



# **D3.2: Gauging the potential societal contributions of research and innovation**

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## **ABSTRACT**

This deliverable provides guidance to HEFRCs on the potential societal contributions of R&I. It offers orientation for the strategic and continuous monitoring of societal needs to be considered in R&I activities at the organisational level and gives methodological advice for a customised needs assessment. The document identifies the six most pressing needs currently highlighted by stakeholders and analysts and illustrates how to apply them by implementing an ETHNA System.

## EXECUTIVE SUMMARY

This report provides guidance to HEFRCs on how to keep an updated overview of society's values, needs and expectations to which R&I may respond to build trust between science and society and address the challenges of our time. Based on stakeholder statements collected e.g., in deliberative workshops, from other project results such as BOHEMIA or PE2020, but also from a survey of various networks within the ETHNA System project, including SIS.net, ECsite, EUSEA, GenPORT, Scientix, EUCYS, RRI Tools, ENRIO, ENERI, EURAXESS and others, this guide describes the potential societal contributions of R&I. To meet the demands of HEFRCs for a consolidated and structured research policy, which is essential to ensure accountable research, the guide presents the implementation of a Code of Ethics and Good Practices (CEGP) following “The European Charter for Researchers” and “The Code of Conduct for Recruitment”. To customise the needs assessment, examples of good practices related to the four key RRI areas are outlined and provided for further elaboration. Three methods for identifying societal needs, namely Eurobarometer, research funding programmes and calls, as well as foresight exercises, are presented as particularly useful for monitoring societal needs. The strategies are illustrated with helpful examples of how to engage in joint dialogue with relevant stakeholders to reflect on and respond to societal needs in the context of RRI activities. This is illustrated in terms of six identified most pressing needs. Finally, an outlook is provided on how the insights gained in this guide on monitoring and addressing societal needs in R&I can be used in deliberative stakeholder workshops to explore different perspectives on complex issues of societal relevance and their implications for HEFRCs' R&I activities.

# Gauging the potential societal contributions of research and innovation

## »»»»» A GUIDE FOR HEFRCs 21|12|21

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#### Disclaimer:

This deliverable has not yet been reviewed by the European Commission. Its content might therefore change as a result of the review process.



## List of abbreviations

<b>AI</b>	Artificial Intelligence
<b>ALLEA</b>	All European Academies
<b>CoC</b>	Code of Conduct
<b>CEGP</b>	Code of Ethics and Good Practices
<b>CORDIS</b>	The Community Research and Development Information Service
<b>ERA</b>	European Research Area
<b>EEA</b>	European Environment Agency
<b>EFP</b>	European Foresight Platform
<b>ETHNA System</b>	Ethical Governance of RRI in Innovation and Research in Research Performing Organisations and Research Funding Organisations
<b>EU</b>	European Union
<b>HEFRC</b>	Higher Education, Funding and Research Centre
<b>HORIZON</b>	Horizon Europe Framework Programme
<b>HR</b>	Human Resources
<b>HRS4R</b>	Human Resources Strategy for Researchers
<b>MDG</b>	Millennium Development Goal
<b>MS</b>	Member States
<b>PE2020</b>	Public Engagement Innovations for Horizon 2020
<b>R&amp;I</b>	Research and Innovation
<b>RFO</b>	Research Funding Organisation
<b>RPO</b>	Research Performing Organisation
<b>RRI</b>	Responsible Research and Innovation
<b>RTO</b>	Research Technology Organisation
<b>SDG</b>	Sustainable Development Goal
<b>SME</b>	Small and Medium Enterprise
<b>SWG HRM</b>	Standing Working Group on Human Resources and Mobility
<b>QHM</b>	Quadruple Helix Model

## What this guide is about and how you can use it

With this guide, Higher Education, Funding and Research Centres (HEFRCs) wishing to implement an ETHNA System will learn how to monitor and respond to the potential societal contributions of research and innovation (R&I). You will gain insight into the benefits of responsible research and innovation (RRI) in addressing transitions related to the challenges of our time. Based on stakeholder statements and perspectives gathered through literature reviews, surveys and deliberative workshops, you will get answers to the question of how organisations can best identify societal needs in order to address today's most pressing demands. The guide highlights the different stakeholder viewpoints, draws on key findings from other EU-funded projects such as EURAXESS, BOHEMIA or PE2020 and consults a variety of networks such as SIS.net, ECsite, EUSEA, GenPORT, Scientix, EUCYS, RRI Tools, ENRIO, ENERI, EURAXESS. Following the success story of "The European Charter for Researchers" and "The Code of Conduct for Recruitment", which address the need for a consolidated and structured EU research policy, you will get inspiration and motivation to create an ETHNA System Code of Ethics and Good Practices (CEGP). With respect to RRI principles and examples of good practice, you will be able to adapt your organisation's needs assessment to the RRI key areas research integrity, gender perspective, public engagement and open access. Focusing on three methods for monitoring societal values, needs and expectations, you will become familiar with affordable secondary research activities and foresight exercises that you can use in this process. Methodological examples will illustrate how you can use Eurobarometer, research funding programmes and calls, as well as foresight exercises to engage in a dialogue on urgent needs, e.g., based on innovative breakthroughs. Finally, the last chapter gives you an insight into how to best use the resources from this guide to reflect on society's most pressing needs in deliberative stakeholder workshops.

**If you are interested in discovering what you can do to continuously monitor and respond to societal needs when promoting R&I at your organisation, this guide will help you to**

- › **make use of the benefits of R&I to find answers to the questions of our time**
- › **strive for improvement based on success stories**
- › **follow good practice to monitor the potential societal contributions of R&I**
- › **use secondary research and foresight exercises to customise your needs assessment**
- › **draw on stakeholders' perspectives on the most pressing needs.**

## Why it is important to explore the potential societal contributions of R&I

The European Commission describes RRI as “[...] an ongoing process of aligning research and innovation with society’s values, needs and expectations” (European Commission 2014). The responsibility that goes along with the commitment to RRI is thus expressed in involving society and addressing its needs. This can build trust between science and society and promote societal acceptance of R&I, especially publicly funded research (cf. Forsberg et al. 2020). Engaging society ultimately contributes to research, accelerates the creation of markets and facilitates the conclusion of ethical debates on scientific and technological issues. Indeed, citizens are increasingly demanding to be involved in science and technology issues and are placing their hopes and expectations in RRI activities. When planning RRI activities at your organisation, you should thus ensure that you are responsive to society’s demands and recognise the benefits of R&I that come with societal contributions. However, the Commission also emphasises that the benefits of RRI go beyond alignment with societal needs. R&I not only delivers on the promise of smart, inclusive and sustainable solutions to societal challenges, but also offers new perspectives to deal with problems of our time that would otherwise go unnoticed. In this sense, identifying new perspectives and innovative solutions to existing problems constitutes a transition where technological developments are embraced and widely used due to the interplay between innovation and societal needs. The turn towards innovative products and services is not least due to the fact that RRI activities assess the risks and how to deal with them in this context (cf. European Commission 2014).

***“Collective fostering of innovation can bring economic benefits, better services and products, and the social benefit of more cohesion, where citizens are able to shape the future of rapid change together” (Weber et al. 2018, 21).***

### How do transitions occur?

Based on historical evidence of past transitions, the multi-level perspective suggests that transitions start from interacting processes at three levels (cf. Geels et al. 2019, 26 in reference to Geels, 2002/2018). At the first level, innovations emerge in niches, e.g., in protected spaces outside or on the edge of the established system, where, for example, inventors and entrepreneurs, start-ups and small social networks can experiment without being exposed to the pressure of the market and institutional forces. Second, it is about change at the system level, where established structures can be disrupted by novel developments. Third, at the regime level, the existing system faces increasing problems that can make established actors doubt its sustainability. Such regime destabilisation ultimately creates opportunities for transitional change (ibid. in reference to Turnheim/ Geels, 2012). Transitions are described as “[...] the simultaneous occurrence of far-reaching institutional, organisational, technical, social and political changes in and of socio-technical systems, all of which strive for improvements enabled by innovation (Weber et al. 2018, 17 following Markard et al. 2012). However, as transitions are complex and uncertain and therefore cannot be managed with traditional approaches, reflexivity, continuous adaptation and coordination across levels and fields of action are crucial (ibid.).

The BOHEMIA project identifies four transitions, based on scientific literature focusing in particular on sustainability and energy issues (ibid., 17 in reference to Geels/ Schot 2007, Markard et al. 2012, Fischer-Kowalski/ Rotmans 2009). These serve as a frame of reference and focusing tool for the ambitions and possible priorities in future European R&I policy to be aligned with the Sustainable Development Goals (SDGs).

**The transitions concern:**

- › **Social needs**
- › **Biosphere**
- › **Innovation**
- › **Governance**

*“To improve the lives of people, our reflection about the future should be inspired by the goals of sustainability in order to stretch the boundaries of what is feasible in function of what is desirable for people” (Paquet, 2019, 4).*

Sustainability transitions have triggered a debate on the need for new R&I policies that are more ambitious and linked to societal challenges (cf. Weber et al. 2018, 17 in reference to Geels/ Schot 2007, Markard et al. 2012, Fischer-Kowalski/ Rotmans 2009). Therefore, the BOHEMIA project especially emphasises the urgency of finding proper governance models (cf. Weber et al. 2018, 21) and highlights the need to create suitable regulatory and institutional frameworks to empower citizens in relation to RRI activities to steer technological developments into sustainable paths (ibid.). By implementing an ETHNA System, you actively contribute to this endeavor through introducing a new formal organisational structure for the ethical governance of R&I. Involving various stakeholders and addressing the RRI key dimensions research integrity, gender perspective, public engagement and open science ensures that research innovations are responsive to the needs of society. <sup>1</sup>In the following chapters, you will learn how to get an updated overview of societal needs and how to link them to innovation processes so that you can implement the ETHNA System governance model most effectively.

*“Researchers should ensure that their research activities are made known to society at large in such a way that they can be understood by non-specialists, thereby improving the public’s understanding of science. Direct engagement with the public will help researchers to better understand public interest in priorities for science and technology and also the public’s concerns” (European Commission 2005, 14).*

<sup>1</sup> To cover a wide range of perspectives from various disciplines, you should keep in mind that societal needs are expressed by different actors. With regard to the implementation of an ETHNA System, four major actors can be identified: research innovation and funding community, business and industry, policy makers, civil society. You will find detailed instructions on how to identify, analyse, map, prioritise, select and recruit relevant stakeholders in the ETHNA System guide “Mapping stakeholders and scoping involvement – a guide for HEFRCS”. Available at: [https://ethnasystem.eu/wp-content/uploads/2021/10/ETHNA\\_2021\\_d3.1-stakeholdermapping\\_2110011.pdf](https://ethnasystem.eu/wp-content/uploads/2021/10/ETHNA_2021_d3.1-stakeholdermapping_2110011.pdf).

## Monitoring and responding to societal needs when promoting R&I

When it comes to responsibility, who do you think is responsible for keeping an updated overview of societal needs? Isn't it interesting that in the ETHNA System project survey the majority of respondents indicated that, in addition to many actors, such as research funding organisations (RFOs), political institutions or the researchers themselves, who play a role in shaping R&I responsibly, the research performing organisation (RPO) is accountable for keeping an updated overview of the potential societal contributions of R&I? But how can institutions even meet this requirement? How can they actually monitor and respond to societal needs when promoting R&I?

In the ETHNA System project, different EU networks, all involved in ethical governance of R&I, were asked to participate in a short survey to monitor societal needs and the potential positive contributions to society.<sup>2</sup>

### European networks that have been consulted

SIS.net	<a href="https://www.sisnetwork.eu/">https://www.sisnetwork.eu/</a>
ECsite	<a href="https://www.ecsite.eu/">https://www.ecsite.eu/</a>
EUSEA	<a href="https://eusea.info/">https://eusea.info/</a>
GenPORT	<a href="https://www.genderportal.eu/">https://www.genderportal.eu/</a>
Scientix	<a href="http://www.scientix.eu/">http://www.scientix.eu/</a>
EUCYS	<a href="https://eucys2020.usal.es/">https://eucys2020.usal.es/</a>
RRI Tools	<a href="https://rri-tools.eu/">https://rri-tools.eu/</a>
ENRIO	<a href="http://www.enrio.eu/">http://www.enrio.eu/</a>
ENERI	<a href="https://eneri.eu/">https://eneri.eu/</a>
EURAXESS	<a href="https://euraxess.ec.europa.eu/">https://euraxess.ec.europa.eu/</a>
EARMA- ERION	<a href="https://www.earma.org/about/governance/thematic-groups/ethics-and-research-integrity-officer-network-erion/">https://www.earma.org/about/governance/thematic-groups/ethics-and-research-integrity-officer-network-erion/</a>
DBT	<a href="https://tekno.dk">https://tekno.dk</a>
NBT	<a href="https://teknologiradet.no/en/homepage/">https://teknologiradet.no/en/homepage/</a>
Biofaction	<a href="https://www.biofaction.com">https://www.biofaction.com</a>
Rathenau Instituut	<a href="https://www.rathenau.nl/en">https://www.rathenau.nl/en</a>
ACA	<a href="https://aca-secretariat.be/">https://aca-secretariat.be/</a>
ENIC-NARIC	<a href="https://www.enic-naric.net/">https://www.enic-naric.net/</a>
EAIE	<a href="https://www.eaie.org/">https://www.eaie.org/</a>
INQAAHE	<a href="https://www.inqaahe.org/">https://www.inqaahe.org/</a>
ENQA	<a href="https://www.enqa.eu/">https://www.enqa.eu/</a>
EQAVET	<a href="https://www.eqavet.eu/">https://www.eqavet.eu/</a>
EQAR	<a href="https://www.eqar.eu/">https://www.eqar.eu/</a>

<sup>2</sup> The questionnaire was distributed between February and April 2021.

Specifically, participants were asked how an organisation can identify societal needs to which R&I may respond, and what the most pressing needs currently expressed by analysts and stakeholders are in this context. The aim of the broad consultation on this topic was to provide relevant findings that support the implementation of an ETHNA System as a regulatory and institutional framework to strengthen R&I governance. The following insight into the results of the survey, followed by a presentation of an example of good practice, offers you specific guidance on how to implement one of the three elements of the ETHNA System, a CEGP that exemplifies successful monitoring and responding to societal needs in the field of R&I.

## How to address the needs of HEFRCs with a Code of Ethics and Good Practice

It is striking that a majority of respondents to the ETHNA System project survey answered that codes of conduct, among other measures, are key to making R&I more accountable. Such documents provide a framework for self-regulation in scientific and academic disciplines and for research environments facing new challenges. They are an important tool to support researchers and research organisations in conducting research of the highest quality and help prevent misconduct by promoting good practice in R&I, as well as providing practical guidance to the research community. This is also relevant to take into account when implementing an ETHNA System at your organisation. One of the three levels of institutional commitment to consider when implementing an ETHNA System is the development of a CEGP, which explicitly sets out the principles, values and good practices that should guide the activities of those involved in R&I processes, as well as the policies and programmes of the organisation.

Recognising the relevance for HEFRCs to have a code of conduct (CoC) that can serve as a reference document for ethical governance, as well as providing guidance for the development or adaptation of a CEGP, can also reaffirm the organisation's commitment to ethical governance of R&I and actively contribute to the creation of a culture of continuous improvement in RRI activities. By developing an action plan that sets specific goals and outlines planned activities, you can track your organisation's progress towards achieving its goals. Create a customised action plan to align your RRI strategy with the CEGP and commit to achieving or completing the principles that are considered priorities for your organisation. To develop a CEGP, you can start by setting up a working group and discuss the purpose of the CoC:

› ***What are the specific requirements related to R&I that your organisation wants to commit to?***

› ***What rules and regulations do you expect researchers to follow in their R&I activities?***

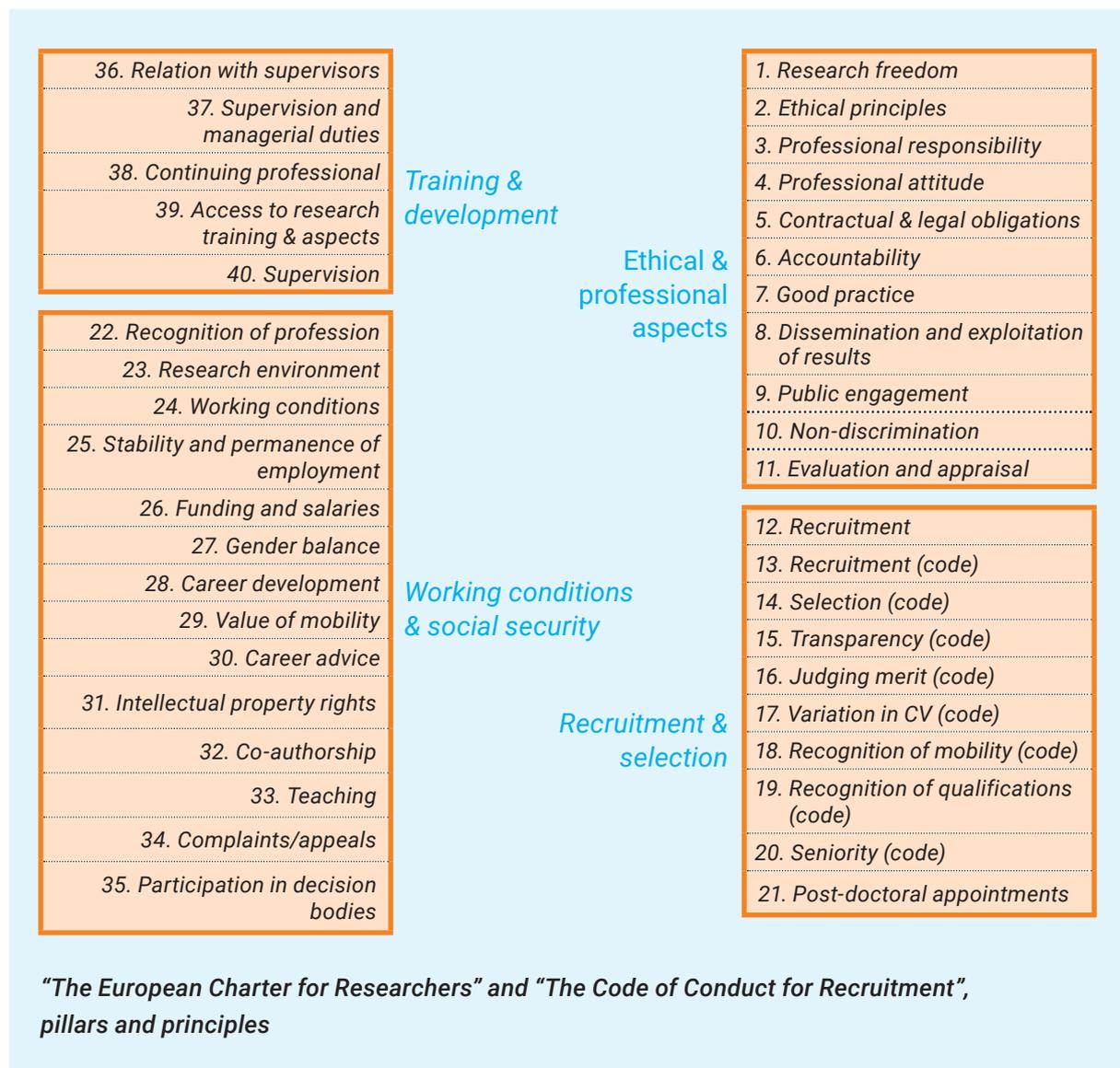
To do this, engage stakeholders in participatory workshops to brainstorm the first draft of the CEGP and further develop this document by considering relevant aspects from the engagement process. Create a map of possible risks and examples of good practices in R&I and identify the aspects to be addressed by the CEGP. Gather opinions and suggestions to improve the draft, possibly using questionnaires, in-depth interviews or deliberative methods in participatory workshops. Remember to keep stakeholders informed about the progress and results of the CEGP. Finally, the document needs to be disseminated to increase its visibility. This could include training so that stakeholders know and internalise the rules and regulations (cf. González-Esteban et al. 2021, 24).<sup>3</sup>

3 Find out more about how you can develop a Code of Ethics and Good Practice in the Concept of the ETHNA System. Available here: [https://ethnasystem.eu/wp-content/uploads/2021/09/d4.1-guide\\_update\\_16092021.pdf](https://ethnasystem.eu/wp-content/uploads/2021/09/d4.1-guide_update_16092021.pdf).

## The need for a consolidated and structured research policy – “The European Charter for Researchers” and “The Code of Conduct for Recruitment”

A concrete example that can serve as an inspiration as well as a motivation to develop an EHTHNA System CEGP that identifies and addresses the values, needs and expectations of the HEFRC and relates them to the RRI key areas is “The European Charter for Researchers” and “The Code of Conduct for Recruitment” initiated as part of the Human Resources Strategy for Researchers (HRS4R).<sup>4</sup>

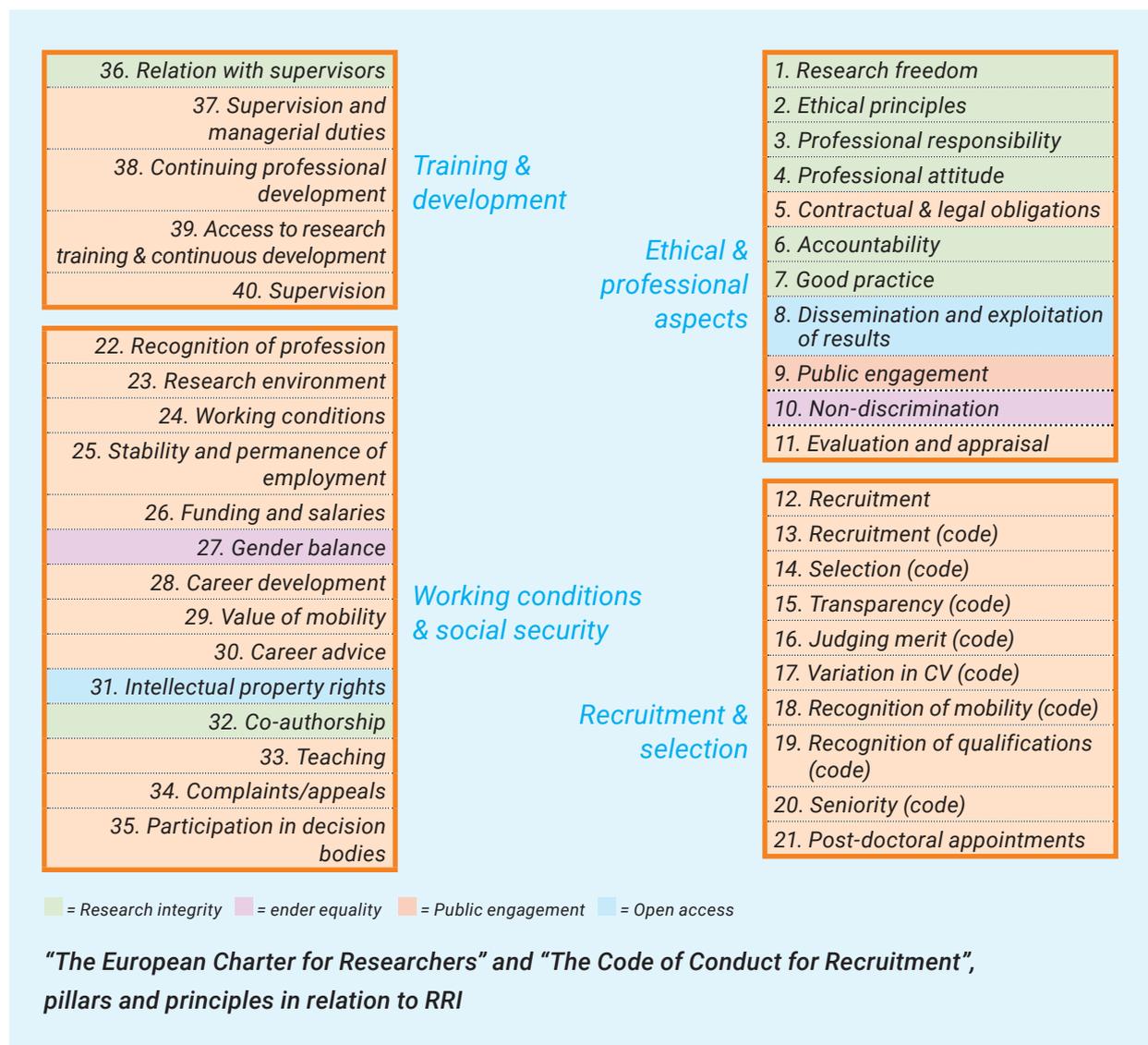
The Charter and Code respond to the fact that research careers in Europe are fragmented and scattered at local, regional, national or sectoral level. The documents provide a framework for responsible and professional practice and mutual respect for all those involved in the research environment. They comprise 40 general principles relating to the roles, responsibilities and entitlements of researchers and of employers and/ or funders in research, divided into four different pillars: a) ethical and professional aspects, b) working conditions and social security aspects, c) recruitment and selection, and d) training and development.



<sup>4</sup> Within the ETHNA System project, several existing HRS4R action plans were reviewed to assess  
a) the degree of relevance of each action to the corresponding principles and  
b) the degree of involvement of internal and external stakeholders in each action.

The CoC was issued in 2005 as a good practice recommendation by the Commission to Member States (MS) to contribute to the development of the European Research Area (ERA) and creating a common understanding of the rights and responsibilities of European researchers and their funders. It complements the rules set out in “The European Charter for Researchers” and provides individual researchers with the same rights and obligations wherever they work across the EU, so that they can fulfil their potential (cf. European Commission 2005, 34). Institutions and employers that adhere to the CoC openly demonstrate their commitment to act responsibly and respectfully and to provide a fair environment for researchers, with the intention of contributing to the progress of the ERA (cf. EURAXESS).

Although not explicit, the Charter and Code recognise several principles that can be described as related dimensions of RRI. In an analysis of institutions which, through a customised action plan or human resources (HR) strategy, make progress in aligning their HR policies to the 40 principles of the Charter & Code, an indirect analysis of the relevance of RRI could be made and, equally important, concrete activities to promote the RRI principles could be identified. The figure below shows a first analysis of the principles related to the RRI key areas research integrity, gender perspective, public engagement and open access. Highlighted are those principles which, if taken into account, might contribute to fostering an RRI culture in research or research funding organisations that stimulates economic and employment growth.<sup>5</sup>



<sup>5</sup> Use the guide “Mapping stakeholders and scoping involvement – a guide for HEFRCs” to identify relevant stakeholders who already have expertise or a high level of interest in one or more of the RRI key areas. Feel free to adapt the templates to your individual mapping strategies. Finally, use the guide “Stakeholder involvement in ethical governance of R&I – a guide for HEFRCs” to give stakeholders a say in deliberative workshops and jointly discuss societal challenges in relation to the RRI key areas that you consider relevant to the planned RRI activity.

## So, what was the driving force behind the creation of the European Charter and Code?

Among other things, a potential shortage of researchers, especially in certain key disciplines<sup>6</sup>, was identified as a serious threat to the EU’s future innovation power, knowledge capacity and productivity growth. To respond to this, the attractiveness of a career in research should be boosted by providing the necessary conditions for more sustainable and committed careers in R&I. This required the introduction of new career development tools and the promotion of better and more visible career prospects (cf. European Commission 2005, 4). The consolidation and structuring of European research policy through the European Charter and Code were intended to achieve these objectives (ibid., 3). In this way, the documents are already an answer to the question of how to meet the most pressing need for a consolidated and structured EU research policy. Then, how were the general principles and requirements established and what legitimises them?

The recommendations are the result of a public consultation process involving the members of the Standing Working Group on Human Resources and Mobility (SWG HRM) (cf. European Commission 2005).<sup>7</sup> The principles formulated thus stem from a proactive attempt to directly involve citizens in decision-making processes.<sup>8</sup>

***“Democracy must be applied by gathering public opinion. Questions should be answered through surveys etc. This will guarantee public consent” (ETHNA System deliberative workshop participant).***



### What is public consultation?

The PE2020 project describes public consultation as one out of five categories of public engagement initiatives<sup>9</sup>: The aim of public consultation is to inform decision-makers about public opinions on a particular issue. These opinions are sought, but no prescribed dialogue takes place. In this case, the communication is one-way from the citizens to the decision-makers (cf. Ravn et al. 2015, 9). The adoption of public consultation in considering the question of how to meet the most pressing need for a consolidated and structured EU research policy thus responds to the increasing demand for public participation in setting research priorities.

6 Key disciplines are “plant genomics, road and maritime transport, hydrogen, photovoltaics, areas of nanotechnologies and information and communication technologies, and steel technology” (European Commission 2003).

7 The mandate of the Standing Working Group: <https://data.consilium.europa.eu/doc/document/ST-1207-2019-INIT/en/pdf>.

8 For more information on stakeholder engagement and examples of different levels of public engagement, such as public consultations, see the chapter „New and emerging patterns in civil society involvement“ in the ETHNA System guide “Mapping stakeholders and scoping involvement – a guide for HEFRCs”. Available at: [https://ethnasystem.eu/wp-content/uploads/2021/10/ETHNA\\_2021\\_d3.1-stakeholdermapping\\_2110011.pdf](https://ethnasystem.eu/wp-content/uploads/2021/10/ETHNA_2021_d3.1-stakeholdermapping_2110011.pdf).

9 Further information on the PE2020 project can be found here: <https://cordis.europa.eu/project/id/611826>.

## How to customise your needs assessment by incorporating good practices

When developing a CEGP customised to the needs of your organisation, it is recommended to include a description of professional and organisational good practices across the four key areas to cover a wide range of topics (cf. González-Esteban et al. 2021, 26). Feel free to use the following examples as an inspiration to develop good practice examples that you can include in your CEGP. Ask yourself: What are good practices that your organisation would like to promote for example in relation to the four RRI key areas and related principles?

### Examples of good practice from four RRI key areas

#### Research integrity:

Training, supervision and mentoring: How might your institution offer researchers the opportunity to develop professionally and improve their employability through access to continuous skills and competence development measures? (cf. European Commission 2005, 19) For example, develop a plan for training on the CEGP for all members of the organisation, enable mentoring of staff by senior researchers, research managers and supervisors, or provide specific guidance and training to ensure that research activities promote a culture of research integrity (cf. González-Esteban et al. 2021, 44).

Would you like to have more examples for inspiration? Have a look at All European Academies' (ALLEA) "The European Code of Conduct for Research Integrity" and think about,

Reliability,

Honesty,

Respect and

Accountability

as fundamental principles (cf. ALLEA 2017, 4).

#### Gender perspective:

Conflicts of interests and non-discrimination: How might your organisation offer research staff the opportunity for confidential and informal support in resolving work-related conflicts to promote fair and equitable treatment and to improve the overall quality of the working environment? (cf. European Commission 2005, 22) Wouldn't it be great to implement a hotline for ethics issues to make this easier? The Ethics Line of the ETHNA System is a communication channel that allows all stakeholders to send suggestions, alerts, complaints or reports to the organisation in a simple and confident way (cf. González-Esteban et al. 2021, 8).<sup>10</sup>

<sup>10</sup> Find out more about how you can create an Ethics Line in the Concept of the ETHNA System. Available here: [https://ethnasystem.eu/wp-content/uploads/2021/09/d4.1-guide\\_update\\_16092021.pdf](https://ethnasystem.eu/wp-content/uploads/2021/09/d4.1-guide_update_16092021.pdf).

**Public engagement:**

Collaborative working: How might your organisation encourage the use of public engagement methodologies that promote stakeholder involvement in RRI activities? Why not use the ETHNA System guide “Stakeholder involvement in ethical governance of R&I. A guide for HEFRCs” to support deliberative approaches in stakeholder dialogue that facilitate the involvement of different perspectives?

**Open Access:**

Publication and dissemination: How might your organisation promote open access and ensure that researchers benefit from the exploitation of their results while protecting intellectual property rights, including copyrights? How about adopting the FAIR principles (findability, accessibility, interoperability, and reuse of digital assets), which are widely recognised as a standard for open data by many RPOs and RFOs.<sup>11</sup>

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<sup>11</sup> The examples of good practice reflect principles in the European Charter and Code. Numerous other topics could be assigned to the four RRI key areas. Some topics can also be assigned to other key areas and would thus be mentioned more than once.

## Three Methods for identifying societal needs to which research may respond

*“Researchers should focus their research for the good of mankind and for expanding the frontiers of scientific knowledge, while enjoying the freedom of thought and expression, and the freedom to identify methods by which problems are solved, according to recognised ethical principles and practices” (European Commission 2005, 11).*

It is crucial for HEFRCs wishing to implement an ETHNA System to know how to continuously monitor societal needs to which research may respond. There are, of course, a number of methods you can use to identify and monitor social needs. For example, you can conduct quantitative surveys to analyse the needs of many respondents or use qualitative surveys to capture background and context in an interview with only a few people. In the ETHNA System project survey, we introduced participants to the five mission areas of Horizon Europe and challenged them to think about their legitimacy. As a result, it was recommended by analysts and stakeholders to broaden the scope to get a more detailed picture of societal needs, so that we could finally identify six pressing societal needs in relation to the five mission areas.

1. Sustainability/protecting land and oceans
2. Data Protection/privacy/protection of human rights
3. New Technologies/AI/robotics
4. Health (including mental health and well-being)
5. Food/farming
6. (Drinking) Water

A relatively simple and affordable way to identify societal needs is to conduct secondary research and use the results of existing studies. These can give you an idea of which issues are currently most relevant and could possibly be included in your planned RRI activity. The use of Eurobarometer and research funding programmes and calls was highlighted as particularly relevant among a range of alternatives by participants in the ETHNA System project survey. Thus, these two approaches are recommended as a reference to build on existing evidence, draw conclusions for your own organisation and use them for your planned RRI activity. The networks interviewed also recommended engaging in real dialogue with relevant stakeholders about social needs, for example through participatory events and stakeholder engagement activities. In their view, such formats are highly promising.<sup>12</sup> Also, consider Eurobarometer and calls as a basis for further thematic discussions with relevant stakeholders, oriented towards your specific institu-

<sup>12</sup> More information on why consulting broader communities is important for RRI can be found in the guide “Stakeholder involvement in ethical governance of R&I. A guide for HEFRCs”. Available at: <https://ethnasystem.eu/wp-content/uploads/2021/11/ethna-d3.3-stakeholder-engagement-guide.pdf>.

tional needs. The adoption of foresight techniques is also very suitable for stakeholder dialogues. This approach likewise allows for both drawing on existing results and engaging in a dialogue with relevant stakeholders. In the following, you will find useful examples related to the most pressing needs identified in the ETHNA System project survey, showing how you can ideally use Eurobarometer, research funding programmes and calls, as well as foresight exercises to ensure an updated overview of societal values, needs and expectations and take them into account in your planned RRI activity.

### How to use Eurobarometer?

Eurobarometer is a long-term series of opinion surveys on a wide range of topics. It gathers citizens' perceptions and expectations of EU policies and key challenges to provide detailed insights into trends and developments. You can access the Eurobarometer results and use them for your own RRI activity or participate in surveys yourself.

› Eurobarometer:

<https://www.europarl.europa.eu/at-your-service/en/be-heard/eurobarometer>

Engage in a dialogue on the topic of ...

#### Sustainability

Take a look at the report „European Youth in 2021“, where the topic „Climate Change and the Environment“ is addressed (Centre Kantar sur le future de l'Europe 2021 a), 22ff). Even though the COVID-19 pandemic is dominating the news and demanding attention, climate change and its consequences are of great importance for Europeans in general and for the youth in particular. When asked which objectives the EU should prioritise in the European Green Deal<sup>13</sup>, an absolute majority mentioned the development of renewable energy (55%). Other issues of importance to the EU include reducing plastic consumption, limiting waste as well as safe and affordable food. Both these priorities and the wider topics vary from country to country. How about addressing national or regional differences in prioritising climate change issues and the European Green Deal in a deliberative workshop with stakeholders from various backgrounds?



› You can find the report here: <https://www.europarl.europa.eu/at-your-service/files/be-heard/eurobarometer/2021/youth-in-europe-2021/european-youth-2021-report1-en.pdf>.

<sup>13</sup> Read more about the European Green Deal in this fact sheet: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN>.

### Data protection

A recent survey on cybercrime, mentioned in Plenary Insights – May 2021, shows that 52 % of respondents feel fairly or well informed about the associated risks. However, 47 % do not feel well informed, so they remain concerned. Survey respondents worry about “[...] misuse of their personal data, fraud, being locked out of their computer and forced to pay ransom to access their own data, as well as about identity theft” (European Commission 2020). Only 52 % believe they can protect themselves from these risks. Different law enforcement authorities, tools and legal frameworks are discussed. Wouldn't this be an exciting topic for a participatory workshop to develop ideas on how to protect personal data and privacy more effectively?



- › You can find the plenary session here: <https://www.europarl.europa.eu/at-your-service/files/be-heard/eurobarometer/2021/plenary-insights-may-2021/en-plenary-insights-may-2021.pdf>.

**Are you particularly interested in this topic? Take a look at the Budapest Convention on Cybercrime: <https://rm.coe.int/1680081561>.**

### New technologies

Take a look at the findings from the plenary session in May 2021 on Europe's digital future covering questions on the digital single market and the use of AI for European consumers. 61 % of respondents support 'a digital single market within the European Union', according to Eurobarometer, ranging from 89% in Estonia to 39 % in the Czech Republic.



- › You can find the plenary session here: <https://www.europarl.europa.eu/at-your-service/files/be-heard/eurobarometer/2021/plenary-insights-may-2021/en-plenary-insights-may-2021.pdf>.

### Health

Against the background of the COVID19 pandemic, a survey from spring 2021 shows that health has become one of the main concerns of Europeans. A majority of respondents consider the health benefits of restriction measures in their country to be greater than the associated economic damage (Centre Kantar sur le future de l'Europe 2021 b), 21f.). The role of the EU in the development and distribution of vaccines and the impact of the pandemic on the economic and financial aspects of individuals are discussed. Would you like to take up this highly relevant topic to raise health issues in relation to R&I with relevant stakeholders?



- › You can find the report here: <https://www.europarl.europa.eu/at-your-service/files/be-heard/eurobarometer/2021/spring-2021-survey/report.pdf>.

### Food and farming

A special Eurobarometer survey on “Making our food fit for the future - new trends and challenges” from October 2020 shows that Europeans prioritise taste, food safety and costs over sustainability aspects when buying food. More than four in ten respondents say that taste (45%) is the most important factor in their food purchasing decisions, followed by food safety (42%) and cost (40%). At least a third of respondents think that where food comes from (34%) and its nutrient content (33%) are important factors, while a fifth cite the amount of available shelf-life (20%) among their top priorities. What do the stakeholders you have recruited think about this issue and the priorities mentioned?



› You can find the report here: <https://europa.eu/eurobarometer/api/deliverable/download/file?deliverableId=73867>.

### (Drinking) Water

The Perlemer 2019 shows that drinking water scarcity is one of the most important environmental problems for Europeans. With regard to water in general, the report also lists marine pollution and pollution of rivers, lakes and groundwater (Schulmeister et al. 2019, 48f.).



› You can find the report here: <https://www.europarl.europa.eu/pdf/eurobarometre/2019/parlemeter-2019-heeding-the-call-beyond-the-vote/report/en-report.pdf>.

## How to use research funding programmes and calls?

You can refer to research funding programmes and calls, such as those from Horizon Europe Framework Programme (HORIZON), to identify projects that are eligible for funding and can therefore be considered relevant for R&I in addressing global challenges.

› Horizon Europe funding programmes and open calls: [https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls\\_en](https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls_en).

Engage in a dialogue on the topic of ...

### Sustainability and education aspects for renewable energy

In this call, the European Commission emphasises the need to achieve climate neutrality by 2050 and therefore calls for a framework that covers sustainability and education aspects for renewable energy. The Commission expects outcomes on social and environmental aspects of renewable energies that identify the main challenges and are in line with the European Green Deal.



› Sustainability and educational aspects for renewable energy and renewable fuel technologies

### Sharing data on food and nutrition systems

Take a look at the call on data rights in the field of food and nutrition and discuss, for example in a deliberative workshop, whether and how digital and data technologies are key requirements for the European Green Deal and the EU's climate goals. How can citizens be empowered to claim their data rights and what alternative approaches are there to sharing data on food systems?



- › Piloting approaches and tools to empower citizens to exercise their “data rights” in the area of food and nutrition

### AI for predicting disease

The call for a trustworthy AI tool for predicting disease combines two topics of the identified most pressing needs and offers an opportunity to discuss the benefits of such systems for clinicians and patients. The European Commission argues that patients benefit from AI-based personalised prevention strategies. But what do the stakeholders think about it, who are involved in your RRI activity?



- › Trustworthy artificial intelligence (AI) tools to predict the risk of chronic non-communicable diseases and/or their progression

### Empowering a sustainable health ecosystem

Given that health is one of the most pressing needs of the public, the European Commission intends to establish a “European Smart Health Innovation Hub”. The innovation hub will empower patients and citizens by creating a sustainable European health ecosystem in cooperation with small and medium enterprises (SMEs) and research technology organisations (RTOs). Would such an innovation hub also be a useful feature at your organisation?



- › Setting up a European Smart Health Innovation Hub

### Food systems in alignment with the European Green Deal

Take a look at the Commission's call to transform the food systems to be aligned with the European Green Deal and discuss how different stakeholders can work together to achieve this objective. Sustainability and legitimacy are key factors in this process.



- › Mobilisation of society to transform food systems for co-benefits

### Innovative water governance

Take a look at the European Commission call for water governance and discuss how the EU can contribute to innovative governance and sound decision making in water policy.



- › Water governance, economic and financial sustainability of water systems

## How to use foresight approaches?

Foresight is a method of future research. It is a systematic, participatory process for gathering knowledge about the future and creating visions. The aim is to enable decisions concerning the present and to mobilise joint action. The foresight process can be understood as a triangle linking 'thinking the future', 'discussing the future' and 'shaping the future'. (European Foresight Platform). You can carry out foresight exercises yourself or learn from existing approaches, e.g., by referring to foresight outcomes like recommendations to policy-makers or corporate executives.

› [European Foresight Platform \(EFP\): http://www.foresight-platform.eu/](http://www.foresight-platform.eu/).

*“Foresight studies have helped gain legitimacy for policies through making the mechanisms for policy creation transparent. [...]. Additionally, foresight studies led to greater innovation in research and policy making overall, promoting collective learning and educating stakeholders about future opportunities and challenges. Incorporating a large number of diverse types of experts into the foresight process helped build engagement with the policy area among a wide range of people” (Cox et al. 2015, 4).*

## Bottom-up or top-down?

The European Foresight Platform explains different ways of approaching a foresight process once the focus of the planned RRI activity has been determined:

- › Top-down approaches work within a pre-determined set of parameters, usually involving small groups of experts drawn from different stakeholder groups who work on information gathered from a variety of sources.
- › Bottom-up approaches place more emphasis on interaction, especially because the process of gathering information and the dissemination and implementation of the results are themselves subject to discussion (cf. EFP).

The distinction between “top-down” and “bottom-up” approaches cannot be made strictly in most cases, since the processes are stimulated, for example, by the involvement of relevant stakeholders, but ultimately formulated by policy makers. The United Nations Millennium Development Goals (MDGs), for example, have been criticised for being formulated in a top-down approach. While the SDGs have already been defined through bottom-up processes, their implementation in practice must also be a bottom-up approach to increase their acceptance:

*“Policymakers must translate the global SDG targets into local policy options that reflect real-world conditions. Often this translation is top-down; experts and elites dominate the policy process. This produces ineffective policies that conflict with local priorities and disregard specific development contexts” (Koski 2019).*

This was also emphasised by one of the participants in the ETHNA System deliberative stakeholder workshops.<sup>14</sup> During an online workshop, the question of how to combine bottom-up approaches with top-down solutions was answered by saying that top-down solutions are usually poor and need to be corrected from a bottom-up perspective. There must be bridges to combine the two approaches:

***“We need bridges between science and society, bottom-up and top-down approaches”  
(ETHNA System deliberative workshop participant).***



### Making foresight exercises with relevant stakeholders a success

Foresight might be of particular interest for the RRI activity you plan to undertake, as foresight exercises are highly interactive processes. As foresight is still in its early stages, there are also conflicting ideas on how to describe and conduct certain methods (cf. EFP). You can use the ETHNA System guide on deliberative workshops to learn more about planning and conducting as well as the methodology of participatory events where conversations about societal values, needs and expectations can flourish.

Since you might wish to interactively involve relevant stakeholders in your planned RRI activity, it is advisable to use foresight participation methods that “[...] are meant to ease participants and experts into an imagined future and a mode of thinking outside the box.<sup>15</sup> It helps leaving comfort zones and is especially useful to break up the dogma of linear developments in a long-term future (cf. EFP). Brainstorming, deliberative mind mapping or world café, among other methods, are particularly suitable for this purpose. They are also mentioned on the European Foresight Platform as “creative methods” and are explained in more detail in the ETHNA System guide “Stakeholder involvement in ethical governance of R&I – a guide for HEFRCs” (cf. Häberlein et al. 2021) (cf. EFP). Identifying and addressing key challenges and opportunities related to RRI governance can be achieved by developing new ways of thinking about the future with relevant stakeholders, fostering collective learning through an open exchange of experiences, acquiring evidence-based knowledge, facilitating communication structures between innovation actors and creating new stakeholder networks. All this justifies more investment in your planned RRI activity (ibid.)

14 Learn more about the ETHNA System deliberative stakeholder workshops in “Stakeholder involvement in ethical governance of R&I – a guide for HEFRCs”. Available at: <https://ethnasystem.eu/wp-content/uploads/2021/11/ethna-d3.3-stakeholder-engagement-guide.pdf>.

15 For further information and additional examples of foresight exercises, please visit the European Foresight Platform (EFP): <http://www.foresight-platform.eu/>.

## What can foresight look like? – Brainstorming



Brainstorming is a deliberative method of collecting unconstrained suggestions and ideas without judgement or filtering to find as many creative solutions to RRI problems as possible. All ideas generated are of equal value.

Brainstorming can be divided into three phases:

The first phase is free thinking, which is used to articulate ideas. The moderator introduces the topic and starts the discussion by presenting a problem and asking specific open questions. This first phase ends after a certain amount of time, when a sufficient number of ideas has been collected or when the participants feel that there are no more ideas they can come up with. In the second phase, the collected ideas are discussed again, clustered, prioritised and ranked. Participants are encouraged to provide more information on each point and explain all aspects that might be unclear. In the end, all gathered ideas are used as a basis for further analytical discussion.<sup>16</sup>



The collection of ideas can be guided by different techniques to increase the productivity of the brainstorming, e.g., role-playing. By assigning different roles to participants in relation to the problem being addressed, you can help to make the discussion more lively. Ask participants to express their views from the perspective of the role they are playing. This way they can look at the problem from different perspectives and gain new insights.

### Need a concrete example?

Conduct a brainstorming session on monitoring societal values, needs and expectations and highlight problem areas relevant to your RRI activity. Why not build on the six most pressing needs identified in the ETHNA System project survey and present a concrete problem that comes from one of these areas? Collect ideas from participants on how to improve the situation through R&I.

***“All public needs are legitimate, but how to identify and prioritise them?” (ETHNA System deliberative workshop participant).***



<sup>16</sup> See the ETHNA System guide on deliberative stakeholder workshops and the instructions on the brainstorming method on page 19: <https://ethnasystem.eu/wp-content/uploads/2021/11/ethna-d3.3-stakeholder-engagement-guide.pdf>.



Engage in a dialogue on the topic of ...

### Innovative breakthroughs

You can present innovative breakthroughs in relation to the six most pressing needs to assess their potential impact on future global value creation. This might help to understand the potential of breakthroughs as drivers or barriers to sustainability transitions (cf. Paquet, 2019, 4).

- › Sustainable use of water systems and resources in relation to the pressing need for sustainability, and the protection of land and oceans (cf. Warnke et al. 2019, 300ff.).
- › Ownership and sharing of health data to ensure data protection, privacy and human rights (ibid., 272ff.).
- › Humanoids when it comes to new technologies, AI and robotics (ibid., 62ff.).
- › Proactive health and self-care approaches in terms of (mental) health and well-being (ibid., 307ff.).
- › Automated indoor farming in terms of food and agriculture (ibid., 29ff.).
- › Desalination for providing drinking water (ibid., 201ff.).

***“Breakthrough innovations are needed to boost the quality of our science as well as to address the many challenges faced by people today, individually as well as collectively” (Paquet 2019, 4).***

## What comes next? Addressing societal needs in deliberative stakeholder workshops

In the ETHNA System project, relevant stakeholders are to be engaged in a dialogue primarily through deliberative workshops. These workshops enable group discussions through public participation in which stakeholders can express, discuss and contextualise social values, needs and expectations and reflect on the future. In this context, new knowledge and skills can be acquired, which offer the opportunity to stimulate innovative power. Refer to the guide “Stakeholder involvement in ethical governance of R&I - a guide for HEFRCs” to learn more about the methods and techniques of deliberative workshops (cf. Häberlein et al. 2021).

### Use a flexible workshop design to

- › start a conversation
- › identify society’s values, needs and expectations
- › take into account perspectives from various disciplines
- › identify different opinions, views and (pre-)judgements
- › share knowledge, stimulate innovative thinking and explore actions on a specific R&I topic
- › connect different aspects of an R&I issue
- › provide new impulses and clarify concerns about a particular R&I issue
- › identify possible solutions to RRI problems
- › identify key innovations of the future
- › discuss the drivers and barriers for innovative breakthroughs with maximum benefits for society (cf. Warnke et al. 2019, 15).

*“Connection with stakeholders is really important, because we have to see their needs”  
(ETHNA System deliberative workshop participant).*



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## List of links

- › Eurobarometer: <https://www.europarl.europa.eu/at-your-service/en/be-heard/eurobarometer>
- › European Foresight Platform (EFP): <http://www.foresight-platform.eu/>.
- › European Green Deal:  
<https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN>.
- › EURAXESS: <https://euraxess.ec.europa.eu/jobs/charter-code-researchers>.
- › Horizon Europe: [https://ec.europa.eu/info/horizon-europe\\_en](https://ec.europa.eu/info/horizon-europe_en).
- › Horizon Europe funding programmes and open calls: [https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls\\_en](https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls_en).
- › Horizon Europe call on sustainable, secure and competitive energy supply (HORIZON-CL5-2021-D3-02): <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl5-2021-d3-02-02;callCode=null;freeTextSearchKeyword=sustainability;matchWholeText=true;typeCodes=1;statusCodes=31094501,31094502,31094503;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=sortStatus;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>.
- › Horizon Europe call on innovative governance, environmental observations and digital solutions in support of the Green Deal (HORIZON-CL6-2022-GOVERNANCE-01): <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-cl6-2022-governance-01-10;callCode=null;freeTextSearchKeyword=data%20protection;matchWholeText=true;typeCodes=1;statusCodes=31094501,31094502,31094503;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=sortStatus;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>.
- › Horizon Europe call on staying healthy (Two stage – 2022) (HORIZON-HLTH-2022-STAYHLTH-01-two-stage): <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-hlth-2022-stayhlth-01-04-two-stage;callCode=null;freeTextSearchKeyword=ai;matchWholeText=true;typeCodes=1;statusCodes=31094501,31094502,31094503;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=sortStatus;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>.

- › Horizon Europe call on a competitive health-related industry (2022) (HORIZON-HLTH-2022-IND-13): <https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/horizon-hlth-2022-ind-13-04;callCode=null;freeTextSearchKeyword=health;matchWholeText=true;typeCodes=1;statusCodes=31094501,31094502,31094503;programmePeriod=2021%20-%202027;programCcm2Id=43108390;programDivisionCode=null;focusAreaCode=null;destination=null;mission=null;geographicalZonesCode=null;programmeDivisionProspect=null;startDateLte=null;startDateGte=null;crossCuttingPriorityCode=null;cpvCode=null;performanceOfDelivery=null;sortQuery=sortStatus;orderBy=asc;onlyTenders=false;topicListKey=topicSearchTablePageState>.
- › PE2020 project<sup>17</sup>: <https://cordis.europa.eu/project/id/611826>.
- › The European Code of Conduct for Research Integrity: <https://www.allea.org/wp-content/uploads/2017/05/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017.pdf>.

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<sup>17</sup> The official project website is no longer available. The Community Research and Development Information Service (CORDIS) provides information on the results from projects funded by the EU's framework programmes for research and innovation.

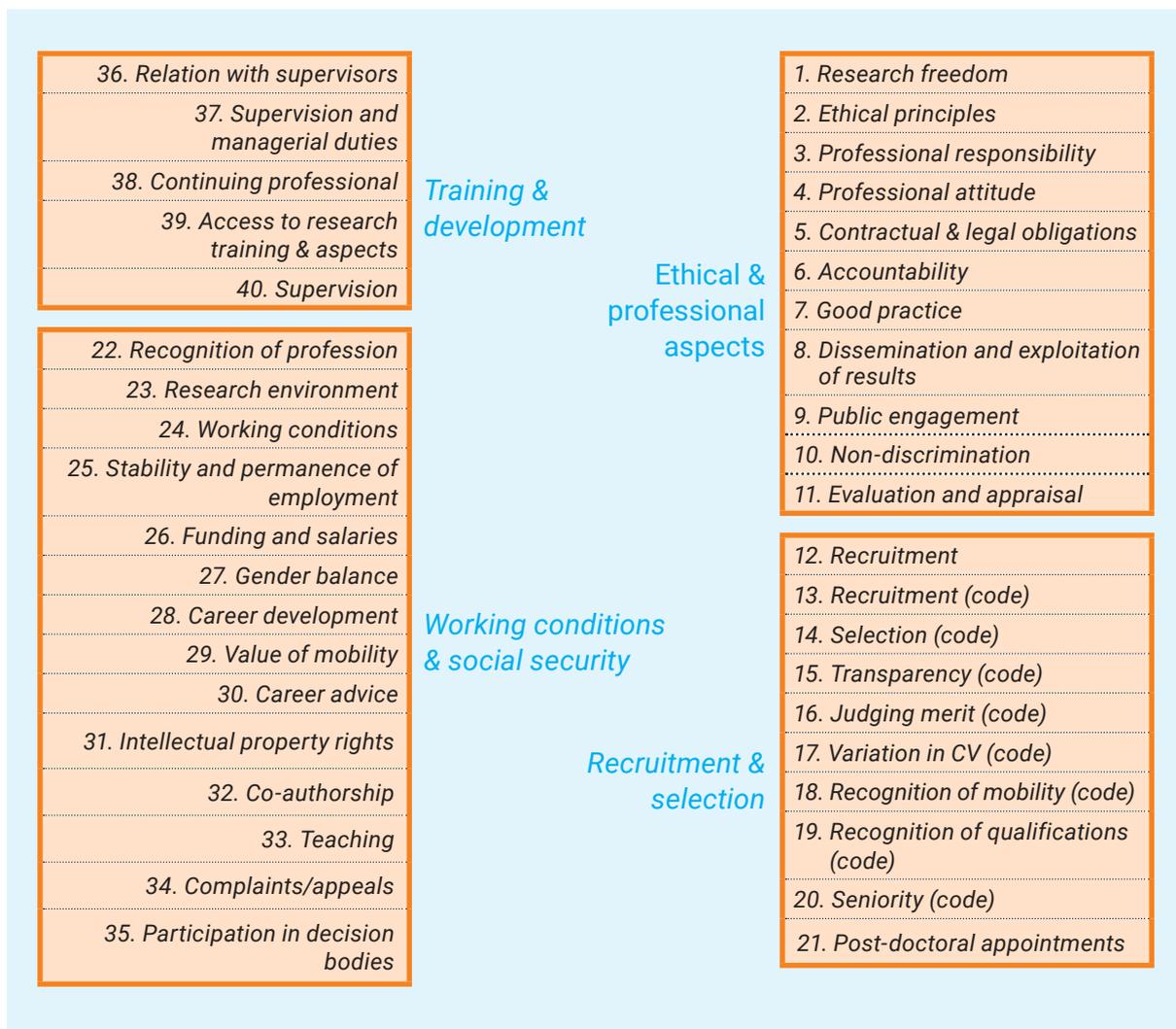


Figure 1: “The European Charter for Researchers” and “The Code of Conduct for Recruitment”, pillars and principles

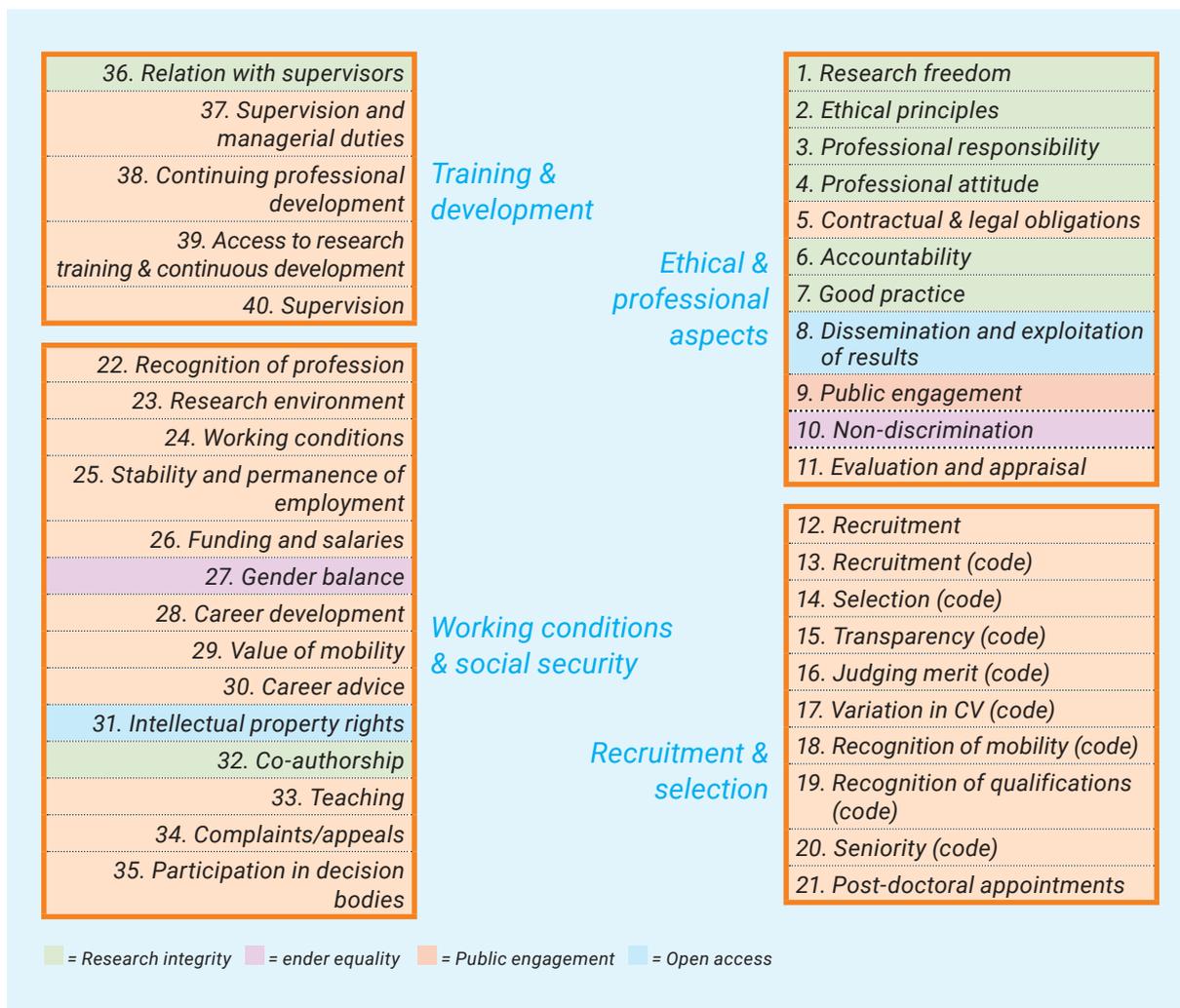


Figure 2: “The European Charter for Researchers” and “The Code of Conduct for Recruitment”, pillars and principles in relation to RRI