RESPONSIBLE RESEARCH AND INNOVATION IN PRACTICE

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This policy brief provides insight into

- → The concept of Responsible Research and Innovation (RRI)
- → The relevance for RRI in the United States
- → The RRI-Practice project

The RRI-Practice project

The main aim of RRI-Practice is to analyse RRI related discourses and pathways to implementation, including barriers and drivers, in 22 research conducting and research funding organisations, in 12 European and non-European countries, in order to identify, understand, disseminate and promote RRI implementation best practices that can be scaled up at European and global levels.

The U.S. case study focused on Arizona State University's Biodesign Institute (BDI) and is now concluded.

The project is funded by the European Commission, in the period 2016 – 2019.

Interpretations of RRI

Responsible Innovation typically seeks ways to make research more anticipatory, inclusive, reflexive, and responsive (see https://www.sciencedirect.com/science/article/pii/S0048733313000930).

The European Commission emphasizes five policy keys for RRI: ethics, gender, open access, societal engagement and science education (see https://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation).

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POLICY BRIEF

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Responsible research and innovation (RRI) has emerged in recent years, especially in Europe, as a science policy framework that seeks to achieve a) engaged publics and responsible actors in the science and innovation field; and b) ethically acceptable, sustainable and socially desirable research and innovation outcomes that are aligned with societal needs and challenges.

While RRI is not as well-known or well-institutionalized in the U.S. as in Europe, many elements of RRI are relevant in the United States. The European Union has identified five "keys" to RRI: ethics, gender, open access, societal engagement, and science education. While each of these keys is importantly applicable in the U.S., science and innovation policy here has not explicitly linked them together in any framework. Some are handled through more general frameworks, e.g., gender through Title IX of the Civil Rights Act, while others are handled more narrowly through policies of specific research funding agencies, e.g., science education through the Directorate for Education and Human Resources at the National Science Foundation (NSF). Research on Ethical, Legal and Social Implications (ELSI) of genomics at the National Institutes of Health, NSF's "broader impacts" criterion, and other research organized around large initiatives are also other means that approximate RRI.

In February 2017, a research team based at Arizona State University (ASU) organised a workshop with key stakeholders in the U.S. research and innovation system. This workshop was followed by interviews with researchers at ASU's Biodesign Institute (BDI) and two focus groups, one on gender and diversity and one on open access/data and ethics.

This research suggests that recent political developments have complicated the trajectories of RRI, especially gender and diversity, open data, and science education, rendering national policy and practice uncertain in these areas. These complications introduced at the Federal level do not seem to have penetrated to the level of the Biodesign Institute. Values and concerns consistent with past agendas in science policy continue to drive priorities and possibilities at BDI.

A full account of the U.S. case study in the RRI-Practice project may be found at https://www.rri-practice.eu/wp-content/uploads/2017/06/USA_National_Workshop_Report_FINAL.pdf

ASU/Biodesign Institute RRI workshop

RESPONSIBLE RESEARCH AND INNOVATION IN PRACTICE

Do research and innovation create societal problems or solve them?

Research and innovation are continually offering new opportunities for people to engage with the world and with one another. Such opportunities create benefits and help make our lives easier and more enjoyable, but they also make our lives more complicated and are sometimes even harmful. From innovations in data science that enable personalized marketing and ideologically tailored political outreach, to genetic technologies that seem to open up whole new ways of altering ourselves and the world we live in, scientific advance is consequential, far reaching and complex.

Responsible Research and Innovation (RRI) looks for ways to think about potential societal impacts of scientific discoveries and new technologies. It asks researchers to see themselves not simply as neutral contributors to an impersonal body of knowledge but rather as consequential actors within society, and to reflect on this new perspective in how they do their work.

Additionally, RRI looks to initiate positive change around the conditions for the production of knowledge itself—what incentives drive scientific knowledge production, and how can we rethink those incentives to get better outcomes? We need to ask these questions not only in pursuit of more accurate and reliable research results, but also for the creation of more widely accessible and socially beneficial knowledge and technologies.

RRI cannot be achieved through closed, elite systems of inaccessible knowledge. It necessitates opening up institutions and making them inclusive to the range of experiences and perspectives that make up our diverse communities. RRI also means making scientific methods, findings and insights transparent and widely accessible, and developing techniques for science education that encourage ways of thinking about the world that transcend traditional disciplinary and culturally shaped limits.

Do we have the tools for being responsible?

The RRI-Practice project identified a range of good practices for addressing these concerns, both at the Federal level in the U.S. and at the institutional level at the Biodesign Institute. Generally speaking, at the Federal level, national legislation and Executive Orders address issues including ethics, gender equity and diversity, and open access, while research funding agencies create research programs that address science education and social engagement. At the level of the research performers like ASU's Biodesign Institute, the strength of response to the RRI keys varies, depending on the particular kind of policy driver. For instance, responses to gender equity and diversity tend to be legalistic in following with Title IX, while responses to science education and societal engagement tend to be, when present, creative like the research programs that frame them. Our tools for creating more anticipatory, reflexive and responsive research are distributed across the system, and they are often not articulated and sufficiently developed to promote the positive social outcomes through research and innovation that we all hope to see. The project has identified a number of areas where action can be taken to strengthen research and innovation in the US, at the level of research conducting organizations, and at the national level. For a deeper dive into the findings of the project, you can find the U.S. national case study report at https://www.rri-practice.eu/wp-content/uploads/2018/09/RRI-Practice_National_Case_Study_Report_USA.pdf

Remarks by ASU President Michael Crow at the National Workshop

"Even if we do end up with this big AI system, if we haven't created a society which is more broadly engaged in all aspects of its future, and have not made it more sustainable, more beautiful, more fair, more egalitarian, if we haven't done that, then we ourselves, the universities, we will have been the main contributors to whatever that collapse is as we enter into the second dark age."

Partners:
Oslo and Akershus University College (NO), Karlsruhe Institute of Technology (DE), University of Exeter (UK), Commissariat a L'Energie Atomique et aux Energies Alternatives (FR), University of Padova (IT), Applied Research and Communications Fund (BG), Stichting Katholieke Universiteit (Nijmegen) (NL), Wageningen University (NL), Chinese Academy of Science and Technology for Development (CN), Research and Information System for Developing Countries (IN), Arizona Board of Regents (US), Fundacao de Desenvolvimento da UNICAMP (BR), The University of Queensland (AU)

The RRI-Practice consortium