

Scoping Paper for Science with and for Society

Important Notice: Working Document

This paper is a working document. It is sent to the Programme Committee for the Horizon 2020 Specific Programme for discussion in the context of the preparation of the Horizon 2020 Work Programme 2016-2017. As such, information and descriptions of activities indicated in this document may not appear in the adopted Work Programme 2016-2017, and likewise, new elements may be introduced.

1. Context

The five point strategic agenda for the Union in times of change set by the European Council and followed up by the new Commission's agenda for jobs, growth, fairness and democratic change constitutes the overarching umbrella under which the next Science with and for Society strategy is developed, aiming strengthen our global competitiveness, stimulate investments from both public and private sources, promote growth and create new and sustainable jobs for the benefit of the economy and citizens.

The present paper builds on work undertaken by the Science with and for Society Advisory Group (AG), on projects funded under FP7-Science in Society, on several workshops and expert groups held to help prepare the next steps of Horizon 2020, and on the results of a public consultation launched on 01/07/2014.

The Horizon 2020 Specific Programme describes the aim of Part V 'Science with and for Society' (SWAFS) as follows: "The aim is to build effective cooperation between science and society, to recruit new talent for science and to pair scientific excellence with social awareness and responsibility". To that end, it indicates that the focus will be on 8 specific activities lines: attractiveness of scientific careers, gender equality, integration of citizens' interests and values in research and innovation (R&I), formal and informal science education, accessibility and use of research results, governance for the advancement of responsible research and innovation, anticipation of potential environmental, health and safety impacts, and improved knowledge on science communication.

Furthermore, the Horizon 2020 Specific Programme (in its Annex I-b) underlines the importance of the complementarities and cross-cutting issues between the various parts of Horizon 2020, notably for Science and Society¹ and for gender equality² (Council Decision 2013/743/EU – Annex 1 – p.12)

¹ "The relationship and interaction between science and society as well as the promotion of responsible research and innovation, science education, science communication and culture shall be deepened and public confidence in science and innovation reinforced by activities of Horizon 2020 favouring the informed engagement of and a dialogue with citizens and civil society in research and innovation."

² "Promoting gender equality in science and innovation is a commitment of the Union. In Horizon 2020, gender will be addressed as a cross-cutting issue in order to rectify imbalances between women and men and to integrate a gender dimension in research and innovation programming and content."

Therefore, the present scoping paper outlines potential strategic priorities for Horizon 2020 funding for the period 2016-2017 concerning the relationship between science and society, both for the Part V 'Science with and for Society' and for embedding the cross-cutting issue 'Responsible Research and Innovation'³ (RRI), in Horizon 2020 overall.

The present scoping paper takes also into account the policy thrust and general framework set by Europe 2020, the Innovation Union and the Communication "Research and innovation as sources of renewed growth", and the European Research Area (ERA), in particular the ERA Progress report, as well as the Horizon 2020 Work Programme 2014-15. For the years 2014-2015, the Science with and for Society calls for proposals focussed on:

- Making science education and careers attractive for young people (SEAC);
- Promoting gender equality in research and innovation (GERI);
- Integrating society in science and innovation (ISSI);
- Developing governance for the advancement of responsible research and innovation (GARRI).

2. Strategic orientations for 2016-17

Main challenges and objectives

In alignment with the new Commission's Agenda, the Science with and for Society Work Programme for 2016-2017 will contribute to the Jobs, Growth and Investment Package helping to strengthen Europe's global competitiveness, create new and sustainable jobs and promote growth. All the calls for proposals and activities will contribute substantially to that end.

As underlined by the Science with and for Society AG, there is a regime shift in the evolution of science and of its interactions with society for a number of reasons. Some of them have been identified in the Communication of the Commission 'Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth' (COM(2014)130), namely: societal changes in European and global society (e.g. new forms of urban and rural lifestyles, new consumption and mobility patterns, new and more diverse family settings), globalisation and trade, productivity developments, and pressure on natural resources.

This shift in the science-society interactions has been discussed and analysed in various contexts (including FP7 projects and Expert Groups). In its opinion, the Science with and for Society AG called it "re-contextualisation of science in society", referring to the MASIS expert group: *"By the 1980s, the earlier regime 'Science, the Endless Frontier' was giving way to a new regime which could be labelled 'Strategic Science'. What kind of role do national governments and European governing bodies want science to play in society? What kinds of conditions frame science? What kinds of institutions are needed? How can they*

³ "Responsible Research and Innovation 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. RRI is an ambitious challenge for the creation of a Research and Innovation policy driven by the needs of society and engaging all societal actors via inclusive participatory approaches." Responsible Research and Innovation includes ethics, gender equality, public engagement, open science and education to science.

respond to societal changes? While parts of the older contract between an autonomous and separated science and society survived (especially as a self-perception of scientists and as cultural views of science), the contract was opened up in recent decades." (MASIS report, 2009)

The various (and tentative) accounts and narratives of the relationship between science and society (e.g. its importance, the degree of urgency to act, and the kind of activities that should be launched in response to these assessments) depend on the normative approaches adopted. This implies that learning-in-interaction (between and within science and society) must be important for the Science with and for Society Work Programme and for RRI embedding in Horizon 2020.

For instance, FP7 Mobilisation and Mutual Learning projects supported collaboration between researchers and citizens in the research cycle, from defining research agendas to exploiting research results; the Gendered innovations initiative provides case studies and methodologies to integrate the needs and behaviours of women as well as men in research content. This trend towards opening research and innovation activities to societal actors and concerns is seen as an important move to be pursued in order to improve the quality and relevance of R&I for society.

The challenge therefore for Science with and for Society and Horizon 2020 is to foster and support the appropriate settings and collaboration to conduct R&I with and for society. This is not a matter of endless stipulation, but rather of open debates and learning-by-doing along the lines of Responsible Research and Innovation. The challenge is also to make the involvement of societal actors and the integration of societal concerns more systemic and sustainable, e.g. through institutional change in research performing and research funding organisations (RPOs and RFOs).

Institutional change at the level of RPOs and RFOs is at the core of collaboration with member States in the ERA. Open access, gender equality and an open labour market for researchers are defined as key priorities in the ERA Communication of 2012. Concerning gender equality, institutional change spurs RPOs and RFOs (a) to remove cultural and institutional barriers that generate direct or indirect discrimination in scientific careers and decision-making and; (b) to integrate a gender dimension in research content. It could be complemented with institutional change contributing to a better engagement of civil society in R&I.

Indeed, there are far reaching changes in the modus operandi of the scientific system, which are enabled by digital technologies and driven by the globalisation of the scientific community, as well as the increasing societal demand to address the Grand Challenges of our times. They have an impact on the entire research cycle, from the inception of research to its publication, as well as on the way in which this cycle is organised. These changes have been referred to as 'science 2.0', or 'open science'. The institutions involved in science are affected (research organisations, research councils, funding bodies), as is the way in which science is disseminated and assessed e.g. the rise of new scientific disciplines, innovative pathways in publishing (among them a substantial rise of Open Access journals), new scientific reputation systems, and changes in the way the quality and impact of research are evaluated.

Furthermore, as it appears through the public consultation, the international cooperation beyond EU borders is seen as imperative for Science with and for Society as present challenges are seen as global and necessitating a global approach to solutions.

Finally, in order to enable research excellence, optimise the return on investment, protect the image of the EU and its financial interests, the Commission actively promotes high levels of research integrity in Horizon 2020.

All the above could shape the content of the future Science with and for Society calls (for example, the role of intermediary actors and organisations could be studied) as well as the nature of the activities, hence a few immediate remarks as to how to proceed and suggestions for the main objectives for 2016-17:

A few remarks:

- The title of part V of Horizon 2020 (i.e. 'Science With And For Society') rightly captures the main thrust of the activities to be conducted in this domain, i.e. that science should be conducted for society but also closely with society in all of its components;
- The adoption of the 'RRI package' as a cross-cutting issue in Horizon 2020 is seen as a positive and instrumental move towards Science with and for Society as well as towards the embedding of RRI within ERA;
- Horizon 2020 activities relating to Science with and for Society and RRI should be contextualised in any case on the global scene;

Main objectives for 2016-17:

1. Implement institutional changes that foster RRI in R&I organisations: Past pilot activities have shown great potential for the future, notably by establishing good practices, but there are still bottlenecks to suppress (e.g. in terms of knowledge, behaviours, and spreading of good practices) in public and private governance frameworks, notably in RFOs and RPOs;
2. Extend and update Science with and for Society and RRI knowledge base: Although there is a good knowledge base regarding the relationships between science and society and while actions can be already taken in a number of domains, this knowledge base should be extended and constantly updated.

Expected impacts

Science with and for Society activities and the embedding of RRI have potentially important impacts in terms of growth, jobs and wellbeing of European citizens. These impacts will occur in the medium/long term at different levels, from very close to citizens, to Member States R&I systems:

Impacts on society:

- More and better R&I jobs and careers, including in the third sector, in the government sector and in the business sector,
- Increased interest of young people (boys and girls) towards R&I,
- Enhancement of scientific collaboration between academia, industry, public authorities/policy makers and civil society (CSOs, citizens);
- Better exchange between different parts of the innovation systems, leading to better creativity, diversity and acceptability in terms of R&I outputs,
- Material improvements e.g. in health, energy and transport systems, better adapted to the needs and expectations, as technologies become more gender-aware and inclusive, improving the lives of a greater number of citizens, women as well as men;
- Reduction of unintended effects of emergent technologies and anticipation of socio-technological disasters;
- Better exchange between Europe and the world;

Impacts on R&I human resources and governance:

- A larger and more diverse talent pool for science and industry, by greater civil society engagement in R&I and an increase of the number of female researchers;
- Creation of new generation of graduates with S&T knowledge combined with broad innovation skills;
- Open recruitment widely applied and more jobs published on EURAXESS;
- Attracting more researchers to Europe by creating the best research environment;
- Modernising the governance of academia, including career evaluation of researchers;
- Increased number of Gender Equality Plans implemented in RPOs and RFOs and elimination of gender bias in scientific careers,
- Enhanced effectiveness of the science system, and better fit of R&I outputs to new market as it responds more closely to citizen's needs, especially due to easier and more open access to and re-use of research outputs;
- Reinforcement of research integrity and reduction in the number of misconduct cases thanks to improved reproducibility of research results;
- Incorporation of research integrity in education systems.

Achieving these impacts entails a mobilisation of other Horizon 2020 Work Programme parts and stakeholders in order to take into account an RRI approach in their activities. Evidence from the embedding analysis of the 2014-2015 Work Programme shows that this mobilisation is increasing. The strategic exercise for 2016-17 is an opportunity to bring further coherence across Horizon 2020 in this regard.

Argumentation based on the evidence collected

The Science with and for Society AG proposed a guiding vision as a base and objective for the 2016-2017 strategy and Work Programme: *"In tomorrow's Europe, science institutions and scientists engage with society, while citizens and civil society organisations engage with science; thereby contributing to a European society and to European science which is smart, sustainable and inclusive."*

Based on the above vision, on the previous FP6 and FP7 activities, on the content of the first Science with and for Society strategy and Work Programme for 2014-15, as well as the present content and policy context of Horizon 2020, the services consider the following implications for Horizon 2020:

- 1- Anticipation (including participatory foresight) should be an integral part of Science with and for Society activities and other parts of Horizon2020 when articulating RRI. This should include considerations of the way science and society are evolving and where they might be within 20 years (e.g. FP7 project 'Research and Innovation Futures' (RIF2030), Science 2.0/Digital science/open science developments).
- 2- Part of the Horizon 2020 funding should be reserved for research projects aiming to strengthen and update the knowledge base related to the eight specific SWAFS activities.
- 3- Part of the Horizon 2020 funding should be reserved for projects that involve a stronger citizen/science engagement including broad consultations (going beyond the Commission's minimum standards, and up to so-called 'citizen science' initiatives) where citizens can co-construct future R&D, often involving problem solving at the regional and local levels.
- 4- Coordination, support and pilot activities should be continued and new activities launched in order to help institutions to change their governance frameworks and accommodate Responsible Research and Innovation approaches.

Links with other priorities for 2016-17 identified by other services

The SWAFS activities should be coordinated with other activities of Horizon 2020, and more specifically with parts II, III and VI. The inclusion of gender issues in more than 100 topics of the 2014-2015 Work Programme is the result of fruitful cooperation with 12 other parts of the Horizon 2020 Work Programme. The pilot project VOICES is an example of a successful cooperation. Bilateral contacts are taking place and workshops are planned to ensure coordination. Bilateral contacts are aiming to embed RRI within the ERA through promoting institutional changes in RPOs and RFOs.

3. Translation into calls 2016-17

The Science with and for Society calls would be built on the strategic priorities gathered by the Science with and for Society AG and the various extended consultations.

A. Call for Institutional Change to Support RRI in Research Performing and Funding Organisations (2016-2017)

The **Institutional Change to Support RRI in Research Performing and Funding Organisations (RRI-IC)** call will support institutional change in RPOs and RFOs in order to implement the RRI keys (e.g. ethics including research integrity, gender equality, open science) and disseminate good practices. Results should contribute to the implementation of the ERA priorities and a better and more sustainable engagement with society.

RRI approach will apply; CSA and ERA-Net from 4 M€ upward.

B. Call for Embedding RRI in Horizon 2020 R&I (2016-2017)

The **Embedding RRI in Horizon 2020 R&I (ERRI)** call will be run in association with other parts of Horizon 2020. It will support various types of engagement of citizens (e.g. focus groups, consensus conferences, MMLs) and civil society organisations relating to Parts II, III, IV, V and VI of Horizon 2020. In this light, the ERRI call can also support proposals that foster the uptake of transdisciplinary research, including understanding of the challenges and opportunities for interoperability of research data.

RRI approach will apply; From 3 M€ upward.

C. Call for strengthening the Science with and for Society Knowledge-Base (2016-2017)

The **Science with and for Society-Knowledge Base (SWAFS-KB)** call will be bottom-up and open to suggestions from researchers on the eight specific activities of SWAFS. Results should help reinforce the understanding and uptake of RRI among research communities, decision-makers and civil society actors. Results should also help analyse and improve the policy initiatives taken in the various keys (or dimensions) of RRI.

RRI approach will apply; Clusters of research projects under a specific umbrella; From 3 M€ upward.

D. Call for Developing Inclusive, Anticipatory Governance for R&I (2016)

The **Developing Inclusive, Anticipatory Governance for R&I (DIAG)** call would develop scenarios regarding possible future RRI activities and how these activities are perceived by science and society. It will build scenarios that consider 2020 and beyond, including various governance levels. It will be grounded in integrated, inclusive assessments of future science and technology, for example by using methodologies from the fields of technology assessment, foresight and impact assessment. The outcomes shall contribute to inclusive, anticipatory governance in the context of strategic priority setting for future R&I (funding) policy.

Results of projects issued from this call should be available in time to inform the R&I and other EC policies when preparing the post-2020 period.

RRI approach will apply; From 3 M€ upward; [This call could be a two stage call]

Embedding of key cross-cutting elements within the Science with and for Society Work Programme

Responsible research and Innovation

Science with and for Society supports the 'RRI' cross-cutting issue. It supports as well the other cross-cutting issues and more specifically interdisciplinary and cross-sectoral R&I; social and economic sciences and humanities; climate change and sustainable development; fostering the functioning and achievement of the ERA; framework conditions in support of the flagship initiative "Innovation Union"; contributing to all relevant Europe 2020 flagship initiatives (including the Digital Agenda for Europe); widening participation across the Union in research and innovation and helping to close the R&I divide in Europe; cooperation with third countries; SME involvement in research and innovation and broader private sector participation; enhancing the attractiveness of the research profession; and facilitating cross-border and cross-sector mobility of researchers.

Transdisciplinarity

Under the evaluation criterion 'Excellence' of Horizon 2020, reference is made to the "trans-disciplinary considerations, where relevant". This aspect will therefore be evaluated – where relevant – and reflected in the scoring under this proposal evaluation criterion. In the context of Horizon 2020, transdisciplinarity refers to approaches and methodologies that integrate (a) theories, concepts, knowledge, data, and techniques from two or more scientific disciplines, and (b) non-academic and non-formalized knowledge (e.g. coming from relevant societal actors and stakeholders such as healthcare practitioners, farmers, user groups). In this way, transdisciplinarity contributes to advancing fundamental understanding or solving complex problems while fostering multi-actor engagement in the R&I process.