



農 護  
つくりながらまもる



# JIRCAS-NARO国際シンポジウム 農業分野における 温室効果ガス排出削減

## JIRCAS-NARO International Symposium on Agricultural Greenhouse Gas Mitigation

日時：平成29年8月31日（木）9:30～17:15

場所：つくば国際会議場（エポカルつくば）

主催（共催）：

国際農林水産業研究センター（JIRCAS）  
農研機構（NARO）

協賛：農林水産省農林水産技術会議事務局

使用言語：英語（日本語同時通訳あり）

国際研究ネットワーク「**農業分野の温室効果ガスに関するグローバル・リサーチ・アライアンス(GRA)**」において、今回、我が国がGRA議長国として、8月29～30日に理事会がつくばで開催されます。これに合わせ、我が国とアジアにおける研究成果を中心に、GRAの研究活動をご紹介します。ご理解いただくことを目的として、標記の国際シンポジウムを開催します。



# GLOBAL RESEARCH ALLIANCE

ON AGRICULTURAL GREENHOUSE GASES



We bring countries together to find ways to  
grow more food without growing GHG emissions.

つくりながらまもる

Tsukuri nagara Mamoru.

# A Chronicle of GRA

- 2009 December, Was established in the margins of the UNFCCC Conference of Parties (COP15), Copenhagen, Denmark
- 2010 April, 1<sup>st</sup> Senior Officials' Meeting, Wellington, New Zealand
- 2011 March, 2<sup>nd</sup> Senior Officials Meeting, Versailles, France
- 2011 June, Ministerial Summit & 1<sup>st</sup> Council Meeting, Rome, Italy
- 2012 June, 2<sup>nd</sup> Council Meeting, Saskatoon, Canada
- 2013 June, 3<sup>rd</sup> Council Meeting, Montevideo, Uruguay
- 2014 June, 4<sup>th</sup> Council Meeting, The Hague/Wageningen, the Netherlands
- 2015 September, 5<sup>th</sup> Council Meeting, Des Moines, Iowa, USA
- 2016 October, 6<sup>th</sup> Council Meeting, Mexico City, Mexico
- 2017 August, 7<sup>th</sup> Council Meeting, Tsukuba, Japan
- 2018, 8<sup>th</sup> Council Meeting, Germany



# AT A GLANCE

**48**  
member  
countries



**4** Research  
Groups 

  
Paddy Rice  
Research  
Group

  
Livestock  
Research  
Group

  
Croplands  
Research  
Group

  
Integrative  
Research  
Group

 **20** Science  
Networks

**14** partner  
organisations 



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

**44** international  
collaborative projects  
supporting the GRA 

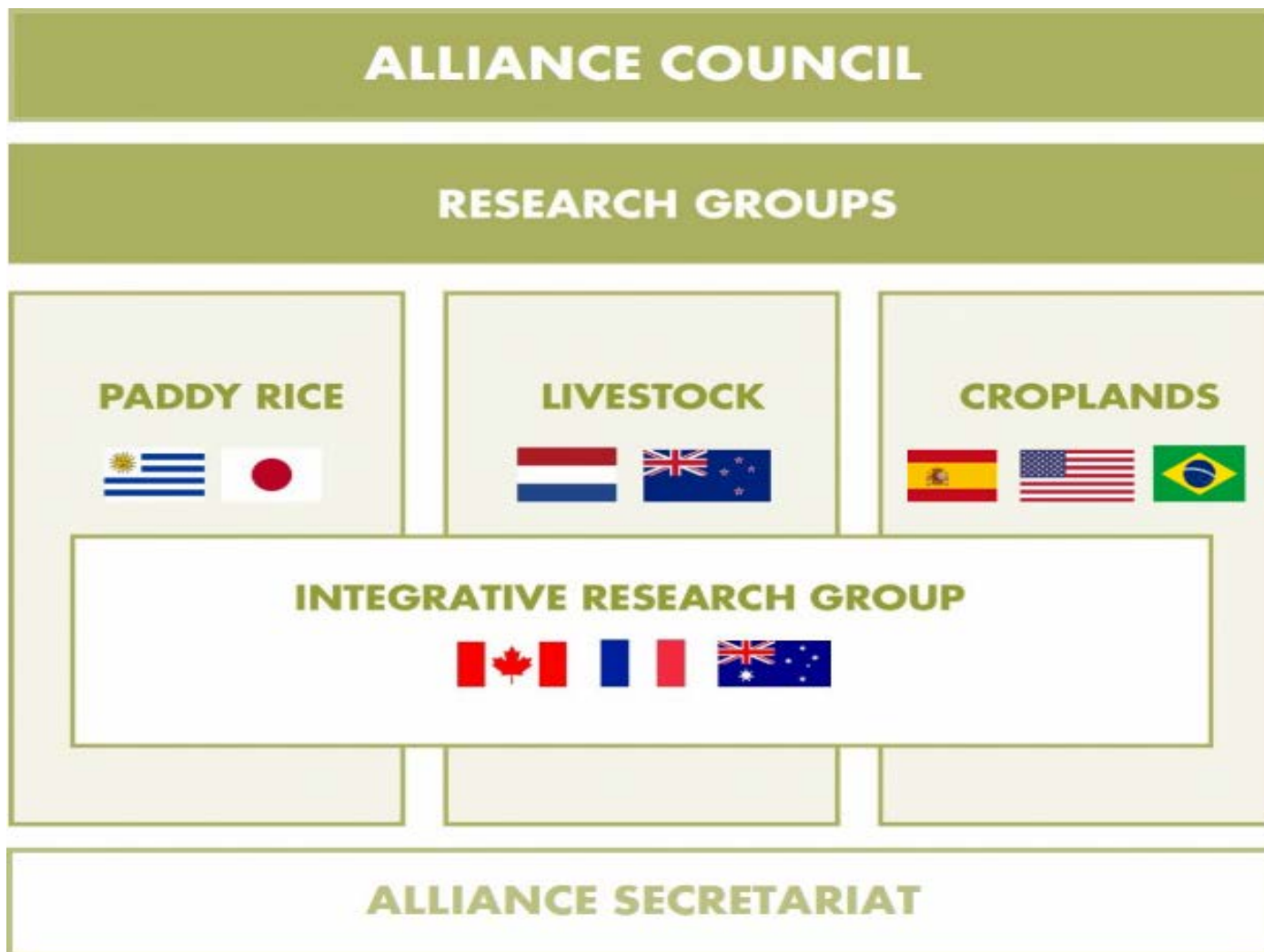
 **50** fellowships awarded to  
recipients from **25** countries

 **19** technical training  
workshops held

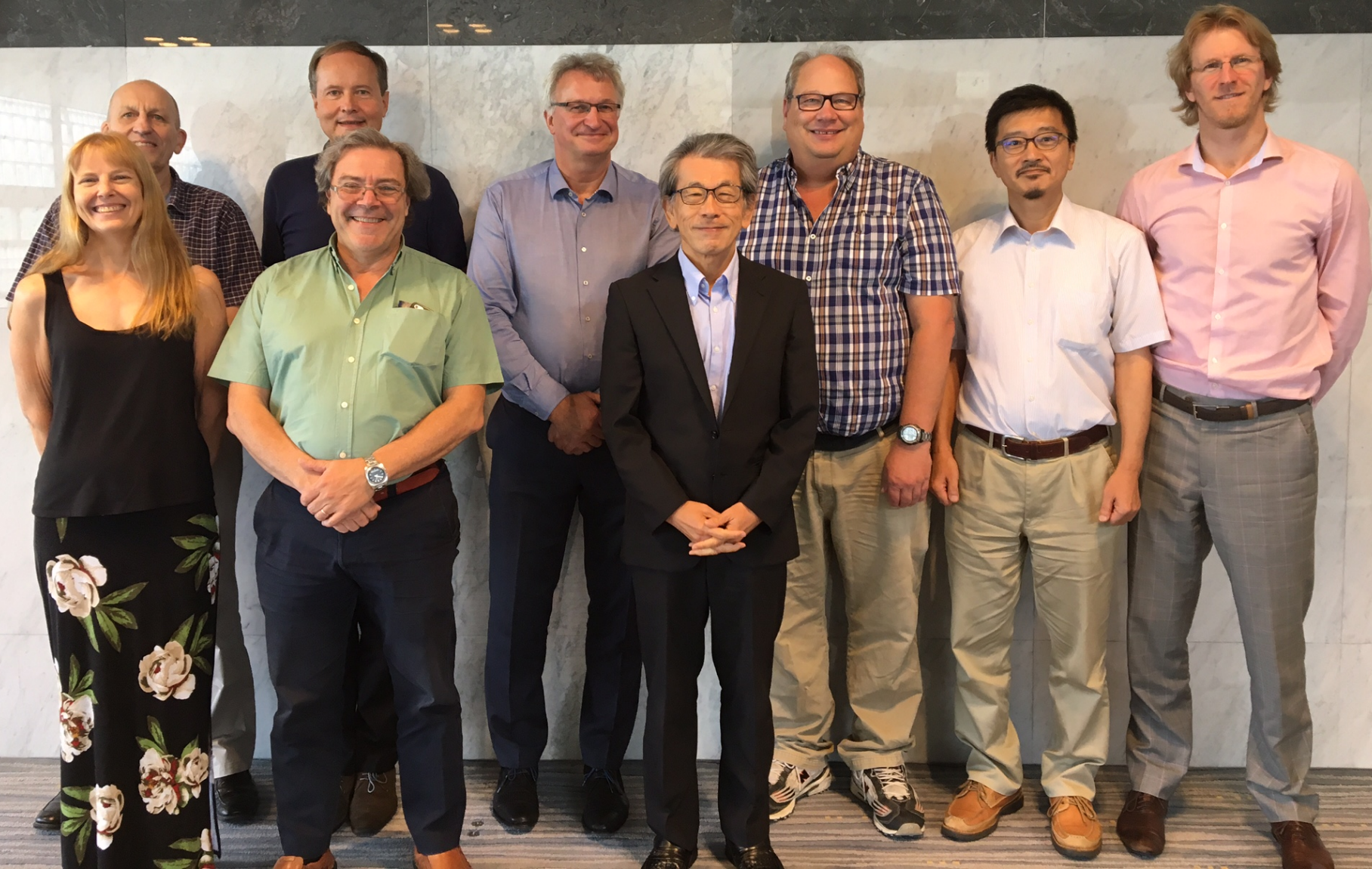
 **12**  
technical guidelines,  
resource materials and  
databases produced



# Structure & Research Groups



# Team of Co-Chairs with Chair 2017

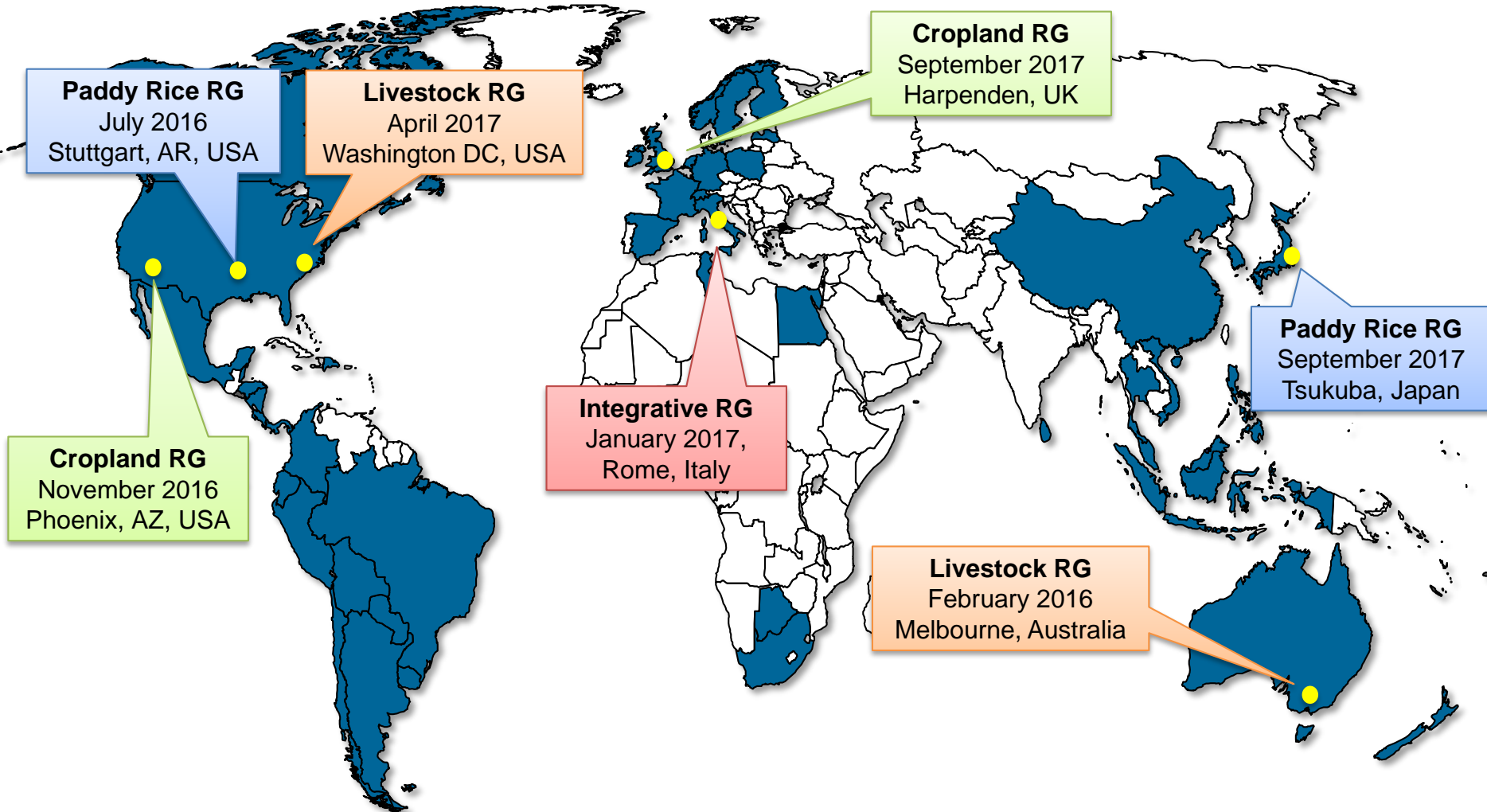


# Research Group Meetings

## 2016-2017

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# Research Group Meetings

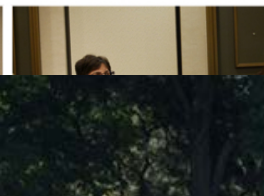
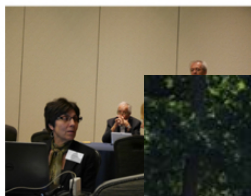
## 2016-2017

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Phoenix | InstaMag





# Partner Organizations

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# Web Page

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We bring countries together to find ways to grow more food without growing greenhouse gas emissions.



Community



Paddy Rice



Livestock



Croplands



Integrative

August 2, 2017 • News

## NEW BROCHURE FOR THE CONSERVATION AGRICULTURE

The Conservation Agriculture Network of our Croplands Research Group, led by Canada, has produced a new brochure of

July 27, 2017 • News

## JOB OPPORTUNITIES WITH THE UNITED NATIONS' CAPITAL

A number of opportunities are currently available for research and officer positions with the United Nations' Capital

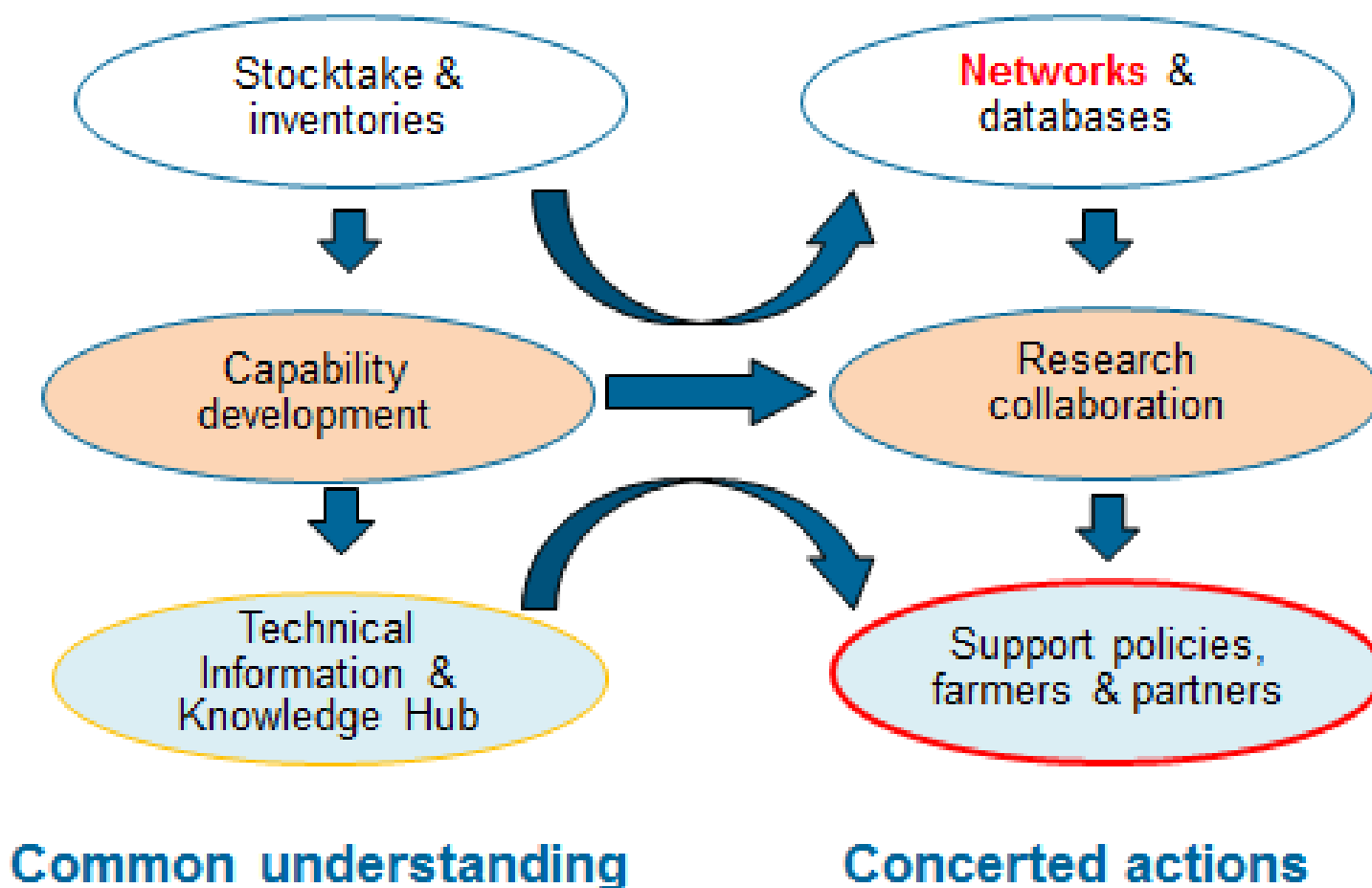
July 26, 2017 • News

## FIRST GLOBAL SUSTAINABLE RICE CONFERENCE &

The Sustainable Rice Platform (SRP) is holding the 2017 Sustainable Rice Conference and Exhibition at the UN

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

# Outline of Work 2011-2016



# Research Networks

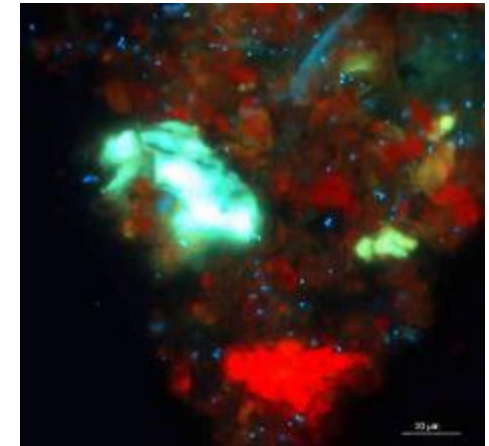
## Livestock Research Group

### **Animal Selection, Genetics & Genomics Network**

- Practice brief for policy makers on improved ruminant genetics for productivity and climate change outcomes
- Advanced state of knowledge on breeding low-emitting animals

### **Rumen Microbial Genomics Network**

- Ground-breaking research in understanding rumen composition across animal species
- Development of global reference sets of data on the rumen microbiome



### **Feed & Nutrition Network**

- Major global databases on predicting and mitigating livestock GHGs through feed & nutrition – being used in IPCC guidance
- Improvements to global good practice for research techniques

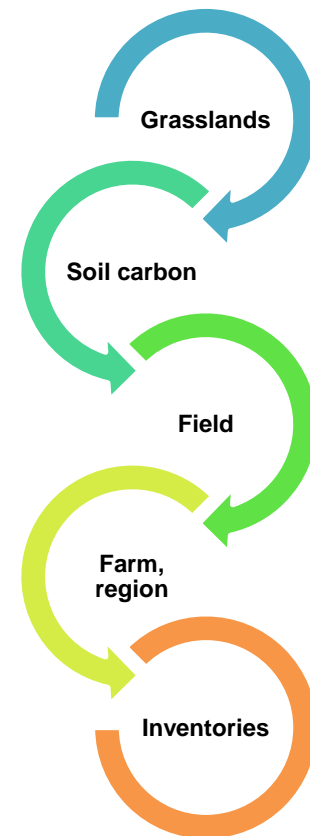
# Research Networks

## Integrative Research Group

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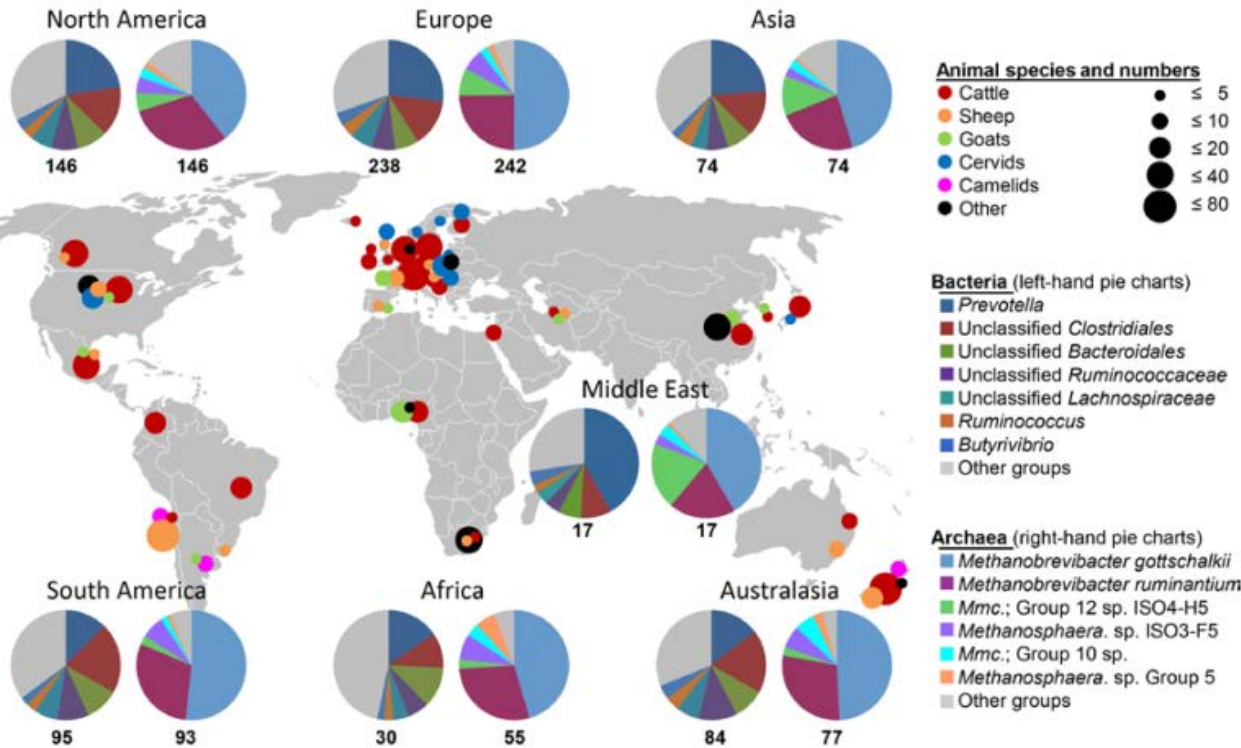
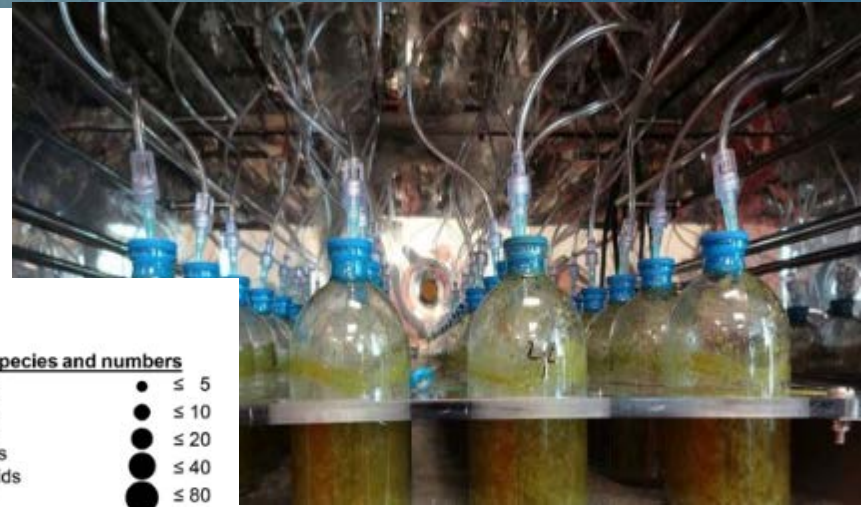
- **Soil carbon network:** C-MIP, testing soil carbon models on a global network of long-term bare fallow sites (launched)
- **Field scale network:** GHG-MIP (in revision, Global Change Biology), showing that the median of 3-4 simulation models predicts within experimental error  $N_2O$  emissions and yields of crop rotations and grasslands at 10 sites across 4 continents.
- **Farm-Region network:** first global map showing organic carbon inputs to soils required to reach the 4 per 1000 target (presented at COP23, Marrakech)
- **Coordination of international cooperation** for soil carbon sequestration research (CIRCASA project, 17 countries) funded by European Commission



# Collaborative Research Projects

## Livestock Research Group

e.g. Global Rumen Census,  
Methane inhibitors, low methane  
rumen



Active research  
networks leading  
major projects incl.  
methodological  
standardisation,  
data collections and  
identification of new  
mitigations

Origins of samples and their bacterial and archaeal community compositions in different regions.

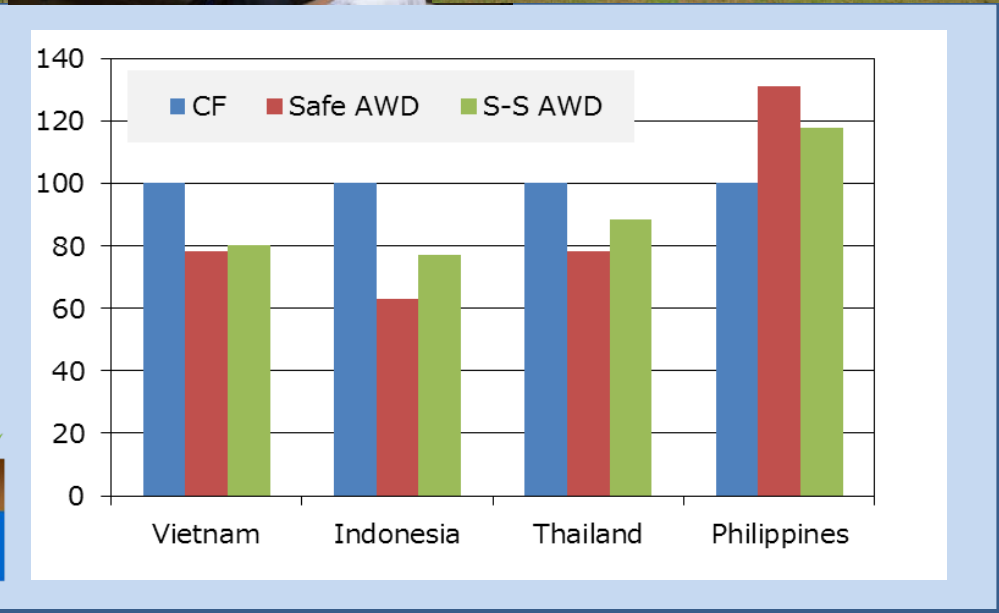
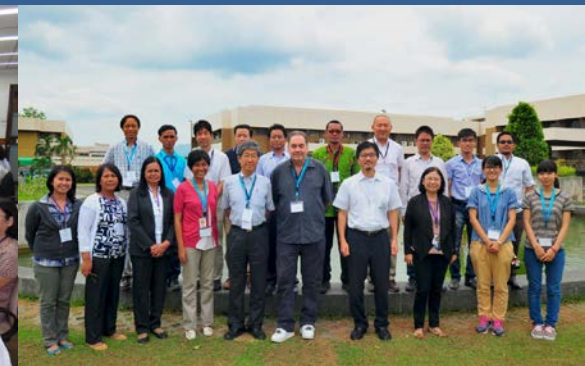
Numbers below pie charts represent the number of samples for which data were obtained. The most abundant bacteria and archaea are named in clockwise order starting at the top of the pie chart.

# Collaborative Research Projects

## Paddy Rice Research Group

### MIRSA Project

(Greenhouse Gas Mitigation in Irrigated Rice Paddies in Southeast Asia)



# Knowledge Hub

## Cropland Research Group

- **MAGGnet**

- International metadata collections of relevant publication on agricultural management influences on GHG fluxes, carbon sequestration (including long-term experimental sites)

- **GRAMP**

- Global Research Alliance Modelling Platform



- **Social media activities**

- via Facebook and Website

- **Literature Database**





# Communication

## Research Group Brochures

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### Livestock Research Group



#### What is the Global Research Alliance?

Agriculture has a vital role to play in the coming decades with the world's population estimated to reach 9.4 billion by 2050. With more mouths to feed but limited natural resources to draw on, the sector must find ways to produce additional food and fibre sustainably, while also contributing to broader development goals.

The Global Research Alliance (GRA) seeks to increase cooperation and investment in research activities to help reduce the emissions intensity of agricultural production systems and increase their potential for soil carbon sequestration. It also seeks to improve their efficiency, productivity, resilience, and adaptive capacity. This contributes in a sustainable way to several mitigation efforts but also helps meet food security objectives.

The main work of the GRA occurs in its four research groups. These are focused on key agricultural sub-sectors (Paddy Rice, Croplands and Livestock) and issues common to those sub-sectors managed by the Integrative Research Group.

#### What is the Livestock Research Group?

The GRA Livestock Research Group (LRG) is focused on reducing the emissions intensity of livestock production and increasing the carbon stored in soils supporting those systems. The LRG works with scientists, farmers and farm advisors, industry and policy makers to research mitigation options, share knowledge and experiences and help strengthen the resilience of livestock farming.

Members collaborate to advance global research on livestock emissions intensity at the same time as supporting countries to achieve their own agriculture and climate change priorities. In this way, the GRA enables progress to be achieved on challenges that any country would struggle to address on their own.

The LRG includes official representatives from GRA member countries, mostly from scientific and government organisations, and key international and regional partners. New member countries and organisations are always welcome.



### Paddy Rice Research Group



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#### About the Paddy Rice Research Group

The GRA's Paddy Rice Research Group (PRRG) is working together to find ways to reduce the emissions intensity, while improving the overall production efficiency of paddy rice. The Group predominantly focuses on methane (CH<sub>4</sub>) because of its significant emissions from paddy rice production in comparison to other cropping systems. Trade-offs with emissions of nitrous oxide (N<sub>2</sub>O) and changes of the quality of carbon stored in paddy soils are also being considered.

The PRRG is focused on helping to provide mitigation options to paddy rice farmers, land managers and policy makers by looking at the impacts of water and soil management, crop rotations, organic matter and fertilisers and cultivar selection.

The PRRG is divided into two regional sub-groups, Asia and America. Both sub-groups deliver activities to the same work plan which spans six areas as shown in the diagram.

The sub-groups allow members to develop activities specifically related to the different rice management options available:

- In the Americas extensive large scale rice farming is dominated by direct seeding, cultivation of rice and rotation with pastures or other upland crops
- In Asia intensive small scale farming is dominated by both direct seeding and transplanted cultivations and widespread multi-cropping of rice.



### Croplands Research Group



#### What is the Global Research Alliance?

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#### What is the Croplands Research Group?

The GRA's Croplands Research Group (CRG) is focused on reducing greenhouse gas intensity and improving the overall production efficiency of cropland systems. Scientists from CRG-member countries work together to find ways to limit losses to the atmosphere of valuable carbon and nitrogen from crops and soils, and to transfer that knowledge and associated technologies to cropland farmers, land managers and policy makers around the world.

The CRG has interest in a wide range of topics, including crop selection, tillage management, crop rotations, and fertilizer management, as well as the fundamental processes underlying greenhouse gas emissions from crops and soils. The CRG's vision is to develop widely available decision support tools that enable reduced greenhouse gas emissions intensity from climate-resilient croplands, producing sustained or increased yields, and identify management practices that improve soil carbon sequestration in croplands.

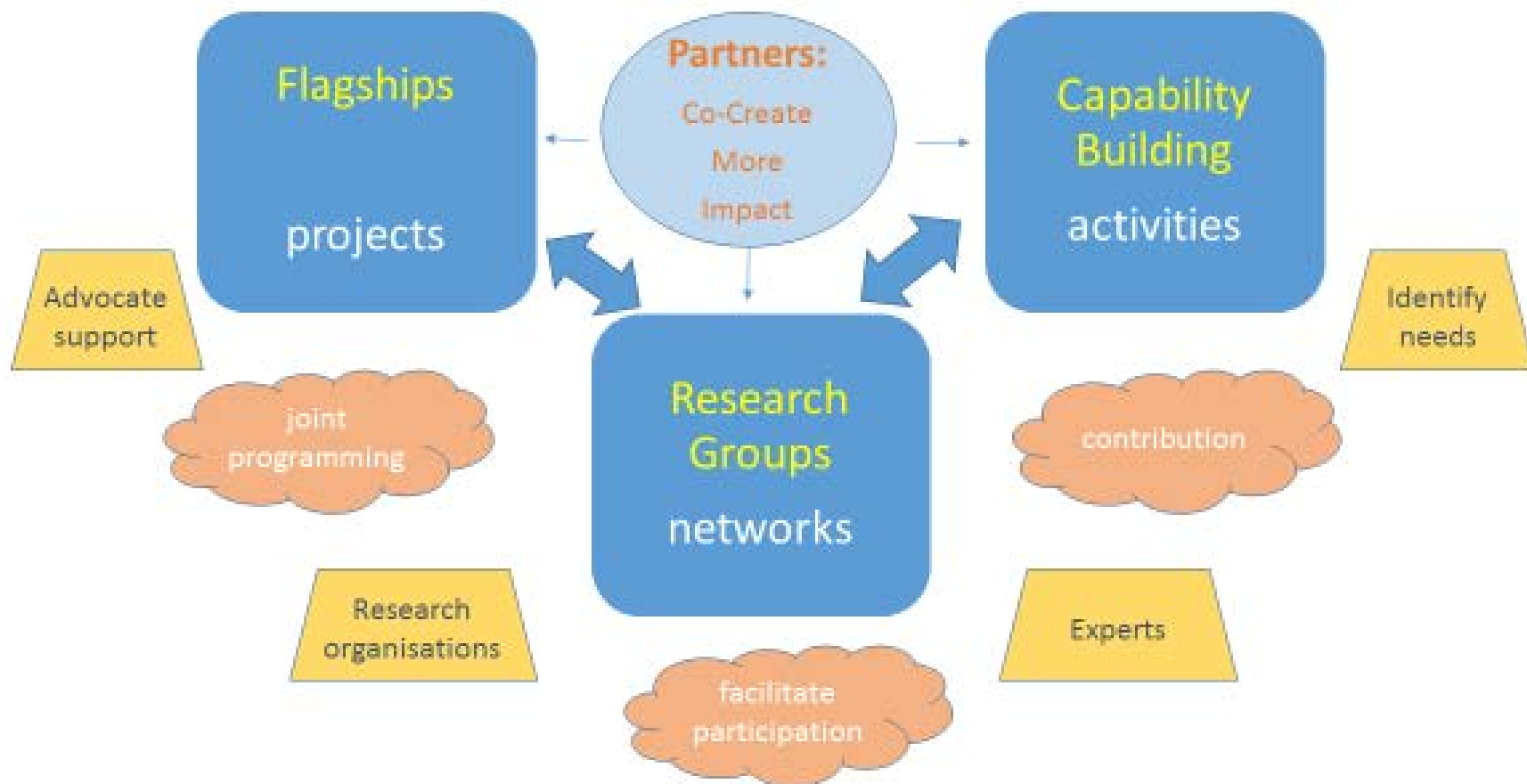


# GRA Flagship Projects

- Addresses a critical research and/or capability building need of the GRA
- Provides unique GRA value-add, by making a major contribution to:
  - Reducing greenhouse gas emissions while supporting food security
  - Advancing global knowledge through collaboration
  - Supporting countries in their developing and implementing solutions

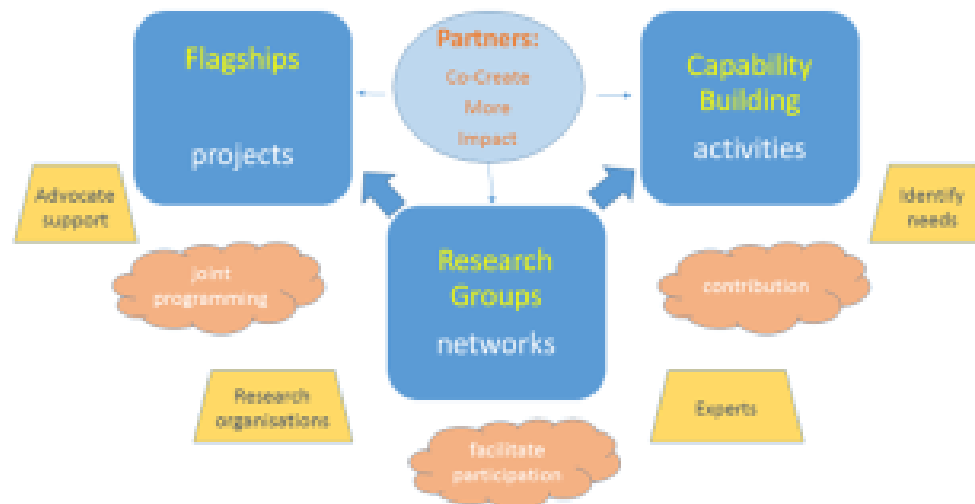
- GRA Council endorsed development of four GRA Flagships in 2016:
  - Enteric Fermentation
  - Agricultural GHG Inventories
  - Soil Carbon Sequestration
  - Rice Systems
- New Flagships are under preparation:
  - Circular Economy
  - Nitrous Oxide

# Outline of Work updated 2017+



# Outline of Work updated 2017+

We bring countries together to find ways to grow more food without growing GHG emissions





FOR MORE INFORMATION

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

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

Twitter: @GRA\_GHG

ありがとうございます。  
Arigatou gozaimasu.

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本日はよろしくお願ひします。  
Enjoy the Symposium Today!

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