

GRA FLAGSHIP PROJECT PROPOSAL:

Title: HALow: Health Approaches for Lowering Livestock Emissions

Leaders:

- Şeyda Özkan, Livestock Climate Solutions (lead consultant), and Nick Wheelhouse, Edinburgh Napier University, co-leads GRA Animal Health Network
- John Tauzel and Pamela Ruiter, Environmental Defense Fund

Advisory board

- Andrea Pickering, GRA Inventories and MRV Network
- Peter Ettema, GRA Special Rep, AEC
- Ilias Kyriazakis, LRG
- Birthe Paul, GIZ (TBC)
- Claudia Arndt, ILRI (TBC)

The Advisory Board, comprising representatives from key GRA networks, partner organizations, and technical experts, will provide strategic overall guidance and facilitate linkages with broader international initiatives. Acting in an advisory capacity, the board will support strategic reflection and alignment and offer independent and impartial guidance across the project activities. This governance structure enables coordination across the Flagship's diverse components while maintaining strong connections to both scientific and policy communities within and beyond the GRA.

GRA Council Champions:

1. John Harrison, Ireland
2. Professor Dickson Andala, Kenya
3. Stephanie Preston, New Zealand
4. Vibeke Lind and Angela Schwarm, Norway
5. Annie Tuisuga, Samoa

Countries involved:

Initial participation from at least eight countries across Africa, Latin America and the Caribbean, Asia, Europe, and Oceania, with scope for expansion to additional GRA member countries subject to resourcing.

Start date and project length:

Proposed start: Following July 2026 Council meeting approval
Project length: 3 years (2026 – 2029)

Executive Summary

HALow is a proposed Global Research Alliance on Agricultural Greenhouse Gases (GRA) Flagship initiative led through the GRA Animal Health Network to strengthen the scientific and policy foundations linking animal health improvements with reductions in livestock greenhouse gas (GHG) emissions.

Livestock systems contribute substantially to global agricultural methane emissions, yet the role of animal health in influencing emissions intensity, productivity, resilience, and resource-use efficiency remains underrepresented in existing quantification methodologies and climate mitigation frameworks. Many countries — particularly low- and middle-income countries (LMICs) — currently lack the tools, harmonized approaches, and institutional capacity needed to incorporate animal health interventions into national climate planning, reporting frameworks, and investment strategies. Unlike single-outcome mitigation interventions, animal health improvements generate quantifiable co-benefits across productivity, welfare, economic performance, resilience, and One Health dimensions — yet without integrated quantification approaches, this distinctive value remains difficult to evidence and finance.

The HALow Flagship will address this gap through the development and application of a harmonised scientific framework and accompanying policy guidance to assess the climate impacts of animal health conditions and interventions across diverse livestock species and production systems. HALow will support the quantification of co-benefits alongside emissions impacts, building the integrated evidence base required to position animal health as investment-ready for climate finance and to demonstrate value across the full suite of outcomes that other mitigation pathways cannot deliver. The initiative brings together interdisciplinary expertise spanning animal health, epidemiology, livestock systems, climate science, economics, policy, and inventory methodologies.

The proposed three-year Flagship (2026–2029) will focus on three interconnected objectives:

1. Establishing a coordinated international research and collaboration platform across participating countries;
2. Implementing and refining harmonized quantification approaches through multi-country applications and LMIC demonstrator case studies; and
3. Supporting pathways for policy uptake by strengthening engagement between research, policy, and inventory communities.

The initiative will place strong emphasis on capability strengthening, including support for early-career researchers, technical training, peer learning, and institutional development within participating countries. Initial engagement includes countries across Africa, Latin America and the Caribbean, Asia, Europe, and Oceania, with ambition to expand participation over time.

The Flagship is expected to deliver globally relevant methodologies, peer-reviewed scientific evidence, practical policy guidance, and strengthened international collaboration. Outcomes will support improved livestock productivity and efficiency, reduced emissions intensity, and enhanced resilience and adaptation co-benefits. The Flagship will also strengthen national analytical capacity and create clearer pathways for integrating animal health into climate mitigation planning and investment frameworks.

Approximately USD 1 million in confirmed support has already been secured through contributions from the Global Methane Hub, Environmental Defense Fund, Edinburgh Napier University, and partners within the GRA Animal Health Network. Additional co-investment will support expanded country participation, enhanced analytical capacity, policy integration activities, and broader dissemination and uptake.

By connecting animal health, livestock productivity, climate mitigation, adaptation, and policy implementation, HALow provides a globally applicable and collaborative platform that complements existing GRA livestock and inventory initiatives while addressing a critical and underexplored opportunity for agricultural climate action.

Brief description of project:

The critical role of animal health in mitigating GHG emissions has been, until recently, largely underexplored. Livestock systems contribute approximately 40% of global agricultural methane emissions, yet significant evidence and methodological gaps remain in understanding how animal health conditions (AHCs) and interventions influence productivity and greenhouse gas emissions across livestock systems. While poor animal health may reduce productivity, resource-use efficiency, and reproductive performance — thereby increasing emissions intensity — countries currently lack harmonised approaches for evaluating and interpreting these relationships within diverse production contexts. Unlike single-pathway interventions such as feed additives, animal health improvements generate measurable co-benefits across productivity, welfare, economic performance, resilience, and One Health outcomes. HALow will quantify these dimensions alongside emissions impacts to ensure animal health is evaluated on its full value proposition. The Flagship therefore focuses on strengthening the evidence base, improving methodological consistency, and supporting uptake within national contexts.

Central to this Flagship are two complementary tools: a scientific framework and policy guidelines — developed by an interdisciplinary team of researchers/stakeholders across animal health, welfare, nutrition, epidemiology, economics, climate and policy science — that together provide a systematic approach for how animal health conditions and interventions are represented in quantifying GHG emissions while accounting for trade-offs and co-benefits across production systems and geographies. The framework recognizes that the impacts of animal health interventions on emissions may arise through both direct and indirect pathways and may vary across production systems, management conditions, and geographical contexts. The project will therefore explicitly consider uncertainty and context dependency in interpretation of results. Spanning 11 components — animal health conditions, interventions, physiological functions, climate, economics & markets, management practices, GHG emissions, human health, policies & regulations, environment, and sociocultural aspects — the framework captures the interconnected nature of these systems. For example, an animal health intervention may simultaneously influence productivity, management practices, resource-use efficiency, and emissions intensity, while also generating economic and resilience-related outcomes at farm and system levels.

The policy guidelines help translate the framework into practical, decision-relevant guidance for integrating animal health into climate policy and planning processes. Both the scientific framework and the policy guidelines are applicable across livestock species and production systems — from intensive to pastoral — without prescribing rigid definitions that vary globally. The framework is intended as a structured analytical approach for linking animal health conditions and interventions with productivity and emissions outcomes, rather than a single fixed model or inventory methodology. Participating countries will apply the framework using approaches appropriate to their systems, data availability, and analytical capacity. Through coordinated international collaboration, the Flagship will help harmonize methodological approaches, improve data availability, and generate policy-relevant evidence across diverse livestock systems.

The GRA provides a unique mechanism to align research, inventory development, and policy engagement across member countries. By working collectively, participating countries will generate evidence that supports integration of animal health into climate mitigation strategies and enables broader uptake beyond the initial project cohort.

Initial implementation will focus on a core group of participating countries across diverse livestock systems and institutional contexts, while ensuring methodologies are designed for wider application

across GRA member countries. Where countries have interest and capacity, the project will also explore alignment with national greenhouse gas inventory methodologies. Engagement with national inventory compilers, where relevant, will help ensure outputs are interpretable and usable within existing reporting systems, while maintaining a primary focus on animal health, productivity, and emissions dynamics.

Where possible, the Flagship will engage animal health practitioners as critical intermediaries between research outputs and on-farm implementation, given their direct connections to primary production. This engagement can strengthen the pathway from research evidence to practical application and farmer adoption.

A strong emphasis will be placed on capacity strengthening (institutional and technical) to ensure sustained impact. Targeted support will be provided to national research, policy, and technical institutions on assessment of animal health in the context of climate, and its potential integration into climate policies. Structured peer-learning mechanisms will facilitate knowledge exchange between participating countries, including mentorship from countries with more advanced systems. The Flagship will generate decision-relevant evidence designed to be interpretable and usable within national policy and reporting contexts through engagement with relevant stakeholders such as policy teams and, where appropriate, inventory practitioners.

This Flagship will be led by the GRA Animal Health Network, with support from the advisory board. A dedicated Flagship Coordinator, based at Edinburgh Napier University, will manage day-to-day operations, facilitate cross-country knowledge exchange, coordinate technical working groups, and ensure alignment across research teams. Strategic oversight will be provided through the AHN-led governance structure and advisory board, with participating countries engaged through thematic technical working groups. Initial country participation will prioritise geographic diversity, existing engagement, and readiness to contribute data, expertise, or case studies. Strategic decisions will be guided through consensus between AHN leadership, participating countries, and the advisory board.

Objectives and outputs

Objective 1. Establish and operationalise a coordinated international platform (Months 1–18)

This workstream will establish the global coordination structure required to implement the Flagship across participating countries. It will bring together national research teams, policy stakeholders, and, where relevant, inventory practitioners to ensure alignment and usability of outputs. Activities will focus on formalising country participation, establishing governance arrangements, and creating thematic technical working groups. Key implementation risks include variability in national data availability, institutional capacity, and livestock system contexts across participating countries. The Flagship will address these through phased participation, harmonised methodological guidance, and structured peer-learning and technical support mechanisms.

A key component will be the identification and synthesis of existing datasets, alongside assessment of data and quantification gaps, institutional capacities, and priority animal health conditions within participating countries. The platform will also support structured peer learning, technical exchange, and collaboration across diverse livestock systems. Early-career researcher engagement (e.g. CLIFF-

GRADS, PhDs, Postdocs) will be embedded within this platform to support both research delivery and long-term capacity development.

Key Outputs:

- Formalised GRA Livestock Health & Emissions Research Platform (Month 6)
- Multi-country data inventory and gap assessment report (Month 8)
- Functional international collaboration and peer-learning network (Month 12)
- Identified pathways for interpretation and application within national systems (Month 12)
- Capacity-building programme established (Month 12)

Objective 2. Apply and adapt harmonised analytical approaches (Months 1–36)

This workstream will apply and adapt the scientific framework across participating countries to assess the relationships between animal health, productivity, and GHG emissions across livestock systems. Harmonization in this context refers to consistency in analytical principles, system boundaries, assumptions, and reporting structures — rather than prescribing identical data collection methodologies — to enable cross-country synthesis while respecting differences in livestock systems and analytical capacities. The work will focus on priority animal health conditions and interventions, generating comparable evidence across production systems and geographies. Where participating countries have advanced inventory systems and express interest, the project will explore opportunities to align the framework approach with national reporting frameworks.

Multi-country applications will be complemented by in-depth demonstrator studies in selected LMICs to generate high-resolution, investment-relevant evidence and strengthen national analytical capacity. Cross-country harmonisation will ensure consistency in assumptions and enable synthesis of results into globally relevant findings. Collaboration with national stakeholders, including policy and (where relevant) inventory practitioners, will support interpretation and potential application of results.

Outputs will be translated into practical methodological guidance to support application within policy, planning, and, where appropriate, reporting contexts. Alignment with emerging international approaches (e.g. LEAP guidelines) will be considered where relevant, without constraining the scientific scope.

Key Outputs:

- Country-level application of the scientific framework across participating livestock systems (Months 24–36)
- Three high-resolution LMIC demonstrator case studies (Month 30)
- Peer-reviewed synthesis publication (Month 36)

Objective 3. Support pathways for policy and reporting uptake (Months 6–36)

This workstream will focus on creating the conditions for the uptake of Flagship outputs by supporting early engagement with relevant stakeholders and identifying practical entry points for application within national systems. The emphasis will be on ensuring that evidence generated through the Flagship is interpretable, accessible, and aligned with country needs.

Engagement with national policy stakeholders and, where relevant, inventory practitioners will support linkage between research outputs and existing planning and reporting processes. These interactions will help identify how animal health evidence could be incorporated into national

approaches over time, recognizing that different countries will have different entry points and timelines for integration based on their institutional contexts and priorities.

The workstream will prioritise enabling pathways and facilitating development of opportunities rather than delivering implementation and will complement longer-term national processes and international initiatives.

Key Outputs:

- Identified country-level pathways for applying animal health evidence (Month 30)
- Policy-relevant summaries and technical briefs (Month 36)
- Established linkages between research teams and policy/reporting stakeholders (Month 36)

Highlight any climate adaptation co-benefits that are expected from the findings or outcomes of the project:

While mitigation is the primary objective, the project's outputs are expected to generate meaningful adaptation-relevant benefits. Improved animal health generates important climate adaptation co-benefits by enhancing livestock's resilience towards climate-related stressors, including changes in feed and water availability. Healthier animals are typically more productive under changing climatic conditions, reducing vulnerability for producers, improving livelihoods, and reducing the GHG emissions intensity. Most countries refer to animal health in their NDCs as a climate adaptation strategy while the link to mitigation benefits is missing. Therefore, the project aims to fill this gap by integrating the adaptation and mitigation benefits of improved animal health into a unified evidence base.

List any capability-building activities or opportunities that are included in this project:

Capability-Building Activities (with Key Outputs Highlighted)

This Flagship embeds capability-building across all workstreams to strengthen scientific, institutional, and policy capacity across participating countries, particularly in low- and middle-income countries (LMICs). Activities are designed to support the generation, interpretation, and application of animal health-related evidence within livestock systems, while ensuring relevance to national policy and reporting contexts.

Early-Career Researcher Development

- Support for 6 early-career researchers (CLIFF-GRADS, PhDs, Postdocs) embedded in national teams
- Cross-country exchanges and co-supervised research aligned with Flagship case studies
- Opportunities for joint publications and international collaboration

Strengthening Technical Quantification of Animal Health in the Context of Climate

- Providing technical assistance on application of the standardized animal health-GHG emissions framework and policy guidelines
- Support for analysing and interpreting results across diverse production systems
- Practical tools for implementation
- Case studies

Connecting Research, Policy, and Inventory Communities

- Facilitating collaboration between research teams, policy stakeholders, and (where relevant) national inventory compilers and veterinarians and extension officers.
- Supporting dialogue to align data needs, assumptions, and outputs across these communities

Enhancing Technical Capacity to Improve Data Systems and Analysis

- Supporting improvements and harmonization in national data collection, management, and integration systems
- Promoting the use of complementary data sources (e.g. surveillance data, administrative records, field knowledge)

Supporting Policy, Reporting, and Investment Readiness

- Development of practical, country-relevant guidance for policy and planning
- Facilitating access to technical support through GRA networks
- Supporting translation of scientific results into policy briefs and investment cases
- Considering alignment with emerging international guidance (e.g. LEAP) where appropriate

Key partners and existing resources:

Organization	Resources or linked projects
Global Methane Hub	Animal Health and Climate Initiative funder: • USD 150,000 direct seed funding for country work under flagship for approx. 3 countries • USD 250,000 funding for Global Research Group (Flagship) coordinator based at Edinburgh Napier University • USD 120,000 for 6 country researchers (CLIFF-GRADS and research stays)
GRA Animal Health Network	In-kind technical contributions: • Project co-leadership • Project management and research coordination
Environmental Defense Fund	In-kind technical contributions: • Project co-leadership and strategic coordination • Policy integration expertise and climate finance engagement support
GRA Livestock Research Group	Platform and network access; dissemination channels; research community engagement
GRA Inventories and MRV Network	Advisory support on inventory considerations (Andrea Pickering); guidance on alignment opportunities where relevant
GBADS	Disease burden data frameworks; economic impact assessment tools; analytical methodologies
GIZ	LiveSys project linkages; funded animal health initiatives; country-level implementation support

National research institutes and universities in participating countries	In-country research capacity; local data access; policy connections; student supervision; institutional partnerships
--	--

Benefits and outcomes from Flagship project:

The Flagship will deliver:

- Harmonised evidence and analytical approaches linking animal health to livestock productivity, emissions, and resilience
- Strengthened international collaboration and improved data systems
- Enhanced technical capacity in participating countries
- Clear pathways for incorporating animal health into climate mitigation planning and related reporting processes
- A scalable model for integrating animal health into livestock climate strategies across GRA member countries

These outcomes will support countries in accessing climate finance and advancing animal welfare, productivity, food security, and One Health objectives.

Further resourcing needs:

The project has secured foundational support for initial implementation, including a dedicated coordinator and project lead, five CLIFF-GRADS students, \$150,000 to support deep-dive studies in three LMICs, and technical engagement from Environmental Defense Fund. These resources enable launch of the global research platform and early country applications of the framework.

To realise full Flagship-scale impact, additional co-investment would strengthen delivery in the following areas:

- Assessment of animal health in the context of climate mitigation – Dedicated analytical support to ensure cross-country comparability.
- Expanded LMIC participation – Small catalytic grants, travel support, and in-country workshops to broaden participation beyond the initial cohort and ensure equitable engagement.
- Policy integration support – Technical input to assist countries in incorporating animal health into national inventories, NDC processes, and mitigation planning frameworks.
- Investment and funding engagement – Exploration of opportunities to support future scaling and uptake.
- Communications and knowledge dissemination – Support for policy briefs, open-access publications, and coordination of synthesis outputs.

Additional investment would accelerate scaling, expand country participation, and enhance the translation of scientific evidence into policy and climate finance outcomes.

Resourcing mechanisms:

To expand participation and maximise the impact of the initiative, the project will pursue a blended resourcing strategy drawing on GRA member contributions, multilateral development bank technical assistance, climate finance readiness programmes, philanthropic research funding, and bilateral development support. Different funding streams are expected to support complementary components of the work programme, including scientific coordination, country-level implementation,

policy integration, and climate finance engagement. The table below outlines potential resourcing mechanisms aligned with the project's objectives.

Funding commitments:

Target up to 30 countries

Confirmed Funding:

Item	Amount (USD)
Country work (3 countries)	150,000
Flagship Coordinator (Edinburgh Napier)	250,000
CLIFF-GRADS & research stays (6 placements)	120,000
EDF/Partners project coordination staffing (3 years)	480,000
TOTAL CONFIRMED	1,000,000

Additional Resourcing Target:

Item	Estimated Need (USD)
Expanded participation (Up to 30 countries total)	TBD based on country engagement (approx. 30-50k per country)
Additional project coordination staffing (3 years)	120,000
In-kind country contributions	TBD

Linkages:

HAlow links to existing GRA Flagships and Networks — particularly the Livestock Research Group and Inventories and MRV Network — and complements productivity- and systems-based mitigation work. The Flagship will also coordinate with related international initiatives, including those led by GMH, GIZ (LiveSys), GBADS, LD4D, Aim4Scale, FAO, WOA, and IFAD among others, to ensure alignment and avoid duplication.