Analysis of actors' participation in the Global Research Alliance on Agricultural Greenhouse Gases

Nina Grassnick

(work in progress)

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1. Introduction

In the margins of the Conference of Parties (COP15) in Copenhagen in 2009, government ministers of 21 countries agreed to form the Global Research Alliance on Agricultural Greenhouse Gases (GRA). This process was initiated by New Zealand scientists and negotiators to promote international research collaboration on mitigating climate change in agriculture and enhance the visibility and potential of this topic in the UNFCCC negotiations (Franzluebbers et al., 2015). The GRA Charter was signed at the Ministerial Summit on 24th June 2011 and was followed by the inaugural Alliance Council meeting on 25th June 2011 in Rome. This meeting was attended by 29 countries and can be seen as the official birth date of the GRA (Global Research Alliance on Agricultural Greenhouse Gases, 2011a). Thus, on 25th June 2021, the GRA celebrated its 10th anniversary which is a good point in time to:

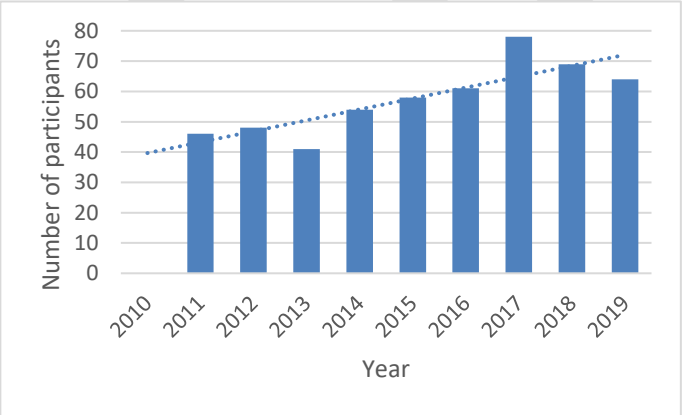
- analyse the participation of actors in the GRA over the past 10-years
- derive recommendations on how to improve underrepresented actors' participation in the GRA

Therefore, the reports of 45 GRA meetings over the last years (2010-2019) have been reviewed and 880 actors identified who participated at the meetings. First, a descriptive analysis summarizes the participation of actors at five different types of GRA meetings: Council meetings, Cropland Research Group meetings, Livestock Research Group meetings, Paddy Rice Research Group meetings and Integrative Research Group meetings. Second, a network analysis helps to identify network structures within the GRA.

2. Results – Descriptive analysis

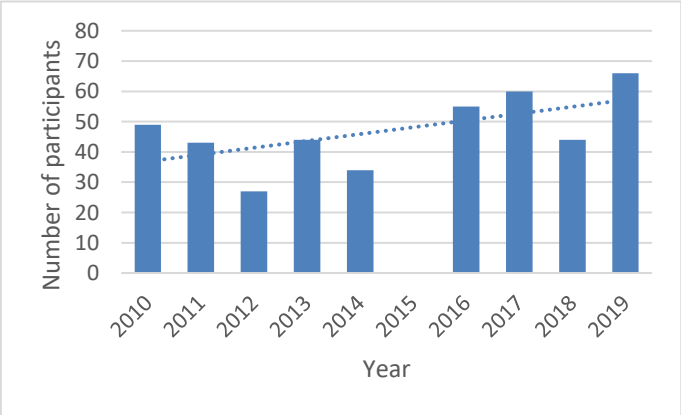
2.1 Attendance at GRA meetings and multipliers

Figure 1: Number of participants at Council meetings (2010-2019)



***Source**: GRA Council Meeting reports (2010-2019), https://globalre-searchalliance.org/publication-library/?doctype=220*
***Note**: There was no meeting in 2010.*

Figure 2: Number of participants at LRG meetings (2010-2019)



***Source**: GRA LRG Meeting reports (2010-2019), https://globalresearch-alliance.org/publication-library/?doctype=220*
***Note**: There was no meeting in 2015. There were two meetings in 2011 with 38 and 48 participants each, here the average value is shown.*

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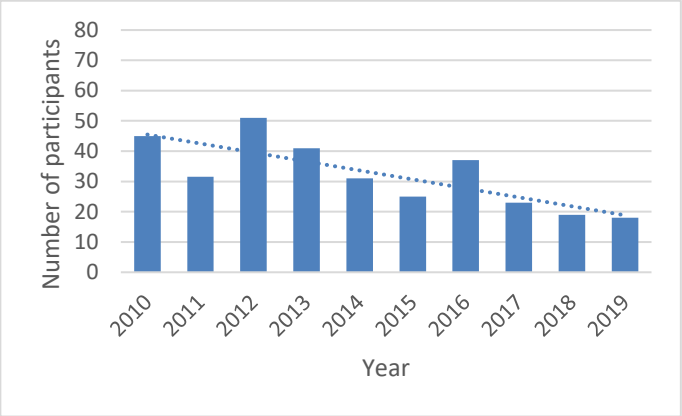
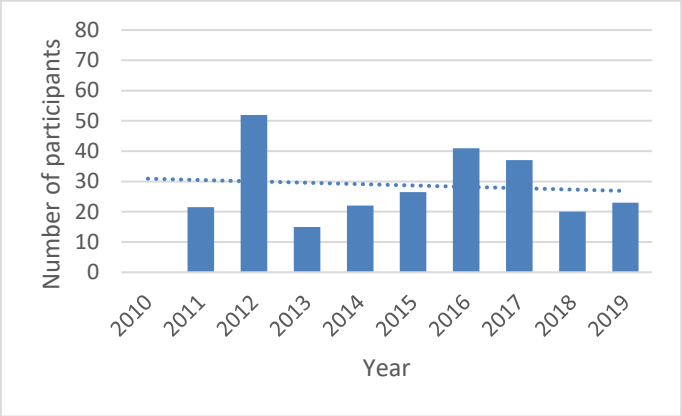
Figure 3: Number of participants at CRG meetings (2010-2019)



***Source**: GRA CRG Meeting reports (2010-2019), https://globalresearch-alliance.org/publication-library/?doctype=220*
***Note**: There were two meetings in 2011 with 30 and 33 participants each, here the average value is shown.*

Figure 4: Number of participants at PRRG meetings (2010-2019)



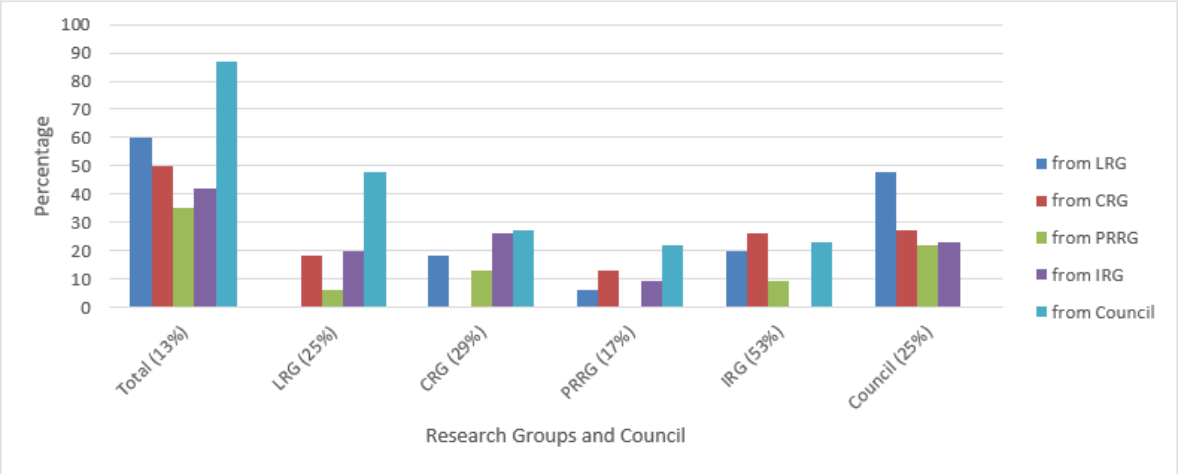
***Source**: GRA PRRG Meeting reports (2010-2019), https://globalre-searchalliance.org/publication-library/?doctype=220*
***Note**: There was no meeting in 2010. There were two meetings in 2011, 2014 and 2015 with 14 and 29, 22 and 22, 13 and 40 participants each, respectively, here the average value is shown.*

Figures 1, 2, 3 and 4 show the number of individuals participating at each of the GRA meetings of the Council, Livestock Research Group (LRG), Cropland Research Group (CRG) and Paddy Rice Research Group (PRRG) during the time period 2010-2019. In most cases, there was one meeting per year of each of the four groups beforementioned. Attendance of meetings of the Integrative Research Group (IRG) is not shown because this group met for the first time in 2017 and therefore had only 3 meetings in total.

The figures show an upward trend for the Council meetings with a peak in 2017 and the LRG meetings with a peak in 2019. These groups also have on average a high number of participants, 57.7 and 46.9, respectively. In the case of the PRRG, we observe no clear trend and the number of participants attending a CRG meeting is decreasing over time. Both groups show on average a low attendance (PRRG: 32.2, CRG: 28.7), 2012 was for both groups the year with the highest attendance.

For the overall picture, also multipliers are analyzed: Multipliers are individuals attending meetings of at least two out of the five GRA groups, and have thus a better interconnection between the groups.

Figure 5: Number of multipliers at meeting from another subgroup (per subgroup) (2010-2019)



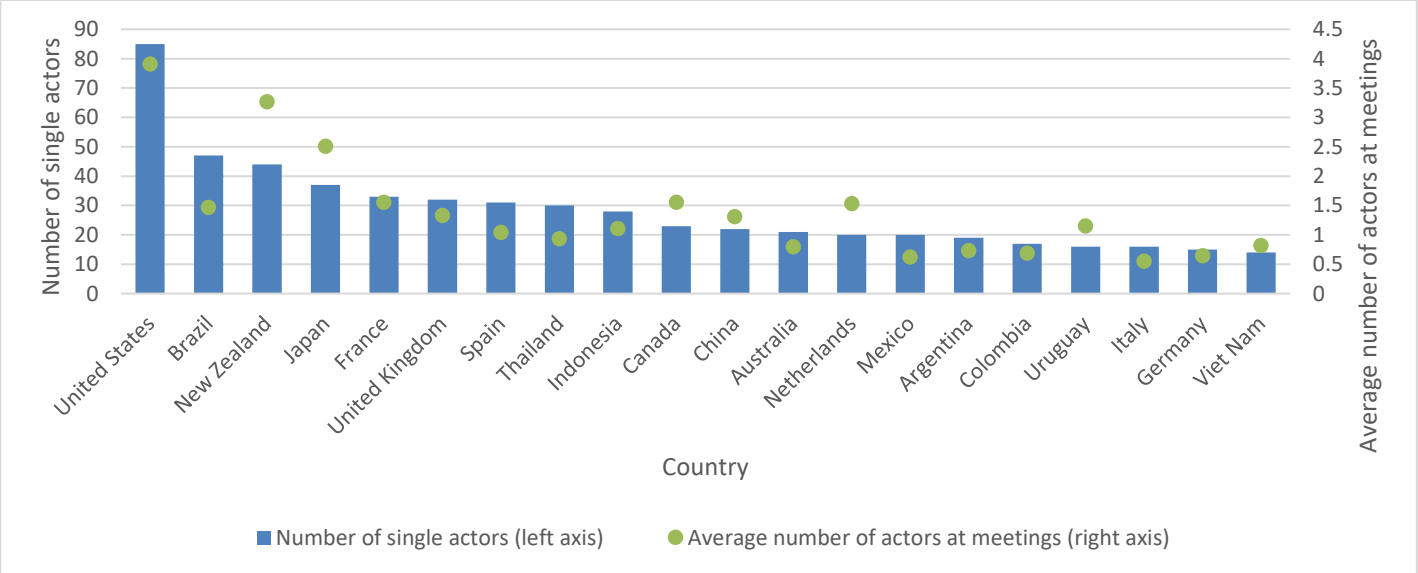
***Source**: GRA meeting reports (2010-2019), https://globalresearchalliance.org/publication-library/?doctype=220.*
***Note**: LRG = Livestock Research Group, CRG = Cropland Research Group, PRRG = Paddy Rice Research Group, IRG = Integrative Research Group*

Figure 5 shows the share of individuals attending meetings of at least two out of the five GRA groups, so-called multipliers.

Considering the whole GRA network, 13% of all individuals who are active in the GRA have attended meetings of at least two GRA groups. Most of these multipliers have attended Council meetings and / or LRG meetings, specifically, 48% of participants attending LRG meetings also attended Council meetings and vice versa. All GRA groups, except for the PRRG, show a multiplier rate of at least 25%, being the highest for the IRG with 53%. In the case of the PRRG, only 17% of all participants attended meetings of other GRA groups and all GRA groups show the lowest overlap with the PRRG. Multipliers in all GRA research groups, except for the IRG, have in most cases additionally attended the council meeting. The IRG shows the strongest overlap of the same participants with the CRG (26%), also for the CRG, multipliers from the IRG are at 2nd rank right after council multipliers.

2.2 Participation characteristics of member countries

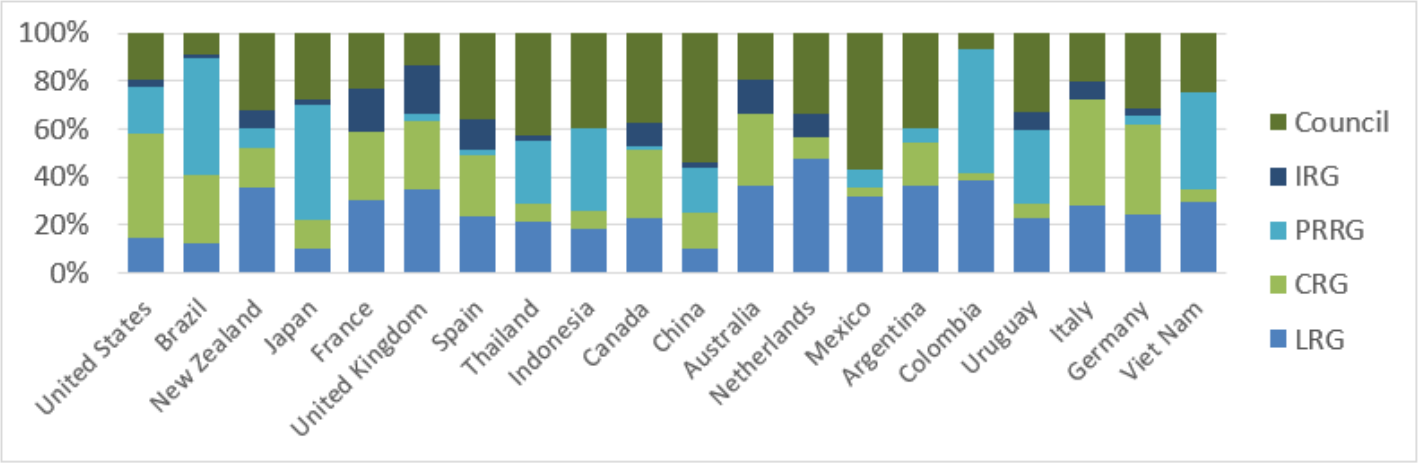
Figure 6: Top 20 member countries – Number of single actors and average number of actors at meetings (2010-2019)



***Source**: GRA meeting reports (2010-2019), https://globalresearchalliance.org/publication-library/?doctype=220.*
***Note**: Top 20 member countries refers to the top 20 member countries in terms of number of single actors that have been present at GRA meetings during the time period 2010-2019, i.e. 85 single actors have been present at least at on GRA meeting. Average number of actors at meetings = Number of single actors / 45 meetings.*

Figure 6 shows the top 20 GRA member countries in terms of the number of single actors that have been present at GRA meetings during the time period 2010-2019. These countries are all GRA founding members who signed the GRA charter in 2011 at the inaugural Ministerial Summit, except for Thailand which joined the GRA in 2012 (https://globalresearchalliance.org/n/global-research-alliance-ministerial-summit-2/). On average, 28.5 single actors of the top 20 GRA member countries have attended any GRA meeting in the past. The values range from 85 single actors from the United States to 14 single actors from Vietnam. Nevertheless, countries with a relatively low number of single actors, e.g. Canada, China, Netherlands and Uruguay, have been present at least with one person at almost all meetings (average number of actors at meetings > 1). New Zealand and Japan in addition to their relatively high number of single actors show an above-average average number of actors at meetings.

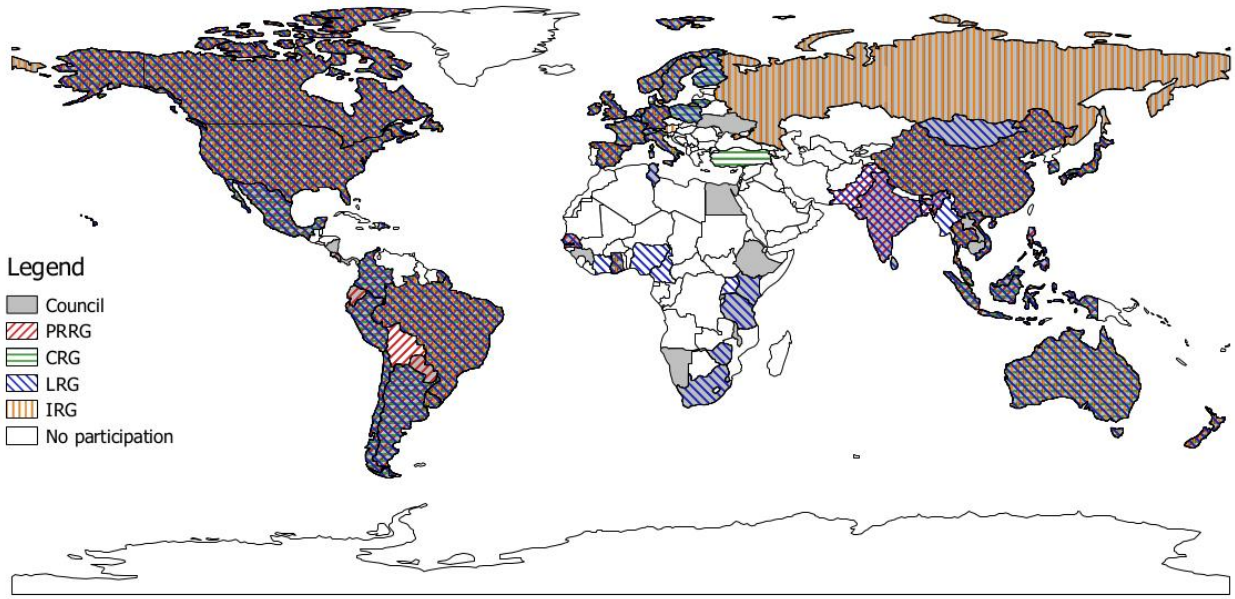
Figure 7: Top 20 member countries - Participation in GRA subgroups (2010-2019)



***Source**: GRA meeting reports (2010-2019), https://globalresearchalliance.org/publication-library/?doctype=220.*
***Note**: participation counts the number of actors that represented each country in each meeting during the time period 2010-2019 including multiple counts of actors that attended several meetings of the same subgroup, i.e. the US had a participation of 34 at council meetings with 19 single actors.*

Figure 7 shows the top 20 GRA member countries as selected in Figure 6 by their participation rate in the 5 GRA meeting groups. In most cases, at least 20% of the country's participation resulted from participation in Council Meetings. In the case of eight countries (Spain, Thailand, Indonesia, Canada, China, Mexico, Argentina and Uruguay) this category was even the strongest. Five countries (New Zealand, France, UK, Australia and Netherlands) had their focus on participation at LRG meetings, four countries (Brazil, Japan, Colombia, Viet Nam) were most present at PRRG meetings and three countries (USA, Italy and Germany) have shown their highest participation rate in CRG meetings. All countries have participated with at least one actor at a meeting of the Council, LRG and CRG. Five countries (Indonesia, Mexico, Argentina, Colombia and Viet Nam) have never participated at any IRG meeting and four countries (France, Australia, Netherlands and Italy) have not been present at meetings of the PRRG.

Figure 8: Participation of countries in GRA research groups (2010-2019)

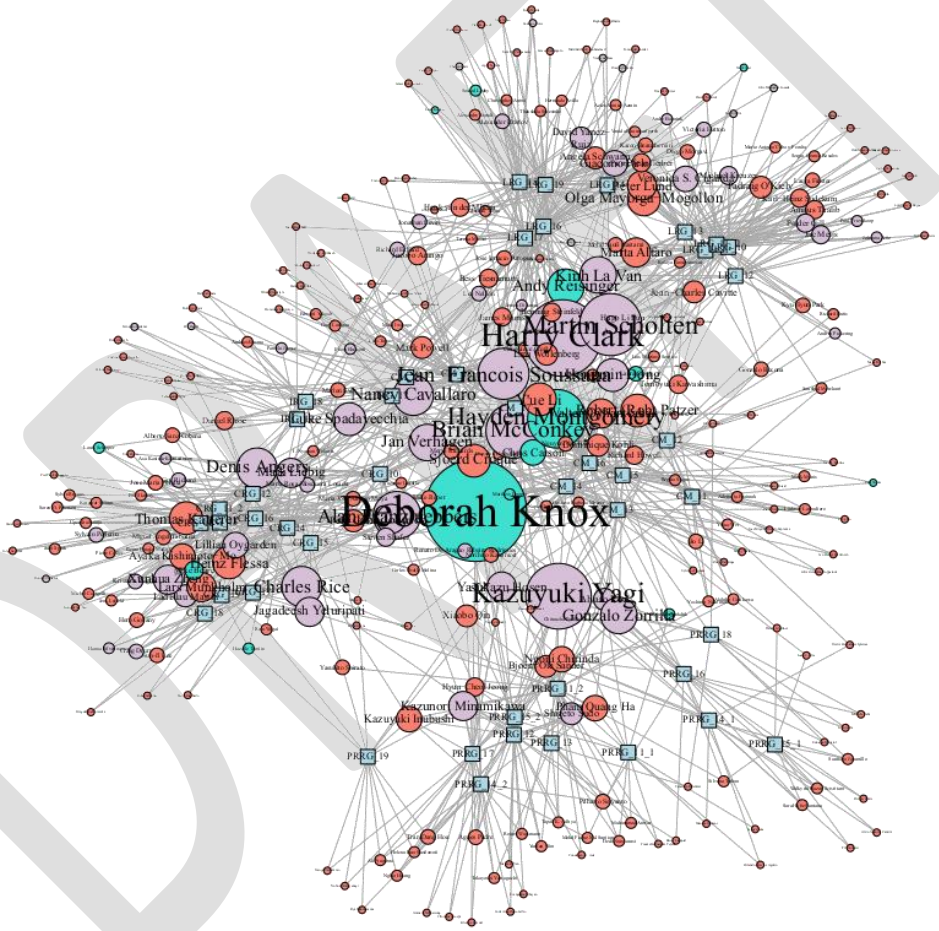


***Source**: GRA meeting reports (2010-2019), https://globalresearchalliance.org/publication-library/?doctype=220.*
***Note**: We count a country as participant in a research group if at least one actor was present at least one meeting during the time period 2010-2019. This figure also includes non-GRA-member countries which e.g. participated as Observer countries.*

Figure 8 shows an overview of all 71 countries that have been present at any of the GRA meetings during the time period 2010-2019. Similar as identified above for the Top 20 GRA member countries (see Figure 7), most of the countries have at least once participated at a LRG meeting and Council meeting. Unlike the top 20 GRA member countries, only around 48 % of all countries have been present at CRG meetings. A similar pattern is shown for PRRG meetings where around 42 % of all countries have been present. Again, IRG meetings show the strongest absence from all countries. Most countries attending IRG meetings are located in Europe. Most African countries only participate at the Council and LRG meetings but at no other research group meeting.

3. Results – Network analysis

Figure 9: Overview individual actors in overall GRA network (degree>1) (2010-2019)


Deborah Knox
Kazuyuki Yagi
Harry Clark
Martin Scholten
Brian McConkey
Hayden McRobbie
Olga Mayorga Mogollon
Andy Reisinger
Kinh La Van
Nancy Cavallaro
Jan Verhagen
Denis Angers
Charles Rice
Jagadeesh Yeluripati
Gonzalo Zurita
Peter Lund
Lillian Oydarden
Heinz Flessa
Kazunori Minamikawa
Kazuyuki Inubushi
Dean Quang Ha
Nigel Chanda
Bjoern Ole Sander
Luke Spadavecchia
Alberto Pozzati
Mark Pozzati
Ruth Pfeifer
Carlos Cassom
Sigrid Crome
Yasuhiro Iizumi
Nobuko Ono
Ayaka Kishimoto
Thomas Kaiser
Lars Mueller
Jean-Francois Soussana
Veronica S. Cardenas
Martin Alfaro
Jean-Charles Cavelier
Jean-Pierre Dong
Alan Hopkins
Mike Popati
Alberto Sanna
Alberto Pozzati
David Yanez
Ana Gomez
Gustavo Saltiel
Mario Antonio Pedreira
Fadang Osseb
Ruben Sommer
Ruben Pelzer
Ruben Pelzer
Ruben Pelz

number of meetings one actor attended. The bigger the circle, the more meetings have been attended by one particular actor. The network graph shows that there is a core group of individual actors that have attended several GRA meetings during the last years. Most of these actors take over a leading position (purple circles) in one of the GRA research groups (e.g. research group co-chair or research network co-lead) or are actors from New Zealand (turquoise circles) e.g. GRA Secretariat team members. Some active actors have participated at 9 meetings but are neither in leading position nor from New Zealand, i.e. Heinz Flessa, Olga Mayorga-Mogollon, Robert Patzer, Sjoerd Croqué, Thomas Katterer and Y'ue Li. In general, however, most actors have been present on average at 2 meetings.

4. Discussion

Attendance at GRA meetings and multipliers

It is not surprising that most multipliers attend Council or LRG meetings because these are also the groups with the highest attendance. Most GRA council focal points are working for an agricultural ministry. GRA council focal points might attend meetings of one or more of the four research groups because they e.g. would like to support a specific research project of its country research group or promote new research topics to the research group. On the other hand, also researchers from one or more research groups can be invited to the council meeting to present the research working plan and thus serve as multipliers as well.

One could for example conclude from this that for the Council, in general, a higher overlap with Research Groups would be desirable because e.g. "[t]he number and focus of Research Groups and Cross-cutting Groups may be amended by a decision of the Council" (Global Research Alliance on Agricultural Greenhouse Gases, 2011b, p. 3). Multipliers at the Council level are important to promote transparency and understanding of Research Group activities and needs that could be considered at Council meetings.

On the other hand, one can conclude, that a representation of research group leader also at the council meeting, to present past and future activities is desirable, as decision backgrounds can be directly provided within the meeting and on the other hand a direct science-policy interface is established.

Participation characteristics of member countries

The strong focus of countries to attend meetings of one specific GRA subgroup can be explained to some extent by this country hosting a meeting of this subgroup at least once during the time period studied. This is e.g. the case for Indonesia, Canada, Mexico and Uruguay which have hosted the Council Meeting in 2019, 2012, 2016 and 2013, respectively. Similarly, this might explain the focus of Australian and Dutch actors on LRG meetings, Colombian, Brazilian and Japanese actors on PRRG meetings and US actors on CRG meetings. Therefore, a recommendation drawn from this observation could be to especially invite / support also other GRA member countries to be the host of one of the next GRA subgroup meetings while taking into consideration the interest of the country on this topic.

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5. Outlook

This paper aims at contributing to the GRA Research and Capability Stocktake which was decided at the GRA Council Meeting 2021. For this purpose, it could be complemented by an online survey and / or stakeholder interviews with selected members of the GRA community to better understand the network dynamics described above. Furthermore, it is envisaged to publish it in a scientific journal.

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