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Public Engagement for Responsible Research and Innovation

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Public Engagement for Responsible Research and Innovation

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The European Commission has put Responsible Research and Innovation (RRI) at the heart of their research and innovation funding scheme Horizon2020. This requires 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 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..¹ The concept of good 'governance' of research then ties these elements together.

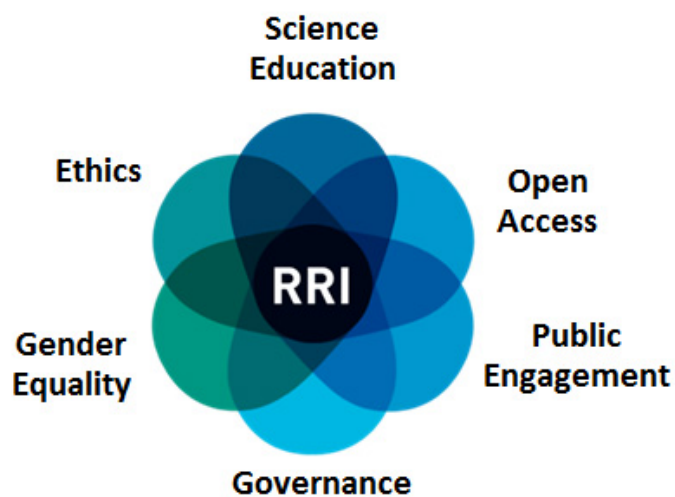


Figure 1: The key elements and policy agendas of Responsible Research and Innovation²

Public engagement (PE) in Responsible Research and Innovation (RRI) is about co-creating the future with citizens and Civil Society Organisations (CSOs), also bringing on board the widest possible diversity of actors that would not normally interact with each other, on matters of science and technology.

In this paper we will elaborate on the role of Public Engagement in research (PE) as a key approach to achieve RRI. We will use PE as an umbrella term, encompassing Community Engagement and Community-Based Research as well.

¹ <http://ec.europa.eu/programmes/horizon2020/en/h2020-section/responsible-research-innovation>

² RRI Tools, deliverable D1.1: Policy brief on the state of the art on RRI and a working definition of RRI
http://www.rri-tools.eu/documents/10182/18424/RRITools_D1.1-RRIPolicyBrief.pdf/e89f61f1-582e-40e3-8e49-7a5344c04473?version=1.2

The main drivers to promote PE in research are both democratic and instrumental. It can be claimed that tax payers should have some say in how their money is used for research, next to the general right of citizens to have a say on developments that will impact their lives and our planet. However, it is also said that the research itself will be better applicable with a broader involvement. This holds especially true for research on what are called the Grand Societal Challenges of our time, such as Healthy Ageing, Sustainability and Inclusive Societies³. These challenges cannot be solved by experts in ivory towers or by pure market forces on their own, but need a broader knowledge base.

We will highlight approaches taken in three current pan-European projects:

- a) Engage2020, aimed at advancing public engagement in RRI, by giving inspiring examples of promising practices in PE, to researchers and research policy makers, and identify policies to support genuine engagement;
- b) RRI-Tools, building on Europe wide stakeholder analysis to increase creativity and shared ownership of the R&I process, and make accessible tools and digital resources to advance, advocate, train, disseminate and implement RRI at their institutes or in their regions;
- c) EnRRICH, building staff capacity in higher education to facilitate students' development of knowledge, skills, attitudes and competencies in RRI, and simultaneously respond to the research needs of society.

We will close with some challenges and approaches to foster RRI in the near future.

Engage2020: Mainstreaming the understanding of Public Engagement

Engage2020 is funded by the European Commission to support Public Engagement in Research (2013-2015)⁴. The project made an overview of various practices to involve civil society stakeholders in various phases of the research process (Engage2020 Consortium, 2015). This can be used by researchers and will help to mainstream engagement as an important element of RRI. The information has been collected from various EU funded projects on Science & Society and other literature sources. Next, a global survey was done through our many networks, including Living Knowledge, to find additional engagement methods, and examples of their applications. Fifty-seven of these descriptions will become available in a searchable database.

The project also made an overview of the various policies that exist worldwide to support these practices (Kuhn *et al.*, 2015); this can inspire research funders and policy makers.

Citizens or their organizations can be involved in making research policy or developing research programmes; they can also be involved in setting research questions or executing the research.

³ <http://ec.europa.eu/programmes/horizon2020/en/h2020-section/societal-challenges>

⁴ Engage2020.eu

The engagement can have different levels of intensity as well; from an open discussion without any strings attached, to consultation –to better understand societal views- to involvement and collaboration in the research. This is shown in Figure 1 and explained in Table 1. Here we see that the engagement level decreases when researchers perform a more ‘supportive’ role, and the lead, or even decision making, rests fully with civil society. In our view, it can be argued that the Ladder of Arnstein (1969), often used to analyse PE, does in fact not apply to engagement in research as it does to public engagement in decision making. Arnstein’s ladder –though slightly implicit- suggests that the highest achievable engagement is that where the decision is in the hand of citizens, which is true for democratic policy making, but in our view the optimum engagement in research lies at the collaboration level, where research is co-designed, combining the ‘best of both worlds’. Examples are the Science Shops⁵ and Community-Based Research⁶.

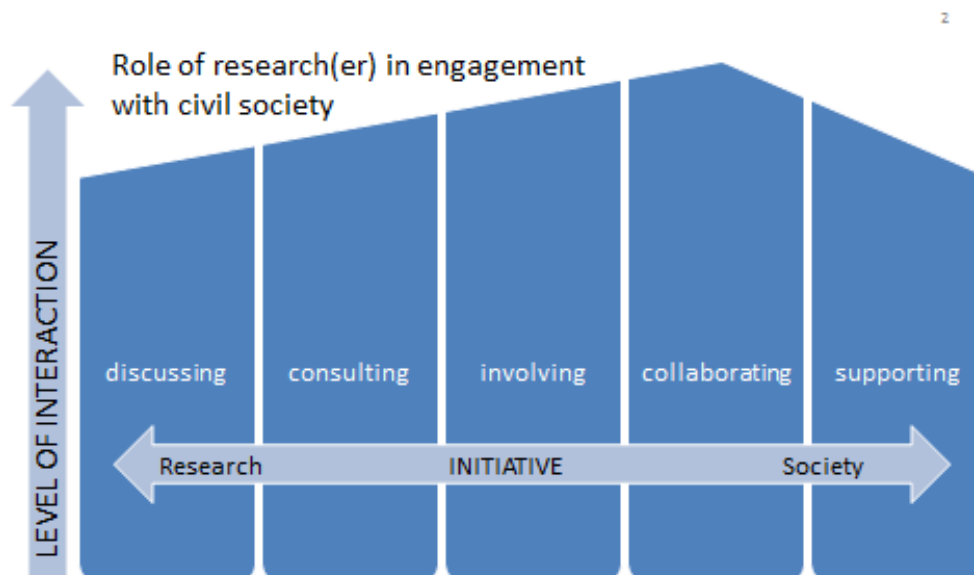


Figure 1: Role of research(er) in engagement with civil society and resulting level of interaction. *Please note: Pure one-way communication is not seen as engagement, nor is research done by stakeholders on their own. These activities would fall off the graph left and right.*

⁵ <http://www.livingknowledge.org/livingknowledge/science-shops>

⁶ See e.g. <http://communityresearchcanada.ca/>

Discussing	Consulting	Involving	Collaborating	Supporting
Sharing information about research & innovation and opening up channels for discussion and interactive communication. No 'strings attached'.	Requesting visions on research and innovation processes, and facilitating contributions and structured discussions. There are 'strings attached'.	Creating opportunities for contributions to deliberations and research activities or contributing to research execution as more than a subject in the project.	Working together on research initiation and/or execution, so there is co-ownership of the project.	Societal actors are in the lead in the research initiation and execution. On their request, they are supported by researchers or institutions, for parts they define.

Table 1: The different intensities of engagement explained

The project has shown that various pathways exist to engage with the public; this is depicted in Figure 2 and Table 2 connects these approaches to the levels of engagement. Figure 2 shows how knowledge is not exclusively generated in the domain of the academy – as it was seen in the Humboldtian university. In fact, university and civil society co-construct knowledge. Citizens and their organisations can submit their knowledge or skills and time, but are also able to put issues on the research agenda – even though this is still not a mainstream activity.

Through e.g. surveys (and media reports) research policy is now paying more attention to the Grand Societal Challenges. More direct impact, but on the project level, is achieved when e.g. Science Shops perform a research project for a community organisation. People can also become 'involved' through citizen science, which is 'hot' nowadays, and in a narrow definition involves people as amateur researchers (sometimes 'citizen science' is taken to be broader, including input to research agenda's).

	Role of the Researcher:				
Stage of R&I	DISCUSSING	CON-SULTING	INVOLVING	COLLABO-RATING	SUPPORTING
R&I Policy	Public Debate	Survey	Public Research Agenda		Referendum
R&I Program	Public Debate	Advisory Board	Patient Board		Citizen Jury

R&I Project Definition		Crowd Funding		Science Shop	Crowd Funding
R&I Activity	Science Café		Citizen Science	Community Based Research	Methodological Support Own Research

Table 2. Typical formats for engagement

Figure 2 also shows that there are complementary and overlapping approaches. All these together make research more aligned with societal values, needs and expectations. I.e., Science Shops often perform research *for* Civil Society Organisations, whereas many Citizen Science projects use individuals as data collectors in a project defined by researchers. Combining the strengths of both approaches, in which participants have a say in governing the research, would be similar to Participatory Action Research. Ergo, a lot of mutual learning and creation of synergies seems possible here.

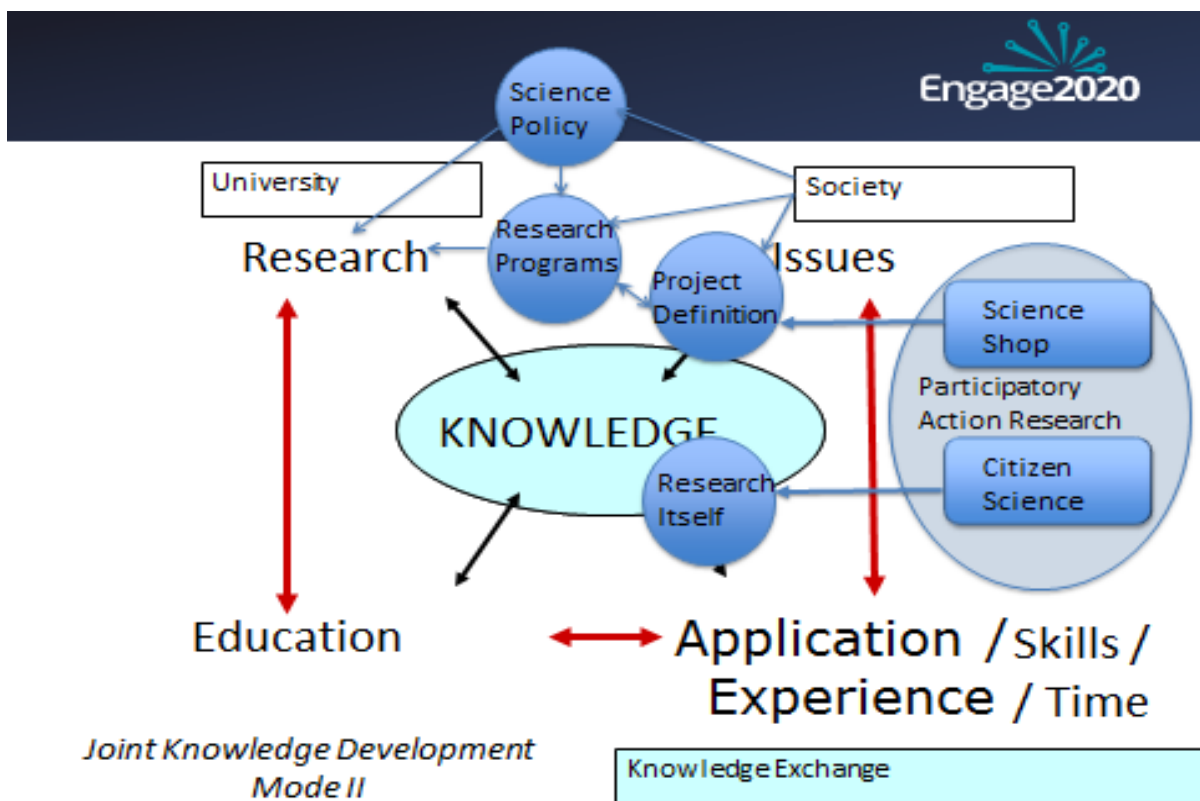


Figure 2. Different pathways to engage the public in the various phases of R & I.

RRI Tools: Advocating, training and disseminating Responsible Research and Innovation (RRI)

RRI Tools is a project funded for three years (2014-2016) by the European Commission under the 7th Framework Programme (FP7) to develop a toolkit on Responsible Research and Innovation, with the participation of all the concerned stakeholders: researchers, business and industry, policy-makers, education community, civil society organizations, education community. The ultimate aim of RRI Tools is to build an RRI Community of Practice across Europe during and beyond the project's life.

RRI Tools is being carried out by a Consortium of 26 partners extending across 30 countries in the European Research Area, led by La Caixa Foundation (Spain). These organizations include representatives from a wide range of stakeholders (research, civil society, policy making, education and business). It consists of four foundations, ten science centres, four universities and research centres, a Science Shop, a chamber of commerce and a technological partner, plus six related European networks. Together, these partners have relevant experience in all different aspects of Responsible Research and Innovation. The involvement of the different stakeholders is facilitated by 19 National RRI Hubs, which will promote RRI among the different stakeholders involved at local and national level.

In RRI participation should be considered as an "endeavour to learn" for all involved actors. Possible failures shall be seen as a value or starting point to be understood for improvement. Therefore experimentation, and very importantly, evaluation and learning of such experimental, collaborative processes are key for a continuous improvement.

Thus responsible research and innovation is a dynamic, iterative process by which all stakeholders involved in the research and innovation practice (researchers, policy makers, industry, citizens, educators) become mutually responsive to each other and share the responsibility regarding ethically acceptable, sustainable and socially desirable R&I outcomes - and processes.⁷

RRI-Tools sees the process requirements for RRI consisting of four integrated dimensions: anticipation (envisioning the future); reflexivity (embracing learning and reflection); 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 recognises the critical role of diversity, meaningful openness and adaptive change in conceptualising RRI.

⁷ RRI Tools, deliverable D1.1: Policy brief on the state of the art on RRI and a working definition of RRI http://www.rri-tools.eu/documents/10182/18424/RRITools_D1.1-RRIPolicyBrief.pdf/e89f61f1-582e-40e3-8e49-7a5344c04473?version=1.2, p. 4

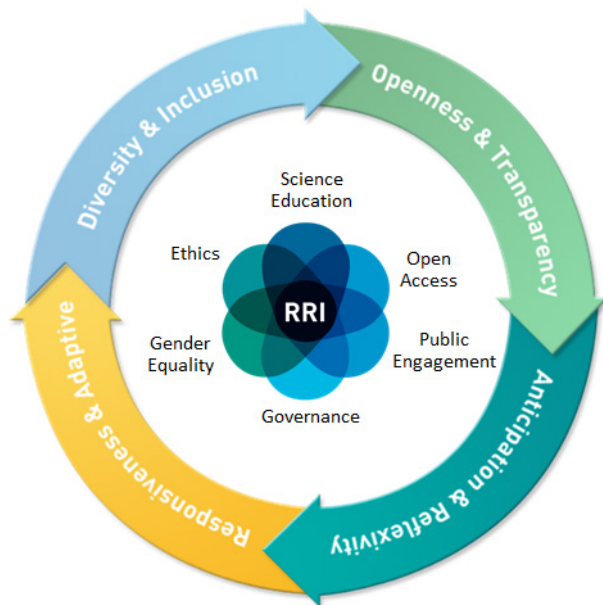


Figure 3: RRI process requirements (policy agendas inside the circle)⁸

Stakeholders, actors and institutions as well as the public, will be empowered to be involved in R&I actions that influence their lives and play a part in establishing and sharing responsibility for actions and outcomes by unveiling societal questions that need to be further considered and examined.

After having elaborated a working definition of Responsible Research and Innovation, the RRI Tools project organized a series of 27 workshops organized in 24 European countries, gathering a total of 411 participants from 5 stakeholder groups - researchers, business and industry, policy-makers, civil society organizations, and the education community. The workshops were set up to discuss stakeholders' understandings of RRI, what they saw as the opportunities and obstacles in moving towards this vision and what practical measures in their understanding could help to implement RRI processes. During these workshops, stakeholders were also invited to collect promising practices that illustrate responsible research and innovation in their country. Based on the preliminary work on the definition of RRI and these promising practices, the RRI Tools project put together a list of quality criteria of Good Practice Standards in RRI⁹ and a catalogue of 31 good RRI practices¹⁰, describing for each case its relation to the initial policy agendas as well as to the grand societal challenges. The respective process requirements, and the outcomes of the practice were analyzed for each mentioned case.

⁸ RRI Tools, deliverable D1.3: Report on the quality criteria of Good Practice Standards in RRI http://www.rri-tools.eu/documents/10182/18424/D1.3_QualityCriteriaGoodPracticeStandards.pdf/f7a1d707-5e54-48cb-949b-053dc7c6f36f, p. 9

⁹ RRI Tools, deliverable D1.3: Report on the quality criteria of Good Practice Standards in RRI http://www.rri-tools.eu/documents/10182/18424/D1.3_QualityCriteriaGoodPracticeStandards.pdf/f7a1d707-5e54-48cb-949b-053dc7c6f36f

¹⁰ RRI Tools, deliverable D1.4: A catalogue of good RRI practices <http://www.rri-tools.eu/documents/10182/18424/D+1.4+A+catalogue+of+good+practice+standards+in+RRI/16f80230-03e4-46e4-b655-b445e66aae3>

An important finding from the RRI-Tools stakeholder workshops is that there is a lack of existing collaborations between stakeholders. This is seen as an important obstacle by nearly all consulted groups, and the chance to establish new networks and partnerships was seen as an important opportunity by all. Moreover, Relations and How to do RRI are seen as the most important fields to take actions on according to the RRI-Tools stakeholder dialogues (Figure 4)¹¹.

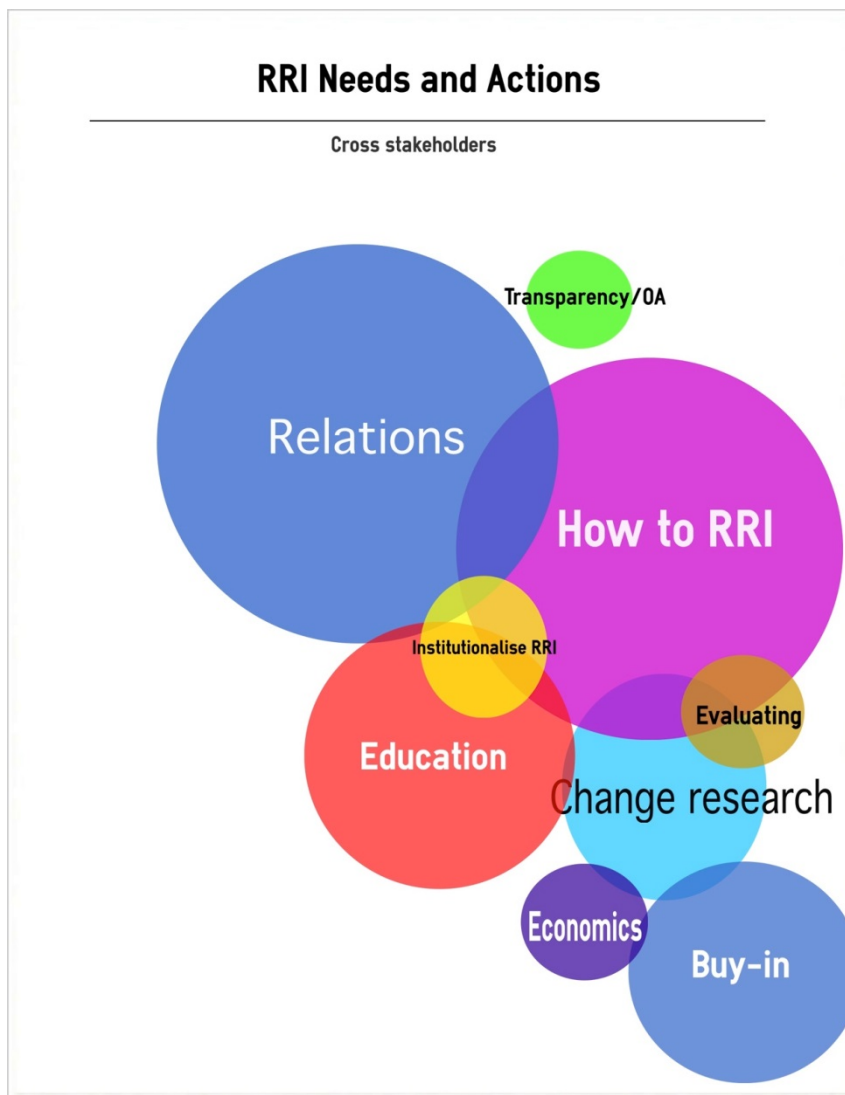


Figure 4: Overview issues identified as possible needs and actions for implementing RRI – shown by relative size/importance.

Next to applicable tools to implement RRI, establishing connections between stakeholder groups thus seem to be the greatest challenge related to RRI at the moment. Therefore one of the approaches the RRI-Tools project took is to develop a website which offers the

¹¹http://www.rri-tools.eu/documents/10182/18424/RRItools_D2.2-AnalysisNeeds+ConstraintsStakeholderGroupsRRI.pdf/d5aade5-12c4-4045-a813-15a55fc534ff.

needed tools but also supports the development of a community of practice, in which peer support can take place.

The existing diversity of formats and tools of public engagement, participation in research and co-design of R&I processes will be used here and / or recombined. The toolkit produced in this project will be available at the end of 2015 on the project's website www.rri-tools.eu.

The results of the wide consultation led among 400 stakeholders in Europe about obstacles, opportunities, and ideas for the implementation of RRI, as well as the list of RRI quality criteria and the catalogue of RRI good practices, that will set the basis for the RRI Toolkit are already available. You can find these reports online on: www.rri-tools.eu/workplan-deliverables.

EnRRICH: Enhancing higher education staffs' capacities to facilitate students' RRI skills

One of the strongholds of Science Shops is doing research with and for Civil Society Organisations, with active involvement of students. This motivated Science Shops start the EnRRICH project: Enhancing Responsible Research and Innovation through Curricula in Higher education. This project started in July 2015 and involves 13 consortium members (higher education & research institutions and a CSO) from 10 European countries for 30 months. EnRRICH aims at improving the capacity of students and staff in higher education to develop knowledge, skills and attitudes to support the embedding of RRI in curricula, by responding to the research needs of society as expressed by civil society organisations (CSOs).

As RRI is a rather new concept, especially in educational domains, EnRRICH recently took off with a revision of background information and a state of the art review relating to RRI in curricula across different academic disciplines and levels in higher education. Which good RRI teaching and learning practices are already present in higher education curricula? But also: which RRI competencies should students develop? In this way, student learning outcomes and competencies which should contribute to the development of responsible and responsive graduates are articulated, acting as a solid base for the rest of the project. Furthermore, students, stakeholder organisations, lecturers and others will be consulted to generate case studies of RRI in curricula and identify needs for further development. This will lead to manual for curricula embedded learning about RRI.

During academic year 2016-2017 partners will pilot good RRI practices of other partners in their own institution. For example: a first year lecture on societal issues and RRI methodologies to engineering students, a master student doing a Science Shop project in the frame of his or her master thesis or a postgraduate module on participatory research methods. Following previous Science Shop work in the European projects PERARES and TRAMS another EnRRICH work package will establish new Science Shops and support already

established ones. As a matter of fact, acting as bridges between science and society, Science Shops offer an ideal platform to embed RRI in curricula of higher education. Not only do they clearly involve public engagement and science education, their research is mostly open access and touches ethical aspects, for example in case certain vulnerable societal groups are being involved. Describing a research and innovation process that includes society from start to end of the research, RRI perfectly matches the Science Shop way of work: starting with the collective definition of the research topic, ideally resulting in the explicit use of research results by a societal group.

As the global community of Science Shops keeps on expanding, EnRRICH will consolidate the existing expertise with a Community of Practice. The successful Science Shop summer school, started in PERARES will also be updated and continued in the frame of EnRRICH – hopefully leading to even more and stable Science Shops. Besides this exchanging and piloting, EnRRICH will also try to advance the uptake of RRI in curricula by developing the policy context at different levels to encourage this work. By examining standards of academic quality in teaching and learning and looking at good practices from other projects, a template will be developed that other members can use to stimulate discussion on their region, country or institution. Through evaluation and sharing this, EnRRICH will kick start a global discussion on how RRI can be used in academic standards, providing the seeds to more and different RRI activities in curricula. Throughout the whole project duration, all this EnRRICH work and results will be widely disseminated through the Living Knowledge Network, e.g. by the 7th Living Knowledge Conference in Dublin, from the 22nd to the 24th of June 2016. Moreover, as all partners will pilot RRI practices in their own institutions, they will involve lecturers, students and local civil society organisations – leading to a massive EnRRICH dissemination.

Taking into account the clear links with other ongoing RRI projects, such as RRI Tools and Engage2020, continuous exchange and dissemination of EnRRICH results will also take place with members of those projects. Wider international dissemination will also occur thanks to the extensive EnRRICH advisory board, including members of Asian, Australian, African and American higher education institutions and networks.

Discussion and Conclusion

Research and education are tasked with developing visions for society and supporting sustainable technological and social innovations to empower people to participate in and shape transformation processes. In the understanding of Responsible Research and Innovation this development has to be shaped in co-operation with policy-makers, business and society at large.

The projects described above show case that previous EU policies on the different key agendas of Research and Innovation (R&I) have now come together and a community of

practice has arisen that fosters a responsible R&I uptake in research organizations. Investments have been made to create tools, for public engagement and the other keys, so RRI uptake in research is made easier. Investments are also made to train the researchers and leaders of tomorrow, by integrating RRI in higher education curricula.

By examining standards of academic quality in teaching and learning and looking at good practices from other projects the RRI concept can be used in academic standards, providing the seeds to more and different RRI activities in curricula.

Based on webinars and discussions that have been conducted, also with the European Commission, activities like Science Cafes and Service Learning, Science Shops and Citizen Science –in which more and more universities are getting involved nowadays- could be connected to work towards an innovative system of participatory (action) research. This also ties in to new projects that are currently in preparation with European and Global partners.

There are challenges ahead, in which dominant cultures in mainstream Research and Innovation will need to change. International cooperation here can function as a source of inspiration. A global community of practice, building on the many networks that exist focusing on engagement and social responsibility has the potential to shape an innovation-friendly culture that enables easier access to scientific results, a better uptake of the gender equality and ethics dimension in R&I and research processes that build on the broadest knowledge base.

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