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Res-AGorA – A brief project overview

The EU seeks to become a genuine Innovation Union in 2020 striving for excellent science, a competitive industry and a better society without compromising on sustainability goals as well as ethically acceptable and socially desirable conditions. Europe thus needs to develop a normative and comprehensive governance framework for Responsible Research and Innovation (RRI). This is the major goal of Res-AGorA.

The Res-AGorA framework will build on existing RRI governance practices across and beyond Europe. It will be reflexive and adaptable to enable the inherent tensions in all governance of RRI to be actively addressed by procedural means aiming to facilitate constructive negotiations and deliberation between diverse actors.

The project will achieve these objectives through a set of work packages providing an empirically grounded comparative analysis of a diverse set of existing RRI governance arrangements and their theoretical/conceptual underpinnings across different scientific technological areas (WP2 and WP3), a continuous monitoring of RRI trends and developments in selected countries (WP5) and, based on the cumulative insights derived from these work packages, co-construct with stakeholders the central building blocks and procedures of an overarching future governance framework for RRI (WP4).

This governance framework will deliver cognitive and normative guidance that can be applied flexibly in different contexts. Res-AGorA will thus have direct impact on RRI practices (science, industry, policy), and strategic impact in terms of the political goals (Horizon 2020) and competitiveness (Lead Market through growing acceptance of new technologies).

Res-AGorA will ensure intensive stakeholder interaction and wide dissemination of its tangible and intangible outputs in order to maximize impact, including comprehensive and interactive stakeholder engagement, liaisons with other ongoing RRI activities funded by the SiS Work Programme, and a final conference.

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Preface: Objectives of the deliverable

The purpose of Deliverable D4.10 is to synthesize and present the main results of a series of five stakeholder workshops on the governance of RRI in different contexts. The main objectives of these workshops were to collect input and incorporate the perspective of different societal stakeholder groups regarding the (then preliminary) Res-AGorA governance framework for RRI, hence *co-constructing* it.

The report at hand is based on internal workshop reports drafted by different members of the Res-AGorA consortium:

- Guido Gorgoni (UNIPD, Copenhagen workshop)
- Allison Loconto (UPEMLV, Vienna workshop)
- Niels Mejlgaard (AU, Brussels workshop).
- Sally Randles (UNIMAN, Berlin workshop)
- Bart Walhout (UT, Amsterdam workshop)

Special thanks to them, to Christoph Mandl, the facilitator of the workshops and to all Res-AGorA partners who supported the organization and implementation of the stakeholder workshops in many ways!

Last but not least, we want to particularly thank all workshop participants who contributed substantially to this work with their competence and open-minded discussion.

Vienna, 31 July 2015

1. Introduction

The objective of the Res-AGorA project is to produce a normative and comprehensive governance framework for Responsible Research and Innovation (RRI). Therefore, Res-AGorA combines conceptual and analytical deliberation (Edler et al. 2014), an empirical case study program (Randles et al. 2015¹), and a continuous monitoring of RRI in 16 European countries (RRI-Trends website; Griessler et al. 2014). These various activities build the basis for constructing a meta-governance framework for RRI that can be used by different societal actors who want to reflect on their own position and those of others in research and innovation (R&I) processes and navigate R&I towards RRI.

In order to answer needs and requirements of different societal stakeholder and groups, which are potential users of the RRI governance framework, Res-AGorA implemented a participatory approach in order to *co-construct* the Res-AGorA RRI governance framework with relevant actors. Thus, the development process itself reflects an important aspect of RRI, that of citizen engagement and participation in R&I. The Res-AGorA team designed and conducted a series of stakeholder workshops on the implementation of RRI in different techno-scientific fields (hydraulic fracturing, GMO) and institutional contexts (research funding organizations, research performing organizations, policy). The workshops took place between March and June 2015 in five European capitals (Copenhagen, Vienna, Amsterdam, Berlin, and Brussels). They brought together stakeholders from different professional and institutional backgrounds – including natural and social scientists, policy maker, public administrators, representatives of industry and NGOs, etc. – deliberating on RRI in the respective context and discussing the design and practicability of the preliminary Res-AGorA governance framework in particular.

The report at hand synthesizes and presents the main findings of the Res-AGorA stakeholder workshops.

First, it gives an overview over the objectives and design of the workshops, including their overall arrangement, topical foci, micro-structure and the participating stakeholder groups, and the data collection and analysis process that laid the basis for this report (Chapter 2).

Second, the results of the workshop evaluation are presented (Chapter 3).

Third, the main findings and lessons learned from the stakeholder workshops are outlined. On the one hand, these concern the different stakeholder's understandings and experience of RRI in their daily work. On the other hand they show how the workshop participants perceive the Res-AGorA governance framework and assess its practicability (Chapter 4).

¹ Individual case studies can be found at <http://res-agora.eu/case-studies/>; accessed 9 July 2015.

Finally, the report draws conclusions regarding the further conceptualization and implementation of RRI, also considering the Res-AGorA governance framework (Chapter 5).

2. The Res-AGorA stakeholder workshops

The overall purpose of the workshops was to

- draw on experiences and insights of different societal stakeholders with RRI and related issues,
- discuss the Res-AGorA findings and the preliminary governance framework with the participants against their professional background,
- give them an opportunity to bring in their perspectives and ideas,
- and to provide an open forum for discussions on RRI, the governance of RRI and related issues.

The overall workshop program and the procedural design of the individual workshops were aligned to these objectives.

2.1 Overall workshop program

Between March and June 2015, a total of five stakeholder workshops addressing different topics and stakeholder groups were conducted in Copenhagen (DK), Vienna (AT), Amsterdam (NL), Berlin (DE), and Brussels (BE). These European capitals were selected as places for the workshops in order to guarantee easy access for the international participants (good travel connections) and to ease the practical organization of the workshops since in every case a Res-AGorA project partner was located on site.

The workshops had different core themes in order to gain a broad perspective on issues related to RRI and input from a variety of stakeholder groups occupying different positions in R&I processes (see Table 1). The invited stakeholders were seen as possible end-users of the Res-AGorA governance framework, therefore their assessment and input was sought in order to fill blind spots, improve the governance framework and better align it to their needs and demands.

The first two workshops discussed RRI and the Res-AGorA governance framework in the context of concrete R&I fields. The Copenhagen workshop dealt with RRI in relation to R&I in the area of shale gas – with its main focus on hydraulic fracturing (“fracking”) – the Vienna workshop with RRI in the context of genetically modified organisms (GMO). Participants in these

workshops came from government, public administration, multinational organizations, academia, industry, and NGOs.

The third and fourth workshops focused on RRI from an organizational perspective. In Amsterdam, RRI and the Res-AGorA governance framework were discussed by stakeholders from public research councils, private foundations, public administration and policy with relation to R&I funding strategies and organizations. In Berlin, participants from research performing organizations, from universities or private research institutes talked about how to implement RRI in their research structures and practices.

The last workshop, held in Brussels, brought together policy maker, public administration, researcher and industry representatives (especially occupied with CSR). The design of this workshop was slightly different than that of the others: besides discussing the Res-AGorA governance framework, it had a special emphasis on presenting and disseminating all different findings of the Res-AGorA project (e.g., results from the RRI trends monitoring, the transversal lessons from the case study program, etc.).

Table 1: Res-AGorA Stakeholder Workshops

Dates/ Places	Workshop	Stakeholders	Exploring the RRI Integrative Measures
2015	Focus		
12-13.3.15 Copenhagen	Workshop 1 RRI in relation to shale gas research.	Government/ Municipalities/ multinational organizations/ Industry/ NGO/	CSR, Municipal and Government instruments
23-24.3.15 Vienna	Workshop 2 RRI in the context of GMO.	Government/ Municipalities/ multinational organizations/ Industry/ NGO/	CSR, diverse types of assessments
16-17.4.15 Amsterdam	Workshop 3 RRI in relation to funding strategies.	Public Research councils/ private foundations	Criteria for ethics, excellency, procedures
7-8.5.15 Berlin	Workshop 4 RRI in the context of research performing institutions.	Universities/ Polytechnics/ research institutions	Framing of study programs RRI education
8-9.6.15 Brussels	Workshop 5 Empowering the governance of RRI in Europe.	Government and research circles	Discussing the Framework

2.2 Design and implementation of the workshops

The design of the workshops was a collaborative effort of DBT (lead WP4), Christoph Mandl, (workshop facilitator), FhG-ISI, IHS and UT.

All workshops were facilitated by Christoph Mandl, a professional facilitator and actively accompanied by several members of the Res-AGorA team, which gave input regarding the project and RRI, collected data and helped facilitating small group discussions.

The first four workshops had a similar procedural design which was adjusted to each specific thematic focus and slightly modified according to the experience gained over the course of implementing the workshops.

The workshops lasted two days, starting on the first day around eleven o'clock and ending on the second day in the afternoon between three and four o'clock; the first workshop day always was concluded by a working dinner of all workshop participants and the Res-AGorA team. The workshops consisted of an alternation of plenary sessions, discussions in small working groups, group presentations and breaks. Within a workshop the composition of the small working groups was continuously diversified in order to facilitate discussion and the encounter of different societal perspectives on RRI.

After a brief outline and the introduction of participants, the workshops started by *exploring the stakeholder's experiences with RRI in the given context*, thus not only showing the different understanding of what RRI is all about, but also discussing *challenges, conflicts and barriers for the governance of RRI*. Then the preliminary governance framework was presented. This initiated the *co-construction phase*, in which the participants discussed different *dimensions and principles of the framework* as well as the framework as a whole regarding its practical value and relevance considering their own experience with challenges, conflict and barriers of RRI. Participants were asked to discuss, how to *make effective use of the governance framework* in their own organization and field and what further guidance and modifications of the framework would be needed to do so. In the end, the participants were invited to share their experience and assessment of the overall workshop with the plenary and to fill out an evaluation form.

The last workshop in Brussels was designed slightly different in that more emphasis was put on presenting results of the different Res-AGorA approaches, i.e. the monitoring of RRI trends, the empirical case study program and the governance framework. Furthermore, it had an explicit focus on the *policy impacts* of the Res-AGorA governance framework for RRI.

2.3 Workshop input: Navigating RRI - The Res-AGorA framework for RRI governance

In the workshops, the concept of RRI and a *preliminary version of the Res-AGorA governance framework*, including its purpose, main characteristics, key dimensions and its guiding principles were presented to and discussed with the workshop participants. The Res-AGorA team emphasized that the governance framework was still in the making and that participants could contribute to its final design and appearance.

In the introduction to the workshop, the Res-AGorA team presented not one definitive concept of RRI but rather described different definitions and approaches that are currently discussed in research and policy making. Thereby, it was made clear that the concept of RRI is still open for negotiation and that it is still under construction.

Later, also the Res-AGorA governance framework for RRI was presented in that way as a preliminary version to be further elaborated and discussed. The following represents the governance framework as discussed during the workshops; since then, it has been further developed.

Table 2 Preliminary Res-AGorA governance framework for RRI as presented in the stakeholder workshops

For actors to be responsive and governance mechanisms to be integrative and facilitating learning we have identified three key dimensions in RRI governance and have formulated guiding principles for each.

- The 1st dimension concerns the way actors interact with one another
- The 2nd dimension is about how governance mechanisms structure action and interaction.
- The 3rd dimension relates to how individual and institutional formation can support the collective ability to direct and shape research and innovation responsibly.

For each of these dimensions we have identified a number of principles. These describe key properties, or functions, of RRI governance that have to be fulfilled.

Qualities of interaction (dimension 1)

1 .Broad inclusion: RRI governance will be game-changing if governance mechanisms can accommodate the full diversity of the actors relevant to the problem or project at hand in such a way, that they are either engaged effectively in the debate or in joint activities. This requires that stakeholders have an understanding of the problem and of the management instruments discussed. It is equally important that actors perceive the process of decision-making as both legitimate and trustworthy. The principle of broad inclusion therefore comes with two other principles:

2. Moderation: Because direct and immediate interactions between actors are neither always reasonable nor possible, there will be a need for "forums" such as institutionalized places where interaction

between conflicting parties (disputing actors) can take place. In the case of geographical distance or large belief differences among disputing actors, a mediating organization should be able to build trust, collect data and create a dialogue that allows for constructive inclusion making sure that everyone involved has a say and is heard and understood.

3. Deliberation: The quality of problem assessment and solving is closely related to the question which knowledge base is used. Knowledge is in-itself always subject to negotiations and improvements. Therefore, in order for information to be "objective" it should always include and express the complexities, uncertainties and ambiguities which underlie any information relied on and collected from a comprehensive knowledge base. Clarification of the diversity of perspectives involved, not only between actors but also for the individual actors themselves, would help to promote synthesis rather than just advancing compromise.

Organizing governance mechanisms (dimension 2)

4. Changes and Flexibility: Legitimate and effective governance of RRI will rest on a judicious mix of both soft and hard regulatory mechanisms. This is necessary to ensure that self-regulatory processes can be effectively incorporated in the external control systems; from everyday level accountability structures, such as reporting performance, to high level political checks and balances. It also concerns the alignment of diverse mechanisms, such as codes of conduct and industry level agreements, or different kinds of safety regulations.

5. Subsidiarity: While both hard and soft regulatory instruments regularly are based on overarching legal frameworks (e.g. from European directives to national constitutions and higher level frameworks), it requires a proper mutual agreement on how these are actually regulated at different levels and how these adjustments will be mutually enforced at all levels.

6. Resilience: As RRI ambitions as well as the benefits and costs of governance instruments will change over time calibration of regulatory mechanisms also applies to a necessary forth running assessment on whether governance instruments systems are up-to-date, effective and legitimate in terms of supporting RRI.

Developing supportive environments for RRI (dimension 3)

7. Capabilities: RRI will crucially depend on actors being able to recognize, anticipate and pursue socially desirable research processes and results. The many facets of RRI governance require specific deliberative skills, vision and strategy. Thus, it is necessary to create the right educational framework to promote RRI and to support the reflexive and investigative skills of the actors involved in RRI processes.

8. Capacities: Where capability building serves to promote RRI at the individual level, so does capacity building at the institutional level: rules, roles, resources and organizational structures. An important element here is the availability of forums in which actors can interact. These can be the fora for deliberation as mentioned in principle 2, or the creation of a multi-perspective knowledge base, as mentioned in principle 3, but also capacities internal to organizations such as the ability to anticipate, reflect and deliberate societal questions in relation to research and innovation.

9. Institutional entrepreneurship: To build RRI capacity is an ongoing process. It is not only about encouraging organizational structures to change, but equally to push entrenched rules and habitual behavior into motion within organizations. It often takes great effort and much debate introducing real institutional change. This requires leadership on the one hand and willingness and supportive cultures towards

RRI on the other.

10. Democratic standards: This is a basic social condition for fostering RRI. The ability to invoke legal and political means drawing on equality, inclusiveness and the rule of law, are necessary.

Open questions considering the design of the framework were put up for debate, e.g. in what form (website, guideline, etc.) the governance framework should be disseminated to potential users, how to modify the framework in order to be a useful means to support RRI, or how to make it better understandable to a broader audience.

2.4 Data and information collection

Members of the Res-AGorA team took minutes of plenary sessions and each individual small group discussion. The minutes were systematically collected and classified according to workshop sessions and small group tables and saved in a database. Furthermore, in some sessions the participants were asked to write main points and findings on flipcharts. The minutes as well as pictures of flipcharts formed the basis for internal reports on every workshop, drafted by alternating consortium rapporteurs.

These information and data are the basis of the subsequent presentation of findings.

At the end of each workshop, participants were asked to fill in an evaluation form which were then digitalized and quantitatively evaluated in order to assess the design and implementation of the workshops as well as to get an idea of the participants' appraisal of the concept of RRI and its usefulness.

3. Workshop evaluation

After the workshop, participants were asked to fill out a questionnaire comprising questions on the concept of RRI in general as well as the workshops in particular (N= 50-52, depending on the question).

The evaluation showed that the **concept of RRI is quite well known** and that participants consider it as relevant for their own work. 58% of participants stated, that they were already acquainted with the concept of RRI before the workshop (21% very little and 21% not at all). 39% rated the discussions about RRI in the workshops as relevant for their own work, 59% relevant to some extent. For most of the participants, i.e. 76%, it seems likely that they keep working with the idea of RRI (20% maybe).

The workshops managed to **bring together a broad variety of different stakeholder groups and societal views**: a majority (61%) assessed that they had interacted with stakeholders they seldom interact with (37% to some extent). Furthermore, 63% of participants stated that the

workshop improved their understanding of viewpoints different than their own (29% to some extent).

The **feedback** on the procedural aspects and the **atmosphere of the workshop was throughout positive**: 90% of the participants felt, that they were able to share their honest concerns and opinions (10% to some extend) and 94% felt that all views were listened to and respected (6% to some extend). 63% would like to participate in similar workshops in the future, 35% maybe. In conclusion, the participants welcomed the workshops and evaluated them positively.

This is in line with internal assessment on behalf of the Res-AGorA team (as brought forward in debriefing sessions after each workshop) of the workshops as events of lively and constructive debate and as a valuable input to the project's understanding of RRI and as important for the further development of the governance framework.

4. Main findings: lessons from the stakeholder workshops for the governance of RRI

In the following, the main findings of the five workshops are presented in synthesis. This means that not each and every finding will be assigned to the individual workshop in which it came up, recurring and dominant aspects of and issues regarding RRI will be depicted considering discussions about quite different topics (hydraulic fracturing, GMO, research funding and research performing institutions, research policy). Only striking links to certain topics or exemplary cases will be pointed out.

4.1 Barriers, challenges and conflicts for practicing RRI

In the workshops there were intense debates about barriers, challenges, and conflicts for practicing RRI. Thereby, workshop participants draw on their experience from their own work in their respective fields. Discussions were not so much about RRI as a concept, but about different aspects related to the concept of RRI.

Barriers, challenges and conflicts for practicing RRI identified by the workshop participants comprise the following issues:

- Lack of trust between different stakeholders.
- Knowledge contestation.
- Facilitating communication.

- Institutional structures.

4.1.1 Lack of trust between different stakeholders

Participants identified the lack of trust between different societal stakeholder, e.g. between researchers, industry, special interest groups, NGOs, or the wider public, as one barrier in bringing together different groups and discussing research and innovation as well as RRI in a meaningful and constructive way.

This lack of trust manifests, for example, when companies organize public engagement activities to seek inclusion of relevant stakeholders, but other groups such as citizen initiatives or NGOs criticize and oppose these attempts arguing that the only purpose of these is to increase acceptance in order to be able to proceed as previously planned. Or, if studies are conducted on possible positive and negative effects of R&I processes (e.g., environmental impact assessments, risk assessments, etc.) but their results are questioned with remark to the researchers' financial dependency on groups with certain interests, e.g., industry, NGOs, or the government (more on that below in the section on *knowledge contestation*).

One reason for this lack of trust are supposed vested interests of different societal groups that are seen as opposed to the greater good or certain positive values (e.g. sustainability or inclusiveness). On the one hand, industry performing R&I is often perceived as not genuinely engaging with the public's concerns but strategically using certain processes in order to gain acceptance. It is supposed that industry only wants to make profit and does not care about other aspects of their work. On the other hand, also opponents - such as NGOs - are seen as driven by financial or personal interests and not considering practical necessities of society as a whole that makes certain R&I necessary. Examples brought up are people with a not-in-my-backyard (NIMBY) mentality or special interest groups that gain a profit out of opposing developments in certain areas; one participant labelled them "protest industry".

Non-transparency of R&I processes was another reason for this lack of trust identified by participants. It is even harder to facilitate mutual trust if stakeholders are secretive about their intentions, goals, the way they want to accomplish them and about the information they have. However, there is a tension between the demand for transparency and the interest of researchers or the industry to restrict access on certain data or findings because of economic competition.

In the workshops on hydraulic fracturing and GMO distrust in media coverage of R&I processes and outcomes was another central issue. Different sides, representatives from industry, research as well as NGOs criticized media coverage of R&I issues such as hydraulic fracturing or GMO as being biased and distributing distorted information and facts; depending on the participant's perspective, the bias was either perceived in favor or against certain developments.

4.1.2 Knowledge contestation

Connected to the issue of lack of trust is that of *knowledge contestation*, which reoccurred during the workshops: In many discussions about R&I and RRI, there is not a shared stock of knowledge and definitions that all involved stakeholders agree upon, but instead there are different interpretations e.g. of the overall situation, of the characteristics and impacts of certain R&I processes and products, of the objective and im-/possibility of RRI governance, or of responsibility in general. Without a shared knowledge-basis and common understanding, different stakeholders engage in a joint debate but finally talk past each other without ever coming to terms or even escalating into a heated conflict.

Another recurring notion in the workshop was that categories, definitions and concepts that (should) guide decision making are subject to negotiation and contestation, the relatively new concept of RRI being not exception to this. The meaning of “responsibility” is contingent upon the context in which it is embedded and in which R&I are practiced and same holds true for the definition of the “collective good” or “quality of life” as generic aims of RRI. It is hard to deliberate on RRI with publics because there is no shared definition of RRI: How to facilitate dialogue on something that is not defined yet? How to define actor groups to be included into decision making processes on RRI issues?

Besides that the *instability resp. persistent development of scientific knowledge* itself imposes a challenge for RRI: There are diverging scientific results on certain issues (e.g. on fugitive shale gas emissions in hydraulic fracturing), depending on the methodology, methods, and data used. Participants identified the selective and purposeful uptake of results into an argument and decision making process on R&I controversies as a further problem. In the workshop debates, there were different views on the extent researchers are independent and curiosity driven or are biased by financial incentives.

4.1.3 Facilitating good communication

Facilitating good communication between different actors and stakeholders in negotiation and decision making processes was identified as one central challenge in R&I processes.

First of all, participants pointed to the issue of determining the audiences that are addressed by different means (e.g. engagement or information activities), to the questions of whom to communicate with, who to include into communication processes. On the one hand, participants stated that it is impossible to reach and include everybody nor that this is reasonable. On the other hand, participants were cautious not to prematurely exclude certain groups, because they are assessed as being not relevant or not affected by R&I processes.

To build and maintain a shared knowledge basis as described above is not only difficult because of lack of trust between different stakeholder, but also because of *challenges regarding scientific education and science communication*. One problem in informing the public and

stakeholder about R&I as perceived by the workshop participants is the necessity to present information in a short amount of time in a way that everybody understands it in order not to lose the audience, but being comprehensive enough and not oversimplify and probably distort certain aspects of the topic under consideration. Workshop participants thought that a certain degree of scientific literacy on behalf of the audience is necessary in order to facilitate meaningful science communication and some assessed the status quo of scientific education as insufficient.

Besides that, adequacy of communication was also an issue with regards to RRI as a political and scientific concept and with regards to the work of the Res-AGorA project. Participants indicated the need to move the concept from the abstract or conceptual level into more concrete and transmittable terms in order to be understood, to attract attention among broader publics and stakeholders and to avoid the risk of “preaching to the converted only”, as one workshop participant put it. Thus, target-group adequate communication is a challenge to the dissemination and uptake of the RRI concept in general as well as the Res-AGorA governance framework for RRI in particular.

4.1.4 Institutional structures

Workshop participants brought up and discussed several barriers for RRI, which emerge from the existing institutional structures of R&I.

One major issue in this regard was *inexistent institutional incentives for doing RRI* or even the *existence of institutional disincentives*. At the moment, the emphasis in science and research lies on research excellence and output, either in terms of publications, patents or marketable products. This is also reflected in funding structures and academic careers, where e.g. high ranked peer reviewed publications count, whereas other activities, such as public engagement or citizen science, is of lower to no value. And for industry, doing RRI is not worthwhile because it might reduce their competitiveness on global markets; RRI has to offer business opportunities or otherwise it will not be implemented.

However, not only incentives are missing. Participants also pointed to a *lack of capacities* to produce and follow measures for RRI in institutions, which are already not able of implementing compliance rules in place. This lack of capacities might not only be a problem for universities and industry, but especially for small and medium enterprises, that often have very limited financial means. Furthermore, for measures that might contribute to RRI, such as public engagement activities, there is often no sufficient institutional infrastructure.

Besides capacities doing RRI is also an *issue of capability* on behalf of individual researchers and research systems. Some participants assessed current trainings of scientists as not sufficiently considering and including critical reflection of the scientific work and its wider implications (for society, ecology, etc.) although this would be a necessary requirement for doing RRI. Others, however, considered the work and attitude of scientists already as responsible as it is.

Another challenge for RRI is the *persistence of institutional structures*: Although they might be barriers for RRI, they fulfill certain functions and are beneficial for certain actors and stakeholder groups. These might not want to give up comfortable positions, which might be necessary in order to implement RRI. Although workshop participants from different areas spoke out in favor of RRI they acknowledged that personal and financial interests of different actors might be stronger than attempts to set up and maintain RRI processes.

4.2 Governance of RRI

Connected to the identification of barriers, challenges and conflicts for RRI, the workshop participants were asked to come up with approaches and principles for good governance of RRI. These were drafted independently from the Res-AGorA governance framework, which was only presented afterwards.

4.2.1 Access and Inclusiveness

According to workshop participants, RRI should bring together different societal stakeholder and include them into certain decision making processes. RRI governance has to *manage the complexity of the actor landscape*.

Thereby it is crucial to facilitate trust in the whole inclusion process, e.g. by (financially) independent institutions designing and implementing such processes and by having non-partisan moderators. Furthermore, stakeholders have to have open access to information necessary to make an informed decision.

Participants demanded, that decisions should not only be made regarding one particular technology or innovation, but also regarding what options are possible instead to solve certain challenges and problems. One means of public engagement to accomplish this could be scenario drafting, which encourages stakeholder not only to decide for or against an issue, but to view it in a broader way, taking into account alternative scenarios and possible futures with or without it.

However, participants also emphasized not to overestimate the impact of public deliberation and participation activities, because these might not support decision making on R&I issues if there are very strong different opinions at the table. A concern repeatedly voiced was that public consultations in the past often did not work out and only took a lot of time and effort. Furthermore, there are relevant stakeholders that even if asked, do not want to participate.

Participants also repeatedly pointed to the necessity of science literacy through scientific education in order for public engagement activities to work properly. However, these prerequisite cannot be bypassed or established in every case by public engagement activities themselves, but have to be prepared in the wider education system.

4.2.2 Establish basic agreements

It was widely acknowledged that besides the individual researcher's decision to act responsibly, there is a need for a political decision for RRI (on different levels). In line with this, participants repeatedly pointed to the need for basic agreements between different stakeholders on various issues in order to be able to facilitate RRI:

- What are the issues you are talking about?
- What timescale are you considering in the decision making process?
- Who are the relevant stakeholders to include into the decision making process?
- What is responsible, who is responsible, etc.?

In these regards, participants suggested, that RRI means to focus on common interests in the long term, taking into account impacts on a global scale, and in the end making an informed decision including relevant stakeholder. However, in the discussions the scope of consensus remained an open question; on which issues do you need a basic agreement and which should be open for contestation?

Furthermore, it did not become clear if the concept of RRI should be used both considering basic and applied research. There were diverging views among participants, with some arguing in favor of applying the concept of RRI to basic and applied research, and others arguing that it should be used only regarding applied research, because only the latter might have immediate impacts.

4.2.3 Transparency

Starting from the issues of lacking trust between stakeholder and knowledge contestations, workshop participants identified the principle of transparency as key for the governance of RRI. Transparency should be facilitated regarding several issues.

First, R&I processes, their design and implementation, as well as their results have to be transparent in order to facilitate trust between different stakeholder and ensure the possibility to engage in or criticize certain developments as well as giving the opportunity to grant accountability. In line with that, research funding procedures should become more transparent.

Second, also research on the impact of certain R&I processes and products has to be transparent regarding its data, methodology and results in order to be comprehensible.

Third, there should be transparency regarding the interests of different actors and stakeholder groups to be able to identify conflicts of interests. However, therefore it is necessary to have a consensus on how to define an interest, how to measure interests, and on criteria for a conflict of interests.

4.2.4 Institutional incentives

Among the workshop participants there was a general agreement that governance of RRI has to implement incentive structures (and minimize disincentives) or otherwise, the concept of RRI will not be taken up and implemented on a regular basis. Incentive structures could be installed on various levels and in various steps of the research and innovation process:

The inclusion of RRI aspects into R&I processes could be a criteria in research funding, in the assessment of research proposals and the allocation of financial means. However, participants pointed to the risk of RRI becoming a tick-box-activity; this has to be prevented by different means.

There could be distinctive RRI programs that support the uptake of issues related to RRI. An example brought up was that of the Responsible Innovation Program by the Dutch research council (NWO) that incentivized companies to work on solutions for grand societal challenges.

Universities and other research institutions should evaluate the output and outcome of their work not only in established terms (number of publications, number of presentations, number of patents, etc.) but also with regards to RRI criteria, such as public engagement or the consideration of gender equality in research.

Some participants pointed beyond the establishment of such “hard” institutional incentives towards a broader change in research cultures: Apart from funding, at the moment the reputation of researchers rely on their scientific excellence; to do RRI is not prestigious yet. This could be done partly by considering RRI in the training of future scientists (e.g. at the PhD level).

4.2.5 Capabilities

Besides institutional changes, participants assigned a major role in pursuing RRI to the adequate education of scientists and researchers. This reflects a stance that repeatedly manifested in the workshops: individual researchers have to *be* responsible, in order to *act* responsible, in order to *achieve RRI*.

One way identified to make scientists more responsible is that of special trainings at universities or even the implementation of RRI seminars into the regular curriculum of Master or PhD courses. These seminars and training should support critical thinking and the consideration of wider societal aspects in research activities.

4.2.6 Freedom of research

One argument often brought up against the governance of RRI was the possible limitation of freedom of science and research. Regulation and freedom of research were seen by some as contrastive pairs. Different participants stated that without freedom of research many scientific results and innovations would not have been possible in the past and that RRI should not

impose barriers that curtail this freedom. On the contrary, other participants pointed to various negative effects of research activities that were not governed.

Governance of RRI also has to safeguard that freedom of research and scientific curiosity of researchers are acknowledged and appreciated in order to be accepted by researchers. Considering research practice, some participants argued against imposing the burden of responsibility solely onto researchers. This would hamper research processes even more than they are delayed at the moment because of increasing administrative requirements.

4.3 The Res-AGorA governance framework for RRI under discussion

During the workshops, it became obvious that the Res-AGorA governance framework in principle connects to the stakeholder's experience with RRI, their barriers, challenges and problems as well as their governance: The participant's deliberations on the Res-AGorA governance framework for RRI and especially its three dimensions and various principles were often closely linked to previously discussed issues.

In general, the overall assessment of the framework appeared to be positive; none of the dimensions and principles was discarded as irrelevant nor was the overall conceptualization rejected. However, the discriminatory power and the linkage between several principles were not always clear.

4.3.1 Dimension 1: Ensuring quality of interaction

Dimension 1 of the governance framework stood out as being the dimension which most participants could relate to. Already in the first sessions, when participants described their own experience with barriers, challenges and problems regarding RRI, aspects related to the quality of interaction, including issues of knowledge contestation, facilitating trust and communication, came up. Participants intensely debated this dimension and brought up a variety of examples on participatory measures, interdisciplinary, science communication, etc.

In the debates, several critical issues on public participation were (re-)raised that have to be recognized in the final version of the governance framework:

- Engagement activities have to have certain defined outcomes and have to be linked to decision making processes; they should not only be reflection activities for the sake of reflection.
- There should be a continuous and open dialogue between different stakeholders; it is not enough to let the public or stakeholders decide for or against certain issues.

- The framework has to deal with issues of power in participatory activities; often, some stakeholder groups are better organized and financed and thus having better chances to participate and to bring in their own perspective than other stakeholder groups. Moderation has to be independent.
- There should be incentives for participation that relate to ability and mobility of participants.
- Participatory processes should not necessarily be oriented towards finding a consensus between different stakeholder.
- The framework should give some guidance on how to identify relevant stakeholders and what “broad” inclusion in fact means (How broad?).
- Although it is good to include the broader public into decisions on R&I, freedom of research should be preserved as far as possible.

The participants identified several possible and already existing ways for participation:

- A variety of existing engagement instruments and approaches were brought up, including consensus conferences, stakeholder dialogues, or public technology assessment. The question arose, how these relate to the RRI governance framework.
- Stakeholder could be integrated in priority setting and new funding initiatives;

4.3.2 Dimension 2: Organizing governance mechanisms

The second dimension of the Res-AGorA governance framework seemed to me more difficult to grasp and to relate to for the workshop participants. In some groups, there were uncertainties about the definition and implications of different principles, e.g. that of flexibility or resilience. Hence, there is a need to better explain and illustrate the principles in the final version of the governance framework.

Nonetheless, considering governance mechanisms to stimulate and support RRI the workshop participants voiced several criteria they have to fulfill in order to be effective and provide “good governance” of RRI:

- Governance mechanisms should be context sensitive and adaptable to the type and phase of research and the research environment (e.g. organization, country).
- In line with that, there should be a mix of different instruments, not only for different contexts but also pursuing different aspects of RRI;
- New governance mechanisms have to consider existing legal requirements, funding strategies, corporate social responsibility strategies, good laboratory practice guidelines, etc.

- Governance should not only prohibit certain activities and kinds of research, but should rather enable and support RRI. They should also give assistance to actors who want to pursue RRI, even if there are no hard requirements for doing it.
- Although governance mechanisms should be flexible in their scope and application, they need stable and continuous financial and personal means in order to work effectively and establish stable structures that have long term effects.
- They have to be transparent regarding their assumptions, objectives, means, and processes.

4.3.3 Dimension 3: Developing supportive environments for RRI

Participants came up with several ideas regarding the development of supportive environments for RRI. In general, a supportive environment - according to the workshop participants - incentivizes RRI and supports capabilities to implement RRI on an institutional and personal level (e.g., through scientific education, to training in RRI, etc.) but does not hamper creativity in or freedom of research.

In particular, research funding organizations were identified as crucial actors in creating a supportive environment for RRI:

- They are in a position to introduce incentive structures for RRI in terms of financial conditions, e.g. integrating RRI as funding criteria or rewarding good RRI practice.
- They have a long-standing expertise in creating environments for R&I in general.
- They could broaden the general scope of R&I evaluation towards RRI.
- They could fund RRI training activities for active researcher in order to increase the capabilities to conduct RRI.
- They could create learning platform to facilitate the exchange of best practice

However, RRI has to be implemented in other institutions too. Universities and other research organizations should also conduct measures to support RRI:

- RRI should be integrated as a topic of science education and into the higher education curriculum.
- Universities have to modify their award criteria in order to support the idea of RRI.

4.4 Improving the framework

The participants of the different workshops voiced one major requirement regarding the Res-AGorA governance framework for RRI in various ways. The framework has to be better explained to its audience with regards to

- its overall objective, relevance, field of application and target group(s);
- the organizational or hierarchical level at which it aims;
- its target group(s), i.e. who is going to use it?
- its basic ideas about the concept of RRI and related issues (a clear definition for RRI was requested by some but not by all participants), and why RRI is important;
- the assumptions about its positive and negative effects and wider impacts as well as the benefits of implementing it for different user groups (industry, CSOs, public administration, etc.);
- its link to the empirical program of Res-AGorA (How do the lessons, governance principles and dimensions derive from the case studies and the monitoring exercise?);
- its relationship to other governance mechanisms (law, guidelines, CSR, etc.) and existing RRI instruments (public engagement activities, Technology Assessment, Risk Assessment, etc.);
- and, in essence, its novelty and innovativeness (What is new in the framework that is not already present elsewhere? Why should you use this framework instead of other existing instruments? What is its unique selling point?).

A suggestion to make these aspects of the framework more visible was to create a preamble to the framework. Some participants also suggested to tailor-made several preambles speaking to different actor groups and stakeholders in R&I. However, there was no consensus on such an approach.

Participants also demanded more concrete examples (e.g. from the case studies) for requirements, implementation, and beneficial effects of RRI in order to be able to grasp the quite abstract and generic dimensions and principles presented as framework and translate them into practice. Populating the framework with a number of illustrative (real or imaginary) cases could be a way to enhance relevance and uptake of the instrument. However, participants also pointed to a risk in making the framework more concrete: the risk of becoming too normative or ideological. The framework should be kept open in terms of values and not give specific and predefined answers to certain RRI challenges but be flexible enough to adapt to different situ-

ations and stakeholder constellations. Overall, it should be neutral regarding different stakeholder groups and interests.

In the Brussels workshop, participants proposed to include evaluative measures into the governance framework; therefore, specific metrics and indicators adaptable to the specific conditions in which the framework is used should be integrated. Evaluation criteria should be set in line with the aims and objectives of the framework.

Workshop participants make further suggestions for improving the framework and its chance to be taken up:

- Res-AGorA should identify gate-keepers and champions at all levels, contact and purposeful disseminate its governance framework to them, because these actors are crucial for the actual implementation of the framework.
- The European Commission, with its portfolio of projects, programs and initiatives around RRI, is an important partner to raise awareness on the Res-AGorA governance framework for RRI:

5. Conclusion

The comparison of the accounts of the workshop participants about their experience with RRI or related aspects with the Res-AGorA governance framework shows that the governance framework in large parts addresses the barriers, challenges and problems as perceived by different stakeholder groups (research, research funding, public administration, civil society, etc.); this underlines its empirical foundation.

In general, the dimensions and principles of the governance framework were taken up positively by various stakeholders participating in the workshops. Although there were uncertainties and reservations of how to practically implement certain measures or achieve certain goals.

However, the drafting of its various parts and of the framework as a whole still needs some modification:

- It is important to find a definitive form and design that is appealing to various stakeholder and user groups in order to ensure the uptake of the governance framework.
- In line with this, it is important to define and explicate the addressees and potential user groups of the governance framework.
- In order to convince stakeholder to use the governance framework, it is essential to spell out its objectives, basic assumptions, its potential benefits and its novelty considering other governance instruments.

- The elaboration of the governance framework has to be enriched with illustrations and explanations of the used terminology in order to be better understandable by different stakeholders.
- It has to become more concrete in its instructions without being partisan or too normative.

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