PRO-GRACE

PROMOTING A PLANT GENETIC RESOURCE COMMUNITY FOR EUROPE

DELIVERABLE 5.4

Governance structure of the proposed infrastructure

This deliverable has been submitted and is currently pending approval by the European Commission.

PRO-GRACE
PROMOTING A PLANT GENETIC RESOURCE COMMUNITY FOR EUROPE

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Promoting a plant genetic resource community for Europe

Deliverable No. 5.4

Governance structure of the proposed infrastructure

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Executive summary

The roadmap 2016 of the European Strategy Forum on Research Infrastructures (ESFRI) identified a clear gap in the sector, pinpointing the lack of a European Research Infrastructure (RI) specifically dedicated to Plant Genetic Resources (PGR). Furthermore, the ECPGR Plant Genetic Resources Strategy for Europe published in 2021 also identified major gaps in PGR conservation and use and called for urgent action and a firm political commitment towards ensuring the preservation of Europe's plant biodiversity. There is, therefore, a clear strategic interest and an urgent need to consolidate and coordinate efforts to catalogue, describe, preserve and enhance European plant agrobiodiversity, and translate the results into conservation practices and utilization of PGR for agricultural innovation.

The EU-funded project PRO-GRACE "Promoting a Plant Genetic Resources Community for Europe" (https://www.grace-ri.eu/pro-grace) is developing the concept and design of a novel Research Infrastructure, the GRACE-RI, aimed at fostering research and innovation and providing services to the research and breeding communities in the field of plant genetic resources, their study and utilization. The immediate goal is for GRACE-RI to be included in the ESFRI roadmap.

To develop an effective governance structure for the GRACE-RI, PRO-GRACE work package 5 has collected and collated valuable knowledge and experience from other RIs. Understanding their governance structures provided critical insights into forming GRACE-RI governance during its ESFRI Roadmap preparation and implementation phases, and as a potential future ERIC.

The following activities were carried out as part of D5.4: Mapping of governance structures of well-established ERICs, A workshop on financing, governance structure and services for a future GRACE-RI, A questionnaire survey on the governance and financial plan of the future GRACE-RI, , Interviews of experienced participants inside the project and external stakeholders,

Based on the information and input extracted from interviews and reports, a two-phase governance structure was proposed: 1) a simple and flexible governance structure during the preparatory/implementation phase (GRACE-RI), and 2) a more complex governance structure during the operational phase (GRACE-ERIC).

Governance is proposed to be executed at three levels: decision-making, executive and operative. Parallel to these levels, an advisory level is proposed to secure important input from / alignment with stakeholders that do not play an active role in the decision-making or executive processes. Detailed rules and regulations for these governance bodies will be developed during the preparatory phase, in collaboration between member country representatives and participating organizations.

The basic approach during the preparation and implementation phase will be that, since the number of (potential) members may initially be smaller and funding for governance will largely be provided "in kind" by the founding members, the structure needs to be simple and agile at this stage. This is reflected in the proposed structure for GRACE-RI outlined in Figure 3.

The GRACE-ERIC will be the operational phase of the GRACE research infrastructure and has the proposed governance structure displayed in Figure 4. As with GRACE-RI, the structure is centred around an executive hub with a decision-making body on the one side and National Nodes and Common Services on the operative side. However, several other elements are added to the structure to meet the demands of the higher complexity of the ERIC, including a Steering Committee, division of advisory bodies into a Scientific Advisory Board and a Stakeholder Forum, and better-defined Common Services.

A point of special consideration, both as challenge and opportunity, will be the role of the European Cooperative Programme for Plant Genetic Resources (ECPGR), both during implementation and in the final GRACE-ERIC.

In the vision of PRO-GRACE, the services of genebanks and research institutes are the central element of the RI, embedded in the National Nodes. In both phases of GRACE governance, the operational level is divided in two areas: National Nodes and Common Services.

The National Node will serve as the primary interface between GRACE and the country's research institutions and stakeholders to ensure that researchers and stakeholders in the country can access shared resources, tools, and data while contributing to the European effort.

Common Services include expertise, services and tools (e.g. sample and data access, ethical and legal services, information technology services, capacity building and training) provided or coordinated by the Central Hub, which will act as a single access point for users. Implementation of Common Services shall be provided in conjunction / collaboration with one or more National Nodes and clearly distinguishable from other services provided by National Nodes.

1. Introduction

Plant Genetic Resources (PGR) play a key role in the transition from a fossil-based to a bio-based economy, as well as in food security and climate mitigation. More than 2 million plant accessions are preserved *ex situ* in 410 institutes across the EU and associated countries and documented in the EURISCO database (https://ecpgr.org/eurisco); even more diversity is found "in situ" in European farmlands and wild habitats. Detailed information on "ex situ" accessions is, at best, fragmentary, while for "in situ" accessions it is almost non-existent and therefore threatened. The roadmap 2016 of the European Strategy Forum on Research Infrastructures (ESFRI) identified a clear gap in the sector "Plant facilities – unlocking green power", i.e. the lack of a European Research Infrastructure (RI) specifically dedicated to PGR [1]. There is, in other words, a clear strategic interest and an urgent need to catalogue, describe, preserve and enhance European plant agrobiodiversity, and translate the results into conservation practices and utilization of PGR for agricultural innovation.

At the European level, an international cooperation within plant genetic resources conservation and use has been established through the European Cooperative Programme for Plant Genetic Resources (ECPGR, www.ecpgr.org) with at present 34 member countries, providing an important platform for knowledge exchange, capacity building, information management, research and development. The ECPGR PGR Strategy for Europe, published in 2021, presents a framework for actions needed to close gaps identified in the European PGR landscape and provides the basis for the vision of the GRACE RI (https://bit.ly/pgrstrategy).Further, there have been several projects within Europe working on the conservation and use of plant genetic resources.

Despite decades of work and considerable progress achieved through collaboration, the conservation of PGR is still inadequate, with 43% of crop wild relative (CWR) taxa represented by less than 10 accessions in genebanks and to date no concerted efforts exist to conserve European CWR diversity *in situ* [4]. European research institutions working on related aspects (e.g. -omics technologies and their applications to PGR conservation; plant breeding) derive their funding either from national funds, or from European projects that, albeit numerous, are limited in scope and time. Furthermore, the genotypic and ic information and bioinformatic tools generated by such projects are often hosted in temporary databases and web repositories, not effectively exploited and risk being lost in the medium term.

In this context, European Research Infrastructures (RIs) play a crucial role in advancing scientific knowledge, fostering collaboration, and promoting innovation across various disciplines. The most advanced form is an ERIC (European Research Infrastructure Consortium), which is a legal structure that facilitates the establishment, operation and utilization of large, Europe-wide research facilities. It allows for international collaboration among member countries to manage and share these research infrastructures.

The EU-funded project PRO-GRACE "Promoting a Plant Genetic Resources Community for Europe" (https://www.grace-ri.eu/pro-grace) is developing the concept and design of a novel Research Infrastructure, the GRACE-RI, aimed at fostering research and innovation and provide services to the research and breeding

communities in the field of plant genetic resources, their study and utilization, making use, whenever convenient, of existing networks, mechanisms and structures within the ECPGR community.

More specifically, **the mission** of GRACE-RI will be to endow the European region with an efficiently conserved, documented and accessible reservoir of plant genetic resources, either maintained in genetic resources centres or in nature and to make these available for research and the public good at all times. At the same time, GRACE-RI will pursue the **scientific challenge** of discovering beneficial plant traits and optimizing their use across all levels (from molecular to ecosystem level), addressing critical current and future challenges including climatic change, environmental protection, energy transition and food security.

For PRO-GRACE to evolve into an ERIC (Figure 1), the first step is to build a strong proposal that will be positively evaluated by ESFRI and have GRACE-RI included into the ESFRI Roadmap. When entering the ESFRI Roadmap, a Research Infrastructure must have completed the concept development and design phases. For the GRACE-RI infrastructure these phases have been completed in the PRO-GRACE project, which at the time of submission of the ESFRI proposal, will have been running for 27 months. Proposals entering the roadmap must be fully ready to begin the preparatory phase and complete the implementation phase (i.e. the 3rd and 4th out of 6 steps in the life cycle of a research infrastructure, Figure 2) within 10 years. A proposal for a novel infrastructure must gather

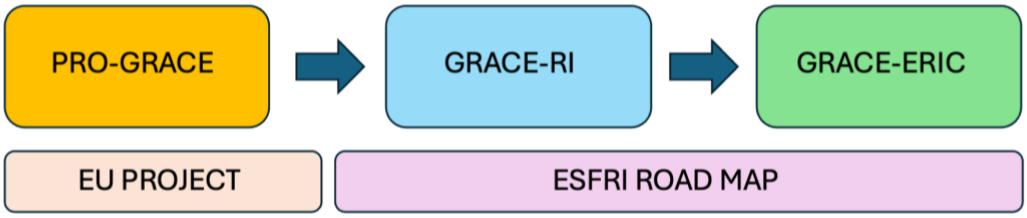

Figure 1. The roadmap to the GRACE-ERIC

political support from at least 3 ESFRI member states, and economic commitment from at least 2 of them, including the one which will coordinate the proposal.

There are different needs and demands for the GRACE-RI governance through the design, preparation, implementation and operation phases of the infrastructure (see Figure 2). Understanding the governance structures of existing Ris and how they evolved over time, as well as adapting them to the needs of the GRACE-RI provided the basis to develop a structure for effective management, decision-making, and coordination of resources.

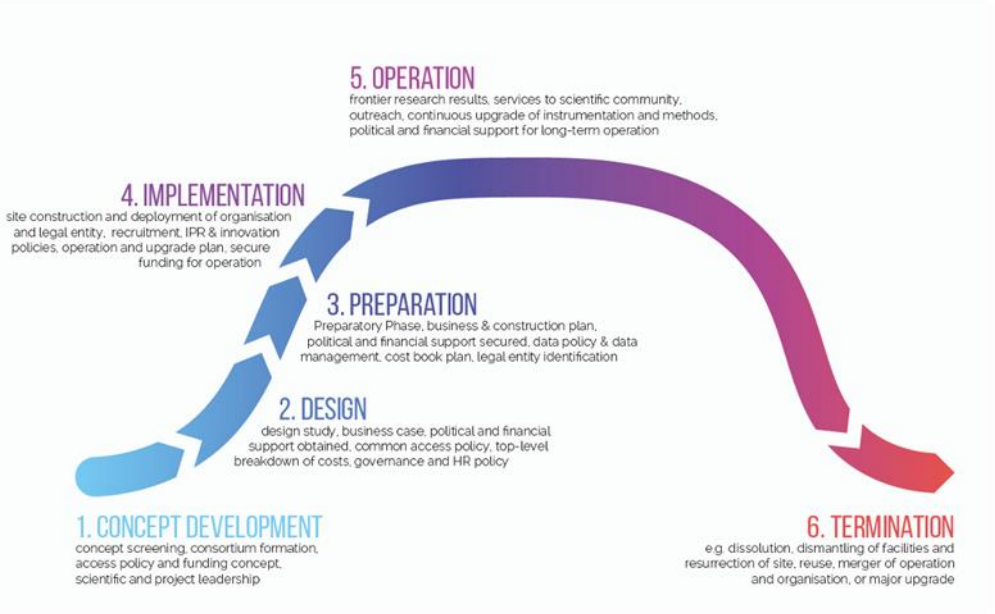

Figure 2. The life cycle of a European Research Infrastructure.

RIs can be organized in different ways, depending on, amongst others, centralized vs distributed structures, structures of the national nodes and their interdependencies, financial policies and possible partnerships. To cover this diversity, PRO-GRACE has collected and collated valuable knowledge and experience that can be utilized in developing GRACE-RI.

Firstly, utilizing the outcomes of completed PRO-GRACE deliverables (see **Annex 1**), the scope, structure and perimeter of the future GRACE-RI (1.1) and the scientific services, stakeholders, promoters and utilizers of the proposed RI (1.2) are defined.

Secondly, the relations of the future GRACE-RI with other ESFRI research infrastructures (1.3), existing international bodies and international treaties (1.4), and with the private sector (1.5) are defined.

Thirdly, these preparatory activities have been complemented by the following additional activities (Chapter 2):

- Mapping of governance structures of well-established ERICs such as BBMRI and LIFEWATCH and valuable inputs from other research infrastructures already on the ESFRI Roadmap, such as EMPHASIS, METROFOOD and DIssCO
- A workshop of project partners on financing, governance structure and services for a future GRACE-RI
- Questionnaire survey on the governance and financial plan of the future GRACE-RI
- Interviews of experienced participants inside the project and external stakeholders such as the ECPGR network, the industry and organisations from civil society.
- Consulting recommendations from ERIC Forum 2 on how to address the challenges related to the ERIC Regulation and its implementation.

1.1 Scope, structure and perimeter of GRACE-RI

GRACE-RI (and later GRACE-ERIC) will be a distributed research infrastructure comprising public research institutions (or private institutions with a public service mission) localized in ESFRI member states, working on the *ex situ* and *in situ* conservation, documentation, evaluation and utilization (including the application of enabling technologies such as various -omics) of Plant Genetic Resources (Figure 3). From the gap survey conducted in D5.1, it is evident that no existing European research infrastructure covers this domain, with the partial exception of EMPHASIS, which works on plant ing applications (see 1.2).

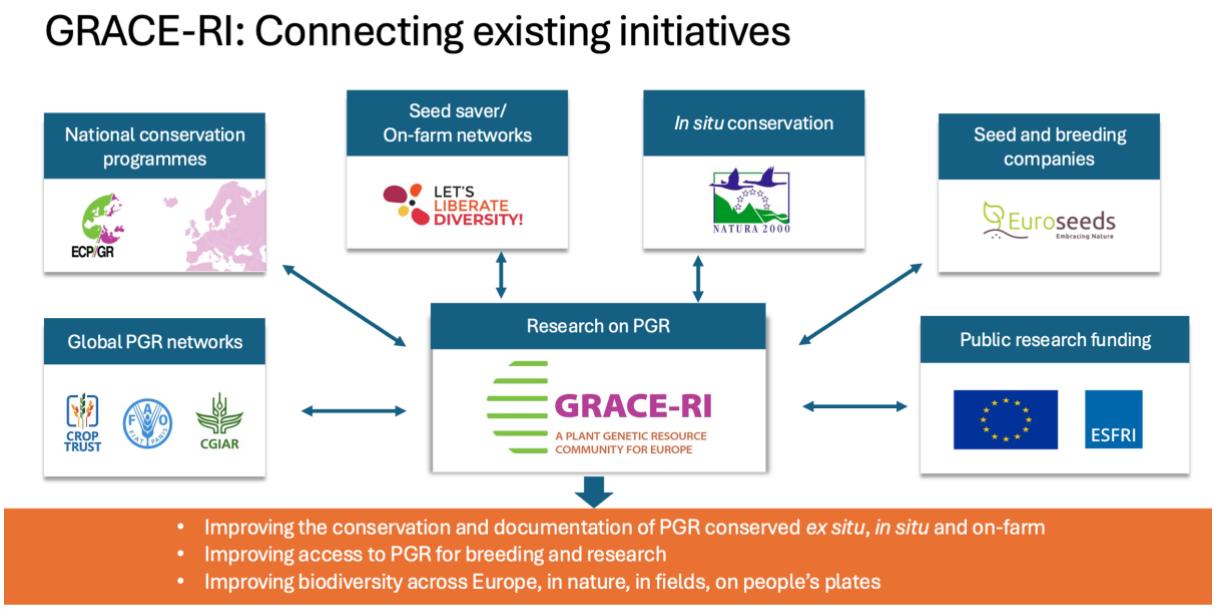

Figure 3. Illustration of the PGR landscape

The GRACE-RI will comprise three main actors: 1) Genetic Resource Centers, loosely defined as genebanks, botanic gardens, *in situ* reserves, on-farm conservation centres and seed exchange networks, with a strong focus on PGR conservation; 2) Research Institutes (including Universities) conducting research or pre-breeding on PGR or developing enabling methods, but not having conservation among their primary goals; and 3) a central governance structure, providing decision making and coordination of the RI, interacting with member institutes as well as external bodies and stakeholders. The scope of this report is to define the operation and role of the central governance structure, and its relations with other components of the GRACE-RI and external actors, during the preparation and implementation phases.

1.2 Scientific services, stakeholders, promoters and utilizers

PRO-GRACE deliverable 5.2 has identified a series of stakeholder groups (i.e. *in situ* genetic reserves; genetic resource centres; farmers; seed companies; other private service providers; other research infrastructures; public research centres; non-governmental organizations; PGR conservation and research networks;

policymakers, legislators and policy experts) and highlighted their roles in the long-term conservation and sustainable use of PGR at European level.

Moreover, four main areas where GRACE-RI could provide services were identified, i.e.: genebank quality management; data storage and information management; multi-omics characterization and application to pre-breeding; and services to ensure optimal access to PGR (Figure 3). A preliminary analysis of how the abovementioned stakeholder groups can contribute to and benefit from these services was conducted and will be further refined in a second iteration of this deliverable. The results suggested that GRACE will be central in the current PGR landscape (Figure 4), having the potential to bridge the gaps in PGR research through multidisciplinary science.

Figure 4. Illustration of the services to be coordinated in a GRACE-RI context

1.3 Relations between GRACE-RI and other ESFRI research infrastructures

A gap and synergy analysis of the current EU ecosystem of RIs supporting research on PGR was performed in D5.1 (Gap analysis of the present European RI ecosystem) using a quantitative approach to evaluate the positioning of a novel RI (GRACE) specifically dedicated to PGR in the European context. Several RIs included in the "Health & Food" (ELIXIR, EMPHASIS, METROFOOD, MIRRI) and the "Environment" (DiSSCo, LIFEWATCH) domains were compared in terms of their research aims, research products and PGR-related services provided. The results suggested that GRACE will be central in the current PGR landscape (see Figure 44), having the potential to bridge the gaps in PGR research through multidisciplinary science, but more peripheral in terms of services provided to end users/stakeholders. In all cases, simple statistics revealed no significant correlations between GRACE and the other RIs (except with EMPHASIS in terms of research aims) with respect to aims, products and services. Overall, ELIXIR, EMPHASIS and DiSSCo were the closest RIs both in terms of research products and services to PGR research, and will be the targets of possible collaborations with GRACE.

The relations of GRACE-RI with other ESFRI research infrastructures will be managed by the central governance structure of the RI. Work done in D5.1 has clearly shown that GRACE-RI covers an obvious gap in the present RI ecosystem regarding plant genetic resources, their conservation, documentation, evaluation and utilization. This gap analysis also identified possible points of interaction/synergy with other ERICs/RIs, like ELIXIR, DiSSCo, METROFOOD, EMPHASIS, which were discussed with those ERICs/RIs in a joint workshop held in Chania on October 2-6, 2023.

1.4 Relations with existing international bodies and treaties

During its implementation and operation phases, the GRACE-RI will have interactions with other international bodies and treaties with different mandates, active in the PGR domain. The most important ones will be the Convention of Biological Diversity and its Nagoya Protocol on Access and Benefit Sharing, The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), the Consultative Group for International Agricultural Research (CGIAR), the Global Crop Diversity Trust and the ECPGR.

1.5 Relations with the private sector and civil society

During its implementation and operation phases, the GRACE-RI will have interactions with private actors within plant breeding, food and agriculture. Private actors without a public mandate cannot be members of the RI but will be able to play an active role through the Stakeholder Forum and as potential users of the research results originating from the RI. Euroseeds, a non-profit international organization representing the interests of private actors active in research, breeding, production and marketing of seeds of agricultural, horticultural and ornamental plant species, has been part of PRO-GRACE and will continue to play a key role in the GRACE-RI Stakeholder Forum.

NGOs/civil society could be represented by “community seed banks” (CSB), which are networks consisting of farmers, gardeners, small breeding companies, small scale direct marketeers, etc. who can be providers of small-scale on-farm PGR to be exploited in GRACE-RI. The European NGOs have gathered in a European network called Let’s liberated diversity (EC-LLD), the only network of CSBs in Europe, which could act as the voice of NGOs.

2. Exploring possible frameworks for governance

As mentioned in Chapter 1, the exploratory phase for defining the GRACE-RI governance structure comprised defining the scope and structure of the future RI, its scientific services, stakeholders, promoters and utilizers, its interactions with existing and perspective ESFRI RIs and international bodies, and with the private sector. This chapter presents an overview of the additional activities that were carried out in preparation of the proposed governance structures.

2.1 Overview of existing governance structures

Firstly, as part of the PRO-GRACE project a report (see **Annex 2**) was prepared on governance structures of existing European RIs at different levels of development along the ESFRI roadmap, including:

- ELIXIR (European Life Science Infrastructure for Biological Information),
- LIFEWATCH ERIC (European Research Infrastructure Consortium),
- MIRRI ERIC (Microbial Resource Research Infrastructure),
- EMPHASIS (European Infrastructure for Multi-scale Plant Phenomics and Simulation),
- METROFOOD (Metrology for Food, Nutrition, and Health),
- DiSSCo (Distributed System of Scientific Collections), and
- BBMRI ERIC (European Biobanking and Biomolecular Resources Research Infrastructure).

The report concluded that the governance structures of the RIs are diverse and tailored to the unique needs, objectives, and operational models of each RI. Whether operating as ERICs, consortia, or distributed infrastructures, these RIs are united in their commitment to facilitating collaboration, promoting innovation, and advancing scientific research across Europe and beyond.

Each RI's governance model provides essential lessons on structuring decision-making bodies, operational oversight, and membership processes. For instance, ELIXIR and BBMRI-ERIC exemplify how distributed infrastructures can be governed by central coordination units, while LIFEWATCH and MIRRI ERICS highlight the advantages of centralized ERIC models that facilitate member state collaboration. Each approach underscores the importance of flexible yet robust governance structures to support operational efficiency and strategic alignment across diverse scientific fields.

For the GRACE-RI, understanding these varied governance structures provided critical insights into forming an effective governance model during its ESFRI Roadmap preparation and implementation phases. The proposed governance model draws from successful models like BBMRI ERIC's regulatory oversight mechanisms or LIFEWATCH's task-specific expert groups. By blending these governance strategies, GRACE-RI can create a structure that supports its long-term vision of collaboration, innovation, and sustainability as a pan-European research infrastructure both during the preparation and implementation phases as an ESFRI Roadmap project and later as a GRACE ERIC.

In addition, further interaction with BBMRI was sought as this ERIC, in spite of the different scope (medical-oriented biobanking) has some significant similarities with GRACE-RI as a distributed research infrastructure with many national entities dealing with conservation of human tissue samples in biobanks. It was evident that BBMRI is structured around research and services in three central areas: Information Technology (IT), Ethical, Legal and Societal Issues (ELSI) and Quality Management Systems (QMS). However, it is the interaction with the National Nodes that determines the eventual structure and bandwidth (or matrix) of these services, resulting in a quite diverse implementation of the services within each node, which, however, remain connected through the central services pillar coordinated by the central hub. Another lesson learnt was that when National Nodes and ERIC affiliates engage in collaborative research, monitoring is not always easy (is the research done as part of ERIC, how to report associated funding, etc.).

From their experience, BBMRI offered the following advice to PRO-GRACE members for the application to the ESFRI roadmap:

- Ensure alignment with EU policy priorities (e.g. one health approach)
- Establish the main service portfolio from the start of the ESFRI application.
- Engage with other ESFRIs and ERICs to establish synergies and joint approaches to avoid duplication of efforts (BBMRI-ERIC is interested in collaboration with GRACE-RI on QMS and IT services)
- Obtain as much member support letters as possible.
- Plan for a solid budget that covers all core activities, even if that means higher membership fees and more difficult negotiations.
- Reach out to the ERIC forum, EU Commission and ESFRI for support during the application.

2.2 Workshops

During the PRO-GRACE project, two workshops have focused on obtaining input and discussing the governance structure of the GRACE-RI.

2.2.1 Interactive stakeholder workshop

On 4 October 2023, an interactive session titled “Stakeholders, Services, Sustainability – Visions for the Future GRACE-RI” was held in Chania, Greece, organized by Work Package 5. This session engaged over 50 participants, both online and in person, including project partners and stakeholders, to discuss key areas essential to establishing a future European research infrastructure (RI) dedicated to PGR — the GRACE-RI. The report is included as appendix to D5.2.

The session featured group discussions that focused on four key areas:

1. **Identifying Likely Stakeholders**: Participants highlighted the primary stakeholders for the future GRACE-RI, identifying potential users and providers of services, such as genebanks, researchers, breeders, and farmers.

2. **Defining Desired Services**: The discussion explored which services stakeholders currently use in their PGR work and would like the future GRACE-RI to provide. Essential services that could be developed and strenghened by a GRACE-RI included conservation (both *ex situ* and *in situ*), data generation, management, and analysis. Participants also expressed interest in GRACE-RI offering training, standardized protocols, and support for legal and policy issues.

3. **Governance and Financial Planning**: Key elements for establishing a sustainable governance structure were discussed, including stakeholder representation, effective communication and dissemination strategies, and agile, coordinated leadership. Strong political support from host countries and the EU was identified as essential for financial sustainability, complemented by project funding and contributions from third-party users of the RI's services.

4. **Opportunities and Challenges**: The session underscored GRACE-RI's potential to serve as a centralized hub for PGR needs in Europe, addressing current challenges such as the lack of harmonized standards and protocols, data accessibility issues, and resource shortages (e.g., staff and facilities). However, participants also noted challenges, particularly in securing funding, managing stakeholder diversity, and navigating legal and political issues related to PGR availability.

Participants expressed a clear demand for a dedicated RI that would serve as a "one-stop shop" for PGR conservation and utilization, supporting both research and practical applications. The establishment of GRACE-RI would bridge gaps within the European RI ecosystem by improving PGR conservation, access, and usage; promoting quality standards in conservation practices and data management; and offering additional support services to address existing bottlenecks.

This session provided valuable insights into developing GRACE-RI and set the stage for continued engagement with stakeholders. Further input was gathered through targeted surveys to inform GRACE-RI's proposed services, governance, and financial models.

2.2.2 Project workshop

In April 2024, another focused workshop was held at NordGen (Alnarp, Sweden) with twelve participants from work package 5 of the PRO-GRACE project (see **Annex 4**). Its aim was to discuss issues regarding scope, governance structure and business models of the GRACE-RI and to develop a roadmap for the preparation and implementation phase of a GRACE-RI. Focus was on four main questions:

A. How could the various bodies (project partners and funding agents) collaborate in developing a 4-year programme?

It was suggested to identify thematic groups that could work more in depth on this issue, e.g. by arranging a separate workshop. It was considered highly valuable to interview other RIs and stakeholders and get insight on how they managed to achieve their goal(s), including getting access to other facilitating information. The importance of maintaining continuous dialogue with funding bodies and policy makers was also emphasized. Interacting with industry was recognized as being important - possibly more so than for ELIXIR - and the idea of

establishing an industry advisory board was considered essential. The existing ECPGR network was seen as very important, and other relevant global stakeholders such as FAO, CGIAR and ITPGFRA were identified.

B. What would the programme be about or, indeed, not?

It was deemed important to adopt a clear mission for GRACE-RI including the most important priorities, in order not to duplicate other projects or programmes. Moreover, GRACE-RI will not be yet another research programme, but rather a means to better use of research data and providing information and access to well documented materials, facilitating high-quality research on PGR**.** It will be important to define standardized approaches, highlight existing functions and initiatives (e.g. data sharing) and guarantee proper interoperability. The GRACE-RI scope and service portfolio, as well as its intended user programme will be defined in D5.5, building on the inventory developed in D5.2.

C. How could an annual roadmap be developed and validated?

Having an ESFRI application in place in 2025 was possible but challenging due to the short time span. Defining activities and pilot services will be necessary in developing the roadmap. Validation could be accomplished through appropriate pilot projects which would develop the services during the preparation and implementation phases.

D. Discuss a tentative business model based on other RIs/network experiences.

A robust business model will be essential for running the operations of the RI and for showing the added value of the consortium. As with ELIXIR and other distributed RIs, a coordinating hub will be essential to coordinate the RI including handling and granting of research proposals.

2.3 Questionnaire of deliverables on governance

A questionnaire was prepared within work package 5 of the PRO-GRACE project. The questionnaire focused on aspects of the envisaged research infrastructure that relate to anticipated beneficiaries, services, financing and governance. The questionnaire was sent out to around 900 recipients and a total of 76 responses were received. The majority of the answers (80%) represented stakeholders from gene banks /genetic resource centres or universities / public research centres. A majority of the respondents (67%) acknowledged a need for a new or strengthened PGR research infrastructure in Europe. Based on the responses received, the following recommendations were given:

- The legal entity of GRACE-RI should be a non-profit organization.
- Two central aspects of governance are the importance of democratic influence and a participatory-driven infrastructure (Working Groups)
- Involvement of national nodes is vital and should be further developed.
- The establishment of a secretariat is desirable.

- Main activity areas of GRACE-RI should include Quality PGR management and access, Data storage, availability and elaboration, Capacity building & dissemination, Technical and scientific services.
- Transparency and a well-developed system for communication is strongly recommended.
- ECPGR is recognized as an important partner. How to integrate the functions and elements of ECPGR into a future GRACE-RI should be discussed with the Executive Committee of ECPGR how to obtain the best possible, and most cost-effective setup.
- ECPGR, through its EVA initiative, should be recognized as a suitable and complementary partner in PGR evaluation, conducted in cooperation with EMPHASIS - the European Infrastructure for Plant Phenotyping
- Input from the plant breeding and seed sector and civil society was underrepresented in the survey and should be secured by the project management.

In addition, while most respondents favoured the establishment of a general assembly and involvement of national nodes, opinions differed on how these entities should be composed. A full report on the results of the survey can be found in **Annex 3**.

2.4 Stakeholder interviews

Subsequently, six qualitative interviews involving representatives of central project partners representing research institutes or genebanks (ENEA, WUR, INRAE), governments (BLE), one NGO (Pro Specie Rara) and the ECPGR network were conducted to further solicit views on best governance of a future GRACE-RI. The central questions asked during the interview are displayed in the text box below.

BOX 1. Questions asked in the stakeholder interviews:

- How could a possible governance be structured in the short term?
    - Which key decision-making entities would be needed?
    - Which management entities/elements do you think would be necessary?
    - What are the operative elements?
    - Would there be differences for a long-term model?
- How could the stakeholders be best possibly integrated into the governance structure?
- Could you reflect on what is the three most important element for a National Node in terms of roles and responsibility?
- How do we ensure a democratic participation in the next phase of the PGR RI and beyond?
- What role and responsibilities do you suggest that ECPGR has in and beyond next phase of PGR-RI?

Summarizing the input from these interviews the following recommendations could be developed:

Input on governance structure (short/long term):

- The management structure should remain light and flexible (no funding for heavy structure) in the preparatory and implementation phases.
- Participants in the proposal should commit to building GRACE-RI by making available in-kind personnel for the preparatory and (partially) implementation phases, to have a steering committee in place.
- Assembly of Members (AoM) would be the highest decision-making body, overseeing budget and strategic planning.
- Depending on how the GRACE-RI is structured, AoM could consist of a scientific and administrative (government) representative per member country, nominated by the country.
- Strong project and Secretariat leadership should enable effective management of the central hub.
- A working group with National Node coordinators and project leader should develop a vision paper/strategy for implementation phase.

Input on stakeholder involvement:

- Interaction with an advisory board will be very important.
- Ensure representation of industry and NGOs
- Decision-making or advisory role to be decided.

Input on National Node role and responsibilities:

- National Nodes can have varying (i.e. country dependent) constellations but should be structured around a national coordinator (NC) and working towards a national roadmap on PGR conservation and use.
- Services of GRACE-RI should be well-defined and clearly distinguished from services routinely undertaken by organizations within the National Nodes

Input on democratic participation:

- Membership in the GRACE-RI should be open to taking part countries and international organizations relevant to PGR.
- Representation in the AoM should reflect the National Nodes (NN) and GRACE members.
- Rules and responsibilities of governing, advisory and implementing bodies are to be developed during the preparatory phase.
- Ensure balanced representation in different bodies such as AoM, advisory committee, stakeholder forum.

Input on ECPGR role and responsibilities:

- Recognized as an important partner and a tentative part of a future ERIC.
- Interaction with ECPGR is very important.
- Possible overlap of roles or tasks stresses the need to coordinate, separate, or integrate.
- The role of ECPGR as advisor, decision-maker or operational needs to be clarified.

2.5 Recommendations from ERIC Forum 2

Finally, recommendations from ERIC Forum 2 (EF2) on how to address the challenges related to the ERIC Regulation and its implementation (ERIC Forum 2, Deliverable 12.1) were also evaluated. Key points from the EF2 report were:

- EF2 recommends a best practice that ensures dual, scientific and ministerial representation in the General Assembly, while ensuring that these representations do not have conflicts of interest regarding the operation and/or sustainability of the ERIC.

- The ERIC practical guidelines show that "The statutes provide for the distribution of voting rights, e.g. each member [country] has one vote, or the voting rights are determined in proportion to the respective [financial] contributions or any other mechanism which the members consider fair and efficient." In practice, various voting right models are applied across the ERIC landscape. These can range from the one country–one vote model to voting rights determined in proportion to the respective contributions of the Members or a combination of both depending on the decision matter (policy, operations, development plans, membership fees, etc.). EF2 points out, that once the voting rights and the decision matter have been set up in the Statutes of the ERIC, it is extremely difficult to revise them.

- Lack of adequate reporting on the scientific, operational and financial aspects, limits the governance efficiency, visibility and global impact of the ERICs. Accessing information, especially on financial aspects, is a major challenge and the ERIC perimeter is often composed of dozens or more small entities whose links to the ERIC Headquarter(s) can be rather loose. In addition, participation in an ERIC induces, especially for the Representing Entities, significant added administrative costs, including for the reporting, which may be a challenge.

3. Proposed GRACE-RI governance structure

3.1 Overview

Based on the information set out in chapter 1 and the input extracted from interviews and reports in chapter 2, a two-phase governance structure was developed:

1. The preparatory/implementation phase (GRACE-RI), and
2. The operational phase (GRACE-ERIC)

As in most RIs and ERICs, governance is proposed to be executed at three levels: decision-making, executive and operative. Parallel to these levels, a fourth level is introduced: the advisory level. The rationale for an advisory level is to secure important input from and alignment with stakeholders that do not play an active role in the decision-making or executive processes. Detailed rules and regulations for these governance bodies will be

developed during the design phase, in collaboration between member country representatives and participating organizations.

The four levels are part of the preparatory/implementation phase as well as the operational phase but may differ with respect to structure and content, depending on the tasks required during the respective phases. **Chapter 3** describes the governance structure during the preparation and implementation of GRACE-RI. The final structure envisaged for the operational phase of a GRACE-ERIC is presented in **Chapter 4**.

The legal status of GRACE-RI will be a distributed infrastructure with national nodes established through legal entities in participating countries. Prospective members express their interest in joining GRACE and engage in negotiations on membership terms and contributions. Upon agreement, the prospective member signs a formal agreement, becoming a member of GRACE-RI and, with time, GRACE-ERIC.

The basic approach during the implementation phase will be that, since the number of (potential) members may initially be smaller and funding for governance will largely need to be provided "in kind" by the founding members, the structure at this stage needs to be simple and agile. This is reflected in the proposed structure for GRACE-RI outlined in Figure 5 and described in detail below.

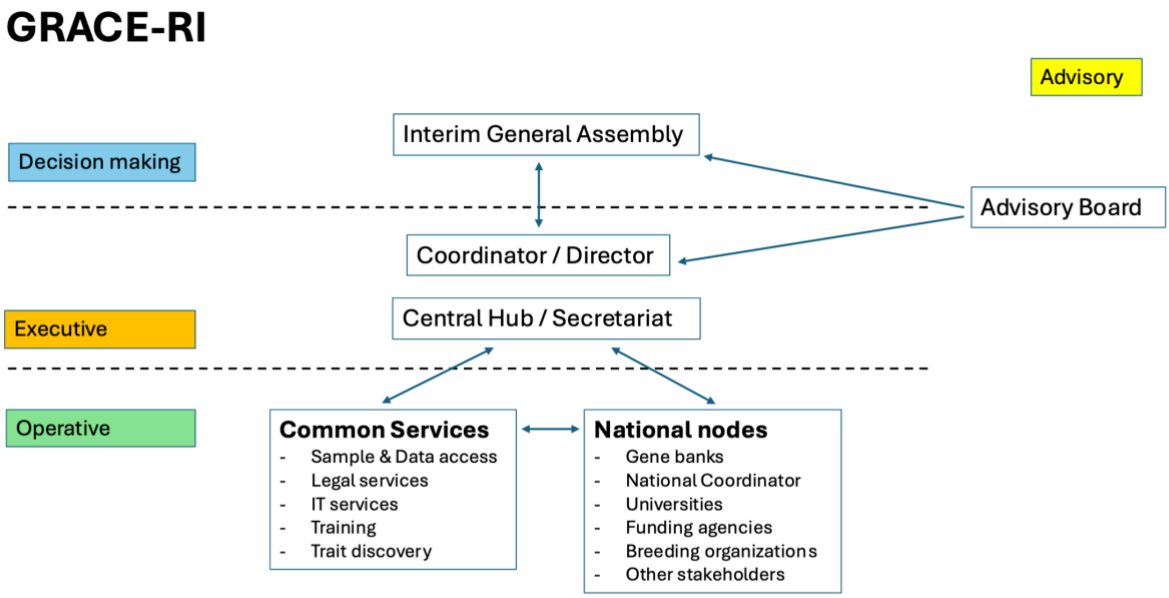

Figure 5. GRACE-RI governance structure during preparatory and implementation phase

3.2 Decision-making level

During preparation and implementation of the GRACE RI, it is important to secure proper representation of RI member countries to provide high-level strategic decision-making and support the executive level.

Interim General Assembly (IGA)

The IGA is the governing body of GRACE-RI during its implementation. The IGA will be acting as a steering Committee in the first phase. It consists of representatives from member countries that have officially signed a Letter of Intent declaring their intention of moving GRACE-RI towards operation. The IGA makes decisions on high-level strategic aspects for the development of GRACE-RI including the following aspects:

- Scope, timeline and cost coverage scheme of implementation
- User strategy and service portfolio
- The legal form and governance
- Statutory seat country
- Cost book and funding framework

The IGA will assume this role until GRACE-RI has set up its final legal entity as an ERIC.

Once the legal entity is formed, the responsibility of the highest governing board will be transferred to a General Assembly which will represent the legal owners of the final GRACE-ERIC legal entity (see 4.1).

Envisaged participants in the IGA are representatives of government and scientific institutions from the member countries (dual representation) as well as the Coordinators of National Nodes (see 3.4). In principle, voting rights will be defined as one vote per member country.

3.3 Executive level

The key element of the executive level is the Central Hub with a coordinating office, which consists of a Coordinator/ Director and a minimum of legal and administrative staff, who will act on behalf of the IGA and are responsible for drafting the working programme and coordinating the construction of the operative level and development of common RI services. In the implementation phase, the Central Hub will interact closely with the ECPGR Secretariat to align activities and avoid duplication of efforts. The Central Hub unit will be extended into an Executive Management Office (EMO) in the operational phase (see 4.2).

The Central Hub/EMO should preferably be in the GRACE-RI hosting country and employ ability in finance, communication, legal matters and project management to support the operative level.

3.4 Operative level

In the vision of PRO-GRACE, the services of genebanks and research institutes are the central element of the RI, embedded in the National Nodes. In both phases of GRACE governance, the operative level is divided in two areas: National Nodes and Common Services.

National Nodes

A National Node means an entity, not necessarily of legal ability, designated by a Member State, which coordinates the national PGRCs and PRIs and links their conservation and use activities with other relevant stakeholders in the Node and with activities of GRACE-RI. Each National Node has a Coordinator, appointed by a

suitable authority of the Member State, hereinafter referred to as "National Coordinator". The National Coordinators play an active role in the development of GRACE-RI activities and take part in the IGA.

Plant Genetic Resource Centers (PGRCs), including genebanks, genetic reserves and on-farm collections, are essential institutions dedicated to the collection, preservation, and distribution of plant genetic material and as such are central to the GRACE-RI. They play a critical role in safeguarding global biodiversity by conserving a vast array of plant species and their genetic diversity *ex situ* and *in situ*, along with detailed data on each resource's origin, traits, and potential uses. These repositories support food security, climate resilience, and sustainable agriculture by providing essential genetic resources for developing new, resilient crop varieties. PGRCs serve as invaluable sources of genetic data for advancing scientific understanding of plant evolution, physiology, and biochemistry, and promotion of on-farm crop production, thereby fostering innovation in agricultural research and development.

Plant Research Institutes (PRIs), including Universities, conduct frontier research on Plant Genetic Resources, studying their evolution, domestication, genetic diversity, phenotypes, metabolic composition, quality, yield, susceptibility to biotic and abiotic stresses and its genetic basis, and using them in pre-competitive breeding (prebreeding) activities. They may or may not host collections of plant genetic material. Their contribution is essential both for the appropriate management and documentation, and for the utilization of Plant Genetic Resources held by PGRCs.

The functions of a National Node can be diverse and country specific. However, in most cases it should cover:

- **Coordination**: Acts as liaison between national stakeholders and GRACE-RI to facilitate implementation of GRACE common services (see above).
- **Data Management**: Collects, processes, and shares data or resources with GRACE-RI.
- **Integration:** Ensure the smooth coordination and integration of *ex situ*, *in situ* and on-farm conservation activities, while ensuring users' demands are fully addressed
- **Capacity Building**: Facilitates training and development to ensure the country's organizations can contribute effectively to GRACE-RI initiatives.
- **Representation**: Represents the country in GRACE-RI in decision-making forums
- **Monitoring**: ensures effective reporting of GRACE-related activities, also within the framework of external projects and financial reporting to the home governments.

Common Services

GRACE-RI will provide expertise, services and tools to its users within the infrastructure by establishing and supporting Common Services such as sample and data access, ethical and legal services, information technology services, capacity building and training (see section 1 and D5.5), exemplified by a virtual information system (EURISCO 2.0) containing all publicly available information on PGRs in a Findable, Accessible, Interoperable and Reusable format. During the preparation and implementation phases, Common Services will be developed and structured in a way that enables best alignment with the National Nodes of the RI based on the results from PROGRACE D5.5 as well as existing networks, mechanisms and structures within the ECPGR community. Common Services will be coordinated by the central hub and implemented through the National Nodes.

3.5 Advisory level

During the preparatory stage, an international advisory board with designated stakeholder representatives with relevant scientific and industry excellence/competence will provide expert input at all levels of the RI during its implementation. In the final GRACE-ERIC, the advisory board will be split up into a Scientific Advisory Board and a Stakeholder Forum (see 4.4), to allow for more targeted guidance and broader representation.

3.6 ECPGR

A point of special consideration, both as challenge and opportunity, will be the role of the European Cooperative Programme for Plant Genetic Resources (ECPGR), both during implementation and in the final GRACE-ERIC.

Many of the functions and services that GRACE-RI will implement are the same or an evolution of those that ECPGR has developed over the past decades. These refer to, among others, activities to improve the efficiency and functionality of an integrated PGR conservation system (considering both *ex situ* and *in situ* strategies), the consolidated mechanism to gather data through National Focal Points and channel these to a centralized information system (i.e. EURISCO), as well as the coordinating function of the ECPGR Secretariat which is currently able to mobilize for joint action over thirty European national programmes on PGR as well as to reach international agreements by consensus among them.

While GRACE-RI aims to expand the use of PGR by enabling ambitious research programmes, which are beyond the scope of the historical ECPGR mandate, it seems reasonable to integrate the ECPGR structures and mechanisms as far as possible into GRACE-RI building on ECPGR's long-term expertise and functionality and thus align with the ECPGR PGR Strategy for Europe.

Additionally, GRACE-RI should be based on the plant genetic resources and commitment of a large number of European countries, since the strength of PGR research in Europe can only be maximized through the involvement of the entire region, its numerous and dispersed collections, its diversity of physical, climatic and human environments.

While ECPGR, as an international network, may not have the appropriate status to be a member of GRACE from the start, a Memorandum of Understanding between the GRACE-RI IGA and the ECPGR Steering Committee could be established so that GRACE would rely on the relevant functions and mechanism of ECPGR, rather than creating similar structures from scratch.

4. Proposed GRACE-ERIC governance structure

GRACE-ERIC will be the operational phase of the GRACE-RI and has the proposed governance structure displayed in Figure 6. As with GRACE-RI, the structure is centred around an executive Central Hub with a decision-making body on the one side and National Nodes and Common Services on the operative side. However, several other elements are added to the structure to meet the demands of the higher complexity of the ERIC. The role of ECPGR within GRACE-ERIC, including the level of interaction and cooperation, will be developed during the preparatory

phase and ensure effective integration and implementation of ECPGR initiatives in the Common Services and National Nodes.

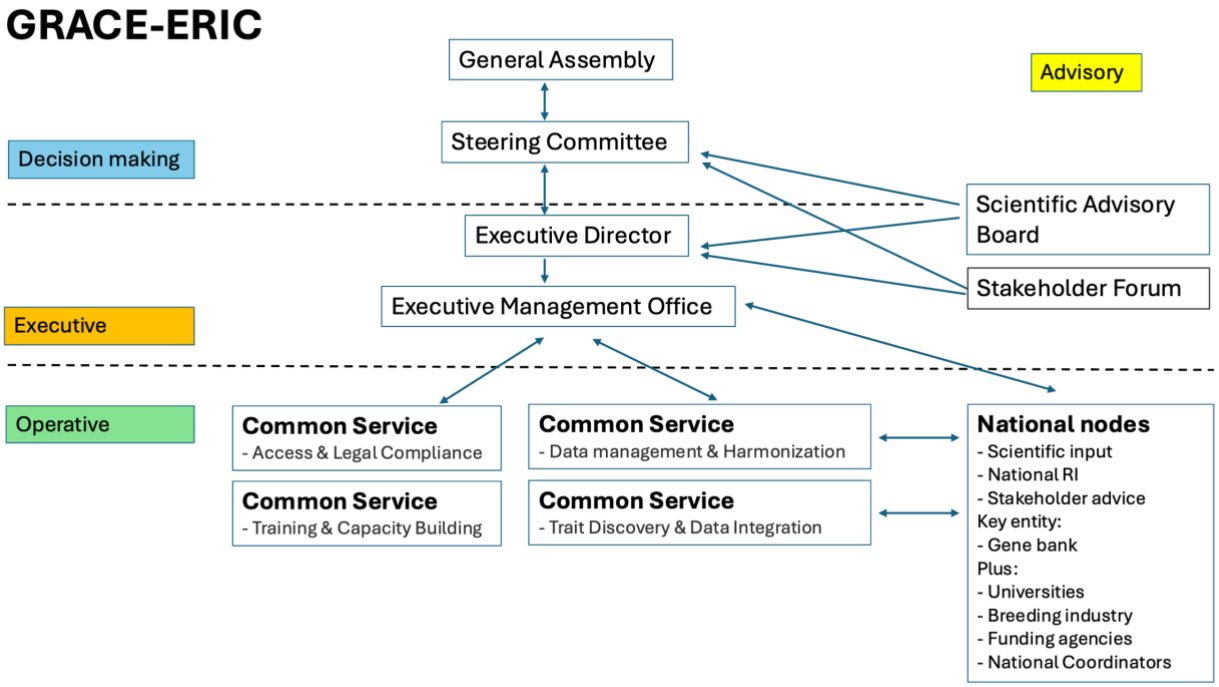

Figure 6. Envisaged GRACE-ERIC governance structure

4.1 Decision-making level

General Assembly (GA)

In the final, envisaged GRACE-ERIC structure the General Assembly will be the central decision-making body. It should be composed of representatives from GRACE-RI-Members, the National Coordinators, and observers from stakeholders that are considering membership. As mentioned previously, dual scientific and ministerial representation in the GA has been strongly recommended by Eric Forum 2, to ensure effective decision making and monitoring of the GRACE-ERIC. Voting rights within the GA will be defined within the rules and regulations developed for the governing bodies of GRACE-ERIC.

Steering Committee

To facilitate support to the executive level, the GA will appoint a Steering Committee (SC). As a minimum, the SC should be comprised of the Coordinators of National Nodes, who also have a seat in the GA, and the coordinators of the Common Services (see 4.3). The SC will play a key role in developing the Work Programme and in supporting its implementation by overseeing the interactions of the key elements of GRACE-ERIC and the National Nodes.

4.2 Executive level

Executive Director

The executive level should be led by an Executive Director, who will act on behalf of the GA and the SC and handles coordinating efforts and activities at the operative level and implementing the decisions made by the GA.

Executive Management Office

The Executive Director should be supported by a Management Office (EMO). The EMO should be in the hosting country and manage the operation of the research infrastructure by employing ability (subject matter experts) in finance, communication, legal matters and project management.

The EMO will be in close contact with the Coordinators of each Common Service activity (see 4.3) and facilitate the necessary support. It will also act as secretariat for the Scientific Advisory Board and the Stakeholder Forum.

Work Programme

The Work Programme is the description of the strategy, planned activities within its Common Services, staffing and funding of GRACE-ERIC. It is developed by the Executive Director with the contribution of the SC and is adopted by the GA.

4.3 Operative level

As with GRACE-RI, the operational level of GRACE-ERIC is divided in two areas: National Nodes and Common Services.

National Nodes

In the operational phase, the structure and activities of the National Node will have further crystallized, and each National Node can be described in more detail.

The National Node will serve as the primary interface between GRACE and the country's research institutions and stakeholders to ensure that researchers and stakeholders in the country can access shared resources, tools, and data while contributing to the European effort.

All member countries of GRACE will be expected to have a National Node. The National Node will set the strategy for its country and ensure links with GRACE as appropriate. The National Nodes will be closely linked by bilateral contractual agreements between the GRACE-ERIC legal entity and the National Node.

Each of the National Nodes will most likely be different or not equally developed. The National Node will be an organizational entity that functions as a national liaison and brings together relevant national stakeholders in the country in a systematic way. In the case of GRACE, the National Node will be a forum centered around plant genetic resources and plant research and sciences. Thus, relevant stakeholders may include, for example, the

national research partners within (the use of) plant genetic resources, such as plant genetic resources institutions e.g. genebanks, genetic reserves and on-farm sites, universities, plant breeders, agricultural stakeholders, national programs and representatives from ministries of agriculture, environment, research and/or science, and others.

The National Node may be a centralized organization linked to a national institution or governmental unit, or it can be a structure within a specific country that acts as a focal point for coordination, communication, and resource sharing in a particular field or domain. In addition, the National Nodes may function as a discussion and advisory forum as well and share data and information both for national and/or international matters.

In summary, a National Node is a country's strategic link into GRACE, enabling synergies, collaboration and resource sharing while serving national interests within plant genetic resources. It is anticipated that the structure and services of National Nodes will vary considerably depending on the member country. However, with the assistance of the SC and EMO common denominators, identified as part of GRACE-RI, they will be further developed and operationalized.

Another major task of the National Nodes is alignment with and contribution to the Common Services (see below).

Common Services

In GRACE-ERIC the ability, services and tools designated to be part of the Common Services will be fully established and become operational and available for its members. They will be coordinated by the Central Hub, which will provide a single access point for users. Implementation of Common Services shall be provided in collaboration with one or more of the National Nodes and clearly distinguishable from other services provided by National Nodes.

GRACE-ERIC builds on existing research on plant genetic resources, and genebank collections, resources, and expertise. GRACE-ERIC will include the following elements:

1) **Standardized High Quality Conservation** to enable excellence in genebank, genetic reserve and on-farm operations and facilitate high quality accessibility of plant genetic resources.
   - Unified Standards
   - Quality Management Guidelines and certification

2) State of the art - Comprehensive Data Platform
   - Generate novel and consolidate existing genotypic, phenotypic, agronomic, and environmental data and metadata in a FAIR-compliant manner
   - Facilitate one-stop-shop access to plant genetic resources and its associated data

3) Plant defense and adaptation

- Integrate data-driven climate forecasts and models to predict adaptation traits and the underlying genes.
- Develop and apply tools for the early discovery of novel biotic and abiotic stresses, their genetic basis, and methods and genotypes for their mitigation

4) Trait discovery and valorization

- Leverage from (cyto)genomic, metabolomic, bioinformatic and (in collaboration with EMPHASIS) phenomic technologies to discover specific traits linked to yield stability, quality, adaptability.
- Develop and implement technologies for the interspecific transfer of such traits and their prebreeding, thus facilitating access by the private sector.

5) **Services for PGR Research and Industry**

- Scientific and Technical Service Portfolio: GRACE will offer scientific and technical services for data generation and analysis, pre-breeding consultation, and compliance with international Treaties
- Foster collaboration with, and between, industry and other stakeholders

6) **Education, Training, and Capacity Building**

- Comprehensive Training Programs: To build expertise in conservation, pre-breeding, and data analysis, GRACE will offer training programs for researchers, students, and plant breeders, covering advanced topics such as conservation techniques, genomic analysis, phenotyping (in collaboration with the EMPHASIS RI), sustainable farming practices, and agroecology
- Outreach to Promote Agrobiodiversity and Sustainability

7) Global Leadership and Cooperation in Plant Genetic Resources

- European Hub for International Collaboration: As a hub for PGR conservation and pre-breeding, GRACE will partner with global organizations, such as the FAO and CGIAR, to promote sustainable plant genetic resources management and support global food security goals.

All resources will be integrated into a distributed network, and will be properly embedded into European scientific, legal and societal frameworks. Specific tasks in the planning of GRACE will comprise the preparation of an inventory of existing resources, achieving interoperability by implementation of common standards and access rules, establishment of incentives for resource providers, and to develop solutions for international exchange of biological samples and data which properly consider the heterogeneity of pertinent national legislation.

4.4 Advisory level

At the advisory level, the board set up during the implementation phase of GRACE-RI will be split up in a Scientific Advisory Board and a Stakeholder Forum with the aim to provide more targeted (scientific) guidance and allow broader representation. Rules and regulations for these advisory bodies will be defined during the preparatory phase.

Scientific Advisory Board

The Scientific Advisory Board consists of independent and experienced scientists or other experts who recommend the GA as well as the Executive Director on the realization of the work programme.

Stakeholder Forum

The Stakeholder Forum consists of representatives from the industry, breeding associations, scientific associations and NGOs.

4.5 ECPGR

The position of ECPGR at this level will be elaborated further as the identified synergies about exchange of knowledge, cooperation and capacity building extend to all levels of GRACE-ERIC. If the ECPGR has not become a member of GRACE, it will be invited to join the GA as an observer and annual coordination meetings between GRACE and ECPGR will be initiated by the Executive Director.

5. GRACE and the ESFRI Roadmap

ESFRI applies the following definition for research infrastructure (RI): "Research infrastructures means facilities that provide resources and services for the research communities to conduct research and foster innovation in their fields, including the associated human resources, major equipment or sets of instruments; knowledge-related facilities such as collections, archives or scientific data infrastructures; computing systems, communication networks and any other infrastructure of a unique nature and open to external users, essential to achieve excellence in R&I; they may, where relevant, be used beyond research, for example for education or public services and they may be single sited, virtual or distributed".

Accordingly, RIs are implemented along different organisational models, including central sources and laboratories for experiments and measurement sessions, coordination and management of geographically distributed observatories or laboratories, remotely accessible resources for computing, data banks, physical sample repositories, surveys and longitudinal studies.

ESFRI adds that a distributed RI like GRACE must show a capability to attribute optimal personnel capacity and coordinating power to the Central Hub, therefore displaying:

1. a high level of integration of the National Nodes such as a unique portal with thorough explanation and guidance towards the common access policy, harmonised and coherent IPR & data policies; adequate central resources; procurement and upgrading of technological infrastructure; human resources policy allowing for staff exchange and secondment.
2. added value compared with the merits of a research cooperation network open to external use. The Central Hub therefore must be a truly international organisation capable of operating with a high level of efficiency and mediating across different scientific cultures.

For projects to be included on the Roadmap, ESFRI distinguishes between a preparatory, implementation and operational phase (see Figure 2). ESFRI defines projects as RIs in their Preparation phase, which have been selected for the excellence of their SCIENTIFIC CASE and IMPLEMENTATION CASE, according to a sound expectation that the Project will reach the Implementation phase within the ten-year term. They are included in the Roadmap in order to underline their strategic importance to the European Research Area (ERA) and to support their timely implementation.

The ESFRI project application for GRACE-RI will combine elements of the preparation and implementation phase. The application will provide:

- proof of **political support** by the lead Member State and other participating countries
- expression of **funding commitment** by the lead Member State and other participating countries
- inter-institutional and multi-lateral **agreement** signed by the core partners formally involved in the consortium.

Documents to be prepared as part of GRACE-RI:

- Letter of Intent
- Statutes / legal framework for GRACE-RI (and if possible, GRACE-ERIC)
- Procedure / rules for the (Interim) General Assembly, incl. Voting rights and procedure
- Contracts with National Nodes
- Working programme

6. Conclusions and next steps

One of the aims of the PRO-GRACE project is to pave the way for an application for GRACE-RI to be included in the 2026 ESFRI Road Map.

Based on extensive mapping of existing structures and sollicitation of input from relevant stakeholders, it is proposed to establish a simple and agile governance structure for the GRACE-RI during the prepraratory and implementation phase. The operational phase will be the GRACE-ERIC, which should contain a more refined description of especially the Common Services and their interaction with the National Nodes.

Governance is proposed to be executed at three levels: decision-making, executive and operative. Parallel to these levels, an advisory level is introduced to secure important input from and alignment with stakeholders that do not play an active role in the decision-making or executive processes.

Next steps for the GRACE-RI will be 1) to prepare a formal application to be included on the 2026 ESFRI Road Map as a Research Infrastructure for Plant Genetic Resources, and 2) to ensure proper alignment between the scope and activitities of GRACE-RI and the ECPGR.

7. References

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[5] ERIC Forum 2 (2024). Recommendations on how to address the challenges related to the ERIC Regulation and its implementation for the relevant WPs of EF2. Work Package 12 - Deliverable 12.1

8. Annexes

Annex 1. Completed PRO-GRACE deliverables on month 23 of the project.

Del. No.	**Deliverable Title**
D1.1	Standards for collecting and displaying phenotypic data and images
D1.2	Standards for collecting and displaying genetic data
D1.3	System for describing, managing and accessing *in situ* conserved populations and interfacing them with EURISCO
D1.4	"Minimum Information About a Genetic resource" standard
D2.1	Minimum quality standards for genebank operations
D2.2	Blueprint for a genebank quality certification system
D4.1	Unified, crop-specific standards and protocols for the evaluation of the phenotypes and agronomic characteristics of PGR
D4.2	Workshop on the evaluation of *in situ* and *ex situ* PGR collections, organized in collaboration with the EMPHASIS RI
D5.1	Gap analysis of the present European RI ecosystem, including an analysis of the possible synergies with existing RIs
D5.2	Identification of the scientific services, stakeholders, promoters, and utilizers of the proposed RI (v1)
D6.3	1st International workshop and training school on Plant Genetic Resources

Annex 2. Report on Governance Structures in European Research Infrastructures

Michael Lyngkjær, NordGen

Introduction:

European Research Infrastructures (RIs) play a crucial role in advancing scientific knowledge, fostering collaboration, and promoting innovation across various disciplines. The most advanced form is an ERIC (European Research Infrastructure Consortium), which is a legal structure that facilitates the establishment and operation of large, Europe-wide research facilities. It allows for international collaboration among member countries to manage and share these research infrastructures.

For PRO-GRACE to evolve into a GRACE ERIC, the first step is to make a proposal that will be evaluated by ESFRI, and if successful the project will be included in the ESFRI Roadmap. Then there will be a development and implementation phase where the project is further refined and prepared for establishment as an ERIC. Finally, a proposal for a GRACE ERIC may be submitted with commitment from at least 3 EU member states, which must be approval by the European Commission and the Council of the European Union.

There are different needs and demands for governance of GRACE through the implementation phase project on the ESFRI Roadmap and later as a GRACE ERIC. Therefore, understanding the governance structures of existing RIs is essential for effective management, decision-making, and coordination of resources in relation to a future GRACE. In this report, we compare the governance structures of six prominent European research infrastructures: ELIXIR, LIFEWATCH ERIC, MIRRI ERIC, EMPHASIS, METROFOOD, and DiSSCo. The three first are established ERICs, the last three are ESFRI-listed projects (ESFRI Roadmap) who are in the preparatory phase of becoming ERICs.

1. ELIXIR (European Life Science Infrastructure for Biological Information):

Legal Status: ELIXIR operates as a distributed infrastructure with a central hub and nodes across Europe. It functions as a consortium and is not a legal entity.

Governance Structure: ELIXIR's governance structure is composed of a Board of Members, a Scientific Advisory Board (SAB), and various committees such as the Training Committee, Industry Advisory Committee, and Interoperability Committee.

Decision Making: Decisions within ELIXIR are typically made through a consensus-based approach involving the Board of Members and relevant stakeholders. The SAB provides strategic guidance and recommendations.

Operational Structure: ELIXIR operates through its Nodes located in various European countries. Each Node has its operational team responsible for day-to-day activities and services.

Funding: ELIXIR receives funding from its member states, the European Union, and other sources such as industry partnerships and research grants.

Membership Criteria: Membership is open to European countries and organizations actively contributing to the infrastructure's mission.

Process of Becoming a member:

- Interested countries or organizations typically express their intention to join ELIXIR through formal communication with the consortium's management.
- Upon expressing interest, negotiations regarding commitments, contributions, and benefits are initiated.
- A formal agreement is established outlining the terms of membership, including financial contributions and participation in activities.

2. LIFEWATCH ERIC (European Research Infrastructure Consortium):

Legal Status: LIFEWATCH ERIC is established as a European Research Infrastructure Consortium (ERIC), granting it legal personality[1] and ensuring its recognition across EU member states.

Governance Structure: The governance structure of LIFEWATCH ERIC comprises a General Assembly, a Statutory Forum, and a Board of Directors. Additionally, expert groups and task forces are established to address specific scientific and operational aspects.

Decision Making: Major decisions, such as the approval of strategic plans and budgets, are made by the General Assembly. The Board of Directors oversees the day-to-day operations and implementation of policies.

Operational Structure: LIFEWATCH ERIC has a Central Coordination Unit (CCU) responsible for coordinating daily operations and services across different thematic groups and member countries.

Funding: Funding sources include contributions from member states, the European Union, and other public and private entities.

Membership Criteria: Membership is open to European countries and organizations with a vested interest in biodiversity and ecosystem research.

Process of Becoming a member:

- Prospective members typically express their interest in joining LIFEWATCH ERIC through formal communication with the management.
- Negotiations regarding membership terms, contributions, and benefits are conducted.
- Upon agreement, the prospective member signs the ERIC Convention, officially becoming a member.

3. MIRRI ERIC (Microbial Resource Research Infrastructure):

Legal Status: MIRRI ERIC is established as an ERIC, like LIFEWATCH ERIC, providing it with legal personality and facilitating cross-border collaboration.

Governance Structure: MIRRI ERIC's governance structure consists of a General Assembly, a Council, and a director. Expert committees may be established to address specific scientific or operational matters.

Decision Making: The General Assembly holds the ultimate decision-making authority within MIRRI ERIC, while the Council provides strategic oversight and guidance. The Director is responsible for the day-to-day management and implementation of activities.

Operational Structure: MIRRI ERIC operates through its distributed network of microbial resource centers. Each center has its operational team managing daily activities related to microbial resource services.

Funding: Funding sources include contributions from member states, the European Union, and international partners.

Membership Criteria: Membership is open to countries and organizations with microbial resources or an interest in microbial research.

Process of Becoming a member:

- Prospective members express their interest in joining MIRRI ERIC and undergo negotiations regarding membership terms and contributions.
- Once terms are agreed upon, the prospective member signs the ERIC Convention, formalizing their membership.

4. EMPHASIS (European Infrastructure for Multi-scale Plant Phenomics and Simulation):

Legal Status: EMPHASIS operates as a distributed infrastructure with legal entities established in participating countries, facilitating regional collaboration.

Governance Structure: The governance of EMPHASIS includes a General Assembly, a Steering Committee, and a Secretariat. Working Groups and Task Forces are established to address specific scientific and operational challenges.

Decision Making: Decision-making processes within EMPHASIS involve consultation and collaboration among members of the General Assembly and Steering Committee. The Secretariat facilitates the implementation of decisions and coordinates activities.

Operational Structure: EMPHASIS operates through its Nodes and Platforms distributed across Europe. Each Node and Platform has its operational team managing plant phenotyping activities and providing services to users.

Funding: Funding is sourced from member states, the European Union, and other public and private entities supporting plant phenomics research.

Membership Criteria: Membership is open to European countries, institutions, and organizations involved in plant phenotyping and related research.

Process of Becoming a member:

- Prospective members express their interest in joining EMPHASIS and engage in negotiations regarding membership terms and contributions.
- Upon agreement, the prospective member signs a formal agreement, becoming a member of EMPHASIS.

5. METROFOOD (Metrology for Food, Nutrition, and Health):

Legal Status: METROFOOD operates as a European Consortium, collaborating with existing organizations rather than establishing a separate legal entity.

Governance Structure: METROFOOD's governance structure comprises a Steering Committee, a Secretariat, and various Working Groups focusing on metrology in food science.

Decision Making: Decisions within METROFOOD are made through consultation by the Steering Committee, with input from Working Groups and relevant stakeholders. The Secretariat supports the coordination and implementation of decisions.

Operational Structure: METROFOOD operates through its member metrology institutes. Each institute has its operational team managing daily activities related to metrology services in food and nutrition.

Funding: Funding is obtained through contributions from member organizations, research grants, and collaborations.

Membership Criteria: Membership is open to organizations involved in metrology for food science and related fields.

Process of Becoming a member:

- Prospective members express their interest in joining METROFOOD and engage in negotiations regarding membership terms and contributions.
- Upon agreement, the prospective member formally joins METROFOOD through a membership agreement.

6. DiSSCo (Distributed System of Scientific Collections):

Legal Status: DiSSCo operates as a distributed research infrastructure, aiming to establish itself as an ERIC in the future to enhance its legal recognition and operational capacity.

Governance Structure: The governance structure of DiSSCo includes a General Assembly, an Executive Board, and a Secretariat. Task Forces and Working Groups are established to address specific scientific and operational challenges.

Decision Making: Major decisions within DiSSCo are made by the General Assembly, with strategic direction provided by the Executive Board. The Secretariat facilitates communication, coordination, and implementation of decisions.

Operational Structure: DiSSCo operates through its network of natural science collections. Each collection institution has its operational team responsible for managing and curating collections, as well as providing access to data and specimens.

Funding: Funding sources include contributions from member states, the European Union, and international partners.

Membership Criteria: Membership is open to countries, institutions, and organizations involved in scientific collections and biodiversity research.

Process of Becoming a member:

- Prospective members express their interest in joining DiSSCo and engage in negotiations regarding membership terms and contributions.
- Upon agreement, the prospective member formally joins DiSSCo through a membership agreement or accession to the ERIC Convention.

7. BBMRI ERIC (Biobanking and Biomolecular Resources Research Infrastructure):

Legal Status: BBMRI ERIC was established as an ERIC, granting it legal personality and recognition across EU member states, supporting cross-border collaborations in biobanking and biomolecular resources.

Governance Structure: BBMRI ERIC's governance structure includes a General Assembly, an Executive Board, a Director General, and multiple advisory bodies such as the Scientific and Ethical Advisory Board (SEAB) and the Stakeholder Forum. The governance model emphasizes ethical and regulatory oversight, given the sensitive nature of biobanking activities.

Decision Making: The General Assembly is the highest decision-making body, overseeing key decisions such as strategic directions, budget approvals, and policies. The Executive Board handles routine operations, while the Director General manages day-to-day activities and the implementation of strategic initiatives.

Operational Structure: BBMRI ERIC operates through National Nodes in member countries, which support and coordinate local biobanking and biomolecular activities. The Central Executive Management Office facilitates alignment across nodes and overseas international collaborations.

Funding: Funding is derived from contributions by member states, the European Union, and project-based grants, ensuring sustainability in operational and research activities. BBMRI ERIC also attracts partnerships with pharmaceutical companies and research institutions, enhancing funding diversity.

Membership Criteria: Membership is open to European countries and organizations contributing to biobanking and biomolecular research. Membership requirements include adhering to ethical standards and data-sharing practices in compliance with European regulations.

Process of Becoming a member:

- Prospective members formally express interest in joining BBMRI ERIC, followed by negotiations on membership terms, obligations, and contributions.
- Upon reaching an agreement, the members sign the ERIC Convention, formalizing their membership and engagement in BBMRI ERIC activities.

Conclusion:

In conclusion, the governance structures of European Research Infrastructures demonstrate substantial diversity, tailored to the distinct needs and objectives of each RI. Whether they operate as ERICs, consortia, or distributed infrastructures, these RIs share a collective commitment to enhancing research collaboration, innovation, and scientific advancement across Europe.

Each RI's governance model provides essential lessons on structuring decision-making bodies, operational oversight, and membership processes. For instance, ELIXIR and BBMRI ERIC exemplify how distributed infrastructures can be governed by central coordination units, while LIFEWATCH and MIRRI highlight the advantages of centralized ERIC models that facilitate member state collaboration. Each approach underscores the importance of flexible yet robust governance structures to support operational efficiency and strategic alignment across diverse scientific fields.

For the GRACE project, understanding these varied governance structures will provide critical insights into forming an effective governance model during its ESFRI Roadmap implementation phase and as a future ERIC. The project can draw from successful models like BBMRI ERIC's regulatory oversight mechanisms or LIFEWATCH's task-specific expert groups. By blending these governance strategies, GRACE can create a structure that supports its long-term vision of collaboration, innovation, and sustainability as a pan-European research infrastructure.

Conclusion:

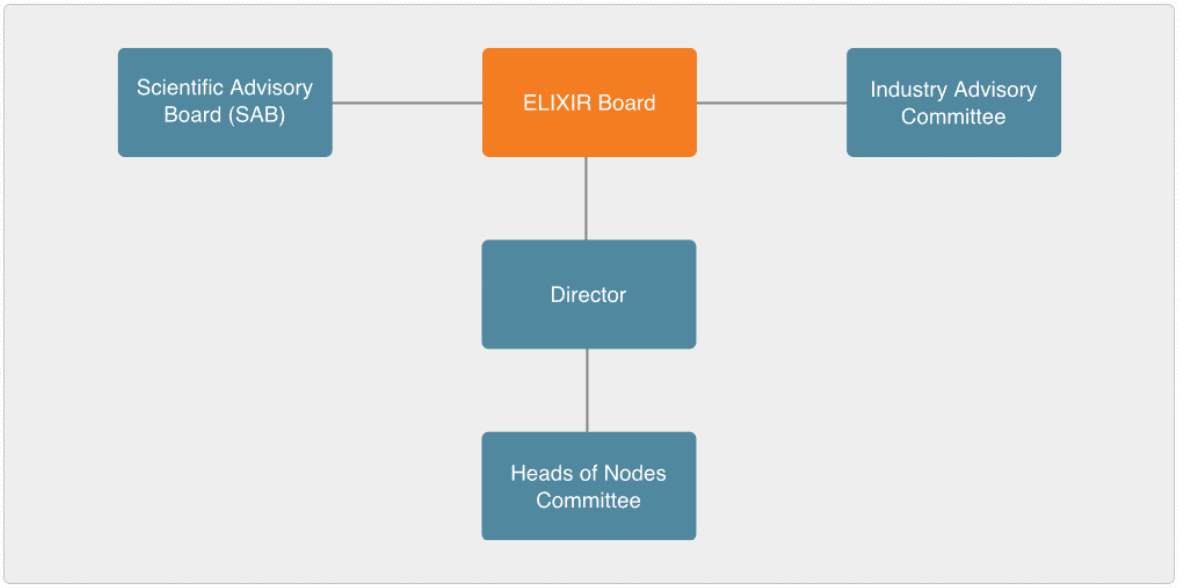
In conclusion, the governance structures of the RIs are diverse, reflecting the unique needs, objectives, and operational models of each RI. Whether operating as ERICs, consortia, or distributed infrastructures, these RIs are united in their commitment to facilitating collaboration, promoting innovation, and advancing scientific research across Europe and beyond. Understanding the governance structures of these Ris is a good starting point for discussion of how we envision governance of GRACE during the implementation phase as an ESFRI Roadmap project and later as a GRACE ERIC.

Appendix 1: Definition of Legal personality

1. Legal personality: Granting legal personality to an entity means recognizing it as a legal entity distinct from its members or founders, with rights and obligations like those of a natural person under the law. This legal recognition allows the entity to enter contracts, own property, sue and be sued, and perform other legal acts in its own name, separate from the individuals or organizations that compose it. In the context of European Research Infrastructures like ERICs (European Research Infrastructure Consortia), granting legal personality means establishing them as legal entities under European law. This enables them to operate independently, enter into agreements, receive funding, and perform other legal functions necessary for their operation. It provides them with a clear legal status, facilitating their governance, operations, and interactions with other entities, including member states, funding agencies, and research institutions.

Appendix 2: Organization/governance diagrams of some of the RIs

https://elixir-europe.org/about-us/governance



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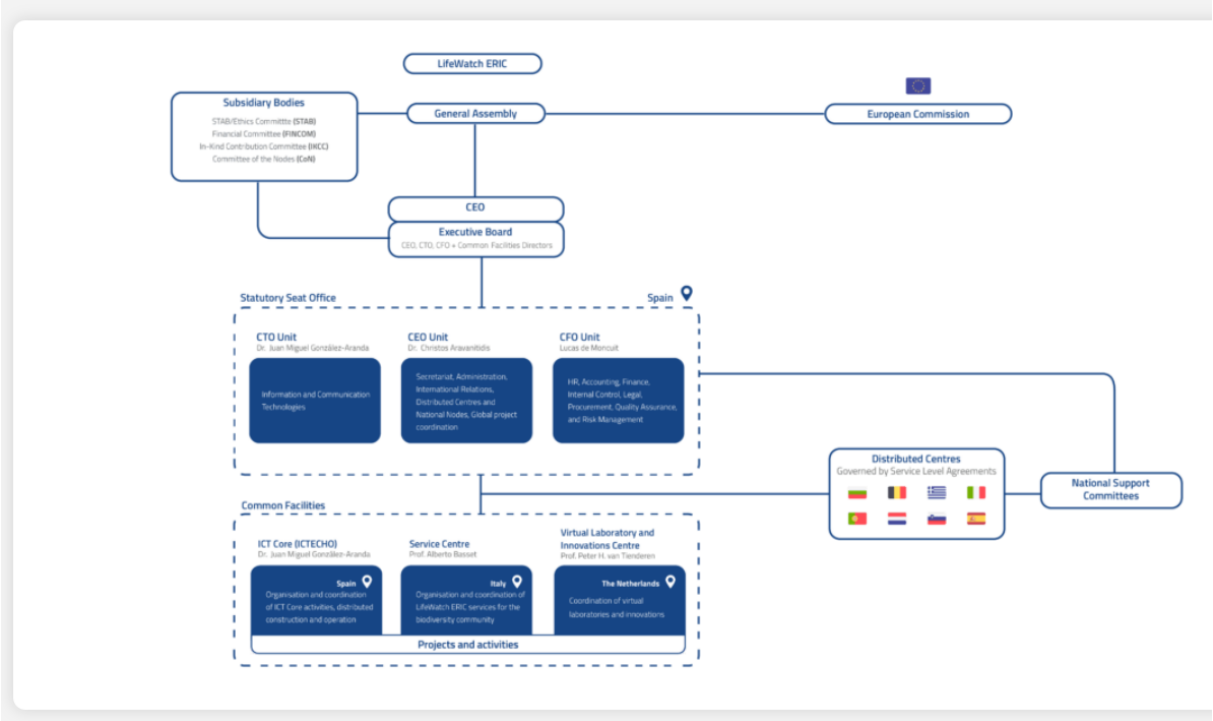

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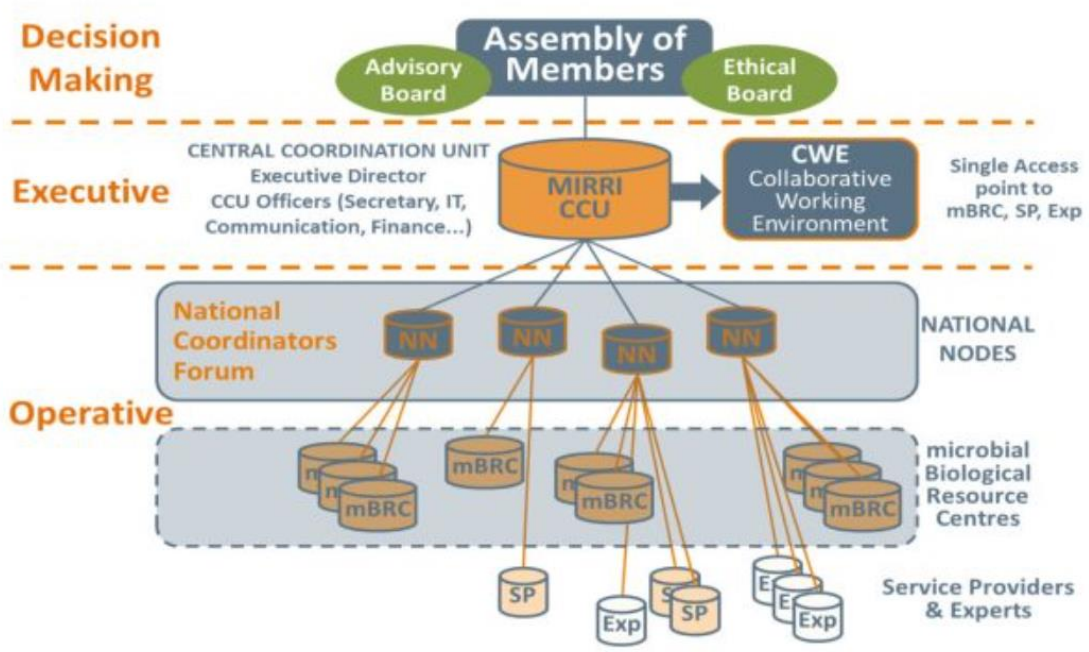

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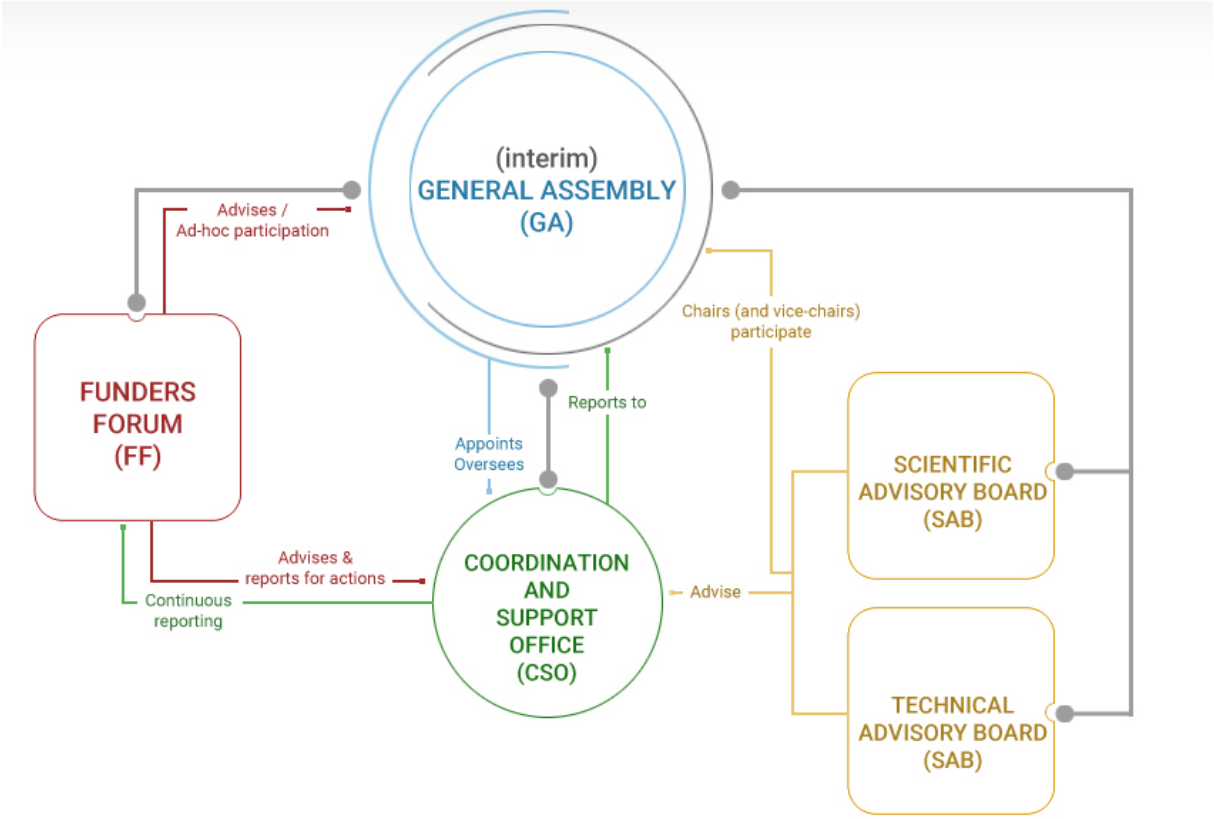


Annex 3. Survey for Deliverables on Governance and Financial plan – Analysis, conclusions and recommendations

Jens Weibull

To the reader

Firstly, despite the original title of the questionnaire (see cover page) questions concerning financial matters – such as a financial plan – were not formulated and are therefore not dealt with in this report.

Secondly, it should be noted that input from both the plant breeding industry/seed sector and civil society was very limited. This observation is addressed under Recommendation 7 (below).

Recommendations

1. **The legal entity** of a future GRACE-RI is recommended to take the form of a Non-profit association.
2. The questionnaire resulted in a firm basis concerning the governance of a future GRACE RI, about two central aspects: the importance of democratic influence — through whatever governance structure (either Steering Committee or General Assembly) — and a participatory-driven infrastructure (Working Groups). **The PRO-GRACE project management may consider setting up a dedicated task force to elaborate this issue further.**
3. While setting up **a governance structure involving National nodes is** seen as vital, and therefore **recommended**, their future responsibilities and activities remains to be developed.
4. **The establishment of a Secretariat is** seen desirable by those responding and, therefore, **recommended**. Such a central component is deemed vital and in line with similar research infrastructures. The mandate and tasks of a future Secretariat must be developed and specified.
5. **Recommended service areas** of a future GRACE-RI **include Quality Management Systems, Data storage and availability, Capacity building and dissemination, and Phenotyping (in collaboration with EMPHASIS)**.
6. **Transparency and a well-developed system for** internal (multiple media channels) and external **communication is strongly recommended**.
7. ECPGR is conclusively recognized an important partner and a tentative part of a future Coordination Office. However, any such collaboration or task-sharing is likely to increase workload and is expected to require resources. **While developing the GRACE-RI concept further, the project management is recommended to**

discuss with the Executive Committee of ECPGR aiming at deciding on the best possible, and cost-effective, setup.

8. **It is further recommended to recognize ECPGR a suitable, and complementary, partner of a future GRACE RI on PGR evaluation.** Care must be taken, however, not to duplicate work of others (c.f. EMPHASIS - the European Infrastructure for Plant Phenotyping).

9. Input from the important plant breeding or seed sector was negligible or indeed void, including from civil society organizations. **The PRO-GRACE project management is recommended to increase their efforts during the rest of the project to capture the views and needs of these stakeholder groups.**

Introduction

The questionnaire was prepared within work package (WP) 5 of the EU-funded project PRO-GRACE "Promoting a Plant Genetic Resources Community for Europe" (https://www.grace-ri.eu/pro-grace), aiming at developing the concept of a novel European Research Infrastructure, the GRACE-RI. The aim of the project is to address the current challenges of conservation and
sustainable use of plant genetic resources in Europe.

The questionnaire focussed on aspects of the envisaged research infrastructure that relate to anticipated beneficiaries, services, financing and governance. Having reached between 150 and 200 recipients (an exact figure cannot be obtained[1]), altogether 76 replies equal a response frequency between 38 and 51%. Response frequencies for each individual question are given within brackets (x%) following the title.

This report is being divided into the following subsections (in accordance with the structure of the questionnaire):

- Contributing stakeholders
- Status of PGR in Europe (i.e. general views of the need of a new Research Infrastructure, RI)
- Main services of GRACE-RI
- Main stakeholders
- Governance structure
- Governance and management processes

Depending on the type of question — simple choice, multiple choice, free text — the assembled responses have been analyzed accordingly. The ANNEX (p. 8-18 of this report) contains a series of graphs for quicker overview. It should be noted that a few minor edits have occasionally been made to improve language; these are indicated by brackets [].

Contributing stakeholders

Out of the 76 respondents more than 80% (61 in total) represented two categories, namely Genetic resources centre/genebank and Public research centre/University (graph 4). A handful — 9% — represented PGR conservation and research networks. One seed company replied. Several stakeholders were missing including, among others, farmers, *in situ* conservation managers and private service providers, and civil society organizations.

[1] In total 94 stakeholders were addressed within Europe incl. the CGIAR network (unknown number).

Conclusion: The relatively low response frequency is considered to have yielded a biased result. It is unfortunate that little input was obtained from the plant breeding sector — a community that is dependent upon both genetic resources and research data — and the civil society.

Status of PGR in Europe

A total of 67% acknowledged a need for a new or strengthened PGR research infrastructure in Europe (graph 10). One out of five (21%) did not express any view and 9% (7 respondents) did not see that need. Among these latter, the common view was it is more important to strengthen already existing infrastructures, and ensuring their sustainability, rather than building new ones.

Conclusion: The questionnaire revealed quite a dedicated support for working towards a strengthened — or even new — research infrastructure for PGR in Europe. However, it is yet somewhat surprising that one out of three is not sure or even against the idea. A reason could be a fear of competition, resulting perhaps in diminishing, financial resources with already existing activities.

Main services of GRACE-RI

The ranking of identified **services** that an anticipated GRACE-RI is expected to deliver turned out to be surprisingly similar independent of type of service (graph 12). Overall, the services receiving the highest ranking (*Very important* and *Important*) were in following order:

- Quality management systems for PGR conservation (90,8%)
- Data storage and availability (89,5%)
- Capacity building and dissemination (86,8%)
- ing (e.g. collaboration, infrastructure access, standard protocols) (85,5%)

In fact, no respondent regarded *Data storage and availability* as being *Not very important*.

The lowest ranking overall was given to *Policy and regulatory aspects* (71,1%).

Conclusion: Judging from the results, one may conclude that proponents of a GRACE-RI primarily see its future values in (a) standardizing and harmonizing PGR conservation and (b) a common approach in storing, handling and sharing data. One might also possibly conclude that the question of dealing with policy and regulatory matters is best left to responsible entities at national or EU level.

A closer look at the **activities** currently being executed by the respondents and/or their institutes reveals a broad palette (graph 14). Given the participating stakeholders, as seen in graph 4, most of the reported

activities fall under what would be considered as ordinary genebank management. It can therefore be expected that the expected services (see above) will closely coincide with on-going institutional activities. Furthermore, activities such as plant breeding and *in situ* conservation — often carried out by nature conservation authorities — are missing.

Main stakeholders

The question about potential **beneficiaries** of a tentative new GRACE-RI gave a very clear result (graph 15), again associated to the professional backgrounds of the respondents. Top ranked was Genetic resources centres/genebanks (29,3%) followed by Public research centres (23,1%) and PGR conservation and research networks (16,0%). Lowest rank was given to NGOs and Other private service providers (both 0,9%).

Rather surprisingly, neither Farmers nor Seed companies were seen particularly obvious beneficiaries. With the GRACE-RI envisaged as an enforced infrastructure" to address the current challenges of conservation and sustainable use of plant genetic resources in Europe", the plant breeding and seed sector would seem a highly relevant stakeholder community.

The general view of **providers** closely follows that of beneficiaries (graph 17). Together, Genetic resources centres/genebanks and Public research centres sum up to 52,7% of the" votes", with PGR conservation and research networks in third place with 14,5%. As expected, Other private service providers and Other research infrastructures increase somewhat given their particular mandate.

Conclusion: As mentioned above under Contributing stakeholders, the biased representation is likely mirrored in the output of expected beneficiaries and providers.

Governance structure

While a clear majority of the respondents — 82,9% — favoured the alternative *Non-profit association* as **legal entity**, it is obvious that views about governance is somewhat of a challenge. This is seen in the various comments delivered under 'Other' (graph 19).

Whether the new **infrastructure** is intended to be **centralized or decentralized** appears to be an open question, at least judging from the replies (graph 21) and the comments submitted under 'Other'.

Concerning the need for certain **key organizational structures**, the questionnaire resulted in a strong support of establishing Working groups and/or an Advisory board (graph 23). All other alternatives received similar moderate support except that of Directors which was ranked lowest. Comments given under 'Other' show that the suggested list of key structures was not exhaustive.

Of the 53% of the respondents that preferred the establishment of a **General Assembly**, the view was divided on how the Assembly should be composed (graph 25). Almost half of the respondents chose not to express their views. It was quite clear, however, that the primary role of such an assembly should be approving the overall strategic direction of the project (I.e. the RI).

The views concerning the legal structure of tentative **National Nodes** was equally divergent (graph 27), although with a clear preference for National research infrastructure (graph 29). Again, a large number of respondents preferred not to answer. The activities and responsibilities of such National Nodes spanned across the whole field, but preferentially *Promoting national research participation*, *Implementing decisions made by the General Assembly*, and *Providing technical ability* (graph 30).

Of those that favoured the establishment of a **Steering Committee**, a majority underlined its role for guidance and direction of the GRACE RI (graph 32). Again, almost 40% did not reply to this question. Among those responding, the views regarding the size and composition of a Steering Committee diverged although a recurrent reply read out as" one representative per country". Notwithstanding the foregoing, the number of members ranged greatly.

The views of what a tentative **Executive Board** should perform spread evenly across the given alternatives (graph 33), although with a slight preference for Implementing decisions made by the *General Assembly* and *Developing and managing the project budget*.

The appointment as **Director** was considered primarily to contain the task as Scientific Director, but also as Chair to a slightly lesser extent (graph 34). Again, response frequency was very low (26%).

On the question of appointing **leaderships**, a majority of those responding preferred *Election by consortium members* (graph 35). Here it should be noted, however, that 41% of delivered replies did not express any opinion.

Essential functions of an envisaged **Secretariat** are thought to comprise all of the suggested alternatives, but in particular *Providing administrative and logistical support to the consortium* (graph 36).

Similarly, the essential functions of tentative **Working groups** or an **Advisory Board** are thought to comprise all suggested alternatives, though in particular *Technical and scientific work within the remit of GRACE* (graph 37).

Regarding the expected role of ECPGR — with its well-established structure including key organizational components such as a Steering Committee, a Secretariat and Working groups — the outcome of the questionnaire is less precise (graph 38). It is equally suggested that the network could be part of a Coordination office, an Advisory Board or a Steering committee but slightly less so of an Executive Board. Comments

included, among others, a request for clarification of the respective scope of ECPGR and proposed RI, or even why GRACE was considered necessary.

Conclusion: When moving into the matters of governance and ownership, the picture becomes less clear. This is not surprising. These are not matters that either a genebank manager or a researcher reflects upon daily. Moreover, only two (2) respondents stated that they represented a stakeholder type equivalent to that of Policymaker, legislator, policy expert, an occupation that is expected to contemplate such questions on a regular basis.

While a non-profit organization was preferred by the majority as a future legal entity, it was clear that a considerable number are still uncertain about the pros and cons of the legal status of the future RI. This also entails the organizational flexibility. On the issue of key organizational structures, it becomes evident that the respondents strongly favour those that allow broad participation (i.e. working groups, steering committee, general assembly) to those of individual executive power (i.e. directors).

Trying to capture the common views of the roles of different key organization components seemed a difficult enterprise. Response frequencies were moderate and varied from 26% (leadership positions) to 64% (responsibilities of the Executive Board). Respondents appeared to have a clearer vision of the role of the anticipated working groups (78%), which is to be expected (see above).

Governance and management processes of GRACE-RI

On **decision making**, the respondents were practically split in two between that of consensus-based (45%) and of a majority/supermajority voting system (50%). (graph 39)

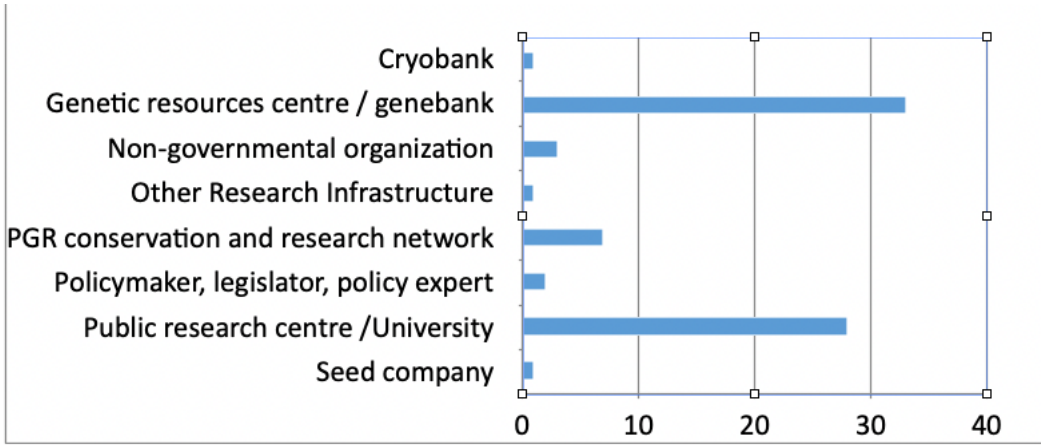
While a clear majority prefers (84%) regular reporting as the means to ensure **transparency and accountability**, open access to meeting minutes is also favoured. Slightly less than half of those responding (48%) would like to see a dedicated website. Comments included the need for active participation, and a request for saving money. (graph 40)

Concerning **communication and information flow** within the anticipated consortium, again regular reporting, a dedicated website and open access principles was preferred (in this order). Comments included, among others, a website with different levels of access rights and a news alerting system (cf. RSS feed). (graph 41)

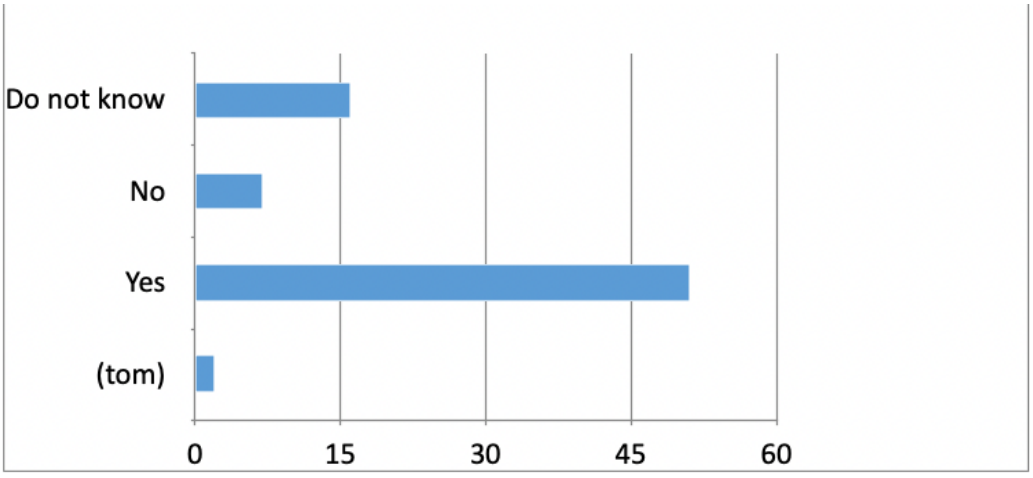
Suggestions submitted as free text in response to questions 42-44 are found on pp. 17-18 in the following Annex.

Annex

4. Stakeholder type (100%)



10. Do you think that there is a need for a new / strengthened PGR research infrastructure in Europe? (97%)



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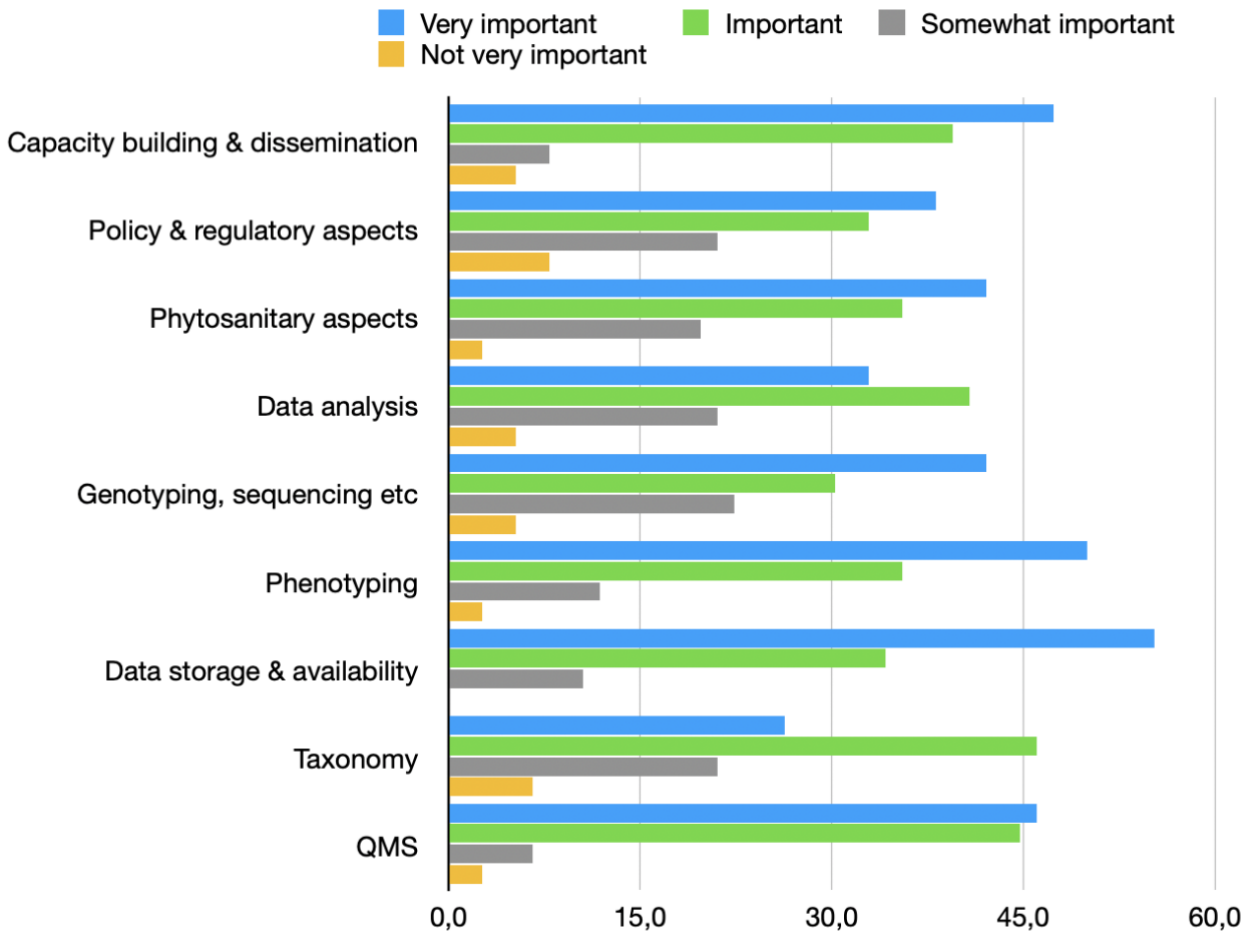
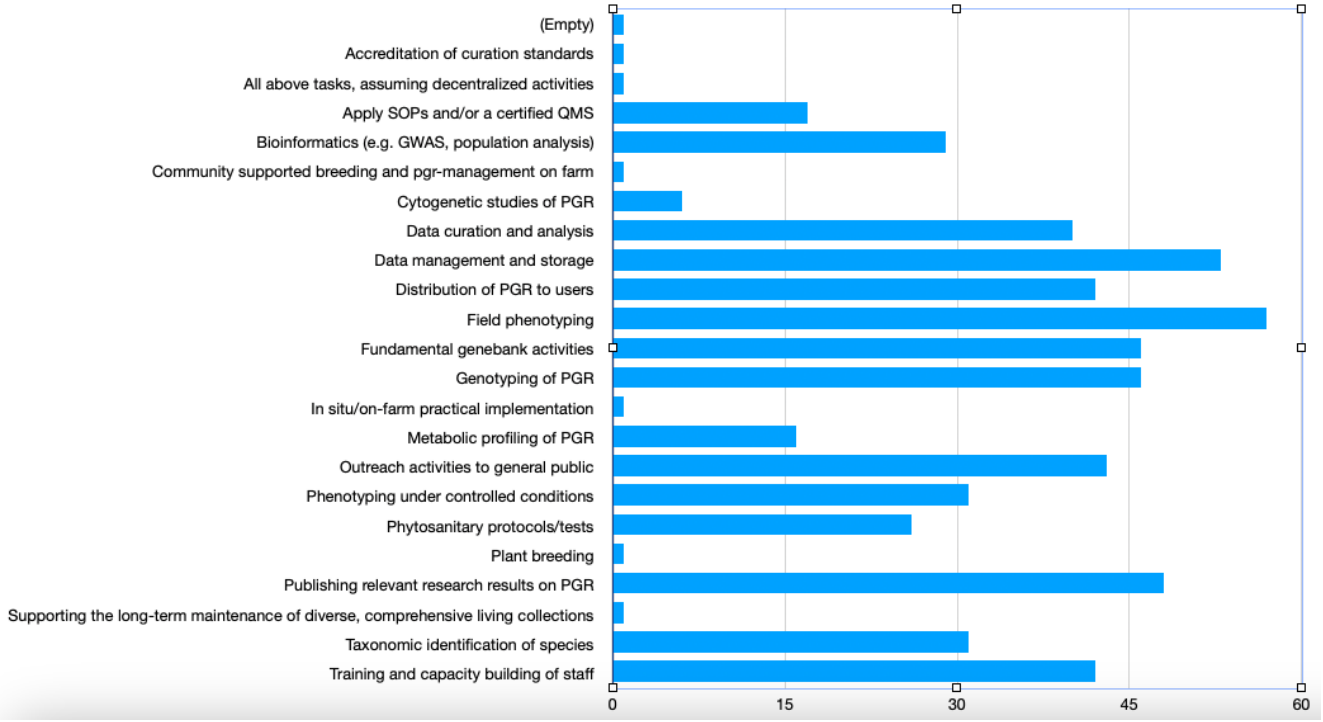
12. Which of the identified services do you think would be the most central for the proposed research



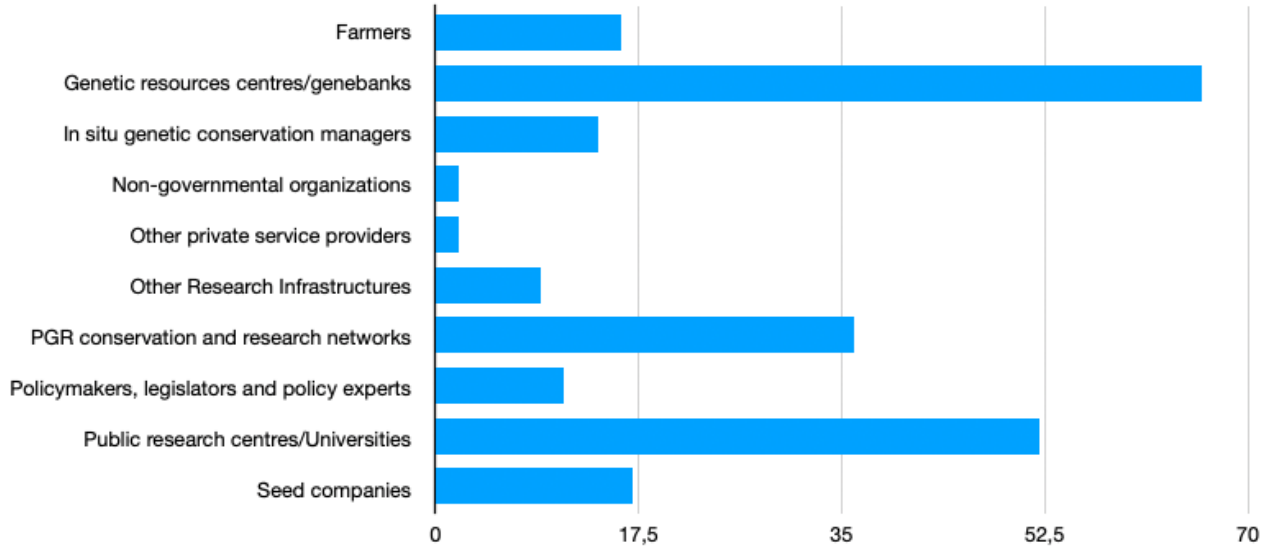
infrastructure? Scale on x-axis in percentage of respondents. (100%)

14. GRACE-RI will provide potential services through a network of providers and users. Which of the following



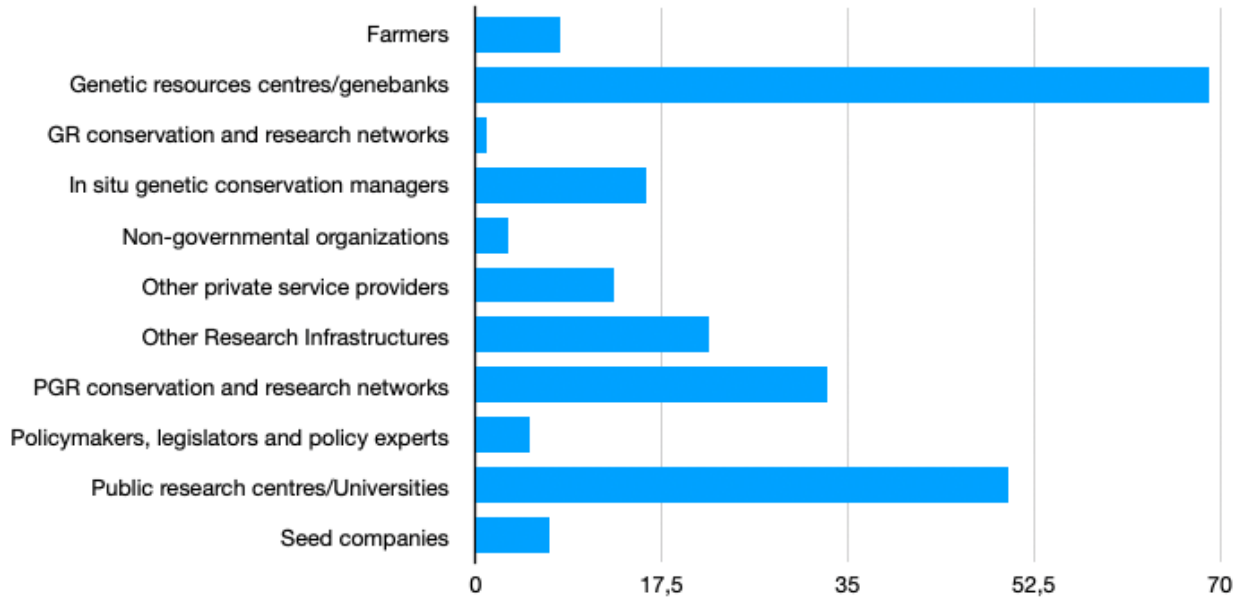
activities does your institute currently undertake? (99%)

15. Which of the identified stakeholder groups do you think would be the main beneficiaries/users of the



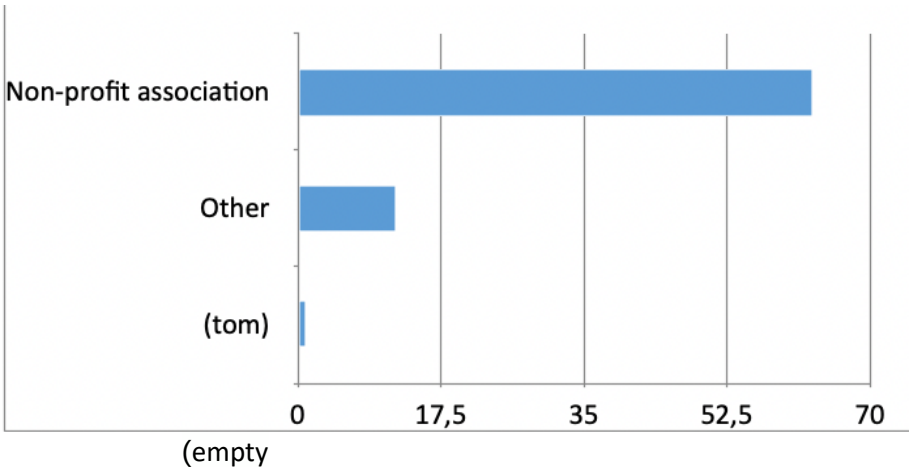
proposed research infrastructure? (100%)

17. Which of the stakeholder groups do you think would be the main providers of the proposed research



infrastructure? (100%)

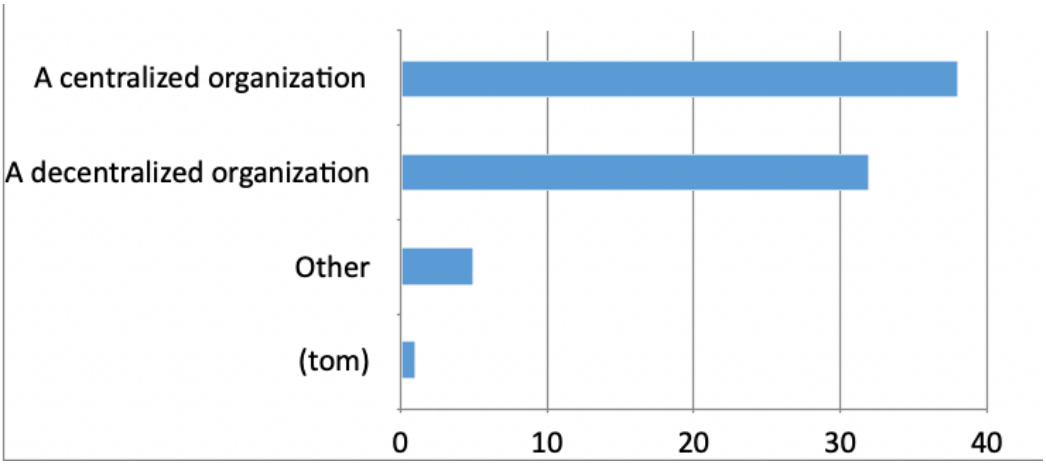
19. In your opinion, what should be the legal entity of a future GRACE RI? (99%)



—> **Other:** It should be a governmental institution; [A] public research institute with partial self-financing through services (seed distribution, information distribution) and partial financing with European funds; ERIC (x3); I don't know the answer - and I don't know the specific implications; I do not understand the

question; I have no clear idea of that yet; Governmental institutes from each country; Research centre; Intergovernmental research organization; Centrally controlled by the EU;

21. How flexible should the governance structure be within the consortium? (99%)



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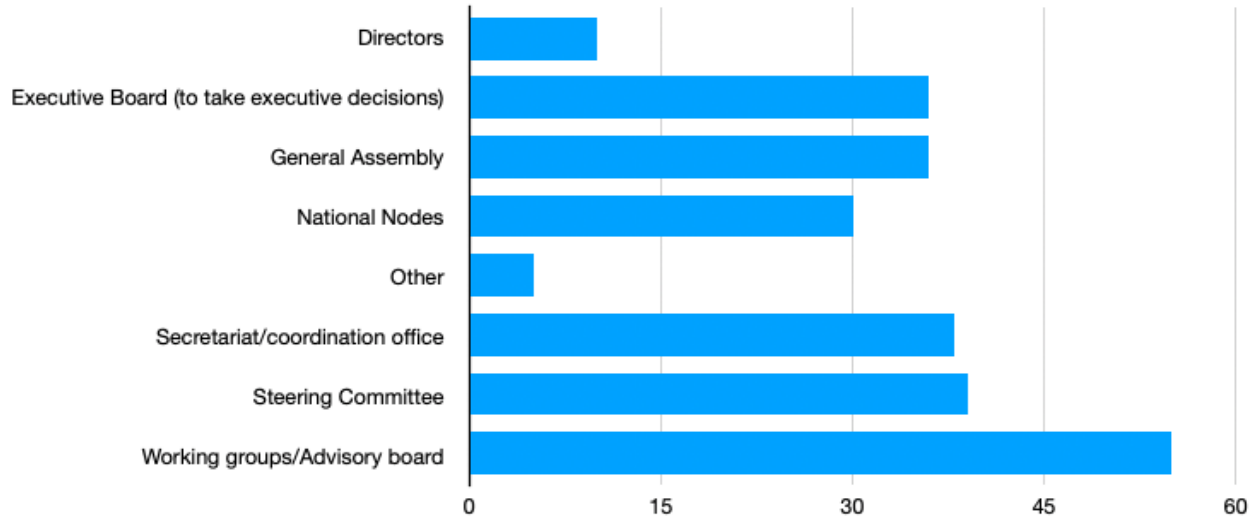
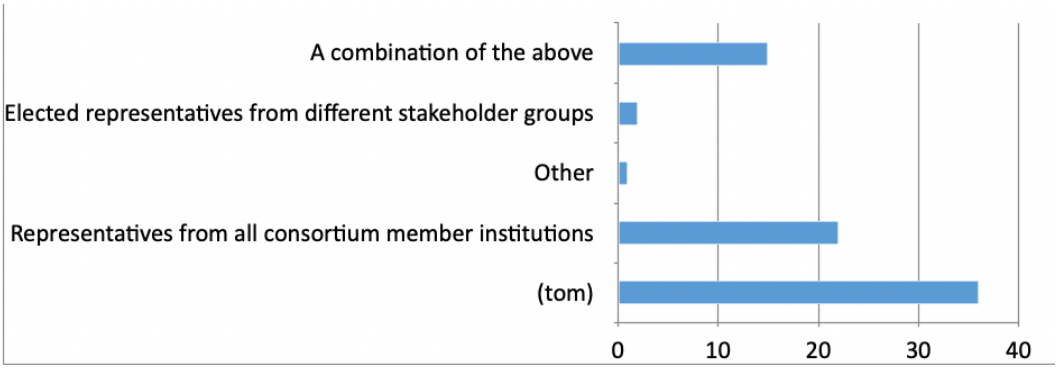
—> **Other:** Centralized structure and lead, division of labour in tasks; Both: a central coordination unit and a decentralized development of services; The governance structure depends on the financing source. Coordination should be central but decision-making structure should be divided and democratic; [Need for] a centralized governance for the RI, but national providers/nodes have their own governance; I am not sure I know the advantages of one over the other, but I would guess there need to be [an] element of both.

23. What key organizational structure(s) do you prefer to be established within the consortium? (99%)



—> **Other:** Independent International Scientific Advisory Board; Industry Advisory Committee; It should be a network of networks - not national representatives that have decisive power; [The RI] may need technical committees for different topics; Curators; Care should be taken to be fully integrated with the existing ECPGR structure;

25. If you selected" General Assembly" above, how should the General Assembly be composed? (53%)



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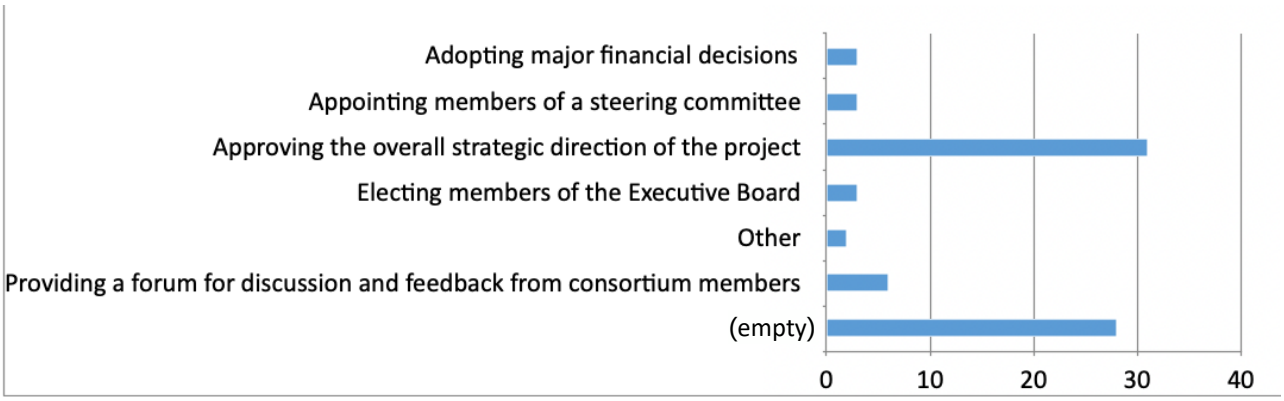
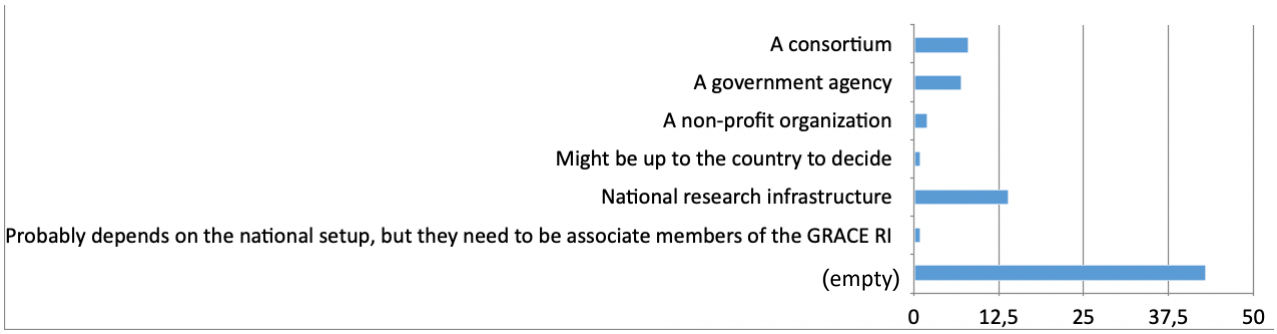
—> **Other:** Stakeholder groups should be established networks with a clear governance structure; another choice than General Assembly.

27. What would be the primary role(s) of the General Assembly? (63%)



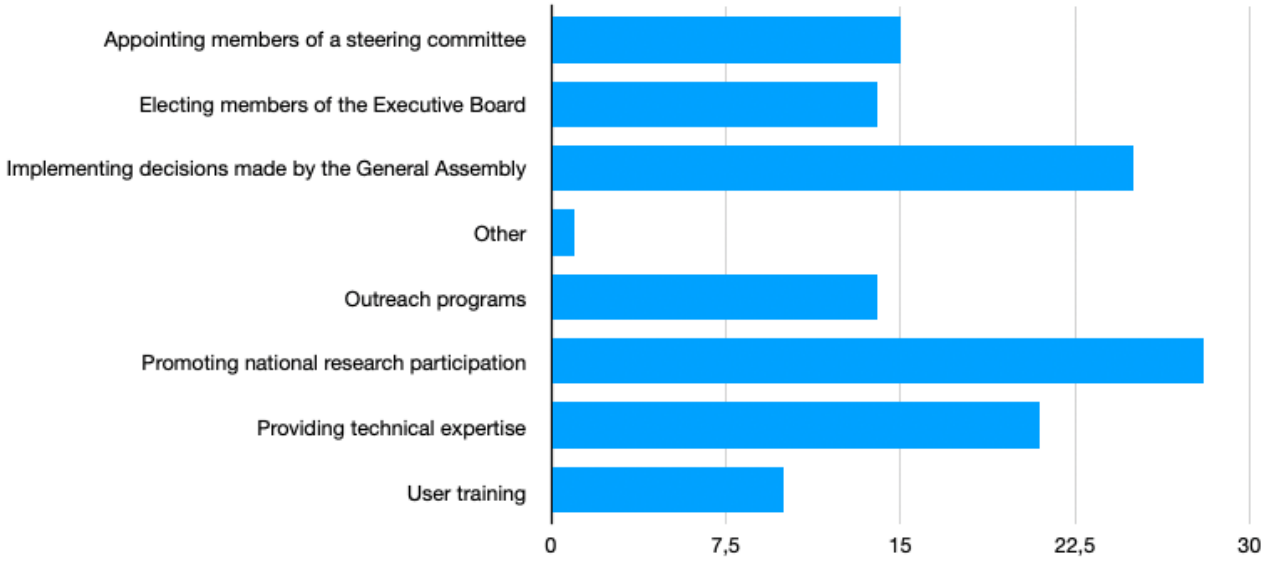
—> Other: All first four options; the Assembly cannot have only one role - overall strategy is connected to a financial frame; another choice than General Assembly.

29. If you selected" National Nodes" above, what would be the legal structure of the National Nodes,



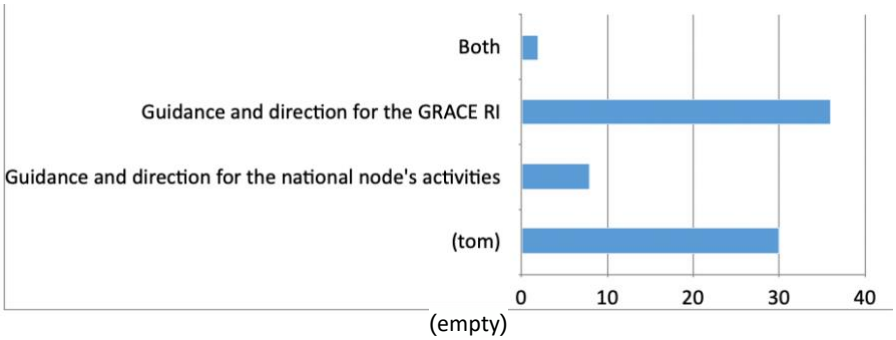
considering factors like operational flexibility and access to funding? (43%)

30. What activities and responsibilities should be associated with the National Nodes? (50%)

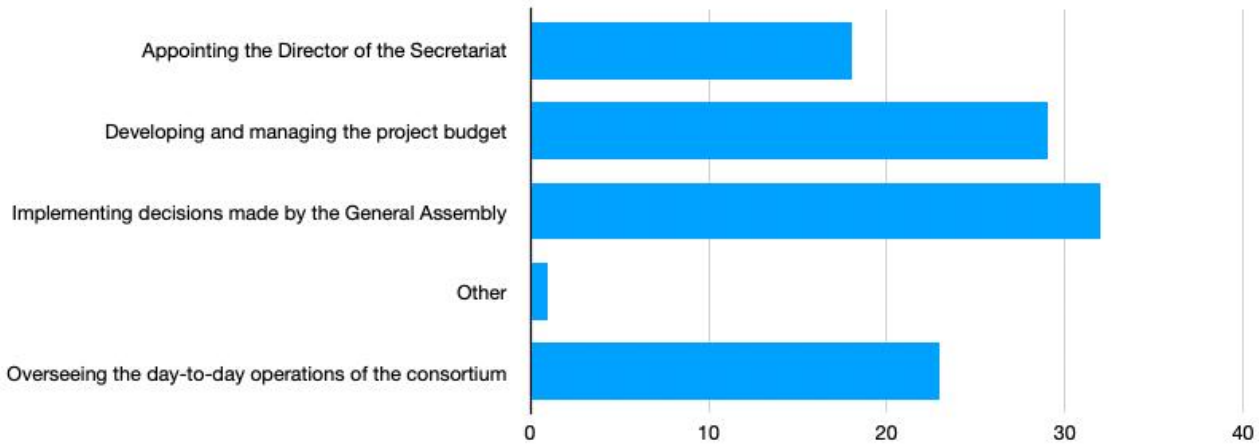


—> Other: Observe the process - refer to the governmental departments.

32. What key responsibilities should the Steering Committee hold? (61%)

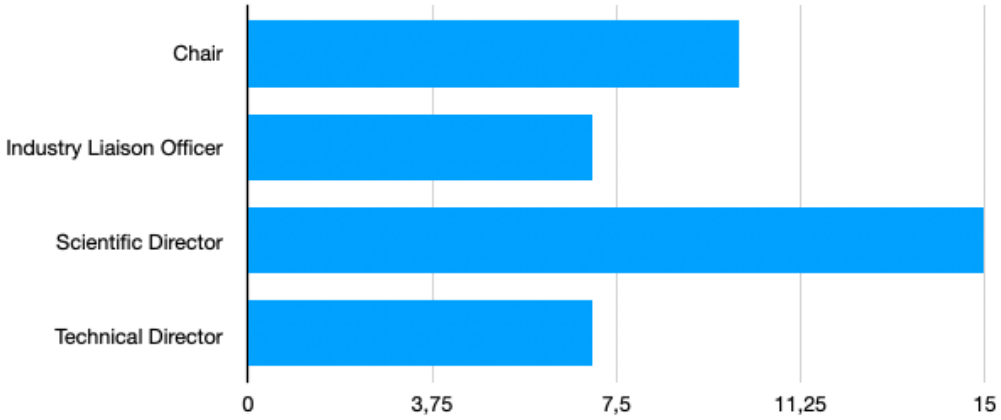


33. What key responsibilities should the Executive Board hold? (64%)

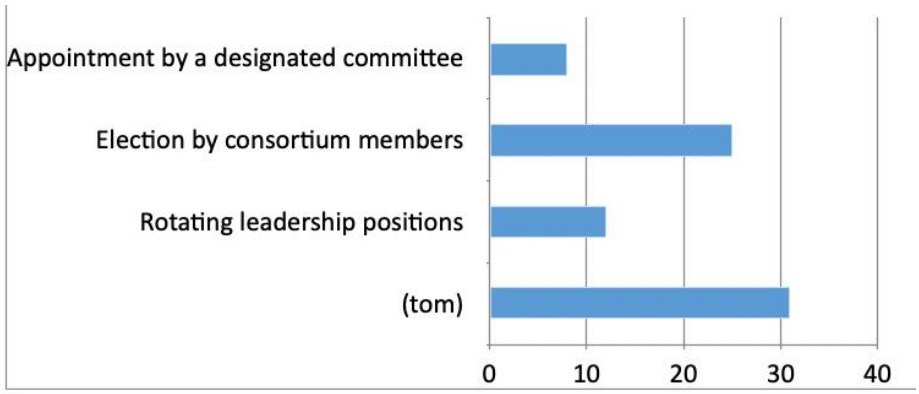


—> Other: [not specified]

34. If you selected "Directors" above, which leadership positions do you consider essential for the consortium? (26%)

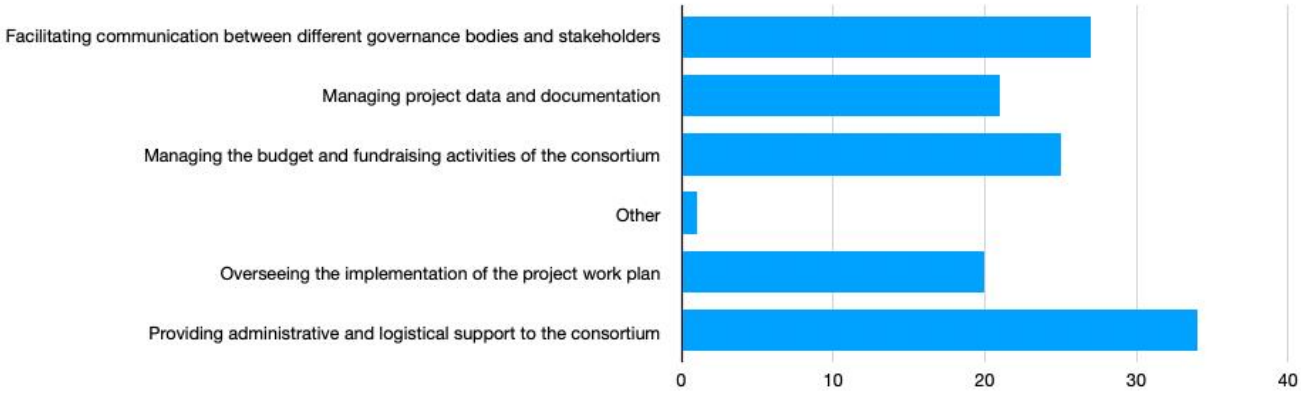


35. How should leadership roles be selected? (59%)



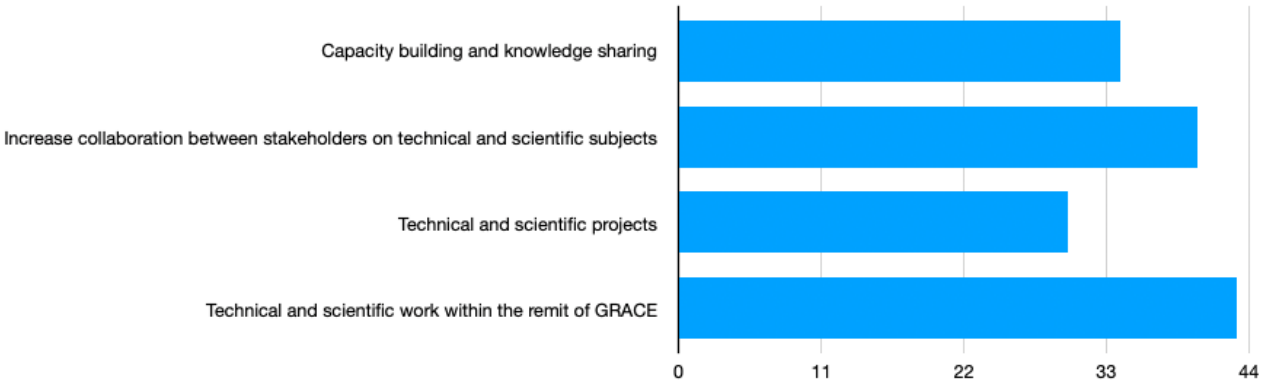
(empty)

36. If you selected "Secretariat" above, what are the essential functions of the Secretariat? (51%)

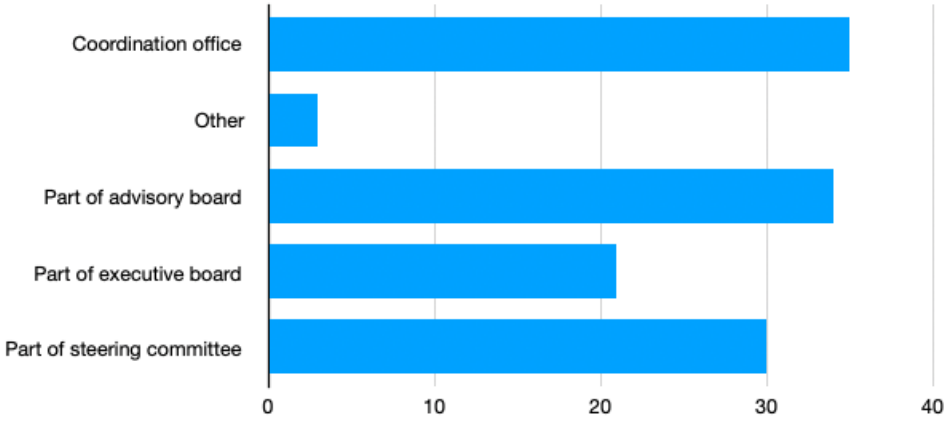


—> Other: Facilitating communication between countries, e.g. translation and arranging large conferences.

37. If you selected "Working groups/Advisory Board" above, what are the essential functions of those? (78%)

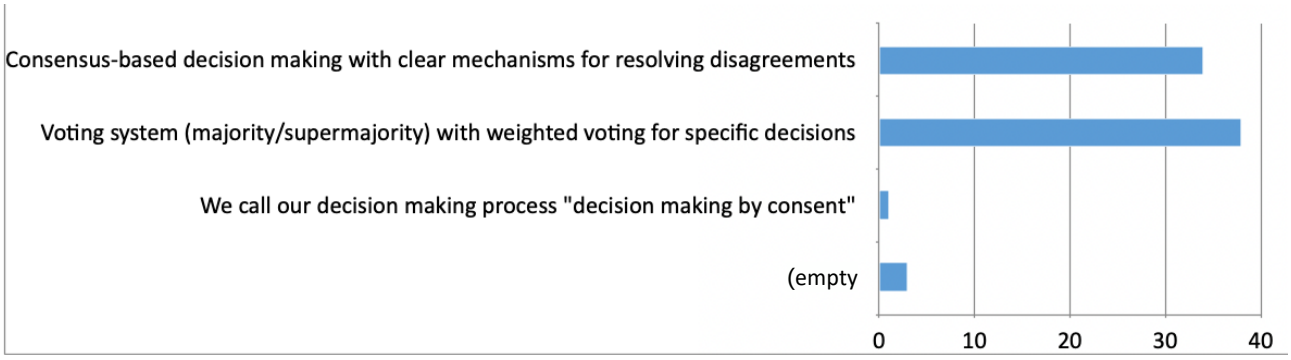


38. The European Cooperative Programme on Plant Genetic Resources (ECPGR) is currently guided by a Steering Committee of National Coordinators, operates through Working Groups, and is coordinated by a Secretariat. What role should ECPGR play in the governance of GRACE? (99%)

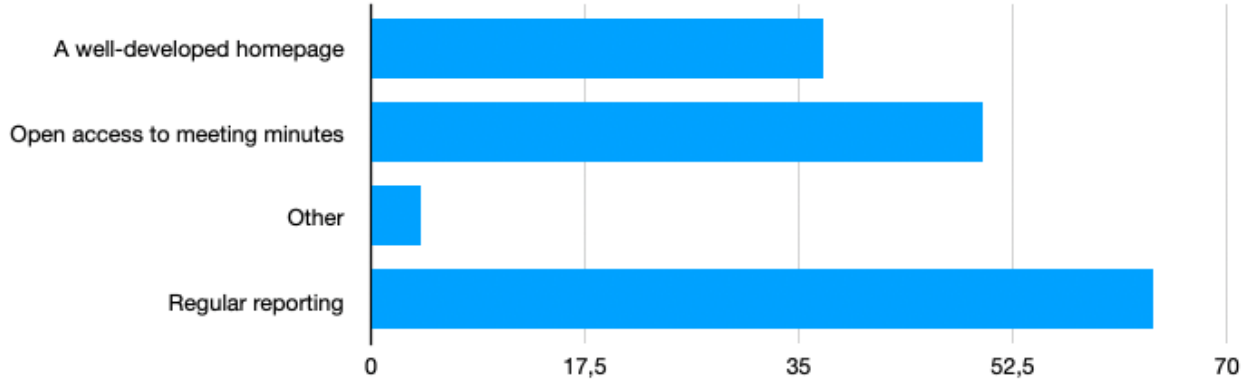


—> **Other**: One of the nodes; Not sure why GRACE is necessary; Need clarified proposals on scope of ECPGR and proposed research infrastructure.

39. What decision-making processes would ensure effective and transparent governance within the consortium, considering the multi-disciplinary nature of the project? (96%)



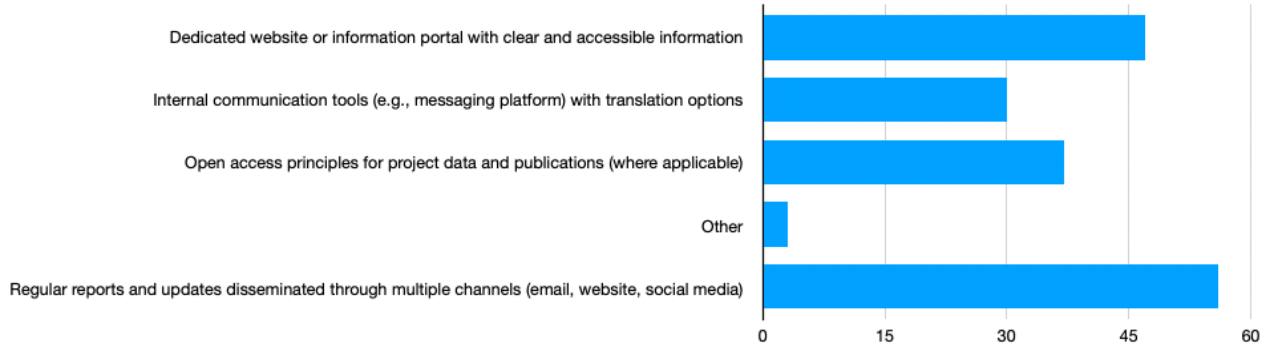
40. What mechanisms do you think are important for ensuring transparency and accountability within the



consortium? (99%)

—> **Other:** Sharing vision and frequent participation - interaction; Spending only little money; [A] homepage would be favourable, but a coordination platform/portal for the project could do as well; Open access funding allocation.

41. How can we ensure clear communication and information flow between different levels of the consortium (e.g., consortium members, working groups, project teams, governing body)? (99%)



—> **Other:** General assemblies; Point two should be linked with an alerting system that tells the stakeholders that something new has been uploaded to the portal; Website with different types of access rights.

42. Do you have any additional suggestions for specific procedures or processes that would promote effective communication and collaboration within the consortium?

- Co-development by the different bodies of handbooks of their operations that describe their roles and main procedures.
- Decision plan
- Regular, short updates from every contributor circulated to every contributor, e.g. quarterly.
- Personal contact during meetings
- Support for activities that facilitate both online and in-person interaction.
- Periodical virtual and/or in-presence roundtables/working sessions on thematic aspects - virtual tutorials or training sessions for capacity building and collaborations - peer-to-peer co-working between different institutions.
- Specific responsibilities could be assigned to Executive Committee members to make decisions quickly when necessary.
- Unlike ECPGR, I think GRACE RI would benefit from a closer relationship with the PGR user, notably plant breeders, who might be encouraged to invest in the RI themselves.

43. Are there any existing governance models from other research infrastructures that you find particularly valuable? If so, please elaborate.

- EPPO — European Plant Protection Organization — that has a council, an executive committee and working parties and panels.
- Conferences and training workshops
- ELIXIR and ECPGR have some common features and differences that could be interesting to look at.
- Webpages, see AnaEE-ERIC for reference.
- The Millennium Seed Bank
- ECPGR
- I don't have enough knowledge of other RIs.

44. Do you have any other comments or suggestions regarding the consortium structure and governance?

- Have a discussion around the way to deal with ethical issues.
- Strengthen the existing RPGR structure.
- May need to consider [an] interim governing body as the GRACE consortium is build and national support is collected before applying for ERIC.
- It is essential to clarify the vision for how ECPGR and the proposed RI [will/may/should] co-exist (or not) - I am not involved in the PRO GRACE work, so I am not aware of discussions/decisions on this topic.
- In the governance promote a sub-organization to engage [the] youngest towards biodiversity conservation and in public awareness campaigns
- Yes, the RI should be designed to complement and extend what is already being achieved in ECPGR and more successfully meet the PGR users' needs.