

**Scoping Paper for
Horizon 2020 work programme 2018-2020
Science with and for Society**

Important Notice: Working Document

This scoping paper will guide the preparation of the work programme itself. It is a working document not formally endorsed by the Commission, and its content does not in any way prejudge the final decision of the Commission on the work programme.

The adoption and the publication of the work programme by the Commission are expected in October 2017. Only the adopted work programme will have legal value.

Scoping paper for the Horizon 2020 work programme 2018-2020

Science with and for Society

1 Introduction

The present scoping paper provides four strategic orientations for Science with and for Society (SwafS) 2018-2020: 1) Accelerating and catalysing processes of institutional change, 2) Stepping up the support to Gender Equality in Research & Innovation policy, 3) Building the territorial dimension of SwafS partnerships, 4) Exploring and supporting citizen science, and 5) Building the knowledge base for SWAFS.

It has been developed in the context of the evolution of science and society, the policy framework set by the European Commission and the Council, Commissioner Moedas' 3Os strategy, and past and on-going Horizon 2020 projects. It aims to deliver smart, inclusive and sustainable solutions to societal challenges by engaging new perspectives, new actors and new talent in research and innovation.

As such, SWAFS will contribute towards several Commission priorities¹, including boosting jobs, growth and investment, taking action to tackle climate change, and supporting the transition to a more secure, affordable and sustainable energy system. SwafS also contributes to the key policy priorities set in the European Research Area, in particular the Council Conclusions of December 2015 on advancing gender equality in the European Research Area.

2 Context

2.1 Science with and for Society in Horizon 2020

The aim of SwafS 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*"². To achieve this it focuses activities on eight areas: scientific careers, gender equality, integration of society in science and innovation, formal and informal science education, accessibility and use of research results, governance for the advancement of Responsible Research and Innovation including ethics (RRI)³, due and proportional precaution, and improvement of knowledge on science communication⁴.

The Key Performance Indicator (KPI) for SwafS in Horizon 2020 is the "*Number of institutional change actions promoted by the programme*", i.e. sustainable changes undertaken and implemented in organisations funding and performing research and innovation; examples include the introduction of specific rules, governance arrangements or practices favouring open access, gender equality, ethics, science education, or public engagement. This attests to

¹ https://ec.europa.eu/priorities/index_en

² <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/science-and-society>.

³ The EC understands RRI as comprising six interlinked dimensions: public engagement, science education, gender, ethics, open access/data and governance.

⁴ http://ec.europa.eu/research/participants/data/ref/h2020/legal_basis/sp/h2020-sp_en.pdf. See in particular Part V.

the importance of ensuring that the effects of SwafS continue well beyond the lifetime of funding.

2.2 Direct inputs to this paper

This paper is structured around the Strategic Opinion delivered by the SwafS Advisory Group⁵. Further input is provided by the results of an internal gap analysis of SwafS 2014-5 & 2016-2017 and carried out early in 2016, which showed that most of the eight areas SwafS focuses on (see above) have been well covered. However, two areas appeared under-represented: due and proportional precaution, and improvement of knowledge on science communication; these two areas should be covered in SwafS 2018-2020.

Important inputs and insights have also been provided by contributions to the SwafS Open Public Online Consultation (OPOC)⁶. This ran from 11 April 2016 to 4 July 2016, and received a total of 104 individual responses. Ninety contributions were analysed after removing duplicates and those received in confidence – representing more than 6500 organisations from a wide range of stakeholder groups (e.g. expert groups, member states, industry, academia, civil society organisations (CSOs)).

Analysis of the SwafS OPOC suggests that:

- All eight SwafS areas continue to require attention and additional efforts are needed to integrate RRI across Societal Challenges and Leadership in Enabling and Industrial Technologies (LEIT).
- Many activities and impacts should be foreseen, e.g. bringing scientists and teachers together in classrooms, citizen science, agenda-setting exercises, focusing on the professional development of scientists, and contributing towards the goal of open science.
- Existing and emerging challenges include gender equality, developing new notions of – and means of measuring – scientific excellence, the implications of open science on the practice of science, and a perceived increase in anti-intellectual sentiment that is distrustful of scientific expertise. Other challenges include healthcare systems, migration, inequalities and issues related to sustainability (e.g. climate change, natural resource depletion and biodiversity). Game changers include the public sector as a driver for innovation, citizen science, genomics, robotics, and text and data mining.
- Contributors stressed the importance of inter/transdisciplinarity research and the need to involve all social groups.
- Gendered innovations have the potential to build more robust, socially responsible and accountable research findings, as well as solutions to grand challenges that answer the needs of the whole population.

⁵ <http://ec.europa.eu/transparency/regexpert/index.cfm?do=groupDetail.groupDetail&groupID=3093>.

⁶ http://ec.europa.eu/research/consultations/swafs-wp2018-2020/consultation_en.htm.

- Policies and initiatives should be implemented in SwafS and in Horizon 2020 to further mainstream RRI. In SwafS this could include an ERA-Net on RRI/Open science, funding for structural changes directed at 'early-stage' institutions, and training on RRI. In Horizon 2020 efforts should be made to open up to CSOs, incorporate RRI criteria in evaluation, and improve the career prospects/working conditions of young scientists⁷.

2.3 A heightened policy interest in SwafS and Responsible Research and Innovation

The present SWAFS scoping paper draws inspiration from the *Rome Declaration on Responsible Research and Innovation in Europe*⁸ and the Competitiveness Council that followed, which encouraged close cooperation among all stakeholders in areas such as science education, the definition of research agendas, access to the results of research and application of new knowledge, and full compliance with gender equality and ethical considerations.

Commissioner Moedas identified three strategic priorities, described in Open innovation, Open science, Open to the world⁹, which proposed that "*many more actors will take part [in the research process] in different ways and the traditional methods of organising and rewarding research will also see many changes*"¹⁰. One important dimension of open science is citizen science, which is envisioned as "*linked with outreach activities, science education or various forms of public engagement with science as a way to promote Responsible Research and Innovation*". Giving impetus to this line of activity, citizen science was recently recognised as an open science priority by the Council¹¹. There is common understanding that RRI, as well as co-design with stakeholders and end-users, needs to be promoted throughout the Work Programme, including consideration of the gender dimension.

3 Strategic orientations for SWAFS 2018–2020

3.1 Strategic orientations for SwafS 2018-2020

The interactions between science and society are undergoing fundamental change. Innovations, such as digitalisation, are affecting all parts of society, not only impacting on the conduct of research but also offering opportunities to open science up to participation by more societal actors. Social phenomena, such as forced migration, are putting severe pressures on societies in terms of integrating migrants into host countries' cultures and employment markets. Human activities are putting a severe strain on Earth's natural resources and ecosystems, resulting in demands for more sustainable development, greater resource efficiency, a more circular economy and protection of biodiversity.

⁷ See *Guidance on Integrating Responsible Research & Innovation in Horizon 2020 and ERA* (being developed by Unit B7, RRI Sector) for suggestions on how RRI can be further mainstreamed in Horizon 2020.

⁸ Commended by the Competitiveness Council debate in December 2014.

⁹ <http://bookshop.europa.eu/en/open-innovation-open-science-open-to-the-world-pbKI0416263/>.

¹⁰ http://europa.eu/rapid/press-release_SPEECH-15-5243_en.htm.

¹¹ <http://data.consilium.europa.eu/doc/document/ST-9526-2016-INIT/en/pdf>.

Increasing expectations are put on science but at the same time citizens fear for the future and the most advanced scientific and technological breakthroughs are under intense scrutiny. Furthermore, asymmetries exist in the ability of individuals to interact with and access science, creating inequalities in scientific and innovation outcomes and an ever more pressing need to promote RRI.

To respond to these challenges, Horizon 2020 research requires an increasingly transdisciplinary and multi-stakeholder approach, involving citizens and end-users, the public sector and industry, so as to link and take advantage of unique perspectives and knowledge¹². SwafS should establish clear links with Horizon 2020 Societal Challenges (as well as with other cross-cutting issues such as climate change, sustainability, and biodiversity), without losing sight of the need to include RRI more effectively all across Horizon 2020.

The SwafS work programme will be designed to respond to these fundamental concerns and developments by opening up science and society through the following four Strategic Orientations. Each should, as appropriate, take into account all SwafS lines, which includes all RRI dimensions (public engagement, open science education (formal and informal), gender equality, ethics, open access/data, and governance) as well as scientific careers, due and proportional precaution and communication of science.

1. Accelerating and catalysing processes of institutional change. The Work Programme 2018-2020 will increase its support for institutional changes in R&I and other types of organisations (e.g. national, regional and local authorities, CSOs, industry). Emphasis will be put on supporting organisations at the start of their journey towards adapting their governance frameworks and practices through all levels of their hierarchies, and with the support of more experienced organisations, so as to enable the sharing of good practices and thereby catalysing processes of institutional change.

Institutional change actions will focus on all RRI keys, as well as on improving the attractiveness of science careers. Fields to explore under this strategic orientation include motivations and incentives conducive to institutional change from the perspectives of science (e.g. recognition and awarding systems), of the economy (e.g. job creation through social innovation), and of society (e.g. social well-being, improved understanding of science). KPIs should be considered to help institutions benchmark themselves and strive for improvement.

The main impacts of the present strategic orientation will be: the embedding of RRI in the ERA, the spreading of good practices, enhanced collaboration between institutions, improved strategic capabilities at the institutional level, and knowledge and experience gained from innovative and inclusive approaches.

2. Stepping up the support to Gender Equality in Research & Innovation policy. Gender Equality Plans are the main policy instruments promoted through the European

¹² See for instance The Lund Declaration (2009), <http://www.vr.se/download/18.7dac901212646d84fd38000336/> and The Lund Declaration (2015). <http://www.vr.se/download/18.43a2830b15168a067b9dac74/1454326776513/The+Lund+Declaration+2015.pdf>.

Research Area to advance gender equality in research organisations and universities. Based on progress so far, actions will be adapted to catalyse the changes in response to the three objectives: gender equality in scientific careers, gender balance in decision making, and the integration of the gender dimension in research content. Additionally, considering the evolution of the research systems in Europe, gender aspects of scientific careers and decision-making processes will be investigated to gather updated evidence for future policy action. Finally, a major and recent challenge is to better integrate the gender dimension in research and innovation programmes and projects. Following the uptake of the gender dimension in Horizon 2020 and in some national research agencies, it is time to take stock of what has been done so far, and design the next steps in terms of process and knowledge. This will enhance the societal relevance of the produced knowledge, technologies and innovations and contribute to the production of goods and services better suited to potential markets.

3. **Building the territorial dimension of SwafS partnerships.** SwafS will encourage partnerships between universities, formal and informal education institutions (including primary and secondary schools), governments and public authorities (including regional and local administrations), businesses (including industry and the service sector) and CSOs¹³ operating at local, national and European levels. Connecting these different levels with a view to sharing scientific knowledge and supporting user-led innovation will require new working methods and governance relations. New ways of opening up R&I broadly to society according to specific contexts will be developed, thus ensuring the involvement of communities in different territorial contexts (e.g. rural vs. urban areas), promotion of gender equality, and consideration and involvement of all people, irrespective of their age, gender, ethnicity and socio-economic background.
4. **Exploring and supporting citizen science.** Citizen science is emerging as an important policy orientation but is still largely unexplored. It is much more than the collection of scientific data by citizens, which in itself calls for adherence to the highest standards of research ethics and integrity and actually covers a range of different levels of citizen participation: from informing citizens about science and encouraging citizens to participate in the scientific process by observing, gathering and processing data, right up to co-designing and implementing science-related policies¹⁴. SwafS will focus on the meanings, mechanisms and challenges facing citizen science from local to European and global levels, learning from on-going experiences and innovative grassroots initiatives. Potential aspects to explore include how citizen science can act as a catalyst to develop scientific skills and competences, act as a tool for informal and formal science education of young people and adults, counter perceived anti-intellectual attitudes in society, raise the scientific literacy of all European citizens and promote social inclusion and employability.

¹³ The so-called quadruple helix approach.

¹⁴ [https://ec.europa.eu/digital-single-market/en/citizen-science;](https://ec.europa.eu/digital-single-market/en/citizen-science) [http://www.buergerschaftenwissen.de/;](http://www.buergerschaftenwissen.de/) [https://ec.europa.eu/digital-single-market/en/news/green-paper-citizen-science-europe-towards-society-empowered-citizens-and-enhanced-research-0.](https://ec.europa.eu/digital-single-market/en/news/green-paper-citizen-science-europe-towards-society-empowered-citizens-and-enhanced-research-0)

5. **Building the knowledge base for SWAFS.** Understanding the evolution of science and society will help proactive and anticipatory policy making. SwafS will examine how societal actors, including young people, behave, understand, react to and interact with science and scientific developments, and their motives for engaging in science-related activities. This includes investigating science communication and science advocacy in the digital world, and how science and technology studies and different disciplines (e.g. behavioural sciences, communication studies, gender studies, linguistics, and social anthropology) – and multi/transdisciplinary approaches – can help explain interactions between science and society. This will include a focus on blind spots of research and innovation in relation to people's needs and concerns, in particular due and proportional precaution, scientific uncertainty, means of measuring the integration of RRI in science and innovation, and the gender dimension in research content. Moreover, consideration could be given to rewarding achievement in RRI in its various dimensions to signal the organisations that are more RRI-aware (answering questions such as how such a reward could work and based on which criteria). Another area is implications of deep changes in science and innovation and its interactions with society and the economy, such as the transition to open science and open innovation, and resultant changes in the relationships between science and society.

3.2 Translation of the 2018-2020 priorities into calls

SWAFS calls will be built on the strategic priorities defined above:

- Accelerating and catalysing processes of institutional change,
- Stepping up support for Gender Equality in Research and Innovation Policy
- Building the territorial dimension of SwafS partnerships,
- Exploring and supporting citizen science and
- Building the knowledge base for SWAFS

The content of the Work Programme will be reviewed for the third year and may be subject to amendment depending on the evolution of the context.

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| H2020-SwafS-2018 | Call Science with and for Society 2018, with five parts corresponding to the five priorities | |
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