

# GLOBAL RESEARCH ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

17 January 2017

SECRETARIAT UPDATE



# AT A GLANCE

**49**  
member  
countries

**14** partner  
organisations

Over **3000** scientists  
involved in activities of the GRA

**44** international  
collaborative projects  
supporting the GRA



**50** fellowships awarded to  
recipients from **25** countries

**4** Research  
Groups



Paddy Rice  
Research  
Group

Livestock  
Research  
Group

Croplands  
Research  
Group

Integrative  
Research  
Group



**20** Science  
Networks



**19** technical training  
workshops held



**12** technical guidelines,  
resource materials and  
databases produced





# PARTNER ORGANISATIONS

GLOBAL  
RESEARCH  
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES



**Inter-American  
Development Bank**

worldAgriculturalforum



# Potential Partners

- The Council agreed to re-issue invitations to the Asian Development Bank and International Fund for Agricultural Development to be partners of the GRA.
- Accepted the request for partnership from the International Soil Reference and Information Centre (ISRIC).
- Agreed to pursue partnerships with the following organisations:
  - Global Agri-business Alliance (GAA)
  - World Business Council on Sustainable Development (WBCSD)
  - Sustainable Agriculture Initiative Platform (SAI Platform)
  - International Fertiliser Development Centre (IFDC)
  - Caribbean Agricultural Research & Development Institute (CARDI)
  - Forum for Agricultural Research in Africa (FARA)

# 2017 COUNCIL MEETING OUTCOMES

GLOBAL  
RESEARCH  
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

- Germany confirmed as vice –Chair
  - Proposal to host a GRA Conference jointly with FACCE, alongside the 2018 Council meeting
- Livestock and Paddy Rice Research Groups call for Members to support a 3rd Co-Chair of each Group.
- Develop an inventory of capability building needs - and survey of capability fellowships and training events.
- Research Groups proposed developing regional capability building activities, coordinated across all Groups.
- Facilitate capability building support – including fellowships
- Council Members to identify the Flagship projects they will support.




# WEBSITE UPDATES

GLOBAL  
RESEARCH  
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

## Expansion of Research Group Pages – to showcase Networks and activities

[ABOUT US](#) [RESEARCH GROUPS](#) [COMMUNITY](#) [UPDATES & EVENTS](#) [LIBRARY](#) [CONTACT US](#)



GLOBAL  
RESEARCH  
ALLIANCE  
ON AGRICULTURAL GREENHOUSE GASES

### CROPLANDS RESEARCH GROUP

[About Us](#)

---


[Networks](#)

---


[Collaborative Activities](#)

---


[Capability Building](#)




#### Highlights



Global Research Alliance Modelling Platform (GRAMP)





Literature Database




Managing Agricultural Greenhouse Gases Network (MAGNet)

#### Croplands Library Items

 Publications

 Meetings


 Collaborative Activities

#### Related Links

- Presentations: Croplands Meeting 2016
- Video presentations: Nitrous Oxide workshop
- Nitrogen Oxide Network


#### Events

[SEE ALL](#)


2017 Croplands Research Group Meeting  
 08/09/2017 - 09/09/2017

6th International Symposium on Soil Organic Matter


#### Research Networks



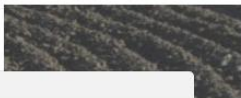
Agroforestry Systems Network




Conservation Agriculture Network



Integrated Crop-Livestock Systems Network



Landscape



Nutrient

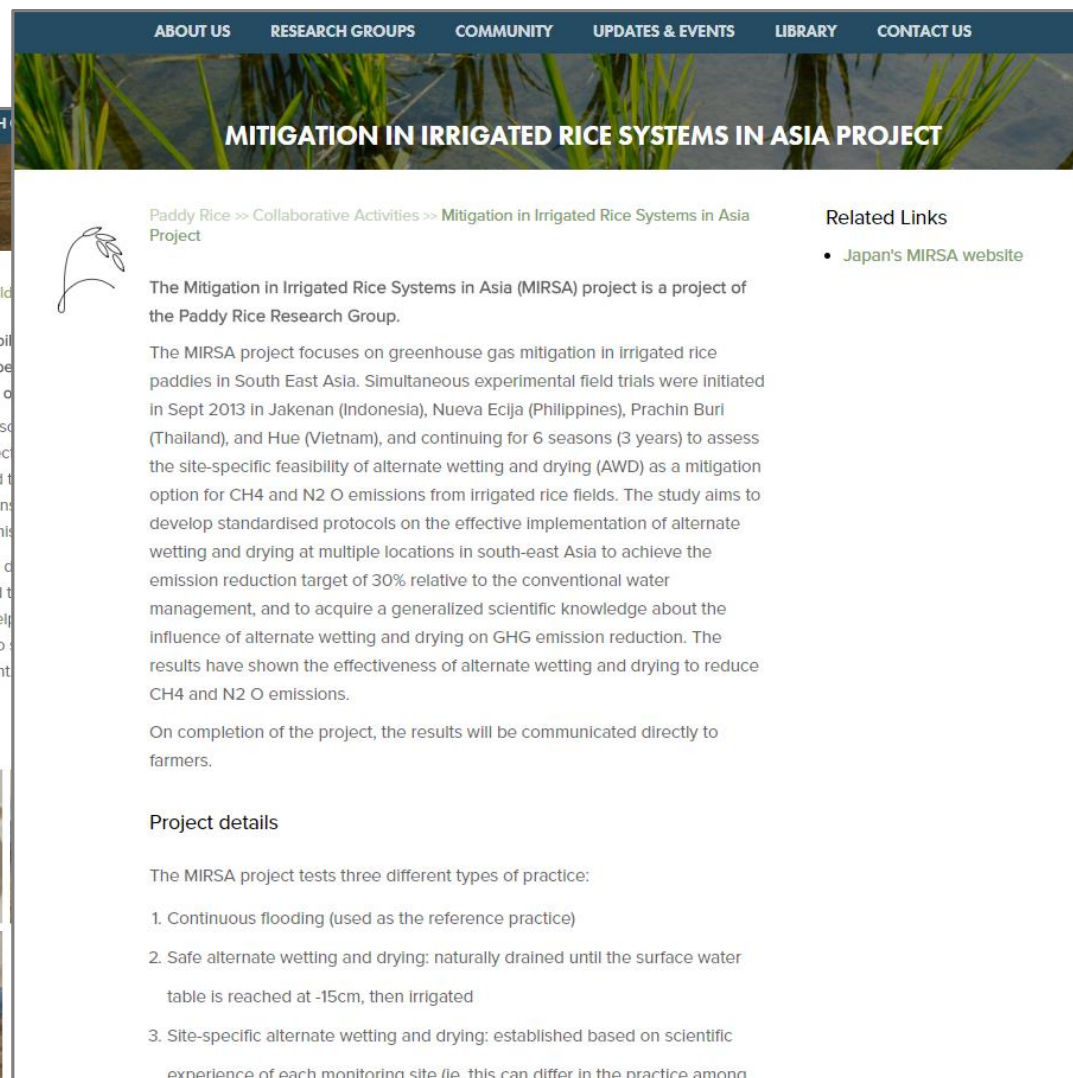
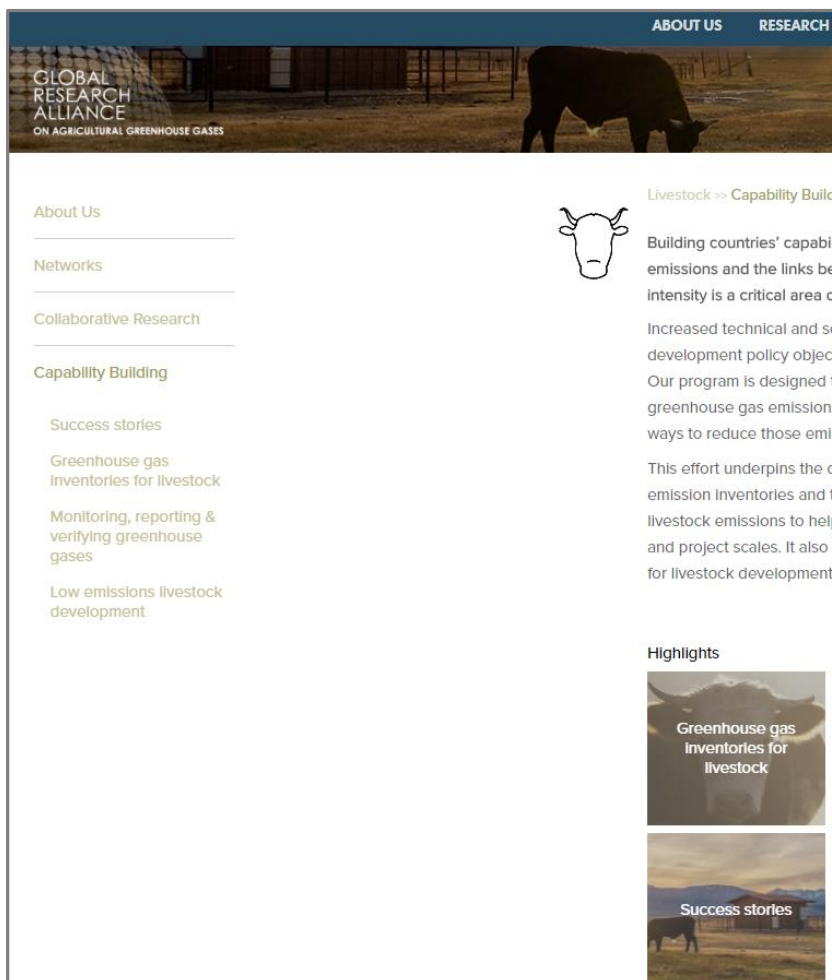
<https://globalresearchalliance.org/updates>

# WEBSITE UPDATES

GLOBAL  
RESEARCH  
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

- Highlight workplan elements and activities
- Focus on priority projects





# WEBSITE UPDATES

GLOBAL  
RESEARCH  
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

Resource Library – access publications, documents, fellowship opportunities and project information

The screenshot displays the 'LIBRARY' section of the Global Research Alliance website. At the top, a dark blue navigation bar contains links: ABOUT US, RESEARCH GROUPS, COMMUNITY, UPDATES & EVENTS, LIBRARY, and CONTACT US. Below this is a green banner with the text 'GLOBAL RESEARCH ALLIANCE ON AGRICULTURAL GREENHOUSE GASES' and 'LIBRARY'. The main content area is divided into several sections. On the left, a sidebar lists 'Collaborative Activities', 'Fellowships', 'Meetings', 'Publications', and 'Technical Manuals'. Next to this is an icon of three stacked books. The central part features a 'SEARCH LIBRARY' bar. Below the search bar, there are six document thumbnails arranged in two rows of three. The first row includes 'Alliance Charter', 'Paddy Rice Meeting Reports', and 'Croplands Meeting Reports'. The second row includes 'Global Research Alliance Modelling Platform Presentation 2016', 'Americas Sub-Group Presentations, Stuttgart 2016', and 'Livestock Research Group Meeting Summary, April 2017'. Each thumbnail has a 'Meetings' label at the bottom. On the right side, there is a 'Research Groups' section with four categories: 'Croplands', 'Integrative', 'Livestock', and 'Paddy Rice', each with a corresponding icon. Below this is a 'Sort by:' section with two options: 'Date' and 'Title'.

ABOUT US RESEARCH GROUPS COMMUNITY UPDATES & EVENTS LIBRARY CONTACT US

GLOBAL RESEARCH ALLIANCE ON AGRICULTURAL GREENHOUSE GASES LIBRARY

Collaborative Activities

Fellowships

Meetings

Publications

Technical Manuals

SEARCH LIBRARY

Alliance Charter

Paddy Rice Meeting Reports

Croplands Meeting Reports

Meetings

Meetings

Meetings

Global Research Alliance Modelling Platform Presentation 2016

Americas Sub-Group Presentations, Stuttgart 2016

Livestock Research Group Meeting Summary, April 2017

Meetings

Meetings

Meetings

Research Groups

Croplands

Integrative

Livestock

Paddy Rice

Sort by:

- Date
- Title

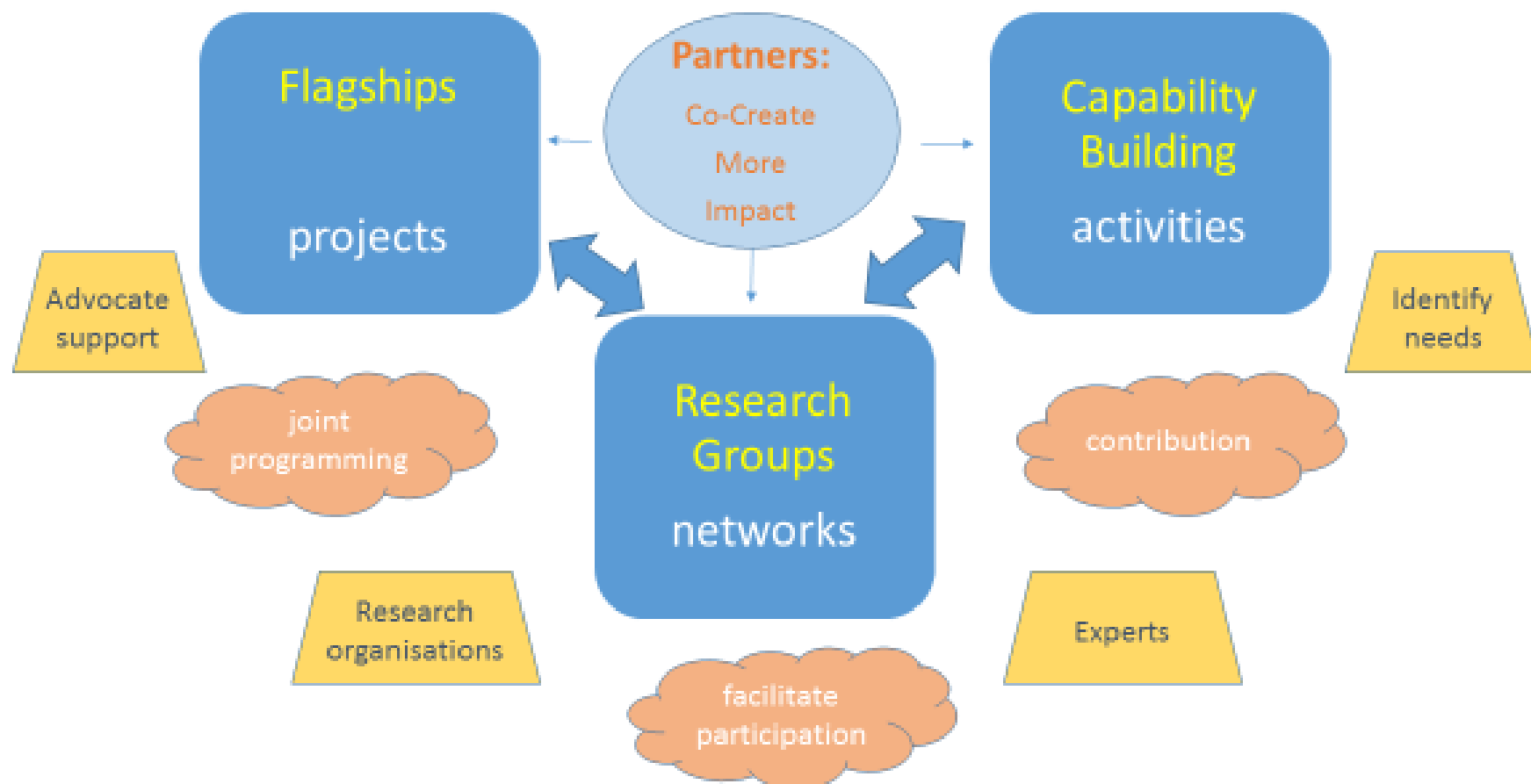
Addis Ababa,



# Outline of Work updated 2017+

GLOBAL  
RESEARCH  
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES



# CROPLANDS RESEARCH GROUP

GLOBAL  
RESEARCH  
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

## Co-Chairs

- Jane Johnson, USDA-ARS, USA
- Ladislau Martin, EMBRAPA, Brazil
- Rosa Mosquera, Spain

## Group Activities

- Landscape management Network –  
Obtained funds - China and UNEP, granted by  
Science Foundation of China. (China and Kenya).
- Conservation Agriculture Network-published factsheet,  
obtained funds for meta data compilation.
- Proposal for a N<sub>2</sub>O “Asia Pacific Regional Network for  
Greenhouse Gases” (pending)

## Next Meeting

- 8 September, Hatfield, UK

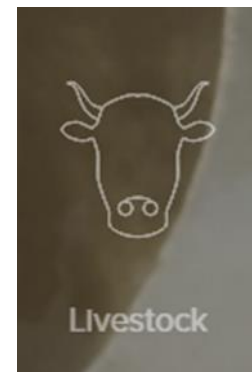


## Co-Chairs

- Harry Clark, NZAGRC, New Zealand
- Martin Scholten, Wageningen UR, the Netherlands

## Group Activities

- Conclusion of stage 1 of project with FAO, CCAC, NZ - '*Reducing enteric methane for improving food security and livelihoods*'. Demonstrated options to reduce emissions intensity at the same time as increasing productivity in 13 countries.
  - Regional training for South/South-East Asian countries
  - White Paper on MRV of livestock GHGs
  - Co-published an informative guide on the benefits of Tier 2 inventories to increase policy options (climate & agriculture)



## Next Meeting

- May 2018, Vietnam



# PADDY RICE RESEARCH GROUP

GLOBAL  
RESEARCH  
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

## Co-Chairs

- Kazuyuki Yagi, NIAES, Japan
- Gonzalo Zorrilla, INIA, Uruguay

## Group Activities

- Developing MRV guidelines
- Capability building activities – APEC proposal.
- Rice Flagship –multi-beneficial management.

## Recent / Next Meeting

- Asia sub-Group, Tsukuba, Japan, 2 September 2017

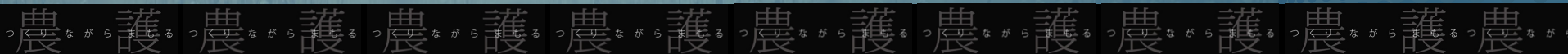


つ農ながらまほる つ農ながらまほる つ農ながらまほる つ農ながらまほる つ農ながらまほる つ農ながらまほる つ農ながらまほる つ農ながらまほる つ農ながらまほる つ農ながらまほる

- “Identify possible GRA Flagship Research Projects for presentation to and review by the Council for potential adoption on an annual basis. “*

- Flagships will make a major contribution to the GRA:
  - Reducing greenhouse gas emissions while supporting food security
  - Advancing global knowledge through collaboration
  - Supporting countries in their developing and implementing solutions
  - Promote synergies between mitigation and adaptation
- Flagships are thematic areas that will be advanced through specific actions and can include research, capacity building, guidance and transfer.
- Excellent opportunity to align Council members' domestic research programmes and Partner activity to the Flagships and to utilise upcoming research calls, both of the GRA and of GRA Partners

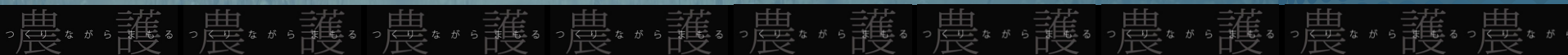
# GRA Flagships – process



- GRA Council endorsed development of four GRA Flagships:
  - Enteric Fermentation
  - Agricultural GHG Inventories
  - Soil Carbon Sequestration
  - Water Management in Rice Production
- ...and Nitrous Oxide to be developed.
- Task Forces comprising lead authors, contributing authors and review authors, were established.
- Task Forces prepared Flagship project proposals that outline work to be done, the resources available, and the resources needed (including types of resources, e.g. research funding, post-doc, etc.).



# GRA Flagships - fundamentals



- The flagship should offer unique **GRA added value** by utilising the knowledge and expertise across the GRA member countries and Partners.
- The flagship must be **inclusive** and provide opportunities for all GRA members and partners to be engaged in some way. Lack of new funding to allocate to flagship projects by individual countries should not be or remain a major barrier to those countries engaging in activities to which they could add value, and from which they could gain benefit.
- The range of projects should be **relevant**: all GRA members need to have benefit from some or all of the flagship. It is unlikely that every individual project will provide benefit to everybody, but the collection of projects and activities should provide benefits to all GRA members.

- 農護農護農護農護農護農護農護農護農護農護農護農

# Enteric fermentation flagship

## Development of **solutions**

- **Animal selection** – data sharing & analysis to facilitate development of genetic/genomic markers (microbial & animal) for low emission traits
- **Feeding** – identification, testing & improved quantification of low emitting feeds suitable for incorporation into the diverse range of animal husbandry systems found in GRA member countries
- **Microbiome** – Improved understanding of the processes involved in enteric CH<sub>4</sub> formation, characterisation and direct manipulation of the microbial populations
- **Animal health** – improved understanding how animal health has an impact on the enteric microbiome functioning in relation to methane production
- **Manure management** – exploring the options to improve the quality of manure from a fertilizer or energy source by fostering the enteric microbiome

## Improved **quantification** of livestock emissions

- **Improved 'emissions factors'** – the determination of methane yield (Y<sub>m</sub>) in temperate, tropical, rangelands/semi arid feeding systems and in by-product dominated diets
- **Improved activity data** - low cost innovative generation of data on animal performance, populations, feeding systems
- **Livestock Tier 2** inventory development – utilise expertise and experience of GRA Members

## Identification, testing and **implementation** of mitigation solutions to support NDC/INDC

- **Identification** of locally appropriate mitigation actions – e.g. feeding, breeding, animal health, reproductive performance
- **Pilot testing** of solutions – impact on mitigation, economics, food security, adaptation-mitigation synergies
- **Implementation** at scale – communication & promotion of tested mitigations, mainstreaming mitigation actions into existing development projects, support for NAMA development



つくりながら護る つくりながら護る つくりながら護る つくりながら護る つくりながら護る つくりながら護る つくりながら護る つくりながら護る つくりながら護る つくりながら護る

**Cultivar selection –**  
identification, testing &  
quantification of high  
yielding rice cultivars with  
low CH<sub>4</sub> emission.

**Modelling** – development and inter-comparison of process-based models to simulate CH<sub>4</sub>/N<sub>2</sub>O emissions soil C stock changes.

**Promotion** of solutions – by communication of tested mitigation solutions with stakeholders to support NAMAs and NDC.

**Coordinated networks** – of scientists and extensionists, private-sector, and farmers for accelerating the wide-scale adoption of best-fit management options.

つりながら進む つりながら進む つりながら進む つりながら進む つりながら進む つりながら進む つりながら進む つりながら進む つりながら進む つりながら進む

Online collaborative knowledge hub

## **Developing** solutions

- Decision support toolbox
- Maps of SCS **potential** (e.g. to reach the 4 per 1000 aspirational target)
- Maps of **crop and pasture practices** suited to reach SCS targets
- Implications** of SCS practices for - yields, - drought tolerance and climate change adaptation - N2O and CH4 emissions, energy use
- Costs and benefits** of transitioning to SCS practices

## Monitoring solutions

- Enabling methods to certify SCS
- Tiered **methodologies** for monitoring, reporting and verifying (MRV) soil organic carbon (SOC) stocks in crop and pasture systems
- Handbooks and guidelines** for project scale MRV adapted to regional contexts and agricultural systems
- Technologies for rapid SOC **stock verification**
- Modelling** of SOC stock change in crop and pasture systems

## **Adopting solutions**

Enabling environment

- Regional stakeholders **workshops** on SCS
- **Criteria** for sustainable SCS projects supporting livelihoods
- **Assessment of barriers** to the adoption of SCS practices
- Value chains, business models and policy **options**
- Research funding **strategy** and international research cooperation

Capacity building and training
--------------------------------

# GHG inventory flagship

## Enhancing *inventory structure*

Regional and source-specific **guidance** for the development of advanced inventories

Tier 2 **inventory development** – utilise expertise and experience of GRA Members

Guidance for development and adoption of **modelling approaches** (i.e. Tier 3) for specific sources within inventories.

## Building *capability*

**Analyses** of current methodologies for estimating GHG emissions adopted in national GHG inventories by source, **barriers to adoption** of advanced methods and **experiences of countries** in adopting advanced methods (networks and reports from international workshops, technical and summary papers)

Identification of **training needs**; country-specific guidance and training needs developed jointly with countries.

Delivery of **targeted technical training** to improve emission factors and design inventories that work with existing national and regional data sources.

## Acquisition and administration of *data*

Incorporation of **improved emission estimates** in emissions databases (e.g. IPCC-EFDB, GRAMP, SAMPLES, MAGGnet) and activity databases.

National and regional **research projects** that validate existing measurements and identify and validate approaches (measurements and modelling methodologies) to reduce the emissions intensity of food production and ensuring that those gains can be captured in inventories.

**Dissemination** of improved estimates of GHG emissions developed from regional and national projects to inform the **development and verification of methodologies** by the IPCC and other inventory support mechanisms

## Demonstrating *mitigation* in NDCs

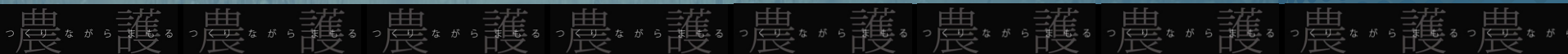
Provide **targeted support** for countries for designing agricultural **monitoring, reporting and verification** (MRV) within NAMAs or Low Emissions Development pathways based on improved inventories



# GRA Flagship projects - list

GLOBAL  
RESEARCH  
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES



## Enteric Fermentation

- Adaptation in ruminants for increased productivity and lowered environmental impact
- Improved quantification of the effects of feed and nutrition on enteric methane emissions from cattle managed under a wide range of production conditions and environments
- Relating ruminant diet, methane output and animal production to the rumen microbiome
- Grazing livestock systems

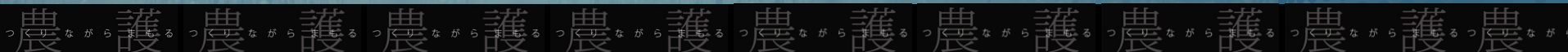
## Rice

- On farm assessment of multi-beneficial improved water management techniques, reducing costs, water use and gas emissions in America's rice systems.
- Multi-country on-farm assessment of multi-beneficial integrated management techniques in the rice sector of Asia
- Identification of high yielding rice cultivars as related to low methane (CH<sub>4</sub>) emissions

# GRA Flagship projects - list

GLOBAL  
RESEARCH  
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES



## Inventory

- 'Best practice' guidelines for incorporation of mitigation into national inventories.
- Guidance on Inventory Tiers
- Developing guidance for good implementation of higher Tier methods in national inventories
- Developing guidance for good implementation of Tier 3 models in national inventories
- Database and Inventory Refinement for GHG Emissions associated with Manure and Nitrogen Management
- Developing guidance for improving emissions from manure management in national inventories
- Towards a national livestock methane database project
- Identifying emissions and mitigation options by mapping analogous production systems
- Establishment of GHG measurement, mitigation, adaptation and inventory Centre in West Africa.

## Soil Carbon Sequestration

- Crop and pasture practices for SCS: potential and agronomic implications
- MRV for strategies for SCS
- Adoption of practices and socio-economic barriers

# GLOBAL RESEARCH ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

GRA Joint Programming

農 護  
つ くり な が ら ま も る





つ農ながらまほる つ農ながらまほる つ農ながらまほる つ農ながらまほる つ農ながらまほる つ農ながらまほる つ農ながらまほる つ農ながらまほる つ農ながら

- GRA Council adopted its first Strategic Plan, which included in its priority actions:
  - ❖ to undertake GRA **joint programming** on an annual basis, beginning no later than August 2017, to support collaborative research, including GRA Flagships.
- GRA Council formed a working group to advance the development of joint programming to identify suite of different mechanisms that could be utilised by GRA to align and mobilise resources.
- Intention is to have more deliberate and well planned coordination within the GRA and between the GRA and its partners.
- Specific outputs/activities identified by Flagship Task Forces and GRA Research Groups that require resourcing will be used as the basis for calls, Fellowships, and other mechanisms to be developed through GRA joint programming.

農護農護農護農護農護農護農護農護農護農護農護農

- Working group prepared a working paper to outline a series of possible GRA 'joint programing' mechanisms that could be adopted by the GRA members for resourcing and coordinating collaborative research and capability building.
- Mechanisms identified include:
  - **GRA Fellowship Fund (priority topics, research fellows)**
  - **Bilateral funding arrangements (topics aligned with GRA priorities)**
  - **GRA Thematic Annual Programing (alignment of existing programmes, sharing data)**
  - **Multi-partner research call (common topics, coordinated timing, intra-national funding)**
  - **Fund for International consortia (common topic, coordinated timing, inter-national funding)**
- GRA Council Members were consulted on the above mechanisms and feedback sought on their interest in being involved

# Some examples of joint programming opportunities related to rice

GLOBAL  
RESEARCH  
ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES

- FACCE-JPI ERAGAS project on improved estimation and mitigation of nitrous oxide emissions and soil carbon storage from crop residues
- FONTAGRO project proposal on rice (Chile, Peru, Colombia, CIAT, FLAR)
- MIRSA II? – Japan, Asia
- APEC rice proposal – Japan, NZ, Mexico, Viet Nam, Thailand, Malaysia, Philippines
- CCAC – possible project on state of knowledge of rice mitigation and promoting adoption of best practices
- GRA-CCAFS Scholarships – NZ funded, but opportunities for others and for hosting 30-40 PhD research visits (4-6 months) linked to GRA and CCAFS research projects
- Ibero-american INIAs – meeting in October 2017 – opportunity to plan joint work on rice?
- AfricaRice GRA Workshop – September 2017 – opportunity to plan GRA activities in sub-regions of Africa.
- N<sub>2</sub>O – Asia Pacific Regional Network for GHGs – Australia + 100 partners
- CIRCASA – soil carbon led by France + 17 countries
- Other....?



**FOR MORE INFORMATION**

**[www.globalresearchalliance.org](http://www.globalresearchalliance.org)**

**[secretariat@globalresearchalliance.org](mailto:secretariat@globalresearchalliance.org)**

**Twitter: @GRA\_GHG**