

FoTRRIS

Fostering a Transition towards Responsible Research and Innovation Systems

Future of RRI

Deliverable D4.5

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About the FoTTRIS project

FoTTRIS develops and introduces new governance practices to foster Responsible Research and Innovation (RRI) policies and methods in Research and Innovation (R&I) systems.

FoTTRIS stresses that RRI is a collaborative activity from the very beginning. Therefore FoTTRIS adds the prefix 'co' to the acronym RRI. Important present-day challenges are of a global nature but manifest themselves in ways that are influenced by local conditions. Thus, FoTTRIS focuses on glocal challenges, i.e. local or regional manifestations of global challenges and on local opportunities for addressing them.

FoTTRIS performs a Transition Experiment, i.e. an experiment to support the transformation of present-day research and innovation strategies into co-RRI-strategies. It designs, tests and validates the organisation, operation and funding of co-RRI competence cells. A competence cell is conceived as a small organisational unit, which functions as a local one-stop innovation platform that encourages various knowledge actors from science, policy, industry and civil society to co-design, -perform, and -monitor co-RRI-projects that are attuned to local manifestations of global sustainability challenges.

Since research and innovation systems and practices in EU member states and within different research performing organisations vary, FoTTRIS experiments the implementation of new governance practices in five member states. These five experiments are evaluated, validated and constitute the basis for FoTTRIS policy recommendations towards EU and member states policy makers so as to enforce co-RRI into the national and EU R&I systems. Training is dispensed to various stakeholders, so as to form them to establish other co-RRI competence cells.

For more information see <http://www.fotrris-h2020.eu>

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List of acronyms

BCE: Back-casting exercise

co-RRI: co-created RRI, aiming at the common good

CSO: Civil Society Organisation

RRI: Responsible Research and Innovation

SDGs: Sustainable Development Goals

TE: Transition Experiment

UN: United Nations

1 Introduction to this report

This deliverable reports about the back-casting exercise (BCE) organised and executed by the FoTTRIS consortium in Paris on the 19th of September 2017. It therefore gives more information about the methodology followed during this exercise, the setting, and the outcomes of this intense day full of discussions. In addition to this, also a brief sketch is given of the overall research approach in the FoTTRIS project and its main subject of research and innovation, namely co-RRI.

As a result, the next chapters will give an answer to the following questions:

Chapter 2: How is 'co-RRI' being conceptualized in the FoTTRIS project?

Chapter 3: How is the back-casting exercise related to the other research activities in the FoTTRIS project?

Chapter 4: What methodology was chosen for this back-casting exercise?

Chapter 5: What was the vision the back-casting exercise started from exactly?

Chapter 6: What were the outcomes of the back-casting exercise?

Chapter 7: What did the FoTTRIS consortium do with the outcomes of the discussion that took place this day?

2 The FoTRRIS project: new practices and tools to foster co-RRI

‘Responsible research and innovation’ (RRI) was introduced as a new way to conceptualise the relationship between science and society. According to the European Commission RRI 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.’*¹ In a broader sense RRI is *‘taking care of the future through collective stewardship of science and innovation in the present.’*²

RRI provides principles for research and innovation in order to meet these challenges. According to the European Commission, inclusive engagement, commitment to gender equality, more science education, ethics defined as shared values reflecting fundamental rights, open access to data and developing new models of governance characterise RRI.³ Related scientific arguments stress the importance of anticipation, reflexivity, inclusion and responsiveness as most fundamental RRI principles.⁴

These definitions and principles, however, leave room for various interpretations and practical implementations; ranging from views and practices that strive for the radical transformation of the current R&I systems to views and practices that do not really challenge current structures. While RRI is a normative concept, with values such as ecological sustainability and social inclusion in its core, its normative anchor points are blurred. This again leads to a diversity of RRI approaches with regard to their ethical and political positions, their understanding of responsibility and their transformative potential.

Therefore, FoTRRIS introduces **co-created responsible research and innovation (co-RRI)**. This is a concept that does not substitute former definitions and principles of RRI. It attempts to supplement them in order to clarify our normative position and our understanding of RRI principles. Co-RRI is characterised by its normative assumptions, content, its approach and its process, which are briefly explained below. (A more elaborated version of this text can be found in D4.3.)

¹ EC (2012): Responsible Research and Innovation. Europe’s Ability to Respond to Societal Challenges. European Commission, Brussels.

² Stilgoe, J.; Owen, R. & Macnaghten, P. (2013): Developing a framework for responsible innovation, *Research Policy*, 42, pp.1568-1580.

³ EC (2012): Responsible Research and Innovation. Europe’s Ability to Respond to Societal Challenges. European Commission, Brussels.

⁴ Owen, R.; Macnaghten, P. & Stilgoe, J. (2012): Responsible research and innovation: From science in society to science for society, with society. *Science and Public Policy*, 39, pp. 751-760.

Schomberg, von R. (2013): A vision of responsible research and innovation. In Owen, R. - Bessant, J. - Heintz, M. (ed): *Responsible Innovation: Managing the Responsible Emergence of Science and Innovation in Society*. John Wiley & Sons, pp. 51-75.

Stilgoe, J.; Owen, R. & Macnaghten, P. (2013): Developing a framework for responsible innovation, *Research Policy*, 42, pp.1568-1580.

Normative assumptions

FoTRRIS acknowledges that research and innovation processes are embedded in societal and political discourses and institutional structures. In the current context, the overarching political framework with regard to sustainable development is provided by the United Nations' Sustainable Development Goals (SDGs). However, the political context may change over time. Yet, the basic values of co-RRI, however, will still press for our **joint responsibility in creating knowledge and taking actions for solving grand environmental and social challenges while respecting planetary boundaries**.

The **underlying values** co-RRI is committed to, therefore, are: **ecological sustainability, acknowledgement of different forms of knowledge and social inclusion**.

Consequentially, bringing co-RRI into practice necessitates **making choices with ethical and political implications**. It therefore emphasises the importance of **reflexivity**.

Content

Co-RRI addresses local manifestations of grand societal challenges (**glocal challenges**). As each locality is characterised by its own specific combination of cultural, social, infrastructural, geographical, economic and environmental elements, the actual problems as well as the answers are contextualised and unique. A precondition for research and innovation systems to become more responsible therefore is that local needs, values and opportunities are taken as a starting point to consider which combinations of traditional and non-traditional (local) knowledge are appropriate to respond effectively to the glocal problems they want to tackle.

Approach

Addressing grand societal challenges and, currently, pursuing SDGs necessarily implies complex and non-linear processes. SDGs and, in general, grand societal challenges cannot be solved in isolation, but they have to be looked at in interaction with each other, and as parts of one global agenda. The SDGs are dealing with **wicked problems**, or said otherwise, problems that are deeply entrenched in contemporary societal, political, and economic structures, and characterised by a hardly reducible structural uncertainty. These kinds of problems are very difficult to manage, given the variety of interests involved and the difficulties to interpret and structure them. Wicked problems are pointing out systemic failures that have gradually become part of our societal systems.⁵ Therefore, co-RRI adopts a **complex systems** perspective.

This necessitates, in our perspective, the involvement of a diverse array of actors to come to a broad understanding of the root causes of glocal problems, as well as a broad range of thinking about possible alternative solutions. Co-RRI can therefore never be understood as just an add-on to 'research and

⁵ Rotmans, J. & Loorbach, D. (2010): Towards a better understanding of transitions and their governance: A systemic and reflexive approach. In Grin, J. – Rotmans, J. – Schot, J. (ed): Transitions to sustainable development: New directions in the study of long-term transformative change. Routledge, pp. 105-113.

innovation as usual.’ Citizen and stakeholders engagement for RRI requires the **co-creation of relevant knowledge and solutions for complex problems.**

Process

The FoTRRIS co-RRI concept assumes that research and innovation will unfold as an ongoing, open, long-term process, not as a closed, one-shot game. Co-RRI requires to build and institutionalise a network of relationships among diverse actors that continuously channel in new problems to be addressed, creatively refine and develop methodologies, processes and tools, and nurture the commitment of multiple actors participating in research and innovation.

3 The back-casting exercise (BCE): final step in a series of experiments

Prior to the BCE, six **local experiments** have been carried out in five countries, namely Austria, Belgium, Hungary, Italy and Spain. These experiments were real ‘living labs’ to develop, test and validate in a co-created way a new methodological approach for the first step in the research cycle, that is the process to come to a project concept. These project concepts were meant to tackle a ‘glocal problem’ or, said otherwise, a specific local manifestation of a global challenge. The issues that were tackled related to sustainable food (AT), material scarcity (BE), local economic development (HU), renewable energies (IT), empowerment of women with disabilities, and the integration of refugees (ES). The concrete results of these experiments were project concepts that will, after the FoTRRIS project, be further developed into real projects. (For more information about these experiments, please read D3.1 and D3.2.)

A next step, following on each local experiment, existed of organising a **(regional or) national outreach workshop** in each of these five countries to which a variety of key actors in the (regional or) national research and innovation system were invited. The aim of this workshop was to validate the relevance of the newly developed co-RRI approach in general (for various themes or sustainable goals), to validate the learnings from the experiments, and to discuss the barriers and the leverages for transitioning towards a more responsible research and innovation system at (regional or) national and EU level. (For more information about the outreach workshops, please read D3.3.)

The **back-casting exercise**, the subject of this deliverable, is a third and final step in this series of events. It was a joint **European workshop** to which experts in the field of research and innovation were invited from European and global networks, as well as representatives of the national outreach workshops. By means of this workshop, an opportunity was created to, on the one hand, complement the insights gathered at the regional and national level, but also to go beyond these levels and to search for communalities in the visions on future European research and innovation.

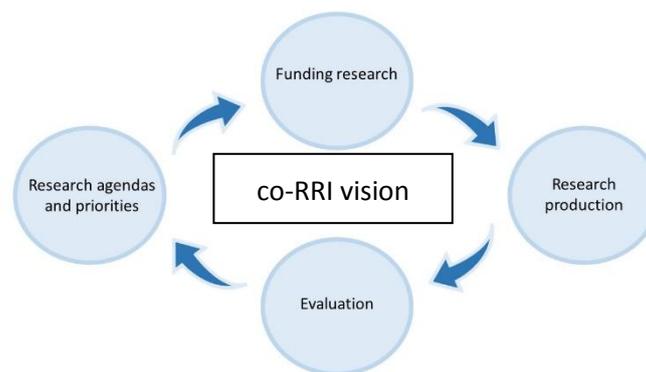
4 Method and setting of the back-casting exercise

4.1 Method

The consortium has chosen back-casting as a methodology to co-create the future of co-RRI in 2030, and to plan steps and actions to arrive there. The participants received a framework vision proposed by the FoTRRIS consortium prior to the workshop (see also Appendix 3). This vision was structured along four **iterative steps characterizing the research policy cycle**. Each of these steps were discussed by the participants later on:

1. setting research agendas and priorities
2. financing R&I
3. research production
4. evaluation and valorisation of R&I.

Table 1: Iterative process of the research policy cycle



The BCE was done in four groups, each focusing on one of the policy steps just presented, and involved two rounds. The **first round** of discussions (90 minutes) was devoted to **co-creating a vision of R&I systems in 2030**, building upon a draft vision the participants received prior to the workshop. As this framework vision was a draft that only indicated desired and envisaged characteristics of the policy cycle, participants were free to approve or disagree with them. This way, the participants could co-create their own vision bottom-up. The advantage of such an approach is that it strengthens the participants' ownership towards the vision.

The outcome of this co-creation process was a vision with a more detailed content, describing how the participants imagined each of the four steps in the policy cycle presented above, namely agenda setting, financing, production and the evaluation of responsible research and innovation.

For **reporting back** to the plenary group, a **mind-map** was drawn in each group, using flipchart paper to visualise the logical association between the main theme discussed in the group and the components of its vision. Moderators were instructed to list, ideally, a maximum of 4 components/priorities. These components would then be analysed during the second round. Due to the time limit, and in order to remain

as concrete as possible, not more than 4 ‘branches’ were feasible. If more ‘branches’ were drawn, the back-casting (second) round could focus only on four of them.

The **second round** of discussions (90 minutes) was devoted to the actual **back-casting exercise**. This exercise explored solutions (leverages) to the most burning barriers keeping the current R&I systems from implementing co-RRI, and planned steps to arrive there from 2030 on back to the present (2017). Two symbolic cut-off dates or ‘check points’ were defined on this timeline: 2021 – starting year of the new multiannual financial framework / the R&I framework programme at EU level (FP9), and 2028 – the beginning of a new multiannual framework / the R&I framework programme at EU level (FP10).

The afternoon round therefore took back the vision co-created during the first round and analysed its main components. Moreover, participants planned steps to achieve each component’s desired position by:

- addressing the bottlenecks,
- defining the role of stakeholders in the process, and
- describing the capacities that would be needed.

The group members remained the same during both rounds, hence giving them ownership towards the vision during the whole process. The moderators and the note-takers (members of the project consortium) did also participate in the discussions. Since they were the leaders of the local Transition Experiments (TE) and the organisers of the outreach workshops, they could enrich the conversations with interesting and important perspectives. Moderators made sure that all group members had the opportunity to speak, and that the interventions remained relevant, hence making sure that discussions did not go ‘off track’.

It is important to mention here that it was fairly difficult for the participants to understand the principles of back-casting as an exercise, and to follow its rules. It is more natural for the human mind to plan steps ahead rather than backwards. Organisers often had to remind participants of the correct direction in the timeline. It would require more time to ‘train the brain’ for this very creative exercise, for instance with games. Given the timeframe available for the workshop, organisers made maximum use of the 90-minute slot.

4.2 Setting

This back-casting exercise was carried out in Paris on the 19th of September 2017. It was symbolically hosted in the premises of the [Fondation Sciences Citoyennes](#), whose objectives and mission are very close to those of FoTRRIS.

Two participants per country from each outreach workshop were invited as well as members of European or global networks representing the quadruple helix (academia, CSOs, policy makers and business).

The list of invited European/global organisations can be found below:

Table 2: Invited European/global organisations

<p>Civil society</p> <p><u>Cities in transition</u></p> <p><u>European Citizens Action Service</u></p> <p><u>Euclidnetwork</u></p> <p><u>Social Enterprise Europe</u></p> <p><u>Civil Society Europe</u></p> <p><u>EIP on Smart Cities Citizens Focus</u></p> <p><u>European Environmental Bureau</u></p>	<p>Academia, researchers</p> <p><u>European University Association</u></p> <p><u>European Consortium of Innovative Universities</u></p> <p><u>The Guild - Research-intensive universities</u></p> <p><u>Young Academy of Europe</u></p> <p><u>Global University Network for Innovation</u></p> <p><u>Science and Technology Alliance for Global Sustainability</u></p> <p><u>Responsible stagnation Research Group</u></p>
<p>Economy/ private sector</p> <p><u>OECD Environment and/or Economy Department</u></p> <p><u>The Global Compact (Belgium member)</u></p> <p><u>CSR Europe</u></p> <p><u>Eurosif</u></p>	<p>Public sector/funders</p> <p><u>Belmont Forum</u></p> <p><u>Veblen institute</u></p> <p><u>Network of Regional Governments for Sustainable Development</u></p> <p><u>Science Europe</u></p> <p><u>Atomium European Institute</u></p>

Nine countries were represented during the back-casting exercise, that is Austria, Belgium, France, Hungary, Italy, Ireland, the Netherlands, the UK and Spain, altogether 34 participants, of which 22 female and 12 male. Looking at this group from a quadruple-helix perspective, we counted seven people from civil society organisations, six researchers, four representatives of the economic sphere and/or businesses and three from the public sector, funding organisation representatives or policy makers (not including the fourteen project partners in the stakeholder statistics who are mostly researchers). The organisers carefully selected the participants so as to have a balance in the group in terms of gender and stakeholder groups.

This group was split up into smaller groups of 6-8 participants. This allowed us to create an informal environment, which would help to pull out key messages concerning how each step of the policy cycle can

foster the uptake of co-RRI. When doing this, the organisers were careful to mix different stakeholder group representatives and different nationalities in order to foster the exchange of views and to stimulate networking among the participants.

5 Co-creating a vision of responsible research and innovation in 2030

As explained in the previous chapter, the first discussion round aimed for co-creating a vision of co-RRI in 2030. This co-creation process started from a framework vision proposed by the FoTTRIS consortium, which can be found in Appendix 3. This chapter presents the critiques of the invited participants on this vision. To facilitate the reading, and to avoid confusion between the text that was used as an input to this discussion and what came out of it, not the full text version of this ‘input vision’ is presented here. Only the most relevant extracts, presented as the following introductory example. Readers wanting to read the whole vision text proposed by the consortium are asked to consult the appendix.

“The vision of FoTTRIS is for all people to thrive in a sustainable, equitable and peaceful world, by strengthening responsible research and innovation systems. In this vision all R&I – in traditional as well as novel settings – responds to societal needs and takes responsibility by intervening so as to build a better future. In 2030 Responsible R&I (RRI) is the ‘new normal’ and the normative frame for planning, funding, producing and evaluating R&I.”

5.1 Agenda and priority setting

“The SDGs will offer a framework for setting R&I priorities. Global goals will manifest themselves differently according to local contexts. ‘Local’ refers to a geographic zone characterised by features that are relevant to specific systemic interventions; these may be at the level of a neighbourhood (e.g. with a migrant population), a city, region or country (e.g. with a given socioeconomic fabric) or several countries (e.g. within a specific climate zone).

*R&I agendas will be set at the relevant local level (subsidiarity) involving **four types of actors**.*

- 1. **Civil society organisations**; special concern is given to representation of groups for whom normal participatory paths are blocked (e.g. refugees) or who are affected but cannot be involved (e.g. future generations or non-human agents)*
- 2. **Ethical networks of companies** with a mission to contribute to the common good (e.g. Social economy, Benefit corp...), called ‘generative businesses’ hereafter*
- 3. **Public services**, the representatives of which understand the complexity of SDGs and are familiar with approaches to complex dynamic problems*
- 4. **Research institutes and universities** that adopted the SDGs as their core mission and created the skills, partnerships, governance and infrastructure this requires.*

Private profit oriented companies and R&I institutions (can receive funds for rebuilding themselves as generative or common-good oriented organisations and) will be informed and consulted, but will have no decision making power in public R&I agenda setting.”

Summary of the comments, changes and additions proposed by the BCE-participants:

Research will be **inclusive**. It is acknowledged that in 2030 there will still be more streamlined research strands than others, but weaker voices should also be involved, and they should be empowered, in order to create a long-term shared vision together. It is natural and human to think differently. This will not disappear by 2030. These different ideas might even come in conflict with each other but these conflicts will have to be successfully dealt with.

“RRI priorities will be based on a systemic analysis of the complex and interconnected SDGs.

- 1. Research of the planetary system and of the ‘web of life’ allows us to understand planetary boundaries and complex and dynamic planetary mechanisms humans depend on (e.g. climate, geochemistry, ecosystems, thermodynamics, physics...);*
- 2. Research of the (historical and current) ‘webs of meaning’ and creativity leads to an understanding of how humans can co-evolve with the rest of nature and learn to thrive (again) as healthy communities within planetary boundaries;*
- 3. Technological research learns from natural ecosystems (biomimicry) how to increase human wellbeing while regenerating planetary health (clean oceans, fertile soils, biodiversity...) and while keeping entropy as low as possible;*
- 4. Economic and legal research studies how access to (use of) resources can be distributed efficiently in a just and sustainable way to all human beings by creating monetary systems, laws and institutions that serve the common good.*

RRI will contribute to the regrowth of economic functionality, allocating only renewable resources to the wellbeing of all living beings in a just and sustainable way. All research will be justified and prioritised in function of its estimated contribution to this regrowth.

Summary of the comments, changes and additions proposed by the BCE-participants:

Open science by 2030 will be more *with* society than *for* society. Research will not be 100% transdisciplinary by 2030. **‘Transdisciplinary’ will be complemented by ‘disciplinary’ research** because some areas will have to be explored separately and not in relation to other disciplines. Both will be needed in the future. **The border between basic and applied research will fade away:** as long as research serves societal needs, it is not so important if it is basic or applied research.

*R&I agenda setting will be responsive to complex, dynamic and non-linear processes, and will be based upon systemic analyses that are inevitably partial (it is impossible to address the whole global system at once). Therefore **agenda setting will be an iterative process of making informed choices and evaluating its (intended and unintended) effects.***

Summary of the comments, changes and additions proposed by the BCE-participants:

We should not think in fragmented, short-term projects, but we should look beyond these boundaries and search for the sustainability of the initiatives. Just like FoTRRIS: even when the project financing ends, the value and the idea the consortium believes in will survive, will be taken up on a voluntary basis and be scaled up. A certain level of cohesion and **coordination** will be needed among the different projects, ideas and initiatives, without however wanting to unify them. Yet, for the sake of efficiency and larger impact, they should be coordinated, for the common good of all.

Furthermore, mankind will always have individual interests, no matter in what ideal world we will live in by 2030, but the **sense of belonging to a community should be stronger.**

Last but not least, **we will need place-based and time-relevant agendas by 2030.** Research and innovation should not go faster than the needs of society. We should have **more ethical and philosophical debates on research and innovation issues.** It is not necessarily the country or region doing more research and innovation that will be most successful by 2030, but the one that does more responsible research and innovation and that cares more about the people, about the communities in its territory and about their future.

5.2 Research financing

*“Financing RRI will both depend on and will contribute to a sustainable financial system. As RRI for the common good does not aim at making money, extractive financial systems (leading to the 2008 crisis) alone will be unsuited to fund RRI. **A combination of (responsibly invested) public funds, participatory financing (social crowdfunding) and complementary currencies designed by RRI-communities will allow for sustainable funding.**”*

*“A regulatory framework will be needed in order to gear private businesses towards **responsible investments**, which will lead to local funds (based on a European vision). At national or regional level, research and innovation will also be financed from both public and private sources. These local funding could take place through ‘classical’ regional and national funds, but also through e.g. crowdfunding or citizens partnerships that generate societal benefits.”*

Summary of the comments, changes and additions proposed by the BCE-participants:

An **integrated funding system** will be necessary beyond Horizon2020. Co-RRI will be a part of the global vision for 2030 and its financing will be embedded in this new integrated funding system. Financing will have **different levels**, just like now, whereby the EU level public financing will play a major role. However, a **new set of criteria** will be introduced that will come from the evaluation of the financing system of 2017. To this end, the assessment of the financing modes has to be carried out to define what works and what does not work nowadays (in 2017). These values and criteria will be summarized in a (process) evaluation framework and will pave the way for the private investments by banks, businesses and institutions that also make responsible innovation or production as their objective (i.e. ethical banks, generative companies...).

Alternative funding systems, based on **alternative currencies will be complementary** to the European and national/regional financing system. This ‘marketplace’ related to open innovation processes and projects will be ruled by a generative currency. It should serve like a platform and will encourage and give value to public and private actors to exchange and promote their research and innovation products and to foster their responsible attitude. This can be entirely detached from the official system.

“Public research funds will only be allocated to projects that serve the common good by directly or indirectly contributing to the SDGs. Local actors, CSOs and generative businesses will be involved in the selection of project proposals. Research funds will only be made available to companies or organisations if they are generative in their mission, ownership model, governance, financial structure and network affiliations.”

Summary of the comments, changes and additions proposed by the BCE-participants:

A decision-making process based on different criteria will be set up. These criteria will be used to decide which sources will be received to conduct certain research and when. **Decisions imply values, new rules and ownership.** Nowadays, companies or universities carrying out research involving high risks are mainly financed by public authorities, both at European and national levels, but the public authorities do not have the ownership of the patents. There is a need for **new rules about ownership of R&I results.** A lot could be steered to increase the **ownership of public authorities** in the future. The communication about funding and the achieved results should be more transparent, the decision-making process should become more participatory (**‘participatory budgeting’**) with the involvement of multi-stakeholder groups, to ensure the presence of society therein. In 2017, the societal and environmental costs incurred in the course of research and innovation production are not internalized. If these costs were borne by the economic actors themselves, that would incentivise them to utilise the available budgets more responsibly.

*“The co-creation of research project-concepts with all four types of actors in a local context will be crucial, as it determines the relevance, inclusiveness and potential impact of R&I. **Specific funding will be provided for inclusive project development processes at local levels.** Since sustainability goals are complex and multidimensional, many valid analyses and solutions will be possible; a wealth of project proposals will increase the resilience of the R&I system. Funds for the creation of project concepts will be available as ‘seed money’ to foster the creative and abundant production of potential solutions.”*

Summary of the comments, changes and additions proposed by the BCE-participants:

Extra funding will be available at micro level, to stimulate applicants to think about how they can implement co-RRI and how they can achieve the SDGs. It needs **extra funding for anticipatory impact assessment and reflection about possible outcomes and futures.** It will be an additional support for those that already received funding or for those that build a ‘responsible’ proposal simply because implementing **co-RRI needs time and flexibility.** Co-RRI should be tailored to individual needs so as to allow applicants to reflect on the process, to anticipate challenges during the implementation and to avoid unintended impacts. On the one hand, in the proposal phase, the consortium might need to look into the SDG goals what they can concretely pursue in their local environment. On the other hand, it also needs more time and flexibility - and money - during the process to adapt to possible unintended impacts. This should be separated from the private or public funding that they will receive. But since implementation in a small company is totally different from implementation in a huge company of university, we need **flexible co-RRI funding schemes.**

5.3 Research production

“Co-RRI will never be produced in an ivory tower. It requires resilient networks that unite a variety of actors and encourage a plurality of methods, perspectives and skills, allowing for agile, engaged and inclusive R&I.”

Summary of the comments, changes and additions proposed by the BCE-participants:

A key component of the research production will be **engagement**, seen in two ways. Engagement can be looked at as a process with diverse actors and as new ways of organising actors for engagement. Professional career paths of researchers will not be locked into the departments they work for. Research will be **open and accessible** to all. For researchers to understand the complexity of SDGs and the interventions they call for, their research activity is always complemented by a personal involvement in commons initiatives or generative economic activities. This ‘citizen engagement’ protects researchers from

adopting a one-dimensional (technical) perspective on social problems and creates the preconditions for iterative boundary critique of their research activities. Interaction with other actors and groups will allow researchers to recognise their own blind spots and to discover new, formerly marginalised perspectives. This will increase the probability their research will be socially accepted and have societal impact.

*“There will be no unique right way for a university or research institution to engage with RRI. How universities will choose to act will depend on the needs of the communities they serve, as well as on their size, context, research strengths and funding availability. Through responsible governance they will define and fulfil their **contract with society**. By joining forces with other RRI-agents, e.g. in networks which mobilise capacities in all parts of the world (such as the Future Earth network), they will contribute to research that connects local to global processes and thus increases their societal impact.”*

Summary of the comments, changes and additions proposed by the BCE-participants:

The ‘input’ vision did not differentiate sufficiently between the diverse actors in the research and innovation landscape, and it was perhaps a bit too research-focused. To compensate this, the **civic university concept**⁶ was brought in the vision for 2030. It means that universities that are highly engaged in research and teaching, take on a prominent societal role and engage with the territorial community (city, region or wider environment) they are anchored to. The tradition of ethics and integrity as requirements for research production will be kept and enhanced in co-RRI by 2030.

*“As sustainability goals are complex, multifaceted and unpredictable, they depend on the integration of social, technical, economic and political or legal dimensions. RRI-projects will start out not by defining the (technical) solution they will produce, but by **identifying the societal question (or goal)** they will address, clarifying (through participatory, co-creative processes) how they will do so and why, **taking into account ethical values and societal expectations**. Since it is impossible to set up perfectly controlled conditions for SDGs, the main function of research will be to generate and openly share relevant data that support decision-making towards the SDGs. High-tech innovations can be part of these solutions, but only if their benefits outweigh the risks, especially in the long run.”*

“Co-RRI will contribute to a world in which traditionally feminine roles and values - such as care and cooperation - are in balance with so-called masculine ones – e.g. competitiveness and control. RRI will not be instrumental to an economy pursuing unsustainable growth and

⁶ <http://www.ncl.ac.uk/media/wwwnclacuk/curds/files/university-leadership.pdf>

*competition, but contributes to a world in which deep gender equality transpires in care for the community, future generations and the planet, or in design and governance of regenerative cultures and economies. It **addresses the root causes of inequality and conflict and replaces ruthless competition by cooperation in a global perspective.***

Summary of the comments, changes and additions proposed by the BCE-participants:

An obstacle to co-RRI in the current era is **politics**. There is **no collective mindset towards the common**, but the present is more dominated by individualism. By 2030 this transition and change will have happened and self-interests will be replaced by common good-based politics. At certain stages, the research production process will be checked to see if it still serves the common good and it does not slip back into the individualist mindset.

5.4 Evaluation/valorisation

*“Co-RRI will be a driver of sustainable development. In a complex, nonlinear context this means **co-evolution**, since innovation changes the environment, and this in turn has an impact on innovation. Evaluation in collaboration with other societal, commons oriented actors, will allow for an iterative process of experimentation, feedback and adaptation. It will monitor whether R&I fosters sustainable development and generative co-evolution. It will not use a static model or norm of linear ‘progress’, but enables RRI to stay agile.”*

*“In nonlinear contexts, the time scale for evaluating impact is crucial. Co-RRI agents will **learn from history** that products or processes deemed beneficial in the short term (‘progress’), often prove harmful after large scale implementation (e.g. plastics, monoculture, CFK’s, antibiotics). RRI must be able to make timely corrections when such tipping points appear. RRI will therefore strictly adhere to the **precautionary principle**, especially for R&I that has effects that are hard to turn back (e.g. entropy). Innovation will always be monitored both on ethical, legal and social aspects and on environment, health and safety issues.”*

“R&I will be valued not for its own sake but for its contribution to human and planetary needs. Projects will not be seen as linear paths towards predefined solutions but as learning steps; learning can result from both successes and failures. Projects that will not result in the planned outcome but have shown an ability to adapt, will be considered successful and are expected to share their learnings. Criteria for projects will include: does the innovation address root causes or only symptoms of a problem? Does it leave space for diverse approaches and solutions? What material throughput does it imply (where do materials come from; are they recyclable or renewable; how are they disposed of; what is the energy cost and impact on air and water)?

How are the outcomes made accessible to people or regions that most need them? How does their implementation affect value systems, traditions, gender roles and other ‘webs of meaning’ and is this acceptable?”

Summary of the comments, changes and additions proposed by the BCE-participants:

In order to **evaluate** the results of the new co-RRI system by 2030, the creativity of responsible researchers and R&I institutions will be needed to collect and disseminate success stories about - but not limited to - **the trans- and interdisciplinary features of the process**. Sharing the same values, agreed upon by all ‘stakeholders’ of this initiative, is crucial for establishing a team spirit. Therefore, efforts have to be invested to **foster the commitment of all stakeholders towards the co-RRI system**. In order to ally this team, it is very likely that the mindset of certain people, who are not yet convinced about the benefits of co-RRI, will have been changed by 2030 till the moment when a **co-ownership** is created towards this common goal. In order to leverage the chance and widely disseminate the added value and benefits of co-RRI, advocacy activity will have to be pursued.

5.5 Summary of the highlights of the first discussion round

While commenting the vision presented by the FoTRRIS consortium, the workshop's participants co-created a vision of the co-RRI system in 2030. Based on their input, the following highlights can be presented.

1. **Co-RRI is an open, inclusive, transparent, collaborative, transdisciplinary and flexible long-term alternative requiring clear objectives and choices.** It is a value-driven process going beyond short-term projects in which a diversity of knowledgeable actors work towards a commonly defined sustainable future. Co-RRI therefore necessitates active empowerment and engagement of weaker voices.
2. **In co-RRI the difference between basic and applied research will not be so significant anymore,** as all R&I should contribute (directly or indirectly) to systemic interventions for the SDGs.
3. **'Engagement' is central to doing research and innovation in a co-RRI way.** It refers to new ways of organising, recognising and valorising the contributions of a diversity of knowledgeable actors. It also refers to the personal involvement of traditional knowledge actors as citizens in R&D processes, encouraging them to look at societal problems not only from a disciplinary point of view, but also as a common citizen, and hence to step out of their 'comfort zone'.
4. **Place-based and time-relevant research and innovation agendas are key to successful co-RRI trajectories.** As sustainable solutions are embedded within local communities, and are an answer to the needs within these communities, co-RRI asks for a co-evolution of social patterns, organisational structures, infrastructures, economic mechanisms, legal frameworks and cultural settings within these communities, and therefore requires tailor-made research and innovation agendas.
5. **Co-RRI needs various, flexible financing schemes,** tailored to the needs of the applicants and the projects.

6 Back-casting from the co-created vision until today

After having discussed the main elements in the vision of co-RRI in 2030, the participants of the BCE were asked to explore solutions to the most burning barriers keeping current R&I systems from implementing co-RRI, and to think of necessary steps to arrive there from 2030 on back to the present. Two symbolic cut-off dates or 'check points' were defined on this timeline: 2021 – starting year of the new multiannual financial framework / the R&I framework programme at EU level (FP9), and 2028 – the beginning of a new multiannual framework / the R&I framework programme at EU level (FP10).

This chapter presents the outcomes of this second round of discussions by means of four narratives. Also in this chapter the four iterative steps characterizing the research policy cycle were taken as the main structuring element.

6.1 Agenda and priority setting

A main goal will be to make an inclusive and collaborative agenda so obvious that by 2030 all researchers will ask “WHY NOT DOING RESEARCH USING A CO-RRI APPROACH?”. Yet, now, in 2017, we are far from that point. Today, researchers and other stakeholders have to explain why they want to act differently from traditional practices and why they want to follow a co-RRI approach. This is because they are in a minority position. By 2030, however, the situation will be the other way round, and researchers who still carry out traditional research will have to explain why they do not want to do research and innovation in a responsible way. Notwithstanding this evolution, co-RRI will certainly not be imposed. Co-RRI will be the free choice of knowledge actors, businesses, policy makers and other actors involved in research and innovation processes. It will be a path they follow because they believe in it.

This transition could be feasible when realizing the following three main phases between now and 2030:

The first phase, the years between 2017 and 2021, will be used to **develop new practices** and to **empower actors**. Relevant actors need to be organised in a community. In addition to this, a collection of practices should be created proving, by evidence, that doing research in a co-responsible way is worth it.

Between 2021 and 2028, these collected **practices** will be **validated** all over Europe. It concerns practices for researchers, but also for other actors essential to further develop and implement co-RRI processes. Moreover, special attention will be paid to good practices showing how individual (research and innovation) habits and community cultures can be changed to become more co-RRI. These practices will cover innovation by resilient communities as well, because an overall aim is to build **resilient research and innovation communities in Europe** (and globally) based on trust⁷. Therefore it will be important to come up with a collection of trustworthy tools and practices, as well as new governance models, so that

⁷ https://ec.europa.eu/research/social-sciences/pdf/other_pubs/ki-01-16-264-en.pdf

individual actors and communities gain **confidence in co-RRI** and join this movement. The general expectation that this validation process will enable co-RRI to become mainstream by 2028.

The last two years, from 2028 to 2030 will be used for **exploitation**, or said otherwise, to make sharable knowledge available to groups of citizens, researchers, policy makers and businesses so that they can use it in their everyday work and, hence, improve their ways of acting.

These three steps can be made concrete by means of an example such as the FoTERRIS project, or another initiative sharing similar values. In 2018, for instance, when the FoTERRIS project ends, a movement will be created that is still ongoing by means of various activities. Co-RRI **projects** should therefore no longer be considered and conceptualised as a linear path, from kick-off until the final conference, but as **essential steps in longer-term trajectories sustained by actors that truly believe in responsible research and innovation**. As a result, times in which one could think in terms of separate projects are behind us. Instead, longer-term strategies should be created to which responsible research efforts are linked.

A prerequisite, however, for this kind of approach is that a clear **framework** is developed **specifying responsibilities, roles and tasks**. It should give an answer to questions such as “Who will be involved?”, “What contribution will be made by whom?” Etc. Equally important will be **capacity building and learning** in order to enable all relevant stakeholders to fulfil their roles and to carry out tasks to their utmost knowledge on co-RRI. And, finally, another crucial element that links to this, will be the development of a checklist, that is a list of good questions that have to be asked to **check on a regular basis whether the process of developing, upscaling and embedding co-RRI practices is on the right track** before continuing it. (Note from the authors of this report: This echoes the vision of the ‘Research production’ group when they state that the process has to be checked at different stages to make sure that one doesn’t deviate from the ultimate sustainable development goal.)

6.2 *Research financing*

In 2030, financial plans for R&I will be created through a real participatory process, including not only ‘traditional’ actors such as researchers and policy makers, but also representatives of civil society. The basic **process structure** underlying this financial roadmap will be **cyclical** in order to have a framework that can be replicated every two years and, therefore, will allow all relevant actors to assess financial plans on a regular basis, and to better align research and innovation with societal evolutions. Within one of such cycles the following four phases can be discerned:

1. **Proposal phase** (January – March): A steering group consisting of highly-skilled researchers and competent EU- and national- (or regional-) policy makers will be invited to draft a proposal for the funding of future research and innovation. This proposal will include necessary adjustments to previous financial plans as well as new strategic lines that will be developed.

2. **Consultation phase** (April –September): The following six months of the year will be devoted to organizing participatory sessions in which people with different backgrounds (CSOs, generative businesses and industry, policy, ethical banks, local authorities, etc.) can review the draft financial plans.
3. **Adaptation phase** (October – December): In the last quarter of the year, the aforementioned steering group will revise and amend the first proposal based on the input received during the consultation phase.
4. **Validation phase** (January – December): The new financial plans and strategy will become effective the following year. Since sufficient time will have been devoted to engaging a wide group of stakeholders, the implementation of this plan is expected to go rather smoothly. All parties concerned will have been consulted about their goals and vision on future research and innovation on a regular basis, and can therefore be considered ‘co-owners’ of the overall process.

Though some elements in this cyclical approach will benefit the overall process of research financing, the following challenges are certainly worth mentioning:

- It is common sense to include a variety of stakeholders in this kind of processes. However, it is not totally clear how to motivate them for longer-term participation trajectories.
- Knowledge sharing and open innovation are seen as very important elements in order to make financing systems more effective. On the one hand because, this way, financing the same kind of research unintentionally through different channels can be avoided and, on the other hand, the global challenge to make financing more ‘responsible’ is easier to tackle. There are, however, no ready-made solutions to organize and regulate this kind of (global) cooperation and exchange of information and knowledge.
- Representatives of civil organisations will have to be empowered to be able to fully take up their role. This will be done making use of a variety of tools, among which trainings that focus on specific competences. Also an online platform will be put at their disposal to contribute to the discussions and, if necessary, face-to-face meetings will be organised. Furthermore, consultations will be organised in a flexible way and will be adapted as far as possible to their means and possibilities. However, further research and action is needed to clarify how these actors can be empowered most effectively.

Apart from the process structure of research financing, there will also have been implemented **fundamental changes regarding the basic principles of research and innovation financing systems** in 2030. Future funding will, for instance, be contingent on sharing results and knowledge. Moreover, funding criteria will **assess the societal benefit of research and innovation** and will be based in the first place on analyses of the positive and negative societal impacts of R&I projects. As a result, financial plans and strategies will be grounded in relevant European and national (and/or regional) policies and (long-term) strategic lines, and will be an integrated part thereof.

Secondly, one or more **alternative financial systems** will be put in place complementary to mainstream financing. These complementary systems will need time to be developed, but they will ensure accessibility, a fair social and ethical return on investment and a reward for those implementing co-RRI. They will use digital technologies to share content and results in a fast way. An important challenge, however, will be the harmonisation of regulations within and between Europe and other countries. (Note from the authors of this report: The group did not have enough time to discuss this, but this complementary system could create the additional means needed to extend responsibility in R&I to a global scale.)

Finally, future financing of research and innovation will be **transparent**. A catalogue of the available funding sources for (generative) private and public organisations will be compiled. This catalogue will show how to finance co-RRI and how to access the available funds while, at the same time, being open and clear about the allocation of financial means in the past.

6.3 Research production

The **civic university** that is embedded in its surrounding society will become the norm. This university will function as a knowledge generating institution that pursues research activities for the benefit of the local hosting community. As a result, university and society will have a relation based on reciprocity – they will learn from each other, hence moving away from a tradition in which knowledge followed a one-way path from the universities towards society.

Since universities and the surrounding societal field will be interacting more intensely, the public's **trust and understanding** of what universities do will be more profound. This will allow for more linkages between, for instance, universities and other chains within the educational system, starting from nursery and kindergarten, and will facilitate the development of an educational system in which the different levels of education are considered a continuum. Automatically, the **educational role** of universities will gain importance again, while reducing the image of universities as institutes for research and innovation to its real proportion. As a result, the Shanghai ranking and other instruments used by universities to compete against each other will become obsolete. Instead, **new methods will be developed to assess the relative value** of this kind of institutions. An important element within this evolution will be the fact that research results will be made available in narratives, that is stories the general public can understand.

In line with this repositioning of universities within the research and innovation landscape, lies the fact that **there won't be a clear-cut line anymore between basic and applied research** and disciplinary and trans- or multidisciplinary research. Researchers will just have a 'research career path'. These paths will preferably be long-term, so that researchers experience job security and can engage in longer-term productive work. In order to be able to do so, it will be necessary to break away from the existing environment and to create settings offering incentives for co-RRI as well, for instance by institutionalising exchange programs facilitating transdisciplinary research and innovation. Another means will be to link up people doing (university) research with non-traditional knowledge actors. An example of this is the 'scientist in residence'

program in which researchers from a particular field leave their research institutions and spend some time at an administration, company or CSO to feel and experiment the challenge in practice – and the other way around. Another example are spaces created to experiment with new (democratic) models and the common good such as the Laboratory for the Governance of the Cities as a Commons in Bologna⁸. These **new research settings** will lead to ongoing mutual learning, new governance approaches and a change in researchers' mindset. Equally important for these **new career paths for researchers** will be organisational changes, changes in accreditation processes and innovative views on teaching and university curricula.

In 2017, **tools** are already available to assess career paths, but they will be modified, enhanced or will further evolve – according to their usefulness. It's advisable to first take stock of what already exists. There are low-hanging fruits that could be used on the path towards 2030. For example the HEInnovate Tool⁹ that allows higher education institutions to self-assess, or the JRC (Joint Research Centre) Research Mapping Tool. At the level of individual researchers, innovation and engagement will be the new incentives, replacing the current assessment criterion to publish scientific papers. Future researchers' career will also be strengthened when they show to have developed strong public engagement skills.

6.4 Evaluation/valorisation

By 2030, all over society results, products and services will be used created in a co-RRI way. This means that by 2028 the methodology and concept of co-RRI will have become common sense and part of the science and innovation culture. It will no longer be questioned. Research that does not have societal benefits and/or that impacts society or the environment negatively will not exist anymore.

By 2025 the whole concept of RRI will have been consolidated in new standards. The FoTRRIS award will be considered as a Nobel prize for world-class researchers, responsible enterprises, etc. – all organised in the mindset and spirit of co-RRI.

By 2021 only scientific articles that meet the standards of co-RRI and that follow co-RRI methodologies will be taken into consideration for publishing. Therefore **co-RRI criteria for the evaluation of R&I will have become the new standard**. It is however acknowledged that not all research can have a direct societal benefit, because research about, for instance, arts or medieval literature does not directly solve any societal challenge. Nonetheless, the baseline for the evaluation will be that there is no negative impact on society and the environment, taking the precautionary principle as one of the main guidelines. This raises automatically the question, of course, how to define this, and calls for more research on this topic. Finally, 2021 will also be the year in which for the first time lots of **success stories** on co-RRI will be available to disseminate.

⁸ <http://www.labgov.it/>

⁹ https://ec.europa.eu/education/resources/heinnovate_en

6.5 Summary of the highlights of the second discussion round

In summary, planning the transition backwards from the co-created vision to the present, the participants of the BCE came to the following conclusions:

6. **Change will come from inside and bottom-up**, and will have to be trust-based because people have to understand co-RRI and will have to believe in the added value of co-RRI. The overall aim will be to build **resilient research and innovation communities in Europe** (and globally) based on trust.
7. **The transition is initiated by a small group of frontrunners and will scale-up when we succeed in making the necessary institutional arrangements.** New ways of assessing researchers' career paths, innovative funding schemes, more involvement of non-traditional knowledge actors in research and innovation processes are only some of the many prerequisites for the upscaling of co-RRI.
8. **The utmost evaluation criteria for responsible research and innovation will be its long-term societal value**, rather than its (immediate) economic impact. Research and innovation will be subject to continuous iterative feedback loops assessing its societal value based on a variety of criteria reflecting its transdisciplinary nature as well as the common agreement that it should, at least, not impact society negatively (precautionary principle).
9. A collection of validated **good practices and narratives will be an important instrument to scale-up co-RRI.** It is not possible to change the whole system of research and innovation at once. Pioneers are needed and their success stories will have to be validated and will have to be used to convince others to follow.
10. **Public consultation will have to be wide, inclusive and binding.** Certain stakeholder groups will therefore need to be empowered, stressing the importance of capacity building, training and education on co-RRI.

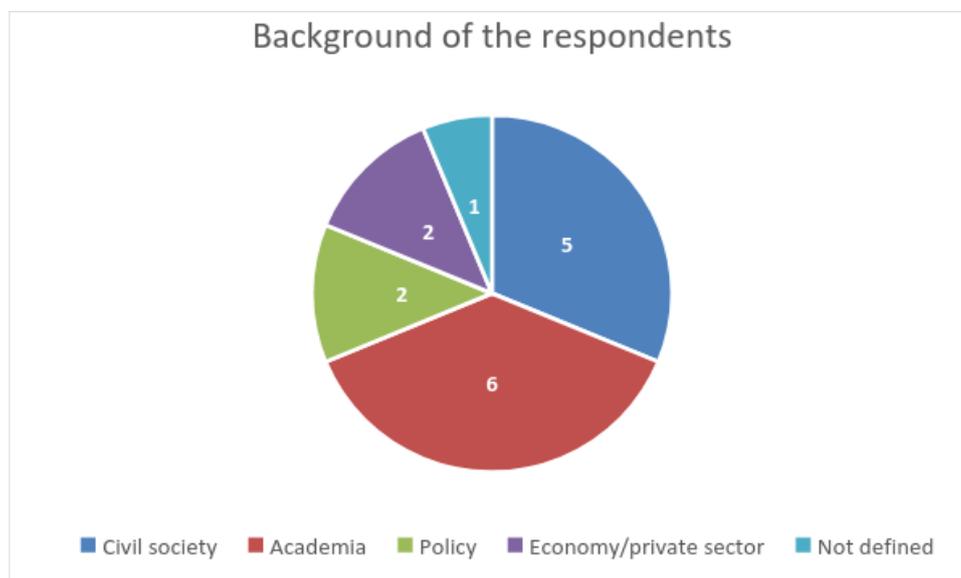
7 Feedback from the participants

The workshop intended to be a win-win for the project partners and the external stakeholders participating in the workshop. Since they invested time, energy and effort to provide input, the organisers paid special attention to return some benefits to these experts. They tried, for instance, to create interesting opportunities to network. They also wanted that each of the participants could take back useful and valuable messages to their home organisations. To measure whether these and other expected results had been achieved, the external participants were asked to fill in a feedback form at the end of the event (see Appendix 4). The results are presented below.

Out of the twenty experts, sixteen filled in the form. They were mainly from academia (6) and civil society (5). In addition to this, also an equal number of economy or private sector representatives and policy makers/funding organisation officials responded (2-2). One respondent forgot to mention his/her background.

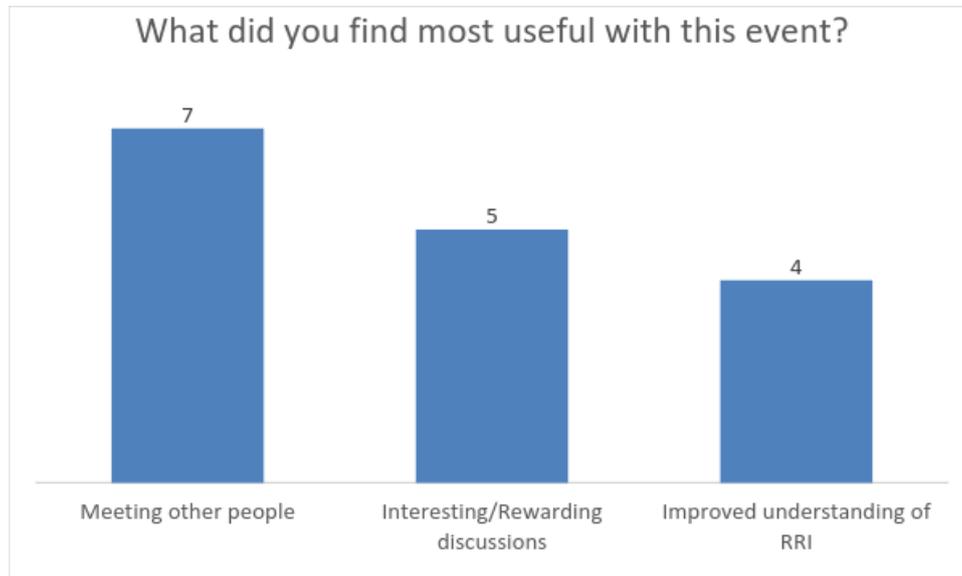
The feedback forms were filled in anonymously but respondents could leave their names on the sheet if they wished to.

Table 3: Stakeholder group affiliation of the respondents



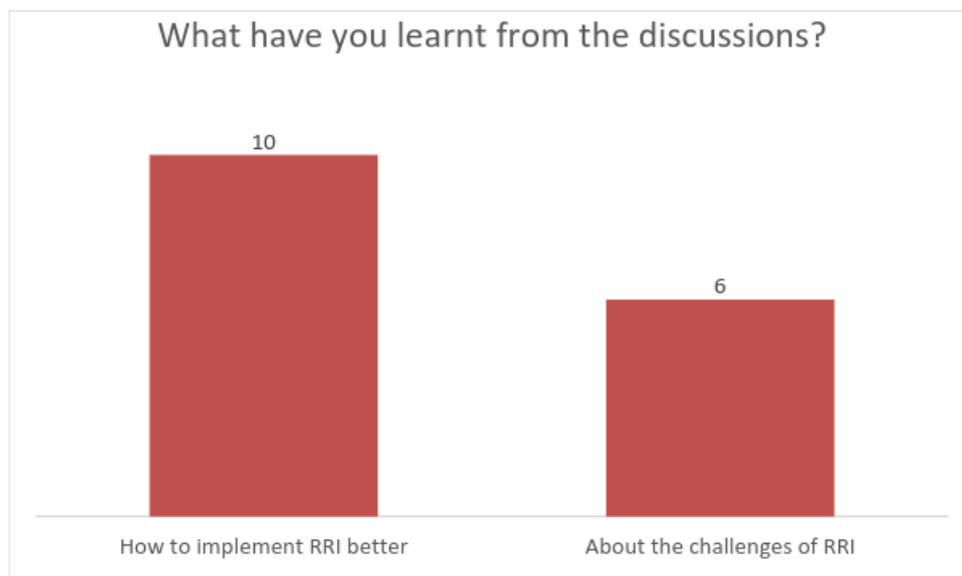
The answers received indicated that participants most appreciated the networking opportunities. Second came the interesting and rewarding discussions and, last but not least, the fact that they learnt more about RRI.

Table 4: Useful side of the event from respondents' view



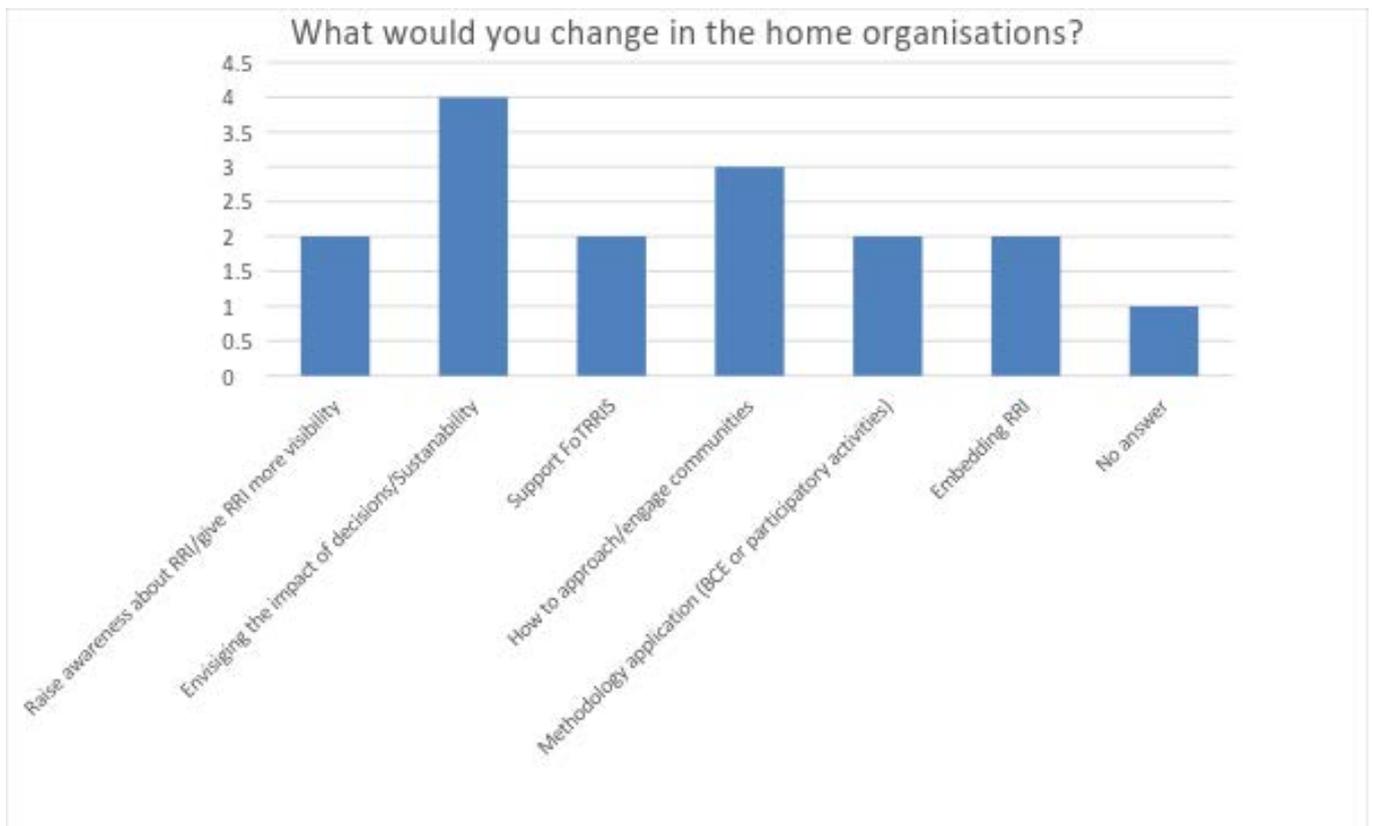
The BCE aimed to be practical and to focus in the discussions on the implementation of co-RRI practices. Based upon the reflections of the participants, it can be stated that the workshop was successful in this sense. Respondents found that they learnt more about the implementation side than about the challenges.

Table 5: Learning from the discussions from respondents' view



The last question in the feedback form assessed the kind of messages for change participants were taking back home. Moreover, they were asked what they would like to change themselves in their own field of action. This question provided us with the widest scale of opinions. Probably one reason for that is that the participants came from different organisations with different profiles. Another reason can be that the respondents were inspired by different elements touched upon during that day: co-RRI, the sustainability approach presented, the methodology, etc.

Table 6: Take-away message from the BCE



8 Epilogue

This report offered input for the FoTTRIS project's policy recommendations at European level (see also D4.3 'Policy recommendations for co-RRI'). Particularly the key messages the workshop's participants formulated about the main characteristics of co-RRI in 2030, and how to reach that goal, were seen as relevant. This report has therefore gone through a wide consultation and opinion coordination process. The participants and the project partners have been given the opportunity to comment on the draft to make sure that the final product represented the values shared by the whole community in question. As stated before, the future of RRI described here, entirely relies on a vision the 34 participants and the FoTTRIS consortium co-created. Yet, this is not a representative sample of the research and innovation community. But since these participants were carefully selected, both at national and at European level, they can be considered an expert group working with R&I and/or RRI issues from different perspectives.

Their messages have been summarised after each chapter in the report, and are repeated below:

1. **Co-RRI is an open, inclusive, transparent, collaborative, transdisciplinary and flexible long-term alternative requiring clear objectives and choices.** It is a value-driven process going beyond short-term projects in which a diversity of knowledgeable actors work towards a commonly defined sustainable future. Co-RRI therefore necessitates active empowerment and engagement of weaker voices.
2. **In co-RRI the difference between basic and applied research will not be so significant anymore,** as all R&I should contribute (directly or indirectly) to systemic interventions for the SDGs.
3. **'Engagement' is central to doing research and innovation in a co-RRI way.** It refers to new ways of organising, recognising and valorising the contributions of a diversity of knowledgeable actors. It also refers to the personal involvement of traditional knowledge actors as citizens in R&D processes, encouraging them to look at societal problems not only from a disciplinary point of view, but also as a common citizen, and hence to step out of their 'comfort zone'.
4. **Place-based and time-relevant research and innovation agendas are key to successful co-RRI trajectories.** As sustainable solutions are embedded within local communities, and are an answer to the needs within these communities, co-RRI asks for a co-evolution of social patterns, organisational structures, infrastructures, economic mechanisms, legal frameworks and cultural settings within these communities, and therefore requires tailor-made research and innovation agendas.
5. **Co-RRI needs various, flexible financing schemes,** tailored to the needs of the applicants and the projects.

6. **Change will come from inside and bottom-up**, and will have to be trust-based because people have to understand co-RRI and will have to believe in the added value of co-RRI. The overall aim will be to build **resilient research and innovation communities in Europe** (and globally) based on trust
7. **The transition is initiated by a small group of frontrunners and will scale-up when we succeed in making the necessary institutional arrangements.** New ways of assessing researchers' career paths, innovative funding schemes, more involvement of non-traditional knowledge actors in research and innovation processes are only some of the many prerequisites for the upscaling of co-RRI.
8. **The utmost evaluation criteria for responsible research and innovation will be its long-term societal value**, rather than its (immediate) economic impact. Research and innovation will be subject to continuous iterative feedback loops assessing its societal value based on a variety of criteria reflecting its transdisciplinary nature as well as the common agreement that it should, at least, not impact society negatively (precautionary principle).
9. A collection of validated **good practices and narratives will be an important instrument to scale-up co-RRI**. It is not possible to change the whole system of research and innovation at once. Pioneers are needed and their success stories will have to be validated and will have to be used to convince others to follow.
10. **Public consultation will have to be wide, inclusive and binding.** Certain stakeholder groups will therefore need to be empowered, stressing the importance of capacity building, training and education on CO-RRI.

Although all of these key messages are important and relevant, only a certain number of them could be prioritized and included in the European policy recommendations. Therefore the **ultimate goal of co-RRI**, as agreed on by the BCE participants, has been given a strong focus in these European recommendations: **increasing our societies' resilience based upon already existing innovation ecosystems** (see also points 3, 6 and 7).

These 'innovation ecosystems' comprise more than only the traditional actors contributing to research and innovation processes, such as scientists, R&D departments of businesses, consultants and dedicated working groups in public administrations. They also include representatives of local communities, social workers, civil society organisations and other non-traditional knowledge actors key to the broader environment in which innovations will be embedded. The European policy recommendations therefore call for large investments into transdisciplinary research that prioritizes co-creation processes starting from a heterogeneous knowledge base. As the successful local implementation of innovative solutions for the grand societal challenges heavily depends on the ability of communities and innovations to co-evolve, only research and innovation projects in which time is allocated to work on community building and to learn to

understand each other's needs, interests, experiences and perspectives, can offer the kind of pluralism needed to successfully increase our societies' resilience (see also points 1, 3, 5, 8 and 10).

The recommendations finally also include the need for a broader definition of the desired impact of research and innovation (see also point 8). Given the systemic perspective inextricably linked to responsible research and innovation, a narrow disciplinary impact defined by mainly economic indicators is insufficient. Moreover, it 'overlooks' the effectiveness of transdisciplinary projects, as the ultimate societal impact of innovations is more the result of the interaction between societal domains than of disciplinary excellence. Therefore evaluation systems should be developed including indicators relevant for the main areas in which change is expected and for the interlinkages determining their interactions. This requires the selection of different indicators than the ones currently in practice.

Appendix 1 – Agenda

Agenda

Moderator: Anett Ruszanov

- 10:15** Registration and coffee
- 10:45** **Welcome by host and organiser**
 - *Ismael Sene – Sciences Citoyennes*
 - *Anett Ruszanov – ERRIN*
- 11:00** **Introduction to FoTTRIS & aim of this meeting**
 - *Anne Snick - VITO*
- 11:10** **Co-creating the vision for the Research & Innovation System by 2030** (4 working groups: setting research agendas, financing research, research production and evaluation)
- 12:40** **Reporting back from round table discussions**
- 13:30** Lunch break
- 14:30** **Back casting from the desired vision to today** (4 working groups: setting research agendas, financing research, research production and evaluation)
- 16:00** Coffee break
- 16:20** **Reporting back from round table discussions**
- 17:10** **Wrap-up, next steps**
 - *Anne Snick – VITO*
 - *Ismael Sene – Sciences Citoyennes*
- 17:30** **End of the workshop**
- 17:45** **Networking drink**



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youtube.com/cesieofficial



info@fotrris-h2020.eu

All participants are kindly invited to join us for a networking dinner at 19:30



9 Appendix 2 – List of participants

Surname	First name	Organization
Bautista Blasco	Susanna	Complutense University of Madrid
Böhme	Olivier	FWO
Brinzei	Monica	Young Academy of Europe
Dallamaggiore	Eve	LGI Consulting
Desaille	Stevienna	Responsible stagnation Research Group
D'Haese	Nele	VITO
di Bono	Silviana	Consortium ARCA
Dutertre	Christian	ATEMIS
Fuentes	Ruben	Complutense University of Madrid
Gadbois	Serge	heSam Université
Ginés	Andrés	TRAVEL FOR ALL: TOURISM AND ASSISTANCE
Hanninen	Liisa	Complutense University of Madrid
Hernández	Cristina	Confederación Autismo España
Jacobsen	Troels	University of Stavanger/ European Consortium of Innovative Universities (ECIU)
Karner	Sandra	IFZ
Kielmanowicz	Daniele	LGI Consulting
Magócs	Krisztina	Lechner Kozpont
Maio	Roberta	EIP on Smart Cities Citizens Focus
Mazaj	Jelena	CESIE
Muller	Johann	ANR/Belmont Forum
Pataki	Gyorgy	ESSRG
Paulavets	Katsia	International Council for Science (ICSU)/ Science and Technology Alliance for Global Sustainability

Surname	First name	Organization
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Ruszanov	Anett	ERRIN
Schans	Charlot	Pakhuis de Zwijger/New Europe - Cities in transition
Schillaci	Domenico	PUSH
Schrammel	Maria	ZSI - Centre for Social Innovation
Sene	Ismael	Sciences Citoyennes
Snick	Anne	VITO
Southtombe	Cliff	Social Enterprise Europe
Stavrou	Vivi	International Social Science Council/Science and Technology Alliance for Global Sustainability
Steinwender	David	Forum Urbanes Gärtnern
van Os	Gerard	Sonnevelt bvba/ The Global Compact
Whelan	Caroline	Science Europe
Wicher	Magdalena	IFZ

10 Appendix 3 – Vision functioning as point of departure for the co-creation process

FoTRRIS Draft Vision 2030 Co-RRI as mainstream practice in research and innovation

'It always seems impossible until it's done.'
(Nelson Mandela)

The vision of FoTRRIS is for all people to thrive in a sustainable, equitable and peaceful world, by strengthening responsible research and innovation systems. In this vision all R&I – in traditional as well as novel settings – responds to societal needs and takes responsibility by intervening so as to build a better future. In 2030 Responsible R&I (RRI) is the 'new normal' and the normative frame for planning, funding, producing and evaluating R&I.

RRI addresses global challenges and creates sustainable alternatives. In 2015 world leaders at the UN adopted the 2030 Agenda for Sustainable Development, a universally agreed framework with 17 goals. These SDGs offer a common framework and organising structure for RRI. Given the critical role of R&I in ensuring the success of the SDGs, all R&I institutions recognize the moral imperative to support the global agenda as their social mission and core function. SDGs provide a frame to demonstrate to all stakeholders – government, funders and the community – how RRI contributes to global and local wellbeing. They are the reference for the R&I community to evaluate the impact and relevance of its work.

SDGs stress the interconnections between the social, environmental and economic aspects of sustainable development, as well as between the goals themselves: SDGs need to be addressed in the context of each other, not separately or sequentially. This interdependency is reflected in the way RRI is set up and evaluated. Key context-defining features of sustainability challenges are complexity and uncertainty, leaving room for multiple legitimate value-laden analyses and interventions. RRI therefore is built upon systemic analyses that take into account planetary boundaries, social needs and economic functionality. It helps to make sound choices between competing options and is engaged in deep transformations of embedded societal patterns and institutions, while supporting resilient ways of organising cities and communities.

In that sense RRI is part of a broader societal learning process, and is embedded in a partnership involving other stakeholders. RRI implies co-creation and transdisciplinarity, integrating the insights and perspectives of citizens, decision-makers and generative economic actors. RRI is a common endeavour (CO-RRI) for the common good, which may integrate specific knowledge or skills that require a more specialist approach.

1. Public agenda setting for RRI

1.1 Who ?

The SDGs offer a framework for setting R&I priorities. Global goals manifest themselves differently according to local contexts. 'Local' refers to a geographic zone characterised by features that are relevant to specific systemic interventions; these may be at the level of a neighbourhood (e.g. with a migrant population), a city, region or country (e.g. with a given socioeconomic fabric) or several countries (e.g. within a specific climate zone).

R&I agendas are set at the relevant local level (subsidiarity) involving 4 types of actors:

1. Civil society organisations; special concern is given to representation of groups for whom normal participatory paths are blocked (e.g. refugees) or who are affected but cannot be involved (e.g. future generations or non-human agents)
2. Ethical networks of companies with a mission to contribute to the common good (e.g. Social economy, Benefit corp...), called 'generative businesses' hereafter
3. Public services, the representatives of which understand the complexity of SDGs and are familiar with approaches to complex dynamic problems
4. Research institutes and universities that adopted the SDGs as their core mission and created the skills, partnerships, governance and infrastructure this requires.

Private profit oriented companies and R&I institutions (can receive funds for rebuilding themselves as generative or common-good oriented organisations and) are informed and consulted, but have no decision making power in public R&I agenda setting.

1.2 What ?

RRI priorities are based on a systemic analysis of the complex and interconnected SDGs.

1. Research of the planetary system and of the 'web of life' allows us to understand planetary boundaries and complex and dynamic planetary mechanisms humans depend on (e.g. climate, geochemistry, ecosystems, thermodynamics, physics...);
2. Research of the (historical and current) 'webs of meaning' and creativity leads to an understanding of how humans can co-evolve with the rest of nature and learn to thrive (again) as healthy communities within planetary boundaries;
3. Technological research learns from natural ecosystems (biomimicry) how to increase human wellbeing while regenerating planetary health (clean oceans, fertile soils, biodiversity...) and while keeping entropy as low as possible;
4. Economic and legal research studies how access to (use of) resources can be distributed efficiently in a just and sustainable way to all human beings by creating monetary systems, laws and institutions that serve the common good.

RRI contributes to the regrowth of economic functionality, allocating only renewable resources to the wellbeing of all living beings in a just and sustainable way. All research is justified and prioritised in function of its estimated contribution to this regrowth.

1.3 How?

R&I agenda setting is responsive to complex, dynamic and non-linear processes, and is based upon systemic analyses that are inevitably partial (it is impossible to address the whole global system at once). Therefore agenda setting is an iterative process of making informed choices and evaluating its (intended and unintended) effects.

This implies boundary critique of previous research projects or agendas, checking for blind spots or excluded groups. Lessons from previous research – successes as well as failures – are integrated into a coherent RRI agenda (thus avoiding ‘projectification’).

2. Public financing of RRI

Financing RRI both depends on and contributes to a sustainable financial system. As RRI for the common good (= SDGs) does not aim at making money, extractive financial systems (leading to the 2008 crisis) alone are unsuited to fund RRI. A combination of (responsibly invested) public funds, participatory financing (social crowdfunding) and complementary currencies designed by RRI-communities allows for sustainable funding.

R&I is a generative process: sharing insights and ideas results in more knowledge and creativity. Sharing and open exchanges are facilitated by a generative currency. While extractive money is a driver for the privatisation of knowledge (IP), generative money facilitates its free circulation and abundance. Generative currencies store the value that is created whenever knowledge actors exchange insights or ideas, and their circulation encourages further co-creation. They valorise the input of all actors involved in RRI (cf. 1.1) on an equal footing, and strengthen inclusive RRI co-creation. This way the relevance of indigenous knowledge is recognised and valorised (but not privatised).

Public research funds are only allocated to projects that serve the common good by directly or indirectly contributing to the SDG’s. Research funds are only made available to companies or organisations if they are generative in their mission, ownership model, governance, financial structure and network affiliations (cf. 1.1)

As SDGs depend on an integration of natural, social, technical and economic knowledge, budgets are allocated in adequate proportions to RRI in these various fields. In addition, in order to support R&I institutions desirous of making the transition towards co-RRI, the budget funds organisations that facilitate this. These organisations are an intermediary for various disciplines to (learn to) integrate their expertise in a systemic analysis and to involve other stakeholders; they facilitate co-creation and offer platforms for sharing co-RRI skills and results; their mandate is defined by the local community.

The co-creation of research project-concepts with all four types of actors (cf. 1.1) in a local context is crucial, as it determines the relevance, inclusiveness and potential impact of R&I. Specific funding is provided for inclusive project development processes at local levels. Since sustainability goals are complex and multidimensional, many valid analyses and solutions are possible; a wealth of project proposals increases the resilience of the R&I system. Funds for the creation of project concepts are available as ‘seed money’ to foster the creative and abundant production of potential solutions.

As social and low-tech innovations are more accessible to social groups or countries facing poverty, their potential impact for the SDGs is high. Budgets allocated to social and low-tech innovation match those for high tech research. High tech innovations are funded only if the locally cocreated project-concept reveals that they are part of the most promising solution, that their benefits outweigh the risks, and that - through generative economic leverages and commons initiatives - they will be accessible to all.

Decision-makers and administrative staff responsible for allocating and following up on budgets are trained in sustainable finance, are familiar with the specific (non-linear) characteristics of RRI, and are deeply committed to realising the SDG's. Local actors, CSO's and generative businesses are involved in the selection of project proposals.

3. Knowledge production: facilities and processes

Co-RRI is never produced in an ivory tower. It requires resilient networks that unite a variety of actors and encourage a plurality of methods, perspectives and skills, allowing for agile, engaged and inclusive R&I.

RRI is an crucial part of a broader societal process of 'learning to thrive within planetary boundaries,' and as such has an educational dimension. This learning process takes place in all kinds of settings, including commons initiatives, citizen science, sustainable communities (e.g. Ecovillages or Transition Towns), generative businesses pursuing a circular and functional economy, or in Social Innovation facilities. R&I institutions define themselves as part of this open knowledge building community and as partners of all those agents committed to research and innovation for sustainability.

As sustainability goals are complex, multifaceted and unpredictable, they depend on the integration of social, technical, economic and political or legal dimensions. RRI-projects start out not by defining the (technical) solution they will produce, but by identifying the societal question (or goal) they will address, clarifying (through participatory, co-creative processes) how they will do so and why, taking into account ethical values and societal expectations. Since it is impossible to set up perfectly controlled conditions for SDGs, the main function of research is to generate and openly share relevant data that support decision-making towards the SDGs. High tech innovations can be part of these solutions, but only if their benefits outweigh the risks, especially in the long run.

For researchers to understand the complexity of SDGs and the interventions they call for, their research activity is always complemented by a personal involvement in commons initiatives or generative economic activities. This 'citizen engagement' protects researchers from adopting a one-dimensional (technical) perspective on social problems and creates the preconditions for iterative boundary critique of their research activities. Interaction with other actors and groups allows researchers to recognise their own blind spots and to discover new, formerly marginalised perspectives. This increases the probability their research will be socially accepted and have societal impact.

RRI contributes to a world in which traditionally feminine roles and values - such as care and cooperation - are in balance with so-called masculine ones – e.g. competitiveness and control. RRI is not instrumental to an economy pursuing unsustainable growth and competition, but contributes to a world in which deep gender equality transpires in care for the community, future generations and the planet, or in design and governance of regenerative cultures and economies. It addresses the root causes of inequality and conflict and replaces ruthless competition by cooperation in a global perspective.

There is no unique right way for a university or research institution to engage with RRI. How universities choose to act depends on the needs of the communities they serve, as well as on their size, context, research strengths and funding availability. Through responsible governance they define and fulfil their contract with society. By joining forces with other RRI-agents, e.g. in networks which mobilise capacities in all parts of the world (such as Future Earth network), they contribute to research that connects local to global processes and thus increases their societal impact.

4. Evaluation and monitoring of RRI

RRI is a driver of sustainable development. In a complex, nonlinear context this means co-evolution, since innovation changes the environment, and this in turn has an impact on innovation. Evaluation in collaboration with other societal, commons oriented actors (cf. 1.1), allows for an iterative process of experimentation, feedback and adaptation. It monitors whether R&I fosters sustainable development and generative co-evolution. It does not use a static model or norm of linear 'progress', but enables RRI to stay agile.

In nonlinear contexts, the time scale for evaluating impact is crucial. RRI-agents learned from history that products or processes deemed beneficial in the short term ('progress'), often prove harmful after large scale implementation (e.g. plastics, monoculture, CFK's, antibiotics). RRI must be able to make timely corrections when such tipping points appear. RRI therefore strictly adheres to the precautionary principle, especially for R&I that has effects that are hard to turn back (e.g. entropy). Innovation is always monitored both on ethical, legal and social aspects and on environment, health and safety issues.

Ranking of research institutions uses a coherent set of 'responsibility' criteria including:

1. the number and quality of open access publications they produce
2. the number and quality of interventions to inform politics or the public debate
3. the portfolio of innovative, commons oriented initiatives they contribute to
4. whether they make ethics, epistemology, systems analysis and transdisciplinary methodology mandatory themes of learning and reflection for all research staff
5. their efforts for RRI in countries in poverty and their active role in RRI networks
6. the degree to which they are managed as sustainable communities (in terms of gender, resource and energy management, local consumption, inclusiveness, etc.)

Gender equality in RRI is not measured by the number of women participating in competition-oriented R&I, but by the number of R&I projects that contribute to a world in which feminine and masculine roles and values are balanced and equally valorised.

R&I is valued not for its own sake but for its contribution to human and planetary needs. Projects are seen not as linear paths towards predefined solutions but as learning steps; learning can result from both successes and failures. Projects that do not result in the planned outcome but have shown an ability to adapt, are considered successful and are expected to share their learnings. Criteria for projects include: does the innovation address root causes or only symptoms of a problem? Does it leave space for diverse approaches and solutions? What material throughput does it imply (where do materials come from; are they recyclable or renewable; how are they disposed of; what is the energy cost and impact on air and

water)? How are the outcomes made accessible to people or regions that most need them? How does their implementation affect value systems, traditions, gender roles and other 'webs of meaning' and is this acceptable?

The evaluation and promotion of individual researchers takes into account:

1. capacities and skills in ethics, epistemology, systems approach and co-creation,
2. open source publications for the scientific community and the general public,
3. engagement in action research, commons initiatives or generative economy,
4. positive and negative impacts (intended or not) of the innovations they were involved in.

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11 Appendix 4 – Feed-back form



Feed-back Form

This feed-back form is designed for the participants of the Back-casting Exercise (BCE) of the FoTRRIS project organised in Paris on 19th September 2017.

The evaluation form can be filled in anonymously, only indicating the type of organisation that you represent. The results will be used for the report of the event to demonstrate the immediate results of the event evaluated by the participants themselves and the potential impacts that the movement that FoTRRIS also promotes could achieve.

What did you find the most useful of this event?

What have you learnt from the discussions?

What would you suggest changing in your organisation upon the outcomes of the BCE?

Name (optional).....

Which type of organisation do you represent?

- Academia/researcher
- Policy maker
- Economy/private sector
- Civil society



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