Navigating towards responsible research and innovation

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Research and innovation activities need to become more responsive to societal challenges and concerns. This requires identification, development and implementation of measures and procedures transforming research and innovation in a way that responsibility becomes an institutionalized ambition.

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1. The Challenge: Striving for Responsible Research and Innovation

The EU seeks to become a genuine Innovation Union in 2020 going for excellent science, a competitive industry and a better society without compromising on sustainability goals as well as ethically acceptable and socially desirable conditions. The European Commission has characterised this ambition as 'Responsible Research and Innovation (RRI)'. This effort calls for a framework that supports stakeholders in governing towards more responsible research and innovation.

The quest for responsible research and innovation has in fact become an increasingly important concern in research and innovation policy and political debates, not only at the EU-level but also within member states' research systems. Arguably, this is a result of two old claims that developed separately and that are now brought together.

First, there are longstanding concerns around the ethical, legal, environmental and social implications of research and innovation which are based on issues related with scientific practice and developments as well as from technological innovations fuelled by claims for reacting against direct or indirect unintended negative effects. Examples include concerns regarding large investments and experiments in brain sciences, space, biotech and many more domains, which all have potential for producing positive effects, but eventually also harm in the short term or in the foreseeable future

The Res-AGorA Project

Res-AGorA is a three-year, EU FP7 project (2013-2016) which has co-constructed with practitioners and strategic decision makers a good-practice framework, the "Responsibility Navigator" (cc) which facilitates reflective processes involving multiple kinds of stakeholder and policy-maker towards the generic aim of making European research and innovation more responsible, responsive, and sustainable.

The development of this framework builds on three years of intensive empirical research comprising: an extensive programme of in-depth case-studies; systematic 'scientometric' literature analysis; country-level monitoring (RRI-Trends) and five broad-based co-construction stakeholder workshops.

The resulting Res-AGorA Responsibility Navigator was conceived as a means to provide orientation without normatively steering research and innovation in a certain direction. Furthermore Res-AGorA's "Co-construction Method" is a collaborative methodology designed to systematically support and facilitate the practical use of the Responsibility Navigator with stakeholders.

The Responsibility Navigator, the Co-construction Method and accompanying materials are offered to change agents who wish to navigate towards Responsible Research and Innovation.

Second, there is an increasing desire among the research and innovation community and policymakers to improve 'responsiveness', that is, to be more responsible vis-a-vis what societies regard as desirable research

directions or outcomes. Examples are the efforts aiming to increase societal relevance of research, corporate responsibility, open access instruments, gender policies, innovation for cohesion, etc.

Against this background, the main purpose of the Res-AGorA project was to assist Europe to embrace simultaneously excellent science, a competitive industry and responsibility-related goals, by developing a governance framework specifically aiming at supporting stakeholders to better navigate towards such goals while encouraging and facilitating strategic collective reflection and action in the desired direction.

2. The Res-AGorA Governance Approach

The starting point for the development of the governance framework was our understanding, later supported by our case study findings and stakeholder workshops (see Res-AGorA Policy Note 1), that how research and innovation activities can be made more responsive to above mentioned divergent expectations and concerns is in fact far from clear. What is judged responsible, by whom and for what could always be contested, as what is desirable and acceptable is indeed a highly subjective judgement. Negotiations and re-definitions of what responsible action is will continue and further evolve.

For this reason, the Res-Agora team approached the aforementioned challenge following an understanding of responsible research and innovation as being reflexive, self-organised and collective. The nature and direction of responsible research and innovation is shaped by varieties of governance instruments and arrangements, and the design and operation of all instruments (even the formulation and operation of hard law) are in fact not a given, but actively constructed through processes of problem framing (appraisal), coordination and negotiation. In this context, what is judged 'responsible' and the ways to assess it would be part of these interactions, where the responsibility-related co-ordination and decision making, i.e. governance, is a collective process of sense-making.

The prime target users for the proposed framework are representatives of key organisations in research and innovation systems, i.e. stakeholders who aim a) to *lead organizations* and procedures towards more responsiveness and accountability; b) to set and *define policies*, design programmes and develop evaluation and assessment tools; c) to *mediate between levels* of the innovation system by bringing together different actors and interests; and d) to *shape the practical implementation* of governance instruments at the analytical, the strategic or the procedural level. Such decision makers typically work as 'change agents' at ministries and funding organizations, in universities, research institutes, companies, professional associations, or civil society organizations, dealing with governance processes towards responsible research and innovation *within* or *between* organizations.

3. The Responsibility Navigator[1]

Taking these ambitions seriously, change agents will have to facilitate transformation of the research and innovation system towards a set of articulated normative goals, embedding values into practices and processes, and orienting action towards those goals.

This change can be facilitated by a set of guiding governance principles and requirements, that is, by applying an orientating framework to better 'navigate' towards institutional transformation. This is done with the help of a 'thinking tool' designed to enable related debate, negotiation, experimentation, and learning in a constructive and productive way. We call this the **Responsibility Navigator**©. It aims at making existing and new governance instruments and arrangements effective, reaching from bottom-up processes up to transformation at a systemic level. It is therefore expected that by adopting and adapting the Responsibility Navigator, research and innovation performed in Europe will become more satisfactorily aligned with societal needs and concerns.

Ten Res-AGorA principles and requirements have been identified to allow for responsibility-related governance (see Box 1). The **Responsibility Navigator** defines each principle and illustrates them with fictive cases depicting possible situations and governance challenges and dilemmas, and complemented by relevant questions which those actors interested in 'navigating' towards the intended cultural change will have to ask themselves in order to arrive at practices and directions that are widely accepted.

The framework is meant to be used by actors facing complex situations characterising the governance towards responsible research and innovation, actors wanting to reflect strategically on their own position as well as

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[1] Please note that the Res-AGorA Responsibility Navigator is licensed under the Creative Commons Attribution-NonCommercial 4.0 International License.

those of others in navigating research and innovation towards higher levels of responsible action. Since these actors have different roles and different needs, they will have to make choices as to whether and how to tailor the Res-AGorA Responsibility Navigator according to specific contexts.

4. What Next?

If the **Responsibility Navigator** is to make a difference, the resulting actor strategies have to aim for effectively transforming present day practices of research and innovation towards 'responsibilisation', i.e. a process by which actors involved internalise issues of concern, enabled by appropriate organisational conditions and governance mechanisms. Given that there will always be multiple responsibility-related goals (from safety and sustainability to inclusiveness and responsiveness) as well as different instruments to promote it (from professional training and education, design principles, stakeholder and public dialogue to regulation by voluntary codes as well as hard law), the **Responsibility Navigator** aims at facilitating strategic reflection and continuous formative evaluations to understand how instruments interact and play out at different levels and contexts and to what extent goals are ultimately achieved.

The change agents using the **Responsibility Navigator** will be supported to work as 'institutional entrepreneurs' seeking to lead research and innovation performed in Europe to be more responsive.

Box 1: Ten Principles and Requirements for Navigating Towards Responsible Research and Innovation

Ensuring quality of interaction

1. **Inclusion**: Navigation towards responsibilisation is more likely to be transformative if its takes into account the diversity of actors relevant to the problem or project in a way that engages them directly and effectively in debate or joint activities, where both their material interests and core values are considered and if they perceive the processes of sense and decision making as legitimate, transparent and trustworthy.
2. **Moderation**: Organizational modes appropriate to build up trust, collect data and organize dialogue are needed in the form of 'fora', that is, institutionalized places or procedures for interaction and for 'bridging' different perspectives between contesting actors, after which some alignment of goals and procedures is expected.
3. **Deliberation**: Sense-making and decision-making among actors with different knowledge claims and positions, not only between organisational actors but also individuals, require confronting, synthesising and eventually compromising across different perspectives which might arise from various 'knowledges'.

Positioning and Orchestration

4. **Modularity and flexibility**: Legitimate and effective governance rest on carefully combining 'hard' and 'soft' regulatory mechanisms, allowing for self-regulation and organisation, as well as external control and accountability structures (e.g. supervision), where flexibility of governance arrangements should not lead to arbitrariness.
5. **Subsidiarity**: Complementary to the self-governance and the self-control expected from the alignment of mutual understanding of responsibility-related values and commitment, some level of hierarchical command-and-control process may be necessary in certain circumstances. This should be performed mainly by independent actors, capable to oversee and enforce, perhaps applying a variation of soft and hard pressures such as requiring transparency about R&I governance practices, naming and shaming, sanctions, and accountability, where both bottom-up and top-down responsible research and innovation governance approaches should be balanced with and attuned to the specific situation. In this context, 'external' authority should have a subsidiary (that is, a supporting, rather than a subordinate) function, performing only those tasks which cannot be performed effectively at a more immediate level.
6. **Adaptability**: Governance towards responsibilisation should be able to reflect different historical developments of R&I systems and changing conditions. Therefore, such calibration requires assessing whether governance arrangements still effectively and legitimately serve responsibility goals, where both goals and costs and consequences of governance instruments and arrangements may also change over time.

Developing Supportive Environments

7. **Capabilities**: Fostering responsibilisation crucially depends on reflexive individuals capable of recognizing, anticipating, deliberating, communicating, and collectively pursuing societally desired processes and outcomes of R&I activities and their evaluation. This process requires a certain level of 'governance literacy,' particularly important for next generation of public and private researchers, programme and research

managers, policymakers and members of civil society organisations, where learning and 'un-learning' new concepts via formal training or practice for assessing 'excellence' involving responsibility-related values are determinant.

8. **Capacities**: For individual capabilities to unfold and express themselves, they need a supportive organisational and network infrastructure, such as access to information and resources for participation. This requires the availability of spaces for reflection, interaction and negotiation, appropriate incentive structures and an open knowledge base.

9. **Institutional entrepreneurship**: Both capability and capacity building are most often not self-organising activities; instead, they require leadership, top-level and continuous support, vision and strategy, lobby work and the rewarding of institutional improvement in order to facilitate change towards responsibilisation.

10. **Culture of transparency, tolerance and rule of law**: Only basic democratic principles such as rule of law and freedom of speech will make responsibility-related governance effective and sustained overtime. For this reason, the ability to make claims and to invoke legal or political means is a necessary condition for fostering responsibilisation at different organizational settings and arrangements. Enacting the aforementioned governance principles implies supporting the free ability to think and act in a proactive way and under the rule of law, where actors feel empowered by the appropriate organizational culture.

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The Policy Note is #2 of 3 and will be followed by one further note:

> Policy Note #1 *Lessons from RRI in the Making*.
> Policy Note #3 *Res-AGorA Outputs and Outcomes: Bringing it all together in the e-book and final conference.*

The Res-AGorA consortium are:

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While every caution has been taken to represent the views of the interviewees and participants, the final representation remains the responsibility of the authors. The views and opinions expressed in this Policy-Note may not be taken as official views of the Res-AGorA nor of the external participants.

The Res-AGorA e-book is forthcoming and will be for download from the Res-AGorA website.

Visit the Res-AGorA website: www.res-agora.eu/

See the Res-AGorA video: Potentials and barriers of RRI

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