

Meetings of the Livestock Research Group and Integrative Research Group

Pullman Albert Park Hotel, Melbourne, Australia

19-20 February 2016

Meeting Report

OVERVIEW

The Government of Australia hosted the eighth meeting of the Livestock Research Group (LRG) of the Global Research Alliance on Agricultural Greenhouse Gases (GRA) on 19-20 February 2016, immediately following the sixth Greenhouse Gas & Animal Agriculture Conference.

The meeting was co-chaired by New Zealand (Dr Harry Clark, New Zealand Agricultural Greenhouse Gas Research Centre) and the Netherlands (Dr Martin Scholten, Wageningen UR) as the country Co-chairs of the LRG. It also incorporated a joint meeting with the Co-chairs of the GRA's newly formed Integrative Research Group (Lee Nelson, Australia; Brian McConkey, Canada; Jean-Francois Soussana, France).

This report is a summary of key discussions, action points and outcomes from the two meetings. Background papers and presentations are provided separately on the GRA website.

PARTICIPANTS

The meeting was attended by GRA representatives from 25 member countries, along with two observer countries and other invited guests:

- **GRA Members attending:** Argentina, Australia, Belgium, Brazil, Canada, Chile, Colombia, Denmark, France, Ghana, Indonesia, Ireland, Italy (via Skype), Japan, Lithuania, Malaysia, Netherlands, New Zealand, Philippines, Spain, Sri Lanka, Switzerland, Thailand, United Kingdom, USA, Vietnam.

- **GRA Members unable to attend:** Bolivia, China, Costa Rica, Dominican Republic, Ecuador, Egypt, Finland, Germany, Honduras, Mexico, Nicaragua, Norway, Panama, Paraguay, Peru, Poland, South Korea, Sweden, Tunisia, Turkey, Uruguay.
- **Observer countries attending:** Tanzania, Uganda
- **Invited Guests attending:** Food and Agriculture Organisation (FAO), Climate Change, Agriculture and Food Security (CCAFS) programme of the CGIAR, World Bank, co-chairing countries of the Integrative Research Group (Australia, Canada, France), coordinators for each of the LRG's five research networks

Refer to Appendix 1 for the full participants' list.

LRG MEETING OUTCOMES

The meeting achieved the following outcomes, listed against the six elements of the LRG work plan:

Current research landscape

- Countries are encouraged to update their individual pages on the GRA website, see for example: <http://globalresearchalliance.org/country/new-zealand/>
- LRG member countries have been requested to share information on existing capability building projects, programmes and funding mechanisms (including where GHG emissions may not be the primary focus but where this could be added as a component), and to submit specific capability building needs with LRG delegates via the LRG co-chairs and GRA Secretariat.

Building capability

- The LRG will work with the Climate Change, Agriculture and Food Security (CCAFS) programme of the CGIAR and the World Bank to strengthen tools, training and processes for countries to monitor, report and verify their livestock GHG emissions and improve national GHG emissions inventories.
- Together with CCAFS, the LRG will compile existing capability building materials on livestock GHG research into an open access, online platform.
- The LRG Co-chairs will work with FAO, the World Bank and CCAFS to develop a proposal for Phase 2 of the CCAC project on enteric fermentation.
- CCAFS will circulate information on the process for submitting data to the IPCC, to inform further work by the LRG on improving countries emissions inventories.
- The LRG will explore the creation of a second type of country case studies, focused on projects in LRG member countries to upscale and implement existing approaches to reduce emissions intensities.

Good practice guidance and methodologies

- The Manure Management Network will review the LRG's N₂O Chamber Methodology Guidelines and update/expand as necessary and appropriate.

Research networks and databases

- Work will continue to develop a regional network for Mediterranean countries, led by Italy.

- The Co-chairs will explore options for raising the profile of the research networks through the wider community, including on the GRA website, and will work with the Secretariat to provide information to network coordinators on using smart technology to engage electronically.
- The Co-chairs will support the network coordinators to prepare a white paper identifying knowledge gaps in promoting an integrated, holistic approach to mitigation management in livestock farming, potentially in collaboration with the IRG.
- CCAFS, with ILRI, will explore ways of engaging directly with the Animal Health Network on livestock health, productivity and climate change impacts.

Collaborative research

- The LRG's research networks will finalise their priority areas for research collaboration with a view to developing proposals for funding (either through ERA-GAS or other mechanisms).
- The LRG will continue to work with the Secretariat to explore options for GRA funding mechanisms, including the prospect of an 'International Research Consortium' (IRC) supported by the European Commission.

Policy support and links to international initiatives

- The Secretariat will provide details on how LRG members can engage in the development of the 5-year GRA Strategic Plan.
- The joint LRG/SAI-Platform industry publication 'Reducing greenhouse gas emissions from livestock: best practice and emerging options' will be translated into French, Spanish and potentially Thai through efforts from LRG member countries with relevant capabilities.
- The LRG will work with the SAI-Platform to hold joint seminars in various world regions to showcase industry/science partnerships that are already reducing the emissions intensity of livestock production.
- The LRG will seek Council guidance on interest in the GRA obtaining formal observer status with the IPCC, and will seek to engage LRG experts from member countries in relevant IPCC reports including a potential IPCC Special Report on food security, climate change and agriculture.
- The LRG will support the World Bank to develop an 'Investor's Guide' to facilitate entry points for donors and industry into livestock mitigation activities.

Other matters

- The Council's idea for a science conference to showcase GRA research in 2017 was welcomed in principle, although consideration needs to be given to the location, target audience and whether it would be best held as a standalone event or combined with an existing event, e.g. FACCE conference, climate smart agriculture event etc.
- The next meeting of the LRG will be held in Washington DC in April 2017. Vietnam has indicated it may be able to host the 2018 meeting.

IRG MEETING OUTCOMES

The meeting achieved the following outcomes:

- The LRG will continue working with the co-chairs of the newly formed Integrative Research Group (IRG) to support that group as it establishes.

- The IRG intends to centre its activities around a series of networks on different integrative issues across the GRA:
 - Grasslands network: transfers and builds on the existing LRG network
 - Soil carbon sequestration network: new, but builds on work started across the GRA
 - Field scale modelling network: builds on existing work from the former Soil C & N Cross-Cutting Group
 - Farm scale and regional modelling network: new, but builds on work started across the GRA
 - GHG inventories network: builds on existing work from the former Inventories & Monitoring Cross-Cutting Group
- The IRG Co-chairs will seek similar input from the GRA's Paddy Rice and Croplands Research Groups.
- The IRG, with the support of the LRG, will investigate options to coordinate existing databases and holding metadata so as to facilitate access to livestock GHG emissions research data held around the world.
- The IRG will explore the potential for its proposed Soil Carbon Sequestration Network to link to the French '4‰ Initiative' as an early activity for that network.

SUMMARY OF DISCUSSIONS

OPENING REMARKS

The LRG Co-chairs opened the meeting by thanking Australia for its generous hosting. They noted the value of holding an LRG meeting immediately after the Greenhouse Gas & Animal Agriculture (GGAA) conference, and the number of LRG projects referenced in GGAA presentations.

2. Peter Ottesen, Assistant Secretary of the Sustainable Agriculture Branch at the Australian Department of Agriculture and Water Resources welcomed LRG delegates and gave an overview of the livestock sector in Australia and its contribution to the national economy and to climate change. He acknowledged the importance of research and capability building, as well as the need to translate research outcomes and technological development into meaningful engagement at the farm level.

SCENE-SETTING CO-CHAIRS OVERVIEW

3. The Co-chairs set the scene for the two-day meeting with a presentation looking back over developments during 2015 and forwards to the challenges and opportunities in 2016.

4. **2015 was a very busy year for the LRG** with active research networks leading major projects, development of a range of communication materials (noting in particular the success of the joint LRG and Sustainable Agriculture Initiative (SAI) Platform publication for industry, which is the third most downloaded document on the GRA website), flagship activities with partner organisations, ongoing capability building activities, and increased regional engagement. The Co-chairs reflected on the outcomes of the September 2015 GRA Council meeting and their relevance to

the LRG, including the formation of the new 'Integrative Research Group' (IRG) – a merger of the existing two GRA cross-cutting groups – and the agreement to establish a working group to explore potential for a GRA funding mechanism, including linking with the European Commission. The Co-chairs also noted the moves underway to strengthen the GRA Secretariat and to develop a 5-year strategic plan. Countries were reminded of the need to stay in regular contact with GRA Council representatives. Please contact the Secretariat for contact details of country representatives.

5. Looking ahead to the remainder of **2016 and beyond**, the Co-chairs acknowledged the evolving landscape post-COP21 (the recently concluded UNFCCC meeting in Paris, where agreement was reached to limit global warming to “well below 2° Celsius” and to pursue efforts to limit it to 1.5°). They also noted that soil carbon sequestration received a renewed focus in Paris with the launch of the '[4‰ Initiative](#)', and a potential role for the GRA in its delivery. Comment was made about the interest in forming regional communities within the GRA while staying mindful of its global emphasis, and on the strength of the relationship with the SAI Platform including an opportunity in 2016 to hold joint LRG/SAI seminars that will extend the 2015 industry publication into practice.

6. The Co-chairs acknowledged the achievements of the **LRG's research networks** during 2015 and noted the outcomes of the recent joint network meeting in the margins of the GGAA (16 February). These included promoting an integrated, holistic approach to mitigation management in livestock farming in order to achieve a more than 40% reduction in the emissions intensity of animal production. This would be expanded on in a white paper identifying knowledge gaps for this integrated approach, from which it was anticipated that collaborative research projects would be developed. The networks had also sought assistance with increasing their visibility within the LRG and wider GRA, and with facilitating greater engagement including via smart communication. The Co-chairs and Secretariat would follow this up. The Co-chairs also noted some changes to the networks during 2016, including:

- Animal Health Network: fiscal reasons mean the UK cannot sustain the leadership of this network past June so a new country/s will need to be found.
- Animal Selection, Genetics & Genomics Network: the Netherlands has transferred the leadership to Denmark.
- Rumen Microbial Genomics Network: looking at life after Hungate 1000 and the Global Rumen Census project.
- Grasslands Network: will be transferred to the Integrative Research Network.
- No change at this stage to either the Feed & Nutrition Network or the Manure Management Network.

7. The Co-chairs then opened the floor to participants to share ideas and initiatives that the LRG should be aware of and/or could be involved in or help support.

8. There was a short presentation on the newly formed **Mediterranean regional network**. This noted the impact of climate change in the region, leading to direct and indirect effects on animal health and productivity. The Mediterranean Livestock Network would focus initially on a multidisciplinary approach to water resources and quality, mycotoxins in feed, heat stress tolerances and vector borne diseases. Twenty scientists are involved, from Egypt, France, Greece, Italy,

Morocco, Portugal, Spain and Turkey. Next steps are to draft a Terms of Reference and to hold a meeting in 2016 in Italy.

9. There was a brief discussion about the involvement of countries outside the region that might share the same climate conditions, with the network indicating inclusive participation (although noting it needed to get up and running first). The broader interest in the global establishment of communities around different production systems, e.g. tropical agriculture, was also noted.

10. During the remainder of the discussion about LRG outreach and communication, the following key points were made:

- There should be a second type of **case studies on reducing emissions intensity** to enable countries to showcase successful, innovative research approaches that are focused on implementing and upscaling existing approaches to reducing emissions intensity. The Co-chairs agreed to look into this, noting that countries' assistance with resourcing the production of these case studies would be appreciated.
- Uptake of the **LRG/SAI industry publication** has been very high and there is interest in having this translated. France agreed to explore translation into French, Chile and Colombia with translation into Spanish, and Thailand with translation into Thai.
- The **IPCC** is currently considering a Special Report on food security, climate change and agriculture. The LRG will seek to engage LRG experts from member countries in helping scope that report, identify authors (especially from developing countries), and engage in regionally specific review processes. The LRG will also seek Council guidance on GRA interest in becoming a formal IPCC Observer.
- Interest was expressed in the development of the **5-year GRA Strategic Plan** and how LRG members might engage. The Secretariat would provide information on this.
- All countries were encouraged to use the **GRA webpages** to showcase their domestic efforts in support of the LRG/GRA (e.g. <http://globalresearchalliance.org/country/new-zealand/>).

RESOURCING: MATCHING LRG PRIORITIES WITH FUNDING OPPORTUNITIES

11. The Co-chairs described the LRG's research networks as its "engine room" for research collaboration. The aim of the 'Resourcing' agenda item was to enable the network coordinators to engage with LRG delegates on network priorities for 2016 and beyond, including identifying potential funding opportunities. A background paper on the networks' preliminary ideas had been circulated prior to the meeting (refer separate document), which was then the basis for discussions in breakout groups, with each group getting to hear from each network coordinator.

12. Before dividing the room into breakout groups, the Co-chairs reflected on the success of the LRG's flexible and creative approach to funding. The range of opportunities during 2016 and beyond was discussed, including an upcoming [ERA-GAS research call](#), a potential GRA funding mechanism, an animal health International Research Consortia in the EU, climate finance, work with partners and philanthropics, and the ongoing ability of countries to align their domestic funding priorities with those of the LRG/GRA. The Co-chairs noted the strong potential for network resourcing in the coming year.

13. On day 2 of the meeting, the network coordinators reported back on their discussions in the breakout groups. There was agreement that this approach was helpful; the smaller groups allowed for more interactive discussions and more detailed exploration of ideas than is normally achievable in plenary. The following points were made during the network coordinators' summaries:

Animal Health Network (AHN)

- Development of a compelling research proposition is a priority for 2016; this will be progressed at the next AHN meeting, which is in mid-March
- Need to consider sub-acute, non-fatal (silent) as well as epidemic disease issues
- Search for diagnostic 'tools' (e.g. Greenfeed) is becoming important
- ERA-GAS is not a good fit for the AHN, although there are prospects for linking with the European Commission's animal health 'International Research Consortia'.

Animal Selection, Genetics & Genomics Network (ASGGN)

- Best breeding practices from the climate-smart agriculture angle, including considering the trade-offs between climate change and productivity traits. Potential for FAO input in terms of best practice resources?
- Clear need for biological understanding of heritability, e.g. where does the heritable part come from? Energy in – energy out; where does it go?
- Developing countries are often focused on adaptation of local breeds to higher production, not on bringing in genetic merit from other countries (although it was noted that there is significant learning here, e.g. not forgetting about reproductive abilities in the quest to improve productivity).
- Breeding goals are different worldwide – need to understand the aspirations of farmers across different production systems. Perhaps develop a recording system for new traits, e.g. temperature, stature etc.
- There is a need for meta data across disciplines in order to learn what is useful in terms of data collection
- Two suggestions for research priorities:
 - i. Social economic study on breeding goals, potentially involving the FAO
 - ii. Repeated trials in different production systems
- ASGGN's next meeting has only just taken place (14 February) so the next meeting won't be for another year. The Secretariat will assist with linking electronically.

Feed & Nutrition Network (FNN)

- Explore the feed-nutrition-manure-soil C/N emissions relationships, in particular those related to microbial activity, and to jointly prepare an ERA-GAS bid with the Manure Management Network.
- Other ideas include identifying knowledge gaps and proposing improvements of mitigation estimates (e.g. rumen, manure and soil emission inhibitors), as well as evaluating inventory methodologies on fate of feed, excreta and manure C & N, and exploring the cost of implementing mitigation practices, trade-offs at the farm level etc.

- Proposals should take a whole-farm approach; variety in climatic regions & farming types/conditions/practices; evaluate universality of current knowledge
- Proposals should link to current FNN projects (e.g. FACCE JPI GLOBAL NETWORK) and with other LRG networks
- Next steps for the FNN during 2016:
 - Complete the two review papers currently underway, including exploring prospects for making them open access
 - Finish compiling and analysis the individual animal database
 - Complete the treatment means database
 - Submit a proposal to ERA-GAS, working with the MMN

Manure Management Network (MMN)

- Improve the visibility of the MMN and establish a closer relationship with the FNN, including via the proposed joint ERA-GAS bid
- Identify other possible ERA-GAS bids in consultation with network members
- Develop a database of emissions factors (EFs), methods and guidelines, and explore a system for permanent archiving
- Linked to the above database, it could also be possible to compile the meta-data, looking for more spatially explicit EFs
- Review the LRG's existing N2O chamber measurement guidelines and update/expand as necessary and appropriate

There was a broader discussion during the MMN's report-back on submitting data to the IPCC. CCAFS has been closely involved with the IPCC taskforce on the process for submitting data and offered to share this with the LRG.

Rumen Microbial Genomics Network (RMG)

- Core RMG projects have ended or are ending this year (Hungate 1000, Global Rumen Census) – need to revisit the vision for the RMG and identify follow-on projects. This could perhaps be the focus of a white paper on priorities. METHAGENE meeting in June 2016 (INRA, France) could be the place to do this.
- Consider developing a meta-database along with guidelines/tools for interrogating the data
- Development of a reference manual on culturing techniques

14. In wrapping up the session, the Co-chairs confirmed that there are **no barriers to participation in ERA-GAS**, other than countries being able to resource their participation (cash or in-kind, including via third party support). As an example, New Zealand has said 10% of its ERA-GAS funding can be used to support developing country participation in any successful New Zealand bids. More information on the ERA-GAS round will be provided when it opens (March).

15. It was also noted that the **Harvard dataverse** facility might be worth exploring as a means of creating a centralised repository for GRA data, as opposed to setting up something bespoke. The MMN plans to explore the use of dataverse to host its planned database of EFs, methodologies and guidelines relating to manure.

JOINT MEETING WITH THE INTEGRATIVE RESEARCH GROUP

16. A core part of this year's LRG meeting was a joint meeting with the newly formed Integrative Research Group (IRG). This group was agreed at the GRA Council meeting in September 2015 as a merger of the previous two GRA cross-cutting groups on soil C and N cycling, and inventories and monitoring issues. The joint LRG/IRG meeting was co-chaired by Australia (Lee Nelson, Department of Agriculture and Water Resources), Canada (Brian McConkey, Agriculture and Agri-Food Canada) and France (Jean-Francois Soussana, INRA).

17. The IRG Co-chairs outlined the rationale, vision and scope for the new group, focusing on the estimation, monitoring and projection of GHG emissions within and across agricultural systems. They acknowledged the challenges associated with such a broad scope, particularly in helping GRA countries understand who might best represent them in that group with such a wide range of skills and knowledge required.

18. The importance of identifying the main audiences/end users for the group's work was underscored, along with how to package their outputs appropriately. As well as shaping the IRG's own efforts, the IRG Co-chairs saw this kind of process as more broadly helping increase the GRA's abilities as an "influencer" and thereby increasing the impact of all of its research groups. It would be a particular focus for the group in the next 12 months, along with identifying existing resources/outputs and helping make these more readily available to different audiences. The LRG noted the challenges with reaching down to the farm level, distilling complex science into key messages for on-farm implementation.

19. As the LRG has done, the IRG intends to centre its activities around a series of networks on different integrative issues across the GRA:

- Grasslands network: transfers and builds on the existing LRG network
- Soil carbon sequestration network: new, but builds on work started across the GRA
- Field scale modelling network: builds on existing work from the former Soil C & N Cross-Cutting Group
- Farm scale and regional modelling network: new, but builds on work started across the GRA
- GHG inventories network: builds on existing work from the former Inventories & Monitoring Cross-Cutting Group

20. Feedback on these networks was sought from the LRG, and the IRG Co-chairs spent some time clarifying the general intent of each network. Discussions focused on the need to ensure that these networks develop a clearly defined purpose and scope along with just one or two priority actions ('low-hanging fruit', i.e. able to be completed within 12 months) to enable them to get up and running effectively. The LRG's experience with networks was that having a central activity/s early on was the best way to facilitate meaningful and sustained participation from a wide range of developed and developing countries and potential partner organisations. Strong leadership was also essential for network success.

21. In their report-back on the second day, the IRG Co-chairs presented their ideas for low-hanging fruit for the proposed networks:

Proposed network	“Low-hanging fruit” / initial priorities
Grasslands	<ul style="list-style-type: none"> • Collate and synthesise soil organic carbon (SOC) change rates for grassland systems • Link up long-term research sites around the world • Look at potential for activities around specific grassland production systems, e.g. tropical agriculture
SOC sequestration	<ul style="list-style-type: none"> • General guidance on estimating reasonable maximum SOC sequestration rates based on net primary production, farming practices and site conditions
Inventories	<ul style="list-style-type: none"> • Compiling experiences and lessons learned from countries on inventory improvement, noting the LRG already has work planned in this area on inventory improvement as it relates to livestock GHG emissions
Farm scale & regional modelling	<ul style="list-style-type: none"> • Capture practical experience on tools being used for estimating farm-scale emissions
Field scale modelling	<ul style="list-style-type: none"> • Publish the model inter-comparison and benchmarking; test climate sensitivity, as well as major mitigation and adaptation options

22. In the longer term, the IRG’s networks might focus on:

- Developing guidance on the MRV of SOC change
- Developing capability to practically model GHG emissions and removals for landscape and catchment scale with multiple land uses
- Developing capability to undertake process modelling of GHG emissions and removals at the farm scale
- Sourcing information to help evaluate adaptation and mitigation benefits and uptake

23. The need for linking with the recently launched 4‰ Initiative on soil carbon was highlighted. This initiative aims to help close the gap between the 2° Celsius target set in the Paris Agreement and the aggregation of countries’ pledges to reduce GHG emissions.

24. In discussing the IRG’s initial and longer term priorities, the potential for overlap with the work of the other GRA research groups was acknowledged, for example in supporting countries to improve national GHG inventories. The IRG Co-chairs agreed that it would be important to continue an open dialogue with the other research groups and to clearly identify the lead group on any particular subject. They expressed their appreciation for the opportunity to hold a joint meeting with the LRG and would be looking to seek similar input from the Paddy Rice and Croplands Research Groups. Other immediate next steps for the IRG include recruiting coordinating countries for the networks, and engaging member countries and partner organisations in the work of the group. It was also suggested that the IRG could explore options to coordinate existing databases and holding metadata so as to facilitate access to livestock GHG emissions research data held around the world. This will be followed up, including with the Secretariat.

PARTNERSHIPS

25. The ‘Partnerships’ agenda item was aimed at deepening the relationship with key partners – exploring in-depth how to jointly advance shared priorities. The session opened with a presentation from CCAFS, followed by FAO and the World Bank. Apologies had been received from other LRG partners including the SAI Platform and the European Commission.

26. **CCAFS**, the CGIAR's Climate Change, Agriculture & Food Security research programme, provided an overview of its work, divided into four flagship areas:

- i. Climate smart technologies, practices and portfolios
- ii. Climate information services and climate-informed safety nets
- iii. Low emissions agriculture
- iv. Policies and institutions for climate-resilient food systems

27. The emphasis on livestock within CCAFS is increasing, particularly in flagship area 3, which is focused on GHG quantification and supporting low-emissions development decisions and solutions. Work is underway on several livestock-specific research initiatives in Africa and also in Latin America and Indonesia.

28. The list of joint activities between CCAFS and the LRG continues to grow, with several opportunities identified for 2016 and beyond. These will be advanced with the LRG as the year progresses:

- Development of guidelines for measurement, reporting and verification (MRV) in livestock systems
- Ongoing training and capability building activities, particularly around GHG measurement
- Ongoing development of joint communication materials, e.g. practice briefs, case studies
- Submission of a joint proposal to the 2017 Climate & Clean Air Coalition funding round, if an opportunity presents for a livestock-related project (note that there will be more information on this in March, following a CCAC meeting in Washington DC)
- Exploring possible connections with the Animal Health Network on livestock health and climate change impacts, working with ILRI

There is also the possibility of CCAFS contributing to the IRG's work on farm scale modelling.

29. **FAO** (Food & Agriculture Organisation of the United Nations) outlined its key areas of focus on livestock in 2016 and the activities that aligned with the LRG's work. The Global Agenda on Sustainable Livestock (GASL) is moving into its second phase with an action plan defined for 2016-2018 centred on three outcome areas: a platform for dialogue and knowledge exchange; tools and analytical evidence of livestock's contribution to sustainable development goals; and guidelines and investment to support local practice change. A connection with the LRG on outcome 2 was identified, although it was noted that engagement during the first phase via the Grasslands Network had been difficult. The transfer of this network to the IRG presented a means of reinvigorating the relationship, particularly noting the potential to include grasslands restoration.

30. FAO noted that the Livestock Environmental Assessment & Performance (LEAP) partnership is also moving into its second phase, which will encompass road testing of guidelines from phase 1. FAO also has work underway to support the design of mitigation packages and their monitoring, reporting and verification in a number of countries.

31. A demonstration of the new 'GLEAM-interactive' (GLEAM-i) model was provided – a tool to support countries tackling climate change through livestock. GLEAM-i is the first open, user-friendly and livestock-specific tool for governments, industry, producers and others to calculate emissions using Tier 2 methods. It is designed to help with the preparation of national GHG inventories and in

ex-ante project evaluation for the assessment of mitigation scenarios in animal husbandry, feed and manure management, drawing on IPCC 2006 guidelines. The tool is free to download from [FAO](#).

32. The **World Bank** commented on the prospects for livestock mitigation research in light of the Paris Agreement on climate change and the enhancements to the Green Climate Fund. Public investment in climate smart agriculture is increasing with the challenge now to integrate climate change and natural resource concerns into livestock development planning and investment decisions within countries. To assist with this, the Bank is proposing a programme to guide investors to large-scale implementation of sustainable livestock. Products would include an Investors' Guide, an online resource to enable access to the material referenced in the Guide, and a series of knowledge sharing events. The GASL will be the main audience for consultation but there is significant opportunity for the LRG to be involved as well.

33. The Bank also commented on the success of phase 1 of the flagship Climate & Clean Air Coalition (CCAC)/FAO/LRG programme on enteric methane ('Reducing enteric methane for improving food security and livelihoods'), and the need to begin planning for a possible phase 2. This was noted as an area of ongoing collaboration with the LRG, along with capability building to support countries to advance their GHG inventories as they relate to livestock.

34. In the general discussion that followed these presentations, several countries noted the volume of work underway in-country or in-region on these issues and the need for global-level initiatives to draw on this information as a way of better informing the development of programmes. There may be a role for the GRA in developing a meta-database to help identify this information. The context that mitigation sits within was also noted, underlining the importance of taking a system-based, or integrative approach to designing intervention packages.

CAPABILITY BUILDING

35. In the background papers distributed prior to the LRG meeting (see separate document), the Co-chairs had proposed a focus for capability building initiatives in 2016 and beyond: "*helping countries move towards Tier 2 inventories and designing improved 'MRV' systems for livestock GHGs*". This proposal was based on the increase in the number of countries interested in moving to Tier 2, particularly because it enables countries to capture trends in reducing emissions intensity through productivity gains.

36. There was broad support for the Co-chairs' proposal and the types of activities that could be undertaken (e.g. workshops for policymakers, targeted training courses, support for country-specific processes, technical manuals, regional projects, case studies). The Co-chairs noted the need to prioritise this 'wish list', and to match it with resourcing to enable the activities to be carried out. Several developing countries gave specific examples of where they needed support in the transition to Tier 2 (including the need for equipment and support to scientists once training has been conducted), and agreed with the emphasis on the wider picture of MRV.

37. The Co-chairs encouraged countries to send their capability building proposals to the Secretariat, seeing a role for the GRA to help link with potential funding sources. It was also noted that countries should share information about other existing capability building initiatives (projects,

programmes, but also funding mechanisms) that may not have GHG measurement and mitigation as the primary focus, but where a GHG component could be added onto an existing focus on livestock productivity and development. This will help countries to identify and prioritise areas where they could support and increase capability work that delivers on the dual benefits of increasing productivity and reducing emissions intensity. Countries were requested to share information about relevant programmes and funding mechanisms, including development aid programmes, with LRG members via the LRG co-chairs.

38. Building on the earlier Partnerships discussions, it was agreed that the LRG would work with CCAFS and the World Bank to strengthen tools, training and processes for developing countries to monitor, report and verify livestock GHG emissions and improve national GHG inventories. This would link to the LRG's existing commitment to produce a brochure for policy makers summarising the benefits of higher Tier inventories (due around mid-2016), which could then lead to a white paper and a possible workshop in 2017. Documenting country experiences with moving to Tier 2 inventories for livestock emissions would be an important part of this package of work – enabling countries just beginning this journey to learn from the experiences of others.

39. More broadly, the idea was put forward to compile existing capability building materials (e.g. powerpoint slides, manuals, videos etc) on livestock GHG research into an open access online platform. This would enable a wider range of people to benefit from the information than just those able to attend the various training courses and workshops. The LRG and CCAFS would look to develop this during 2016.

40. Discussion of phase 1 of the CCAC/LRG/FAO flagship project on enteric methane resulted in agreement that the LRG would work with FAO, CCAFS and the World Bank to develop a proposal for a second phase of this project, possibly involving an international level coordination unit to support regional initiatives indicatively in Latin America, West Africa and East Africa. There may be the possibility to develop additional projects within South Asia although this would be separate to a phase 2, more like a “phase 1.5” given the stage at which the current phase 1 work is.

41. LRG country representatives were urged to continue contributing case studies to the LRG's library of country successes in reducing emissions intensity through improving productivity. Several GRA partners have expressed keen interest in these case studies but to stay relevant, the collection needs to be expanded during 2016.

42. Finally, there was a brief discussion on the possibility of an inventory training course resulting in a formal qualification, with New Zealand noting that it already has plans in this area.

OTHER BUSINESS, CLOSING REMARKS

43. The LRG Co-chairs were pleased to confirm that the next meeting would be hosted by the US in Washington DC in April 2017 and that Vietnam had indicated that it might be in a position to host the 2018 meeting. The LRG Co-chairs will follow up on these offers and details will be provided in due course.

44. There was brief discussion of the Council's idea to hold a GRA science conference in 2017 and delegates indicated support in principle. However, it was noted that consideration would need

to be given to the location and audience for such an event, and whether it should be a standalone conference or combined with an existing event in order to maximise attendance.

45. In bringing the meeting to a close, the Co-chairs thanked the Government of Australia for their generous hosting of the eighth LRG meeting and thanked delegates for making the journey to Melbourne.

APPENDIX ONE: LIST OF PARTICIPANTS

Country	Attendees	Email
GRA member countries		
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