

Responsible Research & Innovation (RRI)

Responsible Research and Innovation is an approach that anticipates and assesses potential implications and societal expectations with regard to research and innovation, with the aim to foster the design of inclusive and sustainable research and innovation.

Responsible Research and Innovation (RRI) implies that societal actors (researchers, citizens, policy makers, business, third sector organisations, etc.) work together during the whole research and innovation process in order to better align both the process and its outcomes with the values, needs and expectations of society.

In practice, RRI is implemented as a package that includes multi-actor and public engagement in research and innovation, enabling easier access to scientific results, the take up of gender and ethics in the research and innovation content and process, and formal and informal science education.

- What is Responsible Research and Innovation?

Responsible Research and Innovation is:

- A concept which has been adopted as a cross-cutting issue at Horizon 2020, the EU Framework Programme for Research and Innovation 2014-2020;
- Doing science and innovation with society and for society, including the involvement of society 'very upstream' in the processes of research and innovation to align its outcomes with the values of society;
- A wide umbrella that brings together different aspects of the relationship between science and innovation and society: public engagement, open access, gender equality, science education, ethics and governance.

RRI's aim is to create a society in which research and innovation practices strive towards sustainable, ethically acceptable, and socially desirable outcomes. RRI does so in such a way that the responsibility for our future is shared by all people and institutions affected by and involved in research and innovation practices.

RRI does not correspond to one fixed definition. First and foremost, it is now a term in the legal text of Horizon 2020 from the European Parliament and the Council, introduced as follows in Preamble 22:

- "With the aim of deepening the relationship between science and society and reinforcing public confidence in science, Horizon 2020 should foster the informed engagement of citizens and civil society in R&I matters by promoting science education, by making scientific knowledge more accessible, by developing Responsible Research and Innovation agendas that meet citizens' and civil society's concerns and expectations and by facilitating their participation in Horizon 2020 activities. The engagement of citizens and civil society should be coupled with public outreach activities to generate and sustain public support for Horizon 2020". (European Parliament and Council 2013)

- “Responsible Research and Innovation means that societal actors work together during the whole research and innovation process in order to better align both the process and its outcomes, with the values, needs and expectations of European society. RRI is an ambitious challenge for the creation of a Research and Innovation policy driven by the needs of society and engaging all societal actors via inclusive participatory approaches”. (European Commission 2012)

The European Commission specified that the RRI framework consists of the following six keys:

- 1) **Public engagement**: The process of R&I is collaborative and multi actor: all societal actors (researchers, citizens, policymakers, industry, educators, etc.) work together during the whole research and innovation process in order to align its outcomes to the values, needs and expectations of European society.
- 2) **Gender equality**: The ideal of gender equality in RRI is a society where the representation of masculine and feminine values in research and innovation are balanced. Issues addressed by this policy agenda challenge people to think about the gendered nature of behaviour, discourse, products, technologies, environments, and knowledge.
- 3) **Science Education**: Focuses on (1) enhancing the current education process to better equip citizens with the necessary knowledge and skills so they can participate in research and innovation debates; and (2) increasing the number of researchers (promote scientific vocations).
- 4) **Open Access**: Addresses issues of accessibility to and ownership of scientific information. Free and earlier access to scientific work might improve the quality of scientific research and facilitate fast innovation, constructive collaborations among peers and productive dialogue with civil society.
- 5) **Ethics**: Focuses on (1) research integrity: the prevention of unacceptable research and research practices; and (2) science and society: the ethical acceptability of scientific and technological developments.
- 6) **Governance**: To reach futures that are both acceptable and desirable, governance arrangements have to (1) be robust and sufficiently adaptable to the unpredictable development of research and innovation (de facto governance); (2) be familiar enough to align with existing practices in research and innovation; (3) share responsibility and accountability among a large variety of actors and provide instruments to actually foster this shared responsibility.

The working definition of RRI remains open to further inquiry and deliberation. RRI is much rather an umbrella term, including a wide range of notions in the academic literature and policy reports. What these notions have in common is that they all strive to create responsible practices in research and innovation. Thus, RRI can be understood as a shift in responsibility: the shift from thinking in terms of individualist and consequentialist notions of responsibility to thinking in terms of collective and distributed responsibility and processes.

Potential key themes than could be included in the future in the analysis of RRI are:

- 7) Social Justice
- 8) Inclusion
- 9) Sustainability

- **Implementing RRI in Horizon 2020**

Responsible research and innovation is key action of the ‘Science with and for Society’ objective. RRI actions will be promoted via ‘Science with and for Society’ objective via:

- actions on thematic elements of RRI (public engagement, open access, gender, ethics, science education), and
- via integrated actions that, for example, promote institutional change, to foster the uptake of the RRI approach by stakeholders and institutions.

RRI is furthermore a ‘cross-cutting issue’ in Horizon 2020, which will be promoted throughout Horizon 2020 objectives. In many cases, inter- and transdisciplinary solutions will have to be developed, which cut across the multiple specific objectives of Horizon 2020. Within the specific objectives of programme, actions can focus on thematic elements of RRI, as well as on more integrated approaches to promote RRI uptake.

RRI Tools

RRI Tools, a project financed by the European Commission through the Seventh Framework Programme from 2014 to 2016, has studied the literature on RRI to get a first impression on what can be distilled from current definitions, and based on this they suggest developing a working definition of RRI that specifies both outcomes and process requirements of the responsible research and innovation process.

The RRI tools project will develop tools for disseminating, training, implementing and practicing RRI in Europe. The tools will be used by policymakers (with a special focus on them), science educators, R&I-intensive industries, CSOs, and researchers and, therefore, need to be tailored to their motivations and needs. The project is organizing stakeholder workshops throughout Europe to give representatives of these groups the opportunity to express their ideas and needs in promoting and realizing RRI.

To make the translation from such theoretical notions of RRI to practical RRI standards and tools, the Consortium will investigate ‘real world’ experiences with RRI by looking at existing practices that might already exert one or more elements featuring in the RRI working definition. Such experiments can inspire others and should be encouraged. Future R&I practices can learn from steps that have already been made. The RRI Tools project thus collects promising RRI practices to analyse them and to draw lessons from them.

In their view, these RRI outcomes can be separated into learning outcomes (engaged publics, responsible actors and responsible institutions), research & innovation outcomes (ethically acceptable research and innovation, sustainable research and innovation and societally desirable research and innovation) and societal outcomes (solutions to grand challenges).

As far as process requirements for RRI are concerned, RRI Tools consortium agrees that RRI should have four integrated dimensions: anticipation (envisioning the future and understanding how present dynamics of promising shape the future), reflexivity (which occurs as first-, second- and third-order learning), inclusion (the involvement of a wide range of stakeholders, such as users, NGOs, etc. in the early development of science and technology) and mutual responsiveness (responding to emerging knowledge, perspectives, views and norms). In addition, RRI Tools suggests adding another three process requirements in their conceptualization of RRI: diversity (key criterion for the evaluation of interactive policy-making

processes), meaningful openness (rephrasing transparency) and adaptive change (describing how an RRI process must leave room to adaptation).

Finally, RRI Tools rename the six key dimensions which have been defined by the European Commission (ethics, governance, public engagement, science education, gender and open access) as policy agendas. In their view, it is necessary to identify the RRI potential per policy agenda in order to be able to search for RRI best practices.

On behalf of the RRI Tools consortium has released [the beta version of the RRI Toolkit](#). RRI Tools has developed a Toolkit that:

- 1) introduces a holistic framework for RRI
- 2) gathers more than 350 resources (tools, best practices, articles...) useful for applying RR
- 3) will contain specific guidelines on how to implement RRI in diverse contexts and
- 4) is a sustainable effort that will allow the community to contribute with their own resources and have fruitful discussions during the following years.

RRI Tools' guidelines on how to implement or [put RRI into practice](#) will be released, presumably, on May 2016.

Fuentes de información:

- [Responsible research & innovation \(EU\)](#)
- [Folleto de la UE acerca de RRI](#)
- [Rome declaration on Responsible Research and Innovation in Europe](#)
- [Responsible Research and Innovation: Options for Research and Innovation Policy in the EU](#)
- [RRI Opportunities in Horizon 2020](#)
- [Indicators for promoting and monitoring Responsible Research and Innovation: Report from the Expert Group on Policy Indicators for Responsible Research and Innovation](#)
- [Options for Strengthening Responsible Research and Innovation](#)
- [A report on Responsible Research & Innovation](#)
- [Quality criteria and indicators for responsible research and innovation: learning from transdisciplinarity](#)
- [Observatory of Responsible Research and Innovation](#) (still in Beta):
- [Towards Responsible Research and Innovation in the Information and Communication Technologies and Security Technologies Fields](#)
- [Navegador ResAgora](#) → Responsibility Navigator (RRI)
- RRI Projects:
 - [RRI TOOLS](#) Project (FP7):
 - o <http://www.rri-tools.eu/about-rri>
 - o [RRI Toolkit](#) (still in Beta)
 - o [RRI TOOLS Report Summary](#)
 - o [RRI Tools: towards RRI in action](#)
 - o [A catalogue of good RRI practices](#)
 - [NERRI-Neuro-Enhancement: Responsible Research and Innovation](#); NERRI Project (FP7):
 - o Libro blanco de RRI (por finalizar)
- [Good practices and useful resources for H2020 projects](#)
- [Recommendations from industry and end-users for RRI](#)
- [RRI and End-Users](#)
- [RRI Funder Requirements Matrix](#)
- [RRI - Best Practice in Industry](#)
- [Agreed \(RRI\) Convergence Strategy](#)
- [Responsible research and innovation: A manifesto for empirical ethics?](#)

- **Conferencias y Jornadas:**

- [Info day on RRI-SSH in ICT-related parts of H2020 WP16-17](#): Bruselas, 7 de Diciembre 2015
([Vídeo de la sesión](#))

- [Putting RRI into practice](#) (Graz, Austria: 7 Jun 2016); [Programme](#)

- "II Jornadas RRI Tools Madrid: ¿Cómo implementar la Investigación e Innovación Responsables?" (Madrid, 30 May 2016). Agenda and registration through the [web](#)