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### Responsible Research and Innovation in H2020

#### *Current Status and Steps Forward*

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# Policy Brief #1

## RESPONSIBLE RESEARCH AND INNOVATION IN H2020: CURRENT STATUS AND STEPS FORWARD

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### 1. INTRODUCTION

Science, research, and innovation are central to the European strategy for smart, sustainable, and inclusive growth.<sup>1</sup> The European Commission (EC) supports research and innovation that upholds European values of inclusiveness and democratic politics. It is also committed to directing research toward expanding the scientific and technological base of the European economy and industry, fostering broader benefits for society and tackling the most pressing societal challenges of our time.<sup>2</sup> One of the tactics taken by the EC to create and disseminate socially and economically beneficial knowledge and drive prosperity and social benefit for all is the cross-cutting Horizon 2020 (H2020) commitment to Responsible Research and Innovation (RRI).<sup>3</sup>

The EC is currently designing the 9th Framework Program for Research and Innovation. As stated by the High-Level Group on maximizing impact of EU Research and Innovation Programmes, chaired by Pascal Lamy: “the future EU R&I programme should aim to become the biggest co-created and co-creation programme in the world.”<sup>4</sup> In the remainder of this brief, at this pivotal moment in European research and innovation, we draw on the preliminary work of the NewHorizon project—commissioned to develop the conceptual and operational basis to integrate RRI into European and national research and innovation (R&I) practice and funding—to present a current state of RRI in H2020. We also delineate opportunities for the EC to better employ RRI as part of its strategy to steer Europe toward smart, sustainable, and inclusive R&I.

■ 1. (COM(2010) 2020)

■ 2. (REGULATION (EU) No 1291/2013)

3. *ibid*

4. European Commission: LAB – FAB – APP – Investing in the European future we want, Brussels, 2017

## RESPONSIBLE RESEARCH AND INNOVATION (RRI): WHERE DOES IT COME FROM? WHAT DOES IT MEAN?

Foundations of RRI can be seen in the 6th Framework Program of the European Union (EU), when the EC began to pay increased attention to building knowledge on better aligning science and society in research.<sup>5</sup> In Horizon 2020, RRI has emerged as a more advanced “process for better aligning R&I [research & innovation] with the values, needs and expectations of society. It implies close cooperation between all stakeholders in various strands comprising: science education, definition of research agendas, access to research results and the application of new knowledge in full compliance with gender and ethics considerations.”<sup>6</sup> The EC has also formulated Responsible Research and Innovation in terms of six key areas: (a) public engagement; (b) gender equality; (c) science literacy and science education; (d) open access; (e) ethics; and (f) governance. EU Commissioner for Research and Innovation, Carlos Moedas further articulated three goals for EU research and innovation policy, summarized as “Open Innovation, Open Science and Open to the World.” As Europe continues to experience challenges of trust in democratic and scientific institutions, EC commitments like the Open Agenda and RRI may be more important than ever.

## 2. NEWHORIZON: OUR APPROACH AND FIRST RESULTS

The NewHorizon<sup>7</sup> project — commissioned to advance the integration of RRI into European and national research and innovation (R&I) funding and practice — is establishing 19 Social Labs, spanning all H2020 programmes, to identify opportunities to evaluate the status quo and suggest improvements to further the implementation of RRI. Our initial work to establish these labs has included an extensive diagnosis, consisting of policy analysis, review of interim evaluation ma-

terials, and more than 150 expert interviews, of the current state of RRI in the H2020 research and innovation landscape. This work has revealed a range of ways that the implementation of RRI is currently lagging behind its potential. Here we present the collected results, implications, and recommendations from the initial phase of our research.

## 3. FINDINGS

### STRONG FIRST STEPS, BUT A LONG DISTANCE TO TRAVEL

Despite laudable first steps of having a vision for RRI in the founding regulation of Horizon 2020, at the programme level, RRI often seems to be included only as a pro-forma set of practices, rather than meeting the spirit of requirements around research ethics, public engagement, and gender equality. Good examples, such as the use of the indicators as well as best practice cases, developed in the MoRRI project may be used more extensively. As one example, when introducing societal aspects of R&I, most H2020 work programmes speak of technologies as having consequences for society or the environment but fail to mention how the cultural, societal, and human factors help shape and co-produce science and technology. As another example (also covered by the Interim Evaluation of Horizon 2020),<sup>8</sup> projects have made a promising show of improving the gender balance of teams and leadership, but devoted far less attention to addressing more systemic issues of gender bias and dynamics affecting R&I.

### LIMITED INCLUSION OF PUBLICS AND STAKEHOLDERS CONTRIBUTES TO SEPARATION FROM SOCIETY

The RRI vision of a socially inclusive R&I framework focuses on, among others, citizen participation, societal impact, fostering solidarity and underpinning horizontal, non-top down thinking.<sup>9</sup> When public or stakeholder di-

■ 5. <https://ec.europa.eu/research/swafs/index.cfm?pg=about>

■ 6. Competitiveness Council, 4-5 December 2014; 16505/14, 3353rd Council Meeting

7. The NewHorizon project (European Commission Grant Agreement No 741402) seeks to promote strong integration of responsible research and innovation into national and international research and innovation funding. To do so, we are engaging a wide-ranging group of R&I stakeholders from across Horizon 2020 programming, and co-creating tailor-made “pilot actions,” based on key needs of European and national research and innovation funding programmes related to inclusive and responsible research and innovation. Get in touch with us to learn more, participate in a Social Lab, share your unique perspective, and shape the future of Responsible Research and Innovation in Europe.

Website: [newhorizon.eu](http://newhorizon.eu) | Newsletter: [list.newhorizon.eu](mailto:list.newhorizon.eu) | [contact@newhorizon.eu](mailto:contact@newhorizon.eu)

8. Available at:

[https://ec.europa.eu/research/evaluations/pdf/book\\_interim\\_evaluation\\_horizon\\_2020.pdf#view=fit&pagemode=none](https://ec.europa.eu/research/evaluations/pdf/book_interim_evaluation_horizon_2020.pdf#view=fit&pagemode=none)

9. cf.: <https://newhorizon.eu/visioning-conference/>

mensions are included in projects, definitions of publics or stakeholders are often very narrow and constraining. For example, projects conducted at lower technology readiness levels (TRLs) often focus on specific technologies void of their societal implications, despite having been funded, in part, on the promise of contributing to some form of economic and broader societal well-being. At low TRLs, a dominant approach of developing technology roadmaps makes projects include perspectives mainly of large institutional actors (for example large multinational industry interests, academic experts, or national policy makers) rather than initiating more inclusive R&I approaches. Alternative methods, supported by RRI, could help projects engage and learn from a wider range of societal actors with diverse identities, interests, and values.

This challenge is reinforced by approaches to communication and dissemination of research outputs in ways that either infantilize nonscientists or pre-determine that citizens and stakeholders exist simply to receive information, rather than also provide knowledge and reflections related to their interests and values. Such a closed view of stakeholder engagement and citizen participation limits Europe's ability to develop new knowledge and pathways of realizing inclusive growth and wellbeing in our complex and interconnected physical and social worlds. Our preliminary findings signal, variously: a lack of awareness, limited motivation or incentives, or mismatches in skills and expertise as challenges to the implementation of RRI at project and policy (national and EC) levels.

### **OVERLY CONSERVATIVE IMPACT EVALUATION CRITERIA MAY UNINTENTIONALLY HINDER RRI ADOPTION**

Over the course of the three H2020 Work Programmes, only a small percentage of dedicated projects deeply explore ethical issues associated with R&I, focus on science education, or conduct citizen engagement. Across programme lines, little attention is paid to encouraging deeper engagement with RRI issues. One of the strongest indications of this limited adoption can be seen in the minimal or token inclusion of RRI in many project impact evaluations. The European Research Council, for example, despite its efforts to acknowledge RRI aspect, e.g. gender and ethics, bases its evaluation solely on the concept of peer-reviewed scientific excellence. This limits assessment of a potentially broader range of social

impacts of frontier science, in the process hindering such research from engaging with broader values and interests related to the coproduction of socially robust scientific knowledge.

### **BRIGHT SPOTS OF PROGRAMMES PIONEERING RRI EXIST AND COULD BE LEVERAGED AND STRENGTHENED**

Despite limited adoption of the term and practice of RRI, researchers and stakeholders of some programmes are taking pioneering steps on issues related to gender equality, ethics, and open access.<sup>10</sup> In some programme lines attention to ethical and other human and societal dimensions of research in work programme texts and topics is visible. Societal challenge programs, like HEALTH, FOOD and ENERGY, ensure that many projects are embedded in larger European policy contexts. They also support an inclusive approach to R&I, e.g. through fostering "multi-actor approaches" in agriculture, forestry, and other areas of bioeconomy research and innovation; or multi-disciplinary approaches in health and smart cities research. Further, Open Innovation and Open Science are deeply integrated into some programme lines. This includes the European Institution of Innovation and Technology (EIT) where research and innovation projects take place in "knowledge triangles" involving companies, research institutions, and universities collaborating in Knowledge and Innovations Communities (KICs).

The 'Science with and for Society' (SWAFS) programme line is also a bright spot in Commission efforts to advance RRI. SWAFS has demonstrated an ability to advance conceptual development around, awareness of, and capacities to support embedding of RRI in a variety of settings. Such achievements have been realized despite a very small budget relative to other H2020 lines. Without further commitment by the Commission to advancing knowledge and practice of RRI through dedicated channels like SWAFS, the effectiveness of funded projects and the return on European investments to shape R&I to be more reflective and inclusive of broad societal values and interests may lack staying power.

### **OVERALL, PROGRESS BY THE COMMISSION TO ADVANCE COMMITMENTS TO RRI ARE LIMITED AND INCONSISTENT**

While some programme lines encourage RRI, as stated above, and increasing attention is dedicated to RRI in

■ 10. Many projects explicitly fund gold or green open access publications, for example. However, we also observed that private sector actors did note a seeming tension between open access and an essential need for industry to safeguard competitive edges related intellectual property.

each successive work programme, other programme lines demonstrated shifts in the opposite direction with RRI being present in earlier work programmes but becoming absent in more recent ones. The Joint Research Center, with a key potential impact on both EC research policy and different European publics, demonstrates hardly any awareness/knowledge of RRI issues. RRI implementation across ERA-Net Co-funds is similarly patchy. Such mixed messages across H2020 demonstrate an inconsistency in the Commission approach to supporting RRI and may hinder larger EC aspirations of inclusive R&I aligned with values, needs, and expectations of Europe. These issues will be tackled in the NewHorizon Social Labs to offer actionable ideas to assist the mainstreaming of RRI in FP9 and beyond, also providing the Commission with narratives about challenges as well as good practices how responsibility in research and innovation may be addressed.



#### 4. IMPLICATIONS & ACTION ITEMS

Inclusive and responsible R&I are vital aspirations embodied within the EU. Our early research highlight steps that the EU has already initiated to advance RRI in H2020 programming, such as including commitments in the founding regulation of the programme and establishing devoted activities through SWAFS programming. However, our findings also point to numerous challenges for widespread and sustained implementation across H2020 programming and projects. Our findings indicate a range of policies that could be pursued to build capacity of the European R&I enterprise to realize RRI.

As Member States, Associated Countries and the European Commission continue to aspire to smart, sustainable and inclusive growth, remaining H2020 work programme efforts and future initiatives such as Framework Programme 9 (FP9) could benefit from strengthening incentives to implement RRI at programme and project levels. Inclusion of RRI in topic scoping language represents a partial step, but clear requirements for RRI in evaluation criteria—whether for excellence, impact, or quality and efficiency of the implementation—seems to be an essential signal to research and innovation stakeholders.

As immediate action,

**1.** the design of FP9 could place increased and strategic emphasis on excellence in terms of transparent, and socially robust knowledge that is inclusive of stakeholder and citizen perspectives, including such approaches in determining research agendas, offering inter- and trans-disciplinary viewpoints and inviting stakeholders to the evaluation process. In the General Annexes of the H2020 2018-2020 Work Programme, the general excellence criteria associated with Research and Innovation Actions represents one such example of a change in this direction,<sup>11</sup> although such language can (and often seems to) be removed at the unrestrained discretion of individual programme lines.

**2.** research shows that criteria-changing policies work best with additional investments in capacity building and training of programme officers, evaluators, researchers, innovators, and stakeholders to learn more about ways that science and technology are embedded in society and about the benefits of building more inclusive approaches to R&I.

*With the increasing complexity and interconnectedness of markets, societies and regulations, R&I funding needs new instruments, tools and perspectives to support innovators in this process and assure societally desirable outcomes. In this vein, a range of first steps could be continued and strengthened by the EC.*

■ 11. "Appropriate consideration of interdisciplinary approaches and, where relevant, use of stakeholder knowledge and gender dimension in research and innovation content", European Commission Decision C(2017)7124 of 27 October 2017, page 29.

**3. In-person citizen consultations** could be organized to **complement online citizen consultations at key points in work programme development** (various European Economic and Social Committees, and groups like the Bioeconomy Stakeholder panel or the Circular Economy Stakeholder panel could provide inspiration and examples);<sup>12</sup> commissioned inputs from conventional stakeholder committees of the EC could be supplemented with broader, more diverse stakeholder groups. Such observations are consistent with the short- and long-term areas of improvement identified by the Interim Evaluation of Horizon 2020 calling for enhanced user engagement in R&I agenda setting, and involvement, transparency and inclusivity of stakeholder involvement in co-design of agendas.<sup>13</sup>

*Many other opportunities exist for the EC to leverage existing research policy infrastructure to further advance its mission of RRI.*

**4.** Existing resources across Europe—like National Contact Point Networks, European Innovation Partnerships, and European Technology Platforms—could be leveraged to **raise awareness and build capacity of RRI in researcher and stakeholder communities.**

**5.** Investments in the development of “Key Performance Indicators” or other methods of **monitoring and evaluating RRI implementation** (for example developed in the 2015 Expert Group on Policy Indicators for Responsible Research and Innovation,<sup>14</sup> and carried forward by the MoRRI project<sup>15</sup>) could provide vital tools and instruments that can be implemented and learned from at a greater scale across Commission R&I programming.

Open questions about effective and efficient ways to advance these objectives of the Commission remain fruitful areas of inquiry for new interdisciplinary and transdisciplinary research of inclusive and responsible R&I.

This NewHorizon policy brief is based on the diagnosis of the current uptake of RRI in all program lines of H2020.

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■ **12.** The Citizen and Multi-Actor Consultation on Horizon 2020 (CIMULACT) could be a model here, available at: <http://www.cimulact.eu/publications/>

■ **13.** Pages 234-237 (footnote 7) of the Interim Evaluation.

**14.** Strand R, et al 2015. EUR 26866 EN. Available at:

[http://ec.europa.eu/research/swafs/pdf/pub\\_rri/rri\\_indicators\\_final\\_version.pdf](http://ec.europa.eu/research/swafs/pdf/pub_rri/rri_indicators_final_version.pdf)

**15.** Monitoring the Evolution and Benefits of Responsible Research and Innovation (MoRRI). Available at:

<http://www.technopolis-group.com/report/public-access-version-final-draft-study-report-d11/>