



Livestock Research Group Meeting

Nairobi, Kenya

10 October 2025

MEETING REPORT

1. The 15th annual meeting of the Livestock Research Group (LRG) of the Global Research Alliance on Agricultural Greenhouse Gases (GRA) was held in Nairobi, Kenya on the margins of the 2025 International Greenhouse Gas & Animal Agriculture Conference.
2. The one-day meeting was chaired by the co-chairs of the LRG: Sinead Leahy (New Zealand), Tommy Boland (Ireland), and Richard Dewhurst (United Kingdom).
3. This report is a summary of the key discussions and outcomes of the meeting. All the presentations are available on the GRA website ([HERE](#)).

PARTICIPANTS

4. This in-person meeting was attended by approximately 44 participants, representing at least 29 member countries of the GRA, as well as multiple partner organisations. For a detailed list of attendees, please refer to Appendix 1.
 - **Countries represented:** Argentina, Australia, Bangladesh, Belgium, Brazil, China, Colombia, Denmark, Finland, France, Germany, Indonesia, Ireland, Kenya, Malaysia, Mongolia, the Netherlands, New Zealand, Nigeria, Peru, Philippines, Poland, South Africa, Spain, the United Kingdom, Uruguay, Zambia, Zimbabwe
 - **Partners represented:** Environmental Defense Fund (EDF), Food and Agriculture Organisation (FAO), International Livestock Research Institute (ILRI), Global Methane Hub (GMH)

KEY MEETING OUTCOMES

4. The key outcomes identified during the meeting are presented below:

Recruit a co-Chair from the Global South
Collaboration with GMH: ● Project on physiology to be developed ● Project on early life to be developed

Capability building:

- Summer school to be organised by the Feed Nutrition and the Rumen Microbiome

Increase interactions between networks.

SESSION 1: OPENING REMARKS

WELCOME AND LRG CO-CHAIR UPDATES

- Tommy Boland opened the meeting and welcomed the 28 countries.
- Bernard Kimoro welcomed the participants. He highlighted the important role the GRA has played in supporting the Kenyan agricultural sector in developing their capacity in terms of inventory development for dairy ruminants and now have also progressed beyond dairy cattle to capture beef, sheep and goats. Showcasing the GRA global's leadership, capability building and training exchanges.
- Bernard also highlighted the importance of:
 - strengthening partnership between Global North and Global South,
 - Building a regional research and data hub in East Africa
 - Improving access to tools, technologies, and research networks for African scientists.
- Richard Dewhurst (co-Chair, add organisation) provided a high-level update on the LRG on behalf of the co-Chairs over the past 12 months. Presentation slides available [here](#).
- Richard thanked the Ministry for Primary Industries (New Zealand), DEFRA (UK), and DAFAM (Ireland) for their financial support.
- The main focus of the meeting was to discuss and develop the work plan for the LRG for the next year, and aligning it with the updated GRA Strategy.
- All five networks are doing well, delivering workshops, flagships, webinars, newsletters, and collaborative projects.
- Outcome of the 2025 Council : LRG is an example of successful cooperation.
- Reinforcing collaboration with partners especially around early life, rumen physiology, animal breeding.
- The LRG is looking at reinforcing its network in Africa to consolidate activities in the Global South.

GRA SPECIAL REPRESENTATIVE UPDATES

15. Dr Harry Clark, GRA Special Representative, provided an update to the group.
16. Presentation available [here](#).
17. Harry's term as GRA Special Representative will end in November 2025, he will still work with the GRA Secretariat to facilitate the transition.
18. Harry welcomed Peter Ettema (New Zealand) as nominee Special Representative for the new term.
19. The GRA still has 68 member countries, as Pakistan joined and the U.S.A withdrew their membership.
20. Harry reminded the participants that the GRA does have its own funding body, and the xxx of the GRA is to focus on collaboration.

SESSION 2: GRA UPDATED STRATEGY

21. John Harrison (on-behalf of Ireland GRA chair) provided an overview of the outcomes of the 2025 Council Meeting and how it will impact the LRG.
22. Presentation available [here](#).
23. The 2025 Council Meeting was held in Dublin, Ireland, and involved 55 participants from 17 member countries, and 5 partners.
24. The Council adopted the updated GRA Strategy for 2026 -2030. The new strategy will focus on:
 - Focusing on advancing research to reduce agricultural GHG emissions
 - Strengthening capability building
 - Enhance collaboration
 - Leveraging finances to support GRA projects
25. The Council members highlighted the work done by the LRG and the quality of the projects led by the networks such as the Feed Additives Flagship. This flagship has been set up as an example for other researchers wanting to start a flagship.
26. John highlighted the key takeaways from the Council Meeting:
27. Importance of international collaboration, and of identifying international funding mechanisms by working with our partners such as the Global Methane Hub and the Environmental Defense Fund.

28. The development of the GRA Strategic Research Agenda will be a valuable tool to guide Research Groups and Networks in developing research projects.
29. The Research Groups restructure will consolidate the Research groups and Networks , with the number of networks going from 19 to 13. The Indigenous Research Network and the Inventories and NDC Network will report directly to the Special Representative.
30. Enhance Science to Policy communication, and increase high-level ministerial engagement.

IMPACT OF THE NEW GRA STRATEGY ON LRG ACTIVITIES

31. Presentation slides [here](#).
32. Richard highlighted the need to aligning the upcoming work plan with the key points raised by the John, and the focus areas should include:
33. Collaborative research: prioritise projects involving three or more member countries and aim for outputs such as peer-reviewed publications, policy briefs, and guidance documents. The Feed Additives Flagship should be used as an example for other projects.
34. Strategic Priorities: consider suggested research areas in relation to local opportunities and challenges. Continue building partnerships, developing ideas, and securing funding support.
35. Richard reminded the participants that the GRA is not a funding body but facilitates consortia and collaboration for externally funded initiatives.
36. Reporting: Flagship projects will now report to the co-Chairs.
37. Regional engagement: Explore better processes for establishing networks and increasing regional involvement. The Group will discuss the possibility to have a fourth co-Chairs from the Global South to better represent the interests of the region.

SESSION 3: NETWORK UPDATES

38. The LRG has five science networks, focussed on strengthening collaboration in the main areas of livestock GHG research. The coordinators of each of the Networks provided on-demand presentations on their respective Network activities since the 2023 LRG meeting and answered questions from participants.

ANIMAL SELECTION, GENETICS AND GENOMICS NETWORK (ASGGN) – Suzanne Rowe

39. The ASGGN is a forum for scientists exploring the impact of genetic technologies for managing livestock greenhouse gas (GHG) emissions. Further information about the Network can be found on the [GRA website](#).
40. The network met this year at GGAA during a workshop, and it was really successful (13 talks, 11 countries represented).
41. The engagement in the network has been strong with 119 members from 47 countries.
42. The network recruited two new people who will provide support for the network activities:
 - Sete Amu (ILRI): website, communications, and quantitative genetics analysis
 - Georgette Piers (South Africa): communications.
48. Updates and activities:
 - Major meeting planned at the World Congress in Genetic next year
 - Exploring a dedicated network meeting in South America (Uruguay)
 - Microbiome Flagship: publications on-going.
 - Looking at developing a Flagship project on Proxis in collaboration with GMH.

ANIMAL HEALTH AND GREENHOUSE GAS EMISSIONS INTENSITY NETWORK (AHN) – Nick Wheelhouse

49. Presentation available [here](#).
50. The aim of the Network is to bring together researchers from various fields to identify links and synergies between the control of animal diseases and the reduction of GHG emission intensity. The network currently has about 70 members. Further information about the Network can be found on the [GRA website](#).
51. Updates and future activities:
 - The network has significantly grown with a 30% increase with strong representation from East Africa due to an ongoing project in the region.
 - Animal Health Climate Solution: phase 1 of the project launched with GMH and EDF support. Phase 2 is underway.
 - The network held workshops throughout the year to develop frameworks integrating animal health into broader ecosystems, considering socio-economic, political and health factors.
 - Field study in Nandi (ILRI-led) addressing subclinical mastitis (53% prevalence) through farmer training. Modeling showing impacts on milk yield and emissions intensity.

- Additional funding secured from the British Academy to explore pathways for translating research into policy: stakeholder engagement including farmers, breeding associations and government.
- Strengthening ties with LD4D, SEBI, and other groups to avoid duplication and align efforts in climate-animal health space.
- Develop a flagship initiative in partnership with EDF.
- Enhance communications (looking for a support)
- LinkedIn followers grew to approximately 765.

FEED AND NUTRITION NETWORK (FNN) - David Yanez-Ruiz

52. Presentation slides available [here](#).

53. The Network focuses on ruminant feed and nutrition issues in relation to GHG emissions., identifying knowledge gaps to set research priorities. There are 120 members in the Network with 32 members from the past year. The network has a strong presence in Latin America, the Caribbean, and South East Asia. However, the Network could benefit from additional membership from Africa. Further information about the Network can be found on the [GRA website](#). The network received 28 new membership requests following the recent workshop at GGAA.

54. Updates and future activities:

- Global Network Project, CIDE Project, Integrity Project, and GRA Feed Additives Flagship have driven engagement and collaboration.
- The flagship project lasted nearly 3 years, producing six peer-reviewed chapters on feed additive development and implementation.
- Extensive dissemination through conferences (Global Dairy Platform, EAAP), webinars (with support of the GRA Secretariat), and industry outreach.
- The recent workshop at GGAA had 85 participants and discussed the following priorities:
 - Implementation of feed additives strategies post-flagship
 - Integration of AI and modeling into nutrition research
 - Mapping global feeding practices
 - Linking nutrition and microbiome research (training for early-career scientists)
 - Great engagement with African partners

55. Future Focus:

- Strengthen regional integration, especially in Africa
- Continue updating shared databases and communication tools
- Explore innovative approaches for mitigation strategies and capacity building

- Florencia Garcia and Sanne van Gastelento become the new network leads. David and Andre will stay onboard to facilitate the transition period.

Q&A Session:

- Beyond technical aspects of feed additives, we should also examine social factors, such as misinformation, adoption rates, and acceptability among consumers and farmers, especially with the issues with Bobaer.
 - Previous discussions noted the lack of information on certain steps, which occurs concurrently or later, and highlighted the need for engagement with social science to ensure these aspects are addressed.

RUMEN MICROBIAL GENOMICS NETWORK (RMG), Yanfen Cheng

56. Presentation available [here](#).

57. The Network focuses on methane mitigation by understanding microbial mechanisms and has grown in success and numbers of participants. The Rumen Microbial Genomics Network has an active Twitter/X account (@RMGNetwork), where Network events, publications and activities are shared. Further information about the Network can be found on the [GRA website](#). There are 204 scientists registered as members of the Network, from 113 institutes across 44 countries.

58. Updates and future activities:

- Maintain an RMG publication collection on topics such as methane mitigation, microbiology and early-life nutrition.
- Webinar on Nagoya Protocol implications (November 2024)
- Webinar on cultivation of rumen microbiology (May 2024)
- In-person workshop in Rennes (June 2025) with presentations and collaborative discussions.
- Future focus:
 - Jenna will lead a literature review on rumen microbiology (nearing submission)
 - Planning an additional review on strategies to inhibit methane emission from the rumen
 - Organizing an in-person meeting at EAAP conference next year (planning underway)



MANURE MANAGEMENT NETWORK (MMN), Sinead Leahy on behalf of Sven Gjedde Sommer

59. Presentation available [here](#).
60. The Network is a global forum for scientists focused on reducing greenhouse gas emissions from livestock production systems and increasing the nutrient use efficiency of manures through the improvement of manure management. Further information about the Network can be found on the [GRA website](#).
61. Updates and future activities:
 - Sven appointed as network leaf in autumn 2024.
 - The network now has its own logo.
 - Organised two well attended workshops focused on calculations for updating IPCC guidelines
 - Poster presented at GGAA
 - Several upcoming webinars planned; GRA Secretariat provided strong support for organising past events.
 - Future priorities:
 - Conduct a review of current knowledge on GHG emissions from manure management
 - Support data collection and develop a collaborative paper
 - Apply for funding to advance research and network activities.

SESSION 4: PARTNERS: WHAT OPPORTUNITIES FOR THE LRG

GLOBAL METHANE HUB, Sinead Leahy on behalf of Taina Sylvestre

62. Presentation available [here](#).
63. The Enteric Fermentation Accelerator is a major initiative under GMH, combining public, philanthropic and private funding.
64. It represents the largest globally coordinated public-good investment in breakthrough research on enteric methane mitigation.
65. Research focus areas:
 - Methane inhibitors
 - Low-methane genetics (global phenotypic data collection, expansion to small ruminants and buffalo).
 - Low-cost measurement technologies
 - Anti-methanogenic feedstock screening (forage screening programmes)

- Methane vaccine development
- Exploration of early-life interventions and AI applications for identifying new mitigation solutions.

66. Recent and planned activities:

- Long-term trials underway in the USA and planned in New Zealand
- Collaboration with Greener Cattle Initiative on early-life intervention research
- Ongoing discussion on expanding geographic coverage and species inclusion
- Contact details for engagement available on the Accelerator's website

ENVIRONMENTAL DEFENSE FUND (EDF), John Tauzel

67. Presentation slides available [here](#).

68. EDF has been leading advocate for methane mitigation for over a decade, initially in oil and gas and now in livestock systems

69. 3 key areas:

- Enteric solutions
- Manure management solutions
- Optimising productivity

70. Recognises livestock's role in global food security and emphasises farmer engagement

71. EDF is working on key initiatives such as

- the Cornell Dairy Sustainability Awards, project with NGOs funding research on enteric methane solutions, manure management, early-life interventions, and whole-farm MRV benchmarking.
- MethaneSAT: project launched in 2024 to provide high-resolution global methane data, and collect valuable datasets before losing operational capacity. New Zealand's NIWA led initial agricultural methane research using Methane SAT data.

72. EDF is currently expanding collaboration with NGOs and civil societies to accelerate funding and innovation.

73. EDF is placing a strong emphasis on ensuring a just transition for farmers and communities as they adopt climate-friendly practices. While technologies such as digesters are effective in reducing emissions, EDF notes that they do not always address other local environmental

concerns, such as ammonia emissions that contribute to PM2.5 pollution. This highlights the need for solutions that deliver broader benefits to communities.

74. A key priority for EDF is ensuring that all farmers, including smallholders, have access to practical tools for methane mitigation. To support this, EDF has launched an innovative initiative in Tamil Nadu, India, where it has sponsored 100 dairy entrepreneur service providers. This program introduces the concept of “Silage as a Service,” which delivers silage in small, manageable packages to help smallholder farmers improve cattle feeding and productivity.
75. Through these efforts, EDF aims to help farmers transition to sustainable practices while maintaining economic security and contributing to global methane reduction goals.

FAO, Lydia Lanzoni

76. Presentation available [here](#).
77. Lydia Lanzoni provided an update on the Global Livestock Environmental Assessment Model (GLEAM), a lifecycle assessment framework that quantifies the environmental impacts of livestock production across the entire supply chain, from feed production and transport to on-farm processes such as fermentation and manure management, and downstream activities like processing and packaging.
78. Originally developed in 2006–2007 as a global baseline assessment tool, GLEAM is now evolving into a more flexible platform called GLEAM-X, funded by the German Federal Ministry of Agriculture. The new version aims to enable mitigation scenario modeling, long-term projections, and broader sustainability assessments, including water use and trade-offs with other development goals.
79. GLEAM-X emphasizes transparency and open data, with all scripts being migrated to R and hosted on an open-access GitHub repository. This will allow the scientific community to review, refine, and contribute to the model. Technical updates include revising feed emission factors, expanding feed item lists, updating enteric methane equations, and developing a dynamic herd module for long-term projections. The team is also incorporating IPCC Tier 2 approaches, certainty assessments, and a solid carbon module, while strengthening data harvesting through tools like Kobo Toolbox.
80. FAO highlighted strong links between GLEAM’s work and LRG network activities, particularly in feed and enteric methane research, and identified opportunities for collaboration with the Animal Health and Manure Management networks. Three LRG members currently serve on



GLEAM's technical advisory board, providing valuable guidance. The team invited further engagement to align efforts and enhance the model's capacity to support mitigation strategies globally.

SESSION 5: FLAGSHIPS

RUMEN GATEWAY, David on behalf of Fernanda Goday Santos

81. Presentation available [here](#).
82. The flagship was launched to address critical knowledge gaps about the role of microbes in rumen fermentation and their potential for methane mitigation.
83. The main goal of the flagship is to over-characterize rumen microbial diversity through cultivation efforts and establish a comprehensive biobank to support innovation. The project involves 25 institutions across multiple countries, with 39 principal investigators and numerous PhD students and postdocs. Initial funding came from the Global Methane Hub in 2024, but coordinating agreements among institutions was challenging and delayed progress.
84. The work plan includes isolating microbes, phenotyping, taxonomic identification, DNA extraction, and genome sequencing. Despite administrative delays, the project has made progress in isolating new microbes and improving cultivation techniques. These isolates will expand the biobank and help identify species most relevant for methane mitigation strategies.
85. Training is a key component of the project, with courses already held on sequencing and culture techniques, and upcoming lab-based training planned in Illinois and Belfast.
86. The project has achieved a significant number of isolates, thanks to contributions from leading institutions such as Queen's University Belfast and the Chinese Academy of Sciences. These efforts are strengthening global collaboration and advancing scientific understanding of rumen microbiology. The project also supports capacity building by involving students from developing countries and linking with other funding initiatives like the Greener Cattle Initiative.

POTENTIAL FLAGSHIP:

ANIMAL HEALTH, John Tauzel

87. Presentation available [here](#).
88. Over the past year, significant progress has been made in advancing the link between animal health and climate mitigation. Building on a previous GRA publication about the role of animal health in national climate commitments, the team has focused on putting these concepts into

practice. A major achievement has been the development of an Animal Health and Climate Scientific Framework, which outlines how to demonstrate that animal health interventions deliver climate benefits. This framework will be published soon.

89. Practical implementation has begun through real-world projects, such as the mastitis study in Nandi County, Kenya, which quantifies emissions impacts of improved animal health. The team has also worked on integrating animal health data into national climate inventories and NDCs, helping countries incorporate these interventions into policy. Scaling these efforts is a priority, and discussions are underway to establish an Animal Health and Climate Flagship.
90. The proposed flagship will use a standardized approach to evaluate animal health interventions within countries, considering disease baselines, treatment options, socioeconomic factors, and system-level impacts. Initial work includes developing a methodology and piloting the process in Ethiopia in early 2026, hosted by Napier University. Seven applications have been submitted for Cliff Grad participation, which could involve researchers from seven countries. Additional research grants are planned to support in-country studies.
91. Funding applications to the Global Methane Hub are in progress to secure resources for a project manager and research activities. The long-term vision is to review animal health and climate pathways in 30 countries, requiring both financial and in-kind support from GRA members. The initiative aims to create a scalable model for integrating animal health into climate strategies globally.

B0, Marianne Hull Cantillo

92. Recording available [here](#).
93. This project aims to improve the accuracy of methane emission estimates from manure management, which currently accounts for about 7% of global agricultural greenhouse gas emissions.
94. Existing IPCC Tier 2 methods rely on parameters such as volatile solids and B_0 values, but these values are outdated and based on limited data. Preliminary research shows that B_0 values vary significantly depending on factors such as the stage of lactation in dairy cows, and correlations have been observed between diet composition (e.g., ADF, NDF, lignin, starch) and B_0 values.

95. The project will update B_0 values for different countries and develop a predictive model based on diet and breed differences. Seven countries have already committed funding, and the team is finalizing contracts with the Global Methane Hub.
96. In Phase 1, participating countries will receive equipment and establish a standardized B_0 measurement protocol. In Phase 2, countries will collect diet and manure samples, characterize them, and measure B_0 values. By Year 3, the data will be analyzed to create a predictive model for B_0 , which will be published and integrated into national inventories to improve methane quantification and support mitigation strategies.
97. The project is expected to start at the end of this year, and additional countries are encouraged to join. Interested parties can contact the project lead for details.

SESSION 6: SCIENCE PRESENTATIONS

ILRI'S RESEARCH GHG EMISSIONS ACROSS AFRICA, Claudia Arndt

98. Presentation available [here](#).
99. The Mazingira Center, established in 2014, is a regional hub for climate-smart livestock research in Africa. Its work addresses the urgent need to reduce emissions as livestock demand rises with a projected doubling of Africa's population by 2050. The center combines laboratory research, controlled trials at ILRI's Kapiti Station, and on-farm studies to generate data for greenhouse gas inventories, model mitigation strategies, and support evidence-based policy.
100. Key activities include measuring animal emissions, analyzing manure and soil greenhouse gases, and testing interventions such as improved feeding, manure management, and animal health practices. The center also investigates system-level impacts, including productivity gains and disease reduction, using tools like GLEAM and the Global Burden of Disease model. Recent projects focus on correcting intake estimates for African systems, developing standardized data protocols, and modeling mitigation pathways for dairy and beef sectors.
101. Beyond research, Mazingira provides analytical services, trains scientists, and builds capacity, having trained over 200 researchers and hosted numerous students, including Cliff Grads. It also advocates for sustainable technical support to maintain research infrastructure. With its integrated approach, Mazingira plays a critical role in advancing climate-smart livestock systems and informing policy across Africa.

REPORT FROM THE GMH RUMEN PHYSIOLOGY WORKING GROUP, Richard Dewhurst

102. Understanding the interaction between animal physiology and methanogenesis is essential for developing effective mitigation strategies. This includes how physiological processes influence methane production and how methane affects animal metabolism. Key research questions involve genetic differences, variation in responses to mitigation, persistence of effects, and links to feed efficiency.
103. A collaborative group reviewed literature and explored topics such as rumen passage rates, microbial growth efficiency, hydrogen utilization, and nutrient fluxes across tissues. They highlighted gaps in knowledge, including diurnal variation in microbial growth and its relationship to feeding patterns. The group emphasized the need for dynamic, rather than static, measurements to capture nutrient flows and physiological processes over time.
104. Future research should combine detailed studies at specialized sites with non-invasive, sensor-based approaches. Technologies such as boluses, accelerometers, acoustic recorders, and breath analysis offer promising ways to monitor rumen dynamics without intrusive methods. Additional biochemical tools, like urinary purine derivatives and stable isotope fractionation, can help estimate microbial growth and feed efficiency. The group also suggested developing guidelines for rumen physiology measurements and organizing training programs or summer schools to bridge knowledge gaps between nutritionists and microbiologists.
105. In summary, advancing methane mitigation requires integrated research on rumen physiology, microbial activity, and animal performance, supported by innovative measurement technologies and collaborative capacity building.

SESSION 7: DEVELOPING THE LRG WORKPLAN

106. Participants split up in small groups to discuss what priorities do you think are important for the group, and need to be incorporated into the new workplan.
107. Results from the discussions are available in Session 9.



SESSION 8: SCIENCE PRESENTATIONS

MiLCA, Harry Clark

108. Presentation available [here](#).

109. MiLCA aims to provide a consistent, science-based framework for evaluating methane mitigation technologies in the dairy sector. This responds to industry concerns about confidence in new products and accurate reporting of greenhouse gas (GHG) reductions.

110. It was developed because dairy companies face constant pressure to adopt new technologies that claim to reduce GHG emissions. While numerous pilot projects are being tested with farmers, the industry lacks confidence in the effectiveness of these solutions and fears inaccurate reporting of emission reductions. To address these concerns, the dairy sector, building on previous collaborative work, sought to create a framework that is consistent, science-based, and aligned with international standards.

111. MiLCA offers several key benefits to the dairy sector. First, it provides a checklist of acceptable considerations for evaluating mitigation technologies. Second, it establishes clear scientific guidelines for new product development, ensuring alignment with Global Research Alliance (GRA) developments. Finally, MiLCA emphasises the importance of high-quality data, which is essential for maximising reportable mitigation and building confidence in reported outcomes.

112. The MiLCA protocol is built on four fundamental principles:

- Technologies must be proven safe before adoption. This includes documented regulatory approval and confirmation that the technology can be legally used within the farming system. Environmental impacts must be assessed using ISO 14044-compliant life cycle assessment (LCA), covering a range of environmental indicators. Safety considerations also include impacts on animal health, product quality, and the overall farming system. Ensuring safety generates confidence among stakeholders.
- Technologies must demonstrate repeatable and measurable reductions in emissions. Scientific evidence is required to provide confidence in efficacy. This can be achieved through one peer-reviewed meta-analysis, a minimum of three peer-reviewed

studies, or a methodology recognised by a carbon crediting scheme. Robust evidence ensures that technologies are credible and effective.

- Claims about emission reductions should be conservative and responsible. Over-crediting must be avoided, and this principle aligns with multiple global carbon frameworks, including the UNFCCC Clean Development Mechanism, Article 6.4 of the Paris Agreement, and the draft GHG Protocol Land Sector and Removals Guidance. Conservativeness is achieved through discounting based on uncertainty, where better data reduces the discount rate. For example, a study by Kebreab showed a discount of approximately 2% when high-quality data was used.
- Data quality is critical for confidence in reported outcomes. Poor-quality farm data reduces confidence and leads to discounting. MiLCA categorises data quality based on reliability (e.g., directly measured vs. estimated), completeness (e.g., data from the system being assessed), temporal correlation (e.g., recent vs. older data), and geographical correlation (e.g., farm-level vs. regional data). High-quality data receives no discount, while poor-quality data is penalised, incentivising better data collection on farms.

113. Key Takeaways

- MiLCA provides a structured and transparent approach for evaluating methane mitigation technologies. By focusing on safety, effectiveness, conservative claims, and appropriate data, the protocol builds confidence among dairy companies, researchers, and policymakers
- It ensures that reported GHG reductions are credible, scientifically supported, and aligned with international standards. Ultimately, MiLCA helps the dairy sector adopt technologies responsibly while maximising the impact of mitigation efforts.

ENHANCING SUSTAINABILITY IN PASTURE-BASED SYSTEMS, Tommy Boland

114. Presentation available [here](#).

115. Ireland's pasture-based livestock systems have unique advantages due to its mild temperate climate, frequent rainfall, and long grass-growing season. Approximately 80% of Ireland's farmland is grassland, compared to 40% in Europe. This supports high productivity, with average grass production of 15 tonnes of dry matter per hectare annually, compared to 11 tonnes in Europe. Beef and dairy enterprises account for 55% of agricultural output, and the country benefits from extensive carboniferous limestone areas ideal for cattle production.

116. Ireland has Europe's longest grass-growing season, supported by the Gulf Stream. Tools such as PastureBase Ireland and the MoSt Grass Growth Model are used to predict and monitor grass growth on farms. These systems rely on farmer data, weather forecasts, and advisory networks like Grass10, which provide performance reports and guidance on fertiliser use and fodder planning.

117. Research has focused on improving sustainability through better pasture management. Key strategies include:

- Optimising fertiliser use to reduce nitrogen surplus and improve nitrogen use efficiency (NUE).
- Incorporating white clover and multispecies swards to reduce reliance on synthetic nitrogen fertilisers.
- Enhancing sward diversity, which improves dry matter yield, animal performance, and environmental outcomes.

118. Studies show that multispecies swards (MSS) outperform perennial ryegrass (PRG) and PRG with clover (PRGWC) in several areas:

- Dry matter production: MSS produced 12,926 kg DM/ha/year compared to 10,380 kg for PRG.
- Days to slaughter weight: MSS reduced finishing time by 35 days compared to PRG.
- Greenhouse gas emissions: MSS reduced CO₂-equivalent emissions per kg of beef carcass by 14%.
- Profitability: MSS increased net margin per hectare by 68% compared to PRG.

119. Pasture quality influences methane emissions in both dairy and beef systems:

- Higher-quality pastures can reduce methane per unit of energy intake by up to 21% in dairy systems and 22% in beef systems.

- Research also shows reductions in methane emissions for sheep, with lactating ewes showing a 39% decrease and dry ewes a 16% decrease under improved pasture management.

120.Key Messages:

- Pasture-based livestock production upcycles biomass that is otherwise unavailable for human consumption.
- Optimising pasture management enhances efficiency, profitability, and environmental performance.
- Fertiliser strategies, sward quality, and species diversity significantly influence greenhouse gas emissions.
- There is an urgent need to understand baseline methane emissions and develop mitigation strategies for pasture-based systems.
- Sustainability efforts should look beyond GHG emissions to include wider ecosystem services and externalities.
- Enhancing sward diversity offers multiple benefits, including mitigation and adaptation potential.

SESSION 9: COMPLETION OF THE LRG WORKPLAN

121.The session aimed to identify priorities for research, communication, and strategic direction within the LRG and its networks. Participants were invited to share ideas, focusing on what is achievable within the voluntary structure of theGRA while considering long-term aspirations.

122.Key themes and Insights:

- **Communication and Policy Interface:** Participants agreed that improving the link between research outputs and policy communication is essential. There is a need to address long-standing challenges in engaging policy stakeholders effectively and ensuring that research findings are translated into actionable policy advice.
- **Research Priorities and Flagships:** The group noted that current flagship proposals include Animal Health and B0. Additional areas of interest include early-life research,

the interface between nutrition and the microbiome, and physiology research linked to the Global Methane Hub.

- **Co-Chair from the Global South:** There was also strong support for appointing a co-chair from the Global South, backed by their government, to champion African involvement and inclusivity.
- **Integration and Collaboration:** Participants highlighted the importance of improving interaction between research groups, such as livestock and crops, and across networks. Mixed farming and grazing systems should receive greater attention, as they account for a significant proportion of global livestock production. Structured collaboration should include shared data, capacity building, and mutual benefits for all partners.
- **Social Science and Economics:** The discussion emphasised the need to incorporate social science into research activities to better engage stakeholders, including farmers, consumers, and private companies. Economic assessments should also be included to evaluate the impact of research and determine returns for farmers and consumers.
- **Adaptation, Resilience, and Co-benefits:** There was consensus that mitigation efforts should be balanced with adaptation and resilience, particularly for low- and middle-income countries. Research should also consider biodiversity, animal welfare, One Health, and ecosystem services alongside emissions reduction.
- **Capacity and Resourcing:** Networks require dedicated resources, such as postdoctoral researchers, to thrive and deliver meaningful outputs. It was suggested to explore global funding mechanisms and international partnerships to support these efforts, while recognising the constraints of a voluntary organisation.
- **Technical Needs:** The group agreed on the need for better mechanistic and integrated models. Research should incorporate animal behaviour and digestibility into genetics and physiology studies to ensure robust scientific outcomes.

123. There was agreement that the group should do fewer things but do them better, aligning activities with the GRA strategic plan.

124. Participants agreed that funding is critical for achieving inclusivity and adaptation goals. A key proposal was to establish a dedicated fundraising committee to pursue opportunities

and partnerships. This committee could include early-career researchers, offering them visibility and career benefits. A timeline and accountability framework should be set to ensure progress beyond the meeting.

125. The group identified the need to clarify Monitoring, Reporting, and Verification (MRV) standards and protocols. Evaluating Nationally Determined Contributions (NDCs) was suggested to inform tailored policy solutions. Participants also proposed establishing an African network to provide technical support and capacity building, potentially through summer schools. Physiology considerations should be integrated across all research activities.

126. One practical suggestion was to create a special issue on negative results in mitigation research. Publishing negative results would prevent duplication of effort and improve model accuracy, as models are often built on incomplete or biased data.

127. The discussion acknowledged that limited funding and the voluntary nature of the organisation require prioritisation of achievable actions. Without a clear structure for fundraising and coordination, ambitious goals will remain aspirational. Participants stressed the importance of avoiding unrealistic “wish lists” and focusing on key deliverables.

128. Recommended Next Steps:

- **Form a Funding Committee:** Establish a group of volunteers to lead fundraising efforts, identify potential funders, and set a timeline for initial actions.
- **Prioritise Achievable Actions:** Focus on clarifying MRV standards, developing an African network, and initiating knowledge-sharing initiatives such as publishing negative results.
- **Strengthen Integration and Communication:** Improve collaboration across networks and enhance strategies for engaging policy stakeholders.
- **Lay Groundwork for Future Growth:** Continue exploring adaptation and resilience initiatives alongside mitigation, while seeking sustainable funding mechanisms.



NEXT MEETING

The Group is exploring to host the next meeting online, and have an in-person meeting in 2027 alongside the EAAP.

Appendix 1: Participants List

Disclaimer: The following list includes individuals who registered for the meeting.

Country	Attendees
GRA Member Countries	

LRG Co-Chair (New Zealand)	• Sinead Leahy, NZAGRC, sinead.leahy@nzagrc.org.nz
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