

Integrative Research Group Meeting

Online

24-25 June 2021

Meeting Report

OVERVIEW

The fifth meeting of the Integrative Research Group (IRG) of the Global Research Alliance on Agricultural Greenhouse Gases (GRA) was held online over four sessions on 24 and 25 June 2021. The IRG meeting was chaired by Canada (Dr Pamela Joosse, Agriculture and Agri-Food Canada), France (Dr Jean-François Soussana, INRAE), and Australia (Mr Lee Nelson, Department of Agriculture, Water and the Environment).

This report is a summary of the key discussions and outcomes of the meeting. PDF's of the presentations and recordings of the meeting sessions may be downloaded from the resource library on the GRA website (<https://globalresearchalliance.org/library/integrative-research-group-meeting-june-2021/>).

PARTICIPANTS

The meeting was attended by 48 participants, representing 20 GRA member countries, and 5 partner organisations.

- **GRA Members attending:** Argentina, Australia, Bangladesh, Canada, Costa Rica, Cote d'Ivoire, Denmark, France, Germany, Japan, Netherlands, New Zealand, Norway, Senegal, South Africa, Spain, Switzerland, United Kingdom, USA, Uruguay.
- **GRA Partners attending:** AgMIP, CIAT, GHGMI, ILRI, World Bank.

MEETING OUTCOMES

The meeting discussed the following activities:

- Identified opportunities for future research funding from IRG members.
- Reports and future activities from the four Networks of the IRG.
- Progress on the development of an International Research Consortium.
- Update on the Mitigation and Adaptation Co-benefits (MAC-B) project from AgMIP.
- Discussed the GRA council request to develop communication briefs.

SUMMARY OF DISCUSSIONS

MEETING STRUCTURE

1. The 2021 meeting was held across four online sessions, two regional sessions for country reports and two plenary sessions. The first plenary session discussed Network updates and the second plenary session discussed IRG projects and enhancing IRG impact including science to policy links.

SECRETARIAT UPDATE

2. GRA Special Representative Hayden Montgomery provided an update on the activities of the GRA since the 2020 IRG meeting and an overview of outcomes from the 2021 Council meeting.

3. The 10th annual GRA Council meeting was hosted by Australia as the new Chair of the Council. Chile was confirmed as the Vice-Chair and will host the 2022 Council meeting. The Council approved the adoption of the GRA Strategic Plan for the 2021-2025 period, and the outcomes from the Council meeting will contribute to the development of the annual operational plan. Key discussions from the Council meeting were the continued support for capability building (including CLIFF-GRADS awards), developing joint research activities of the GRA and ensuring the GRA outputs are relevant to policy makers, including for upcoming international events such as COP26 and the UN Food Systems Summit.

4. There was a strong interest from the Council to complete a stocktake of GRA research activities, which is now being discussed by the Research Group Co-Chairs. The last GRA stocktake was completed in 2011, so it is an opportunity to see what progress has been made in the past 10 years.

5. The GRA membership has increased to 65 countries, with Cuba, Samoa and Bangladesh having joined since the last IRG meeting.

6. In the last year the GRA and the Research Groups have held several webinars and online meetings, which may be viewed on the GRA website. Upcoming online events are posted on the website and advertised through Twitter.

7. The GRA Secretariat has some new additions:

- Veronica Ellis, GRA Secretariat, Ministry for Primary Industries, New Zealand
- Katja Bessoenova, CLIFF-GRADS Administration, GRA Scholarships and Awards, Ryan Institute at the National University of Ireland Galway

8. The GRA has recently provided support for the participation of eligible developing country members to become involved in multi-partner research calls. This support was for the 2021 Circularity Joint call of the ERA-NET Co-fund and is also available for the European Joint Partnership Soil call.

NETWORK PRESENTATIONS

9. The four Networks of the IRG presented an update of activities, including Network meetings and research activities during Plenary 1 of the meeting.

Soil Carbon Sequestration

10. The Soil Carbon Sequestration (SCS) Network is led by Pete Smith, University of Aberdeen, Scotland, UK and Jean-François Soussana, INRAE, France. The Network's leading project is the Coordination of International Research Cooperation on Soil Carbon Sequestration in Agriculture (CIRCASA) which has coordinated soil carbon sequestration research across Europe and with many international partners.

11. An online survey of researchers working in related fields (e.g agricultural practice, soil and land management, ecology and climate change) identified 14 significant research challenges – with respondents from across all continents. The 14 challenges fit into three themes:

- Theme 1 – Process.
- Theme 2 – Management and Monitoring.
- Theme 3 – Barriers.

12. The global potential for soil carbon sequestration was modelled (simulated balance between crop residue inputs and soil organic carbon decomposition) to understand the ability to meet the 4/1000 target, with greater potential seen in some regions.

13. The Network has contributed to guidelines on soil organic carbon (SOC) Monitoring, Reporting and Verification (MRV) and in collaboration with CIRCASA scientists produced a review of how to MRV soil carbon changes.

14. A stakeholder consultation to identify the knowledge needs of farmers and other stakeholders was completed to better transfer soil carbon research to farmers in a useful format for on-farm implementation.

15. Stakeholders were most concerned with the following knowledge needs (ranked):

1. Farm-level management.
2. Knowledge transfer and exchange.
3. Economics.
4. Policy solutions.
5. MRV.

16. Farmers and farm advisors were also interested in the costs and benefits of management practices to increase/maintain soil carbon, while other stakeholders were interested in the wider benefits to society and the environment and the agri-food systems as well as policy incentives and reliable MRV.

Farm and Regional Scale Integration

17. The Farm and Regional Scale Integration Network (FRS) is led by Claus Deblitz (Thünen Institute / Agri benchmark, Germany), Yelto Zimmer (Thünen Institute / Agri benchmark, Germany) and Nina Grassnick (Thünen Institute, Germany/GRA). The main achievements for the year include the new leadership for this network and linking the activities of the GRA to Agri benchmark – providing detailed data on agricultural production systems and economics and analysing GHG mitigation impacts due to changes in management.

18. The Network held a kick-off meeting 25 and 28 May 2021 with 48 participants attending over both sessions. Minutes and presentations are available to download from the GRA website

(<https://globalresearchalliance.org/library/farm-regional-scale-integration-network-kick-off-meeting-2021/>).

19. Workplan and events for the coming year:
 - Create a literature /research database on results – a) farm-level mitigation, b) upscaling from farm to region.
 - Update the FRS webpage on GRA website.
 - Create a LinkedIn group to foster networking with FRS – please send contact request on LinkedIn to Nina Grassnick.
 - Webinar series on farm-level mitigation measures (September 2021 start).
 - Next meeting September 2021.
20. The FRS also identified areas of overlap for collaboration with other GRA Networks
 1. Fertiliser and manure input optimisation, with the Manure Management (LRG) and Nutrient Management (CRG) Networks.
 2. Crop and livestock management practices, with the Conservation Agriculture Network (CRG).
 3. The Paddy Rice Research Group
 4. Benefits of agro-forestry and silvopastoral systems, with the Agroforestry Network (CRG) and Crop and Livestock Systems Integration Network (CRG).
 4. Costs and benefits of feed additives (ruminants), Feed and Nutrition Network (LRG).
 5. Soil carbon with the Soil Carbon Sequestration Network (IRG).
21. Key topics for the network beyond the farm level are:
 - How to capture/account for leakage effects?
 - Identify and analyse trade-offs: food security and GHG mitigation.
 - Perspectives on non-livestock proteins – potential for savings in GHG underestimated?

Circular Food Systems

22. The Circular Food Systems Network is led by Karin Andeweg (Wageningen University, Netherlands). The Netherlands is supporting the leadership and establishment of the Network which has the objective to contribute to food security with the mitigation of GHG emissions by circularity across the entire agri-food system. A kick-off meeting for this Network was held 22-23 June 2021 with 50 participants from 5 continents attending.

23. The Network discussed the scope of circularity to be considered by the Network, points to improve circularity in food systems and heard from the authors of a series of proposed case studies. Upcoming activities for the Network:

- Results workshop, start regional case studies.
- Set up Network communications.
- Presentation at COP26.
- Outcomes case studies, facilitation of joint research, financing new research.
- Reach out to policy makers.

24. Future needs for the Network will be to establish linkages with other GRA groups (Paddy Rice Research Group, Inventories and NDC Network, Integrated Crop-Livestock Systems Network and Agroforestry Network) and harmonise approaches and methodologies as possible. The Network will

also develop communications of the case studies, including policy briefs and support the exchange of students and researchers.

Inventories and Nationally Determined Contributions (INDC)

25. The Inventories and Nationally Determined Contributions Network is led by Richard Eckard (University of Melbourne, Australia), Hazelle Tomlin (Ministry for Primary Industries, New Zealand) and Ngoni Chirinda (Mohammed VI Polytechnic University, Morocco).

26. The Network aims to improve the evidence base and to better connect governments and relevant expertise to subsequently improve the quality of agricultural Nationally Determined Contributions (NDC) and the way these are captured by national GHG inventories.

27. The main Network activity to date has been through the establishment of a quarterly newsletter which now has 280 subscribers. A first meeting of the Network was held 2 and 3 June 2021 with nearly 60 participants attending across both sessions, including from partner organisations. Minutes and presentations are available to download from the GRA website (<https://globalresearchalliance.org/library/inventories-and-nationally-determined-contributions-network-meeting-2021/>).

28. Activities for 2021/2022:

- Expanding the Network.
- Holding an Agricultural sector national inventory compilers workshop.
- Publishing a summary resource of 2019 IPCC refinement.
- Stocktake of national agricultural inventories and NDCs.
- Proposal to write set of guidelines for researchers to upload data into the IPCC Emissions Factor Database (EFDB).
- Compiling and submitting existing emission factor research to IPCC EFDB.
- Webinars to address specific topics of interest.

29. The Group discussed the need to encourage researchers to contribute to the emissions factor database, noting that there is a difference between what data is collected for a research study and the information required by the database.

PROJECT PRESENTATIONS

Mitigation and Adaptation Co-Benefits (MAC-B)

30. The Mitigation and Adaptation Co-Benefits (MAC-B) project, a collaboration between the GRA and Agricultural Model Intercomparison and Improvement Project (AgMIP) was presented by Dr Cynthia Rosenzweig (AgMIP). The project aims to look at interventions that contribute to both mitigation and adaptation co-benefits, trade-offs and synergies.

31. A framework and set of protocols is being developed that consider adaptation and mitigation both separately and together. The methodology identified representative agriculture pathways, different options for the development of farming systems in the region which considers both mitigation and adaptation, as well as biophysical and socio-economic processes.

32. Capacity building is also key; the project will develop in-country capacity to co-develop information products of value to stakeholders.

33. The project is currently being tested in India and Bangladesh on rice systems to help identify the best policies for both adaptation and mitigation outcomes. Several models have been identified and brought together that best capture outputs including GHG emissions, yields and economics. Inputs required to run the models include climate information, economic data and crop management data.

34. AgMIP and GRA members are now in discussions to expand the MAC-B project to additional GRA countries with the expected outcomes to:

- Create set of protocols that can be used and modified by each country.
- Develop national stakeholder/policy-maker engagement.
- Engage with other GRA research groups.

35. The project will be covered in an AgMIP special issue of *CABI Agriculture and Biosciences*, guest edited by Sonali McDermid and Roberto Valdivia. GRA members are welcome to submit papers by 31 October 2021 on any aspect of co-benefits and trade-offs of food security with mitigation and adaptation together.

International Research Consortium on Soil Carbon Sequestration (IRC)

36. The International Research Consortium on soil carbon sequestration was presented by Jean-François Soussana. The IRC is being developed as an outcome of the CIRCASA project and aims to increase soil carbon research to support the research priorities identified by the CIRCASA project.

37. Research priorities:

- Pillar 1 - Frontiers research unlocking the potential of soil carbon, International research calls with European Joint Programming Soil.
- Pillar 2 - Soil carbon stock change MRV international standard, International innovation project.
- Pillar 3 – Agroecological and technological innovations, Private Public innovation projects.
- Pillar 4 - Enabling environment and knowledge co creation, Open online collaborative platforms.

38. The IRC governance and funding options were discussed at an online meeting 9 February 2021 involving 240 participants, most from Europe. Participants were mostly interested in contributing through Pillar 1. The proposed International Research Consortium structure and governance will include a general assembly of members that is overseen by a Steering committee that is advised by a scientific board. An executive board will drive the IRC process and work on all four pillars (each with WGs and working in each region).

39. The project if approved would be launched in late 2022 or more likely 2023 and would be expected to run for 3-4 year, although hopefully longer. The project would consider other land uses as well as agriculture.

SCIENCE TO POLICY CONTEXT

40. A presentation on climate financing for the livestock sector was presented by Pierre Gerber (World Bank). The activity maps out opportunities and barriers for directing climate finance to the livestock sector, which otherwise receives less than 1% current climate finance.

41. Mitigation pathways consider practices that are already available right through to those that are hopefully coming down the line. Three groups of obstacles were identified as limiting climate financing opportunities:

- Livestock and agriculture: High costs of servicing smallholders, high perceived risks, weak or disconnected pricing signals along animal value chains/lack of premiums.
- Lack of shared data for MRV, lack of data and statistics to develop investment plans.
- Animal protein sector perceived as highly controversial, lack of urgency/awareness in the sector, weak policy frameworks, which makes it difficult to see as a valid partner.

42. Six investment opportunities were identified

1. Conditional credit lines on mitigation action.
2. Value-chain finance.
3. Emissions trading schemes.
4. Verified sourcing areas for livestock feed.
5. Prize based incentive programs.
6. Programmatic Official Development Assistance /International Financial Institutions finance – which make the programme and support conditional to policy changes.

43. The project the World Bank is supporting in Kazakhstan looking at programmatic ODA/IFI Finance – conditional on mitigation practices. A project in Kenya for the dairy sector is based on the formulation of a line of credit and a programme in Colombia using value chain financing.

44. The World Bank uses a set of tools and follows certain processes to evaluate programmes:

- Risk assessment.
- GHG emissions.
- EXACT/GLEAM models.
- resilience and mitigation outcomes.

COUNTRY REPORTS

45. Two regional sessions were held for country reports of IRG members; session 1 included North and South America and a report from the International Livestock Research Institute (ILRI) and, session 2 covered Europe, Africa and Asia. Country representatives provided updates on IRG activities and national research activities that link to the work of the IRG.

Australia – Lee Nelson

46. As well as leadership in the IRG Australia is now the Chair of the GRA Council, with Prof. Andrew Campbell, Australian Centre for International Agricultural Research (ACIAR) taking on this role during the recent Council meeting. Prof. Richard Eckard is also a co-lead of the Inventories and NDC Network.

47. Australia's priorities as Council Chair are greater participation from Pacific countries in the GRA; engagement of researchers in Australia's region in GRA research activities; research into mitigation and adaptation synergies; and the improvement of national inventory systems and NDC capability.

48. Australia is funding support for the MAC-B modelling approach and are collaborating on projects in Fiji and Vietnam on National Inventory systems. Queensland University of Technology has made a submission for the development of soil carbon methodologies utilising flux tower technology.
49. Focuses are on soil carbon and protection of agricultural soil through the release of the Technology Investment Roadmap; Australia's National Soils Strategy; the appointment of a National Soils Advocate.
50. Other opportunities identified included: a Drought Resilience Research and Adoption programme; and the Carbon + Biodiversity Pilot that rewards farmers for improving on-farm biodiversity together with carbon projects.
51. There is \$210million to an Australian Climate Service to improve climate predictions and assist industry in adaptation.
52. Australia's full country report can be found [here](#).

Bangladesh – Ashraf Ali Biswas

53. Bangladesh is an active member of the GRA and Food and Nutrition Network under the LRG, alongside contributing to the Circular Food Systems (CFS) kick-off workshop.
54. Focus is on the CFS project initiative that seeks to reduce methane emissions by cultivating legume beans instead of rice in winter. There is possible funding from Chattogram Veterinary and Animal Sciences University, Bangladesh alongside CFS network funding.
55. There was good connectivity identified between the livestock sector and researchers. Other strengths included university facilities for methane emission activation, knowledge, manpower and land, though they are seeking technology and collaboration to run an integrated programme in the country.
56. Bangladesh's full country report can be found [here](#).

Canada – Pamela Joesse

57. Canada is an active member of the GRA, participating in the Livestock and Cropland Research Groups and networks and co-leads the IRG with Australia and France.
58. Canada is a funding partner to the European Joint Program initiative and is interested in supporting a GRA Flagship on soil through an International Research Consortium.
59. The climate change research priorities for Canada are: mitigation (agricultural fertilisers); carbon sequestration; developing regional, national, global models
60. Focus on Agroecology Living Laboratories (ALL) to achieve GHG objectives - working with the US, France and the EU to establish a network of ALL.
61. The Canadian Government has committed \$4billion over ten years for Natural Climate Solutions (including 2 Billion Trees). The Agricultural Climate Solutions (ACS) workstream is led by NGOs, has funding of \$185m over ten years and will establish regional hubs (ALL) working with farming and indigenous groups; also looking at co-benefits. The ACS will contribute to achieving Canada's net-zero emissions by 2050.
62. Canada's full country report can be found [here](#).

Denmark – Nicholas Hutchings

63. Denmark has national targets of 70% reduction of GHG emissions by 2030 and carbon neutrality by 2050. Context is 60% of land area is agricultural which is largely intensive and livestock

dominated. Rural employment and synergies with other policy areas (e.g. nitrates, ammonia) are of concern/interest.

64. Key topics include: mitigation measures (field, manure management, livestock; landscape), GHG accounting (national inventory development; farm-scale and municipality GHG budgets) and new products (manure products; plant-based foods; cultured meat).

65. Primary funding sources were the Danish government through public policy support and competitive research programmes, the EU, and private foundations.

66. Denmark's full country report can be found [here](#).

France – Jean-François Soussana

67. France is also a co-lead in the IRG and has a national priority of being carbon neutral by 2050 in addition to co-chairing the Soil Carbon Network and contributing to both CRG and LRG networks.

68. This includes a strategy for accelerated agricultural emission decline and encouraging eco-schemes, though review of impact is required.

69. France has engaged with multiple networks and calls, including CIRCASA, EJP on Soils, Green Deal, INRAE and more. Engagement has focussed on building collaboration and research consortia; soil health and quality; climate neutrality of farms; mitigation, adaptation and offsetting; modelling; and remote sensing.

70. France sees high potential for soil carbon sequestration in French arable soils, 30 million tonnes CO₂ eq. per year, potentially higher when the current soil carbon stock is low.

71. France's full country report can be found [here](#).

Germany – Claudia Heidecke

72. Germany is leading the Farm and Regional Scale Integration Network with kick-off meetings on the 25 and 28 May. They see a lot of opportunity for further collaboration.

73. Foci include: reducing food loss and waste; circular food systems; soil organic carbon, which has synergies with the Soil Carbon Sequestration Network and Farm and Regional Scale Network; and modelling strategies for climate change mitigation, which can be used at national, European and global scale.

74. Germany's federal cabinet passed a new draft to the federal climate protection law that protects the rights of future generations not to be disproportionately restricted by massive future emission reduction obligations. This increases pressure to achieve climate goals, including climate neutrality by 2045; agricultural emissions to be reduced; and LULUCF targets for sequestration.

75. Germany's full country report can be found [here](#).

Ireland – Gary Lanigan

76. Ireland's policy objectives include a 51% cut in national emissions by 2030 and net zero by 2050. 35% of national emissions are from agriculture. Ireland is currently involved in the CRG and LRG, FNN, Soil C Sequestration Network, EPA and I&NDC Network.

77. Ireland is involved in a wide range of projects and project areas, including mineral and peat soils GHG measurement and carbon cycling; carbon sequestration; GHG reduction; carbon remote sensing; and supporting change in policy and farms in these areas.

78. There is no specific national funding, though there are European calls with funding, including EPA Fellowships and DAFM National Thematic Research Call. Teagasc also has competitive funding for postgraduate students.

79. Ireland's full country report can be found [here](#).

New Zealand – Chanjief Chandrakumar

80. New Zealand is active in contributing to the IRG through: co-leading the I&NDCs Networks, supporting the CFS network; membership of CIRCASA and new IRC; funding joint calls (EJP-Soils; ERA-NET Circularity) and funding GRA to act as a funder; and funding the CLIFF-GRADS scholarship.

81. Key project areas for New Zealand include soil carbon sequestration; farm to regional scale intervention; circular food systems; and inventories and NDCs.

82. New Zealand also has a focus on collaboration, with future opportunities and actions including the FONTAGRO Soil Carbon monitoring programme, and capability building for inventories in Africa and ASEAN. New Zealand also seeks to establish and connect with indigenous networks. Other activities will include developing tools for farm planning and modelling, as well as exploring farm level emission reporting.

83. New Zealand's full country report can be found [here](#).

Norway – Teresa Barcena

84. Norway has multiple contributions under the Soil Carbon Sequestration Network, including research into: cover cropping as a climate action; evaluating trade-offs and synergies of soil management options; and measuring, reporting and verifying soil carbon change.

85. Other contributions in the GRA are being made to the Croplands Research Group and Livestock Research Group.

86. Norway's focuses are reducing agricultural emissions, with an agreement between Government and the Farmer associations to reduce GHGs by 5 million tonnes CO₂ equivalent by 2030, which will include the agricultural sector.

87. Funding is available from both the Research Council of Norway, which has multiple calls, and the EU, including EJP-Soil.

Switzerland – Daniel Bretscher

88. Switzerland has also been involved in soil carbon sequestration, with work on biochar modelling for EJP-Soil and soil organic carbon (SOC) sequestration for the FAO using the RothC model. European countries estimate offsets of about 15% of achievable soil carbon sequestration on agricultural land, though there is limited information at a country level.

89. Other projects have focused on: farm to regional scale integration; assessing and reducing GHG emissions at a farm-level; adaptation tools; inventories and NDCs (measurement of emissions and fluxes on cropland, pasture and managed drained organic soils).

90. There has also been efforts to collaborate and capability build with farms and farmers associations. Switzerland's full country report can be found [here](#).

USA – James P. Dobrowolski

91. Updates on US funding programmes: The Collaborative Research Fund (CRF) was launched at the Belmont Forum Climate, Environment and Health to promote and fund global science collaboration as part of the US contribution to the Paris Accord; and National Alliance for Water Innovation for non-traditional sources of water.

92. NIFA will invest at least USD21.7 million to help producers manage the impact of climate change including soil, extension and education. Noting impacts on the ecosystem, plant health and invasive species, drought and wildfires.
93. The USDA- Agricultural Research Service is funding Climate Hubs to supporting resilience by co-developing and communicating agro-climate practices.
94. USDA also provides funding for international collaborations (as well as Dept of State, USAID, USFAS), funding for adaptation, and professional development for indigenous communities. The US's full country report can be found [here](#).

Uruguay – Virginia Pravia

95. The National Institute of Agricultural Research is a partner in two regional research collaborations, the Low Carbon Livestock Research Network with 8 other countries (to advance inventories and identify mitigation options), and the through FONTAGRO is leading research programmes on legumes and pastures. Internationally Uruguay is participating in the EU Horizon 'HoliSoils' project and the FAO soil carbon mapping.
96. Domestic research includes a project using paired research sites to compare GHG emissions and soil carbon sequestration in irrigated crop systems, using different management, and rice systems and long-term soil carbon sequestration. Future research projects include remote sensing to measure soil carbon (Fontagro project).
97. ANII Post Doc (closing 07/07/2021):
<https://www.anii.org.uy/apoyos/formacion/6/posdoctorados-en-uruguay/>
98. Uruguay's full country report can be found [here](#).

International Livestock Research Institute (ILRI) – Claudia Arndt

99. ILRI has been working on direct GHG measurement from soil and manure emissions using chambers, as well as using chambers for measuring ruminant emissions. ILRI are undertaking surveys of Tier 2 Emission Factors for enteric and manure methane and N₂O emissions in Burkina Faso, Kenya, Ethiopia, Uganda and Tanzania.
100. ILRI also has a postdoc open for a rangelands eddy flux measurement project. Lastly, there is funding from GIZ for stakeholder platforms 'Livestock Community of Practice'.

DISCUSSION

101. The Group discussed a number of outcomes and activities over the four sessions. Each plenary session had breakout groups to consider key questions; - the first relating to strengthening connections and sharing communication of IRG activities with other groups of the GRA ; and, the second regarding the research activities of the IRG, including future projects.

How can the IRG be more Integrative?

102. Each of the Networks have the opportunity to engage with different groups of the GRA and the wider research community. The group noted that soil science was a topic that was considered by a number of GRA groups and underpins much of the research done by SCS network members. The role of the Soil Carbon Sequestration Network is to provide advice and support for models at the system level.
103. Integrating is about sharing, so global initiatives in soil science should have a common place to share information e.g. on databases and websites. Or where these already exist, such as the

Emissions Factor Database, the INDC Network has a role to provide guidance and support others to upload data.

104. The Farm and Regional Scale Integration Network can bring in economics to these farm level discussions and the Circular Food Systems Network has strong focus on integration as it works across systems. The co-benefits project (MAC B) – could help identify better future systems.

IRG Communication

105. The IRG can share information on protocols and practices, on the technical side. But as was discussed at the GRA Council meeting in March the IRG also has a role in engaging with policy groups. The GRA has convening power across its members and partners to support science and policy dialogues. While each country has priority areas, policy needs are more generally shared with common questions across countries – although the answers will be different for each situation.

106. For the IRG to have impact in our communications we should be able to address the high-level views under discussions around the transformation of food systems. It is important to have identified the key people that have specific expertise to engage with stakeholders.

107. The group discussed the difficulty around the creation of policy briefs – when it is unclear what questions policy makers want addressed, and the short time frame that policy makers have to provide advice – this is generally not enough time to understand the communications that are available. For the creation of policy briefs for events e.g. COP26, there is a chance to engage with policy makers and seek their views and needs on what these briefs address.

108. There is great potential for the networks over the next year, and members look forward to working with the co-leads to capture their outputs and identify any gaps.

Scholarships and Awards

109. The meeting discussed how the various scholarship, awards, internship opportunities could be more visible, noting there were also extension programmes and other capability initiatives that could be circulated. The GRA website currently has some information but this needed to be updated by members and shared on social media when calls were going out. Ongoing capacity building and training is important for the IRG, what are the opportunities to work with universities or develop online courses and training.

APPENDIX 1: Participants List

Members	
Argentina	Andres Said, Ministry of Agriculture
Australia	Lee Nelson, Department of Agriculture, Water and Environment Julianne Biddle, Australian Centre for International Agricultural Research Sosheel Godfrey, Charles Sturt University
Bangladesh	Nani Gopal Das, Bangladesh Livestock Research Institute Ashraf Biswas, Chattogram Veterinary and Animal Sciences University
Canada	Pamela Joose, Agriculture and Agri-food Canada Roland Kroebel, Agriculture and Agri-food Canada
Costa Rica	Karla Mena Soto, Ministry of Agriculture and Livestock
Côte d'Ivoire	Kouadio Yao Jean-Clovis, Université Félix Houphouët Boigny
Denmark	Nicholas Hutchings, Aarhus University
France	Jean-Francois Soussana, INRAE Sylvain Pellerin, INRAE
Germany	Claudia Heidecke, Thünen Institute Christopher Poeplau, Thünen Institute Claus Deblitz, Thünen Institute / Agri benchmark Yelto Zimmer, Agri benchmark Cora Vos, Thünen Institute
Ireland	John Harrison, Department of Agriculture, Food and the Marine (DAFM) Gary Lanigan, Teagasc Karl Richards, Teagasc
Netherlands	Karin Andeweg, Wageningen University & Research
New Zealand	Trish Ranstead, Ministry for Primary Industries Chanjief Chandrakumar, Ministry for Primary Industries Hazelle Tomlin, Ministry for Primary Industries Joel Gibbs, Ministry for Primary Industries Andreas Wilkes, NZAGRC
Norway	Teresa G. Bárcena, NIBIO
Senegal	Séga Ndao, ISRA
South Africa	Mokhele Moeletsi, Agricultural Research Council
Spain	Pilar Merino, NEIKER Marisa Tello, CSIC-INIA
Switzerland	Daniel Bretscher, Agroscope
United Kingdom	Luke Spadavecchia, DEFRA Pete Smith, University of Aberdeen
United States	James Dobrowolski, USDA National Institute of Food and Agriculture Wes Hanson, USDA
Uruguay	Virginia Pravia, Instituto Nacional de Investigación Agropecuaria
Partners	
AGMIP	Cynthia Rosenzweig, NASA GISS
CGIAR	Ana Maria Loboguerrero, Alliance of Bioversity International and CIAT Colombia Claudia Arndt, ILRI Kenya

UM6P	Ngonidzashe Chirinda, Mohammed VI Polytechnic University, Morocco
GHG Management Institute	Olia Glade
World Bank	Pierre Gerber
GRA Secretariat	
Hayden Montgomery, GRA Special Representative Deborah Knox, New Zealand Nina Grassnick, Thünen Institute, Germany Katja Bessonova, NUI Galway, Ireland Veronica Ellis, New Zealand	