e.g., government relations, PhD students, collection/sharing local emission factors and activity data) channeled through the Livestock Research Group of the GRA will be crucial in this partnership.
	International NGO	ECLOF is an iNGO working to provide financial and other services to micro-entrepreneurs and smallholders. GANSO is a technical and financial assistance center, Climate Focus is a climate focused NGO and with both we will expand work on deforestation tracking and beef certification.
	Local Government	Ministries of Agriculture and Environment at national and local level are a key partner. For example in Kenya we work directly with county extension staff to provide training of trainers.
	Private Sector	ACRE (Agriculture and Climate Risk Enterprise) Africa links farmers to insurance products so they can confidently invest in their farms. Private insurance companies such as Oromia Insurance and Equity in East Africa are important for taking insurance to scale.
iCow and iShamba are digital application platforms that reach hundreds of thousands of farmers with information about farming innovations.		

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