

'SCIENCE WITH AND FOR SOCIETY' ADVISORY GROUP
STRATEGIC OPINION FOR RESEARCH AND INNOVATION
IN THE HORIZON 2020 - 2016-2017 WORK PROGRAMME

Submitted to the Commission's Services on July 11, 2014

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1 Introduction

The Horizon 2020 Specific Programme sets the scope and content for the implementation of the Framework Programme for research and innovation (R&I) (2014-2020). Providing the legal base as politically agreed with the Member States and the European Parliament, it determines the specific objectives for Union support to the R&I activities for each Horizon 2020 part. On this basis, the Commission services prepare biannual work programmes of which the first Horizon 2020 work programme covering 2014-2015 was adopted on 10th December 2013.

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 achieve this aim, the programme indicates that the focus of the activities will be on eight specific lines including scientific careers, gender, integration of society in science and innovation, formal and informal science education, accessibility and use of results, governance for the advancement of responsible research and innovation, due and proportional precautions, and improve the knowledge on science communication (see Annex I).

Furthermore, 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 Society: *"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."* (see Annex II)

Therefore, the present opinion provides advice on potential strategic priorities for Horizon 2020 funding related to 'Science With And For Society' for the period 2016-2017, both for the Part V 'Science with and for Society' as well as for the remaining of Horizon 2020 as far as the relationship between science and society is concerned. It is part of the first steps towards preparing the next Horizon 2020 work programme covering 2016-2017.

The reflections of the SWAFS EAG have been structured around the consultation documents provided (notably a series of seven questions), and its opinion elaborated following two meetings with the ad-hoc expert advisory group for 'Science with and for Society' that took

place on 15th-16th May 2014 and 16th June 2014. Within the general context of the evolution of science and society, the SWAFS EAG opinion takes into account the general European policy framework set by Europe 2020, the Innovation Union flagship and the European Research Area, Smart Specialisation strategies as well as the Horizon 2020 Work Programme for the period 2014-15. It also draws on the influential MASIS Expert Group Report and topical reports on RRI, ethics, gender, etc.

The mandate of the SWAFS EAG stipulates that 'advice should pertain to all activities under Horizon 2020 where the integration of a Science with and for Society dimension is relevant, as well as the possible interactions with the other crosscutting issues, as specified in Horizon 2020 (Art. 14), with a particular attention to 'Responsible Research and Innovation including Gender' (RRI)¹.

RRI is an approach that allows all societal actors (researchers, citizens, policy makers, business, third sector organisations etc.) to 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 focuses on the participation of citizens and civil society organisations in research and innovation, the gender and ethical dimensions, the free accessibility to scientific knowledge and formal and informal science education.

The present SWAFS EAG's strategic reflections and advice focuses on the one hand on Part V 'Science with and for Society' of Horizon 2020 and, on the other, embedding SWAFS/RRI content in other parts of Horizon 2020 and notably on the cross-cutting issue RRI as a sub-set of SWAFS.

1.1 SWAFS Work programme 2014-15

The SWAFS Work programme 2014-15 focussed on four calls for proposals regrouping SWAFS lines around 'Science Education And Careers' (SEAC), Gender Equality in R&I (GERI), Integrating Society in Science and Innovation (ISSI), and Developing Governance for the Advancement of Responsible Research and Innovation (GARRI). Efforts have been balanced between the four calls and between 2014 and 2015.

The SWAFS 2014-15 Work Programme is oriented towards the support to Responsible Research and Innovation, in particular through institutional changes in research organisations. It supports progress in the completion of the ERA and more broadly in achieving the Europe 2020 objectives.

1.2 SWAFS and RRI in the Horizon 2020 Work programme 2014-15

The Parts of Horizon 2020 other than Part V 'Science with and for Society' are supposed to integrate 'Responsible Research and Innovation including Gender' as a cross-cutting issue (see Art. 14 of the Regulation and the Annex 1-b of the Specific Programme). The analysis of the

¹ A specific External Advisory Group being set up for 'Gender in research content', this field is not taken into account here in the 'embedding' dimension but only in the SWAFS dimension.

RRI content of Horizon 2020 Work Programme for 2014-15 shows nevertheless that this embedding is rather weak and heterogeneous.

Few parts of the Work Programme address the RRI cross-cutting concept entirely (only seven topics out of 610) although RRI could be introduced in the majority of the Work Programme parts. Only 22 topics address the public engagement explicitly, and further efforts are needed as well to integrate the formal and informal Science Education adequately (only 3 topics). Gender in the content of research, by contrast, is better integrated in Horizon 2020 (e.g. 99 topics have explicitly integrated the gender dimension). However, mainstreaming gender equality as part of SWAFS should be improved.

As far as ethics is concerned, the Horizon 2020 Regulation requires that activities funded should be in line with the highest ethical standards. The attention to ethics is drawn in the great majority of the work programmes and where relevant (e.g. Security, Biotechnology) into specific topics. The Horizon 2020 Regulation contains the general provision on Open Access. A few calls/topics have been selected for the Pilot on Open Research Data. Activities relating to Open Access are funded mainly through Part V 'Science with and for Society'.

2 SWAFS EAG's strategic reflexions

The SWAFS EAG's strategic reflexions have been grounded in Europe 2020, the Innovation Union flagship initiative and the latest developments in the European Research Area. The influential MASIS Expert Group Report has provided a base for reflexion. Recent policy innovations and thinking such as European Innovation Partnerships, Smart Specialisation and other activities such as the FP7 projects VOICES² and PLACES³ have contributed to the strategic thinking. The SWAFS EAG also took advantage of the foresight document delivered by the Commission services for the consultation of the EAGs as well as previous policy documents and reports from expert groups led by Commission services.

Since the launch of the European Research Area in 2000, science and society aspects have been present at the European level. The 2020 Vision for the European Research Area, adopted by the Council in December 2008, underlined that "the ERA is firmly rooted in society and responsive to its needs and ambitions in pursuit of sustainable development", and one year later, in July 2009, the Lund Declaration called for a new deal in European Research, advocating that the identification of the Grand Challenges must engage the major stakeholders including the European institutions, business, public services, NGOs and the research community.

While some of these statements were programmatic, by now they are somewhat operational, and this can be further supported and stimulated in Horizon 2020 through Science with and for Society. Importantly, a new feature has appeared as a cross-cutting issue in Horizon 2020:

² <http://www.voicesforinnovation.eu/>

³ <http://www.openplaces.eu/>

Responsible Research and Innovation (RRI). RRI is a package implementing five different and complementary agendas within Research and Innovation: gender, ethics, open science, education to science, multi-actor engagement and in particular the engagement of citizens and civil society in research and innovation activities.

2.1 Diagnosis of the interface between science and society

There are broad and deep changes in the evolution of science and its interactions with society, which are starting point and opportunities for SWAFS which go much further than work to restore trust and confidence in science. Science has the potential to help solve problems faced by European society. Some of these problems 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. Others were discussed in the 2009 MASIS Expert Group Report⁴, particularly the diagnosis of the re-contextualisation of science in society, both as a trend and as something to be pursued as important. The background question, of course, is “what science (and innovation) for what society?”⁵ The Report suggests this is not a matter of stipulation, but of open-ended debate and learning-by-doing.

The various and tentative accounts and narratives of the relationship between science and society, its importance, the degree of urgency to act, and the kind of activities that should be launched in response to these assessments, depending on the normative approach adopted imply that learning-in-interaction must be important for the SWAFS Work Programme as well as for RRI. This will shape the content of the Calls (for example, the role of intermediary actors and organisations could be studied) as well as the nature and shape of activities.

There are a few immediate suggestions how to proceed:

1. 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;
2. The adoption of the ‘RRI package’ as a cross-cutting issue in Horizon 2020 is seen as positive and instrumental to move towards a science with and for society;
3. Although there is a good basis of knowledge and understanding, including expert group reports to the Commission, and action can be taken in a number of domains, this basis should be extended and constantly updated;

⁴ ‘Challenging Futures of Science in Society. Emerging Trends and cutting-edge issues’ http://ec.europa.eu/research/science-society/document_library/pdf_06/monitoring-policy-research-activities-on-sis_en.pdf

⁵ The opposite may also be worth exploring...

4. Past pilot activities have shown a great potential for the future, notably by establishing good practices, but there are bottlenecks in terms of knowledge, behaviours, and translations of good practices in public and private governance frameworks.

The SWAFS EAG made an attempt to formulate an overall guiding vision as a base for the 2016-2017 strategy and work programme. The formulation may well be adapted eventually, but the thrust will remain:

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 which is smart, sustainable and inclusive.

2.2 Implications for Horizon 2020

Given the above vision, the previous related FP6 and FP7⁶ activities, the content of the first SWAFS strategy and Work Programme for 2014-15, as well as the content and policy context of Horizon 2020, the SWAFS EAG consider that the above diagnosis leads to the following implications for Horizon 2020:

1. Anticipation (including participatory foresight) should be an integral part of SWAFS activities, as well as in other parts of Horizon 2020 when articulating RRI. This should include consideration of the way science is evolving in terms of a process and where it might be within 20 years (compare the results of the FP7 project 'Research and Innovation Futures).
2. Part of the Horizon 2020 fund should be reserved for research projects aiming to strengthen and update the knowledge base related to SWAFS topics and background issues.
3. Part of the Horizon 2020 fund should be reserved for projects that involve a stronger citizen/science engagement including broad consultations (going beyond the Commission's minimum standards) where citizens can co-construct future R&D and its design, often involving problem solving at the regional and local level.
4. Coordination, support and pilot activities should be continued and new activities launched in order to consider evolving institutional landscapes for research and innovation and thus help knowledge institutions to develop their leadership, management and governance frameworks to encourage and support Responsible Research and Innovation approaches, specifically outreach programmes and stronger citizen engagement and embed SWAFS into institutional policy and practice.

3 Opinion on Part V: 'Science With And For Society' (SWAFS)

Taking into account the above vision outlined by the SWAFS EAG and given its capacity to use various types of actions of Horizon 2020 (e.g. Research and Innovation and Coordination and Support Actions), SWAFS plays a strong role in understanding and contributing to

⁶ See Technopolis and Fraunhofer mid-term assessment of FP7-Science in Society

enhancing the science and society interface and for advancing the governance of responsible research and innovation in the ERA. This role focuses on three main areas involving supporting institutional change to strengthen the embedding of RRI, supporting activities at the national, regional and local levels and contributing to the understanding of science and society by developing a strong knowledge base; The strategy for 2016-17 should focus on the following lines.

3.1 Main strategic orientations for SWAFS 2016-17

1. Supporting institutional changes in research and science institutions which will strengthen the embedding of RRI in ERA through the spreading of good practice, encouraging collaborations between institutions, studies and innovative activities while acknowledging the diverse contexts of different institutions.
2. Networking regional and national 'SWAFS-type' programmes: the European level is relevant for a number of specific activities but some other are better tackled at local, regional and national level. The EC has the possibility, e.g. with ERA-Net type of activities, to help the reinforcement and dissemination of SWAFS good practices between regions and Member States in their support of institutional changes.
3. Understanding the evolution of science and society: this is important for building relevant policies. SWAFS could favour the launch of large bottom-up clusters of research projects likely to shed light on SWAFS topics and background issues. Our vision can be used to develop further topics for study and action, like the role of intermediaries and boundary spanners on the interface between science and society, or the need for competencies and learning both at the side scientists and science institutions, and at the side of citizens and civil society organisations. Another source of topics and issues, in addition to the themes already in the Workprogramme 2014-2015, are the broad and deep changes in science and its interactions with society. 'Open access' and 'big data' are presently high on the agenda, but should be positioned as part of larger issues, using phrases like 'open science' and 'open innovation.'

4 Opinion on embedding RRI in Horizon 2020

All parts of Horizon 2020 have a clear role to play in embedding RRI. Parts II 'Industrial Leadership' and III 'Societal challenges' should devote part of their efforts and their thinking to that end.

The role of the SWAFS ad-hoc EAG composed in its majority of experts from other EAGs will take on added significance in spreading the RRI key messages. Indeed 20 experts belong to the 15 EAGs advising Part I, II and III of Horizon 2020 and 12 experts are from the SWAFS fields. All 32 experts will work together in order to promote RRI in Horizon 2020 beyond its Part V.

The SWAFS EAG recommends to the other EAGs and to the EC services to consider the following strategic lines.

4.1 Main strategic orientations for better embedding RRI in Horizon 2020 Work Programme for the period 2016-17

1. While the European Research Area has been somewhat successful in creating spaces for European science, it is now time to become more pro-active, and not just in relation to the Grand Challenges. There is a need for a new narrative drawing on a broad-based innovation strategy encompassing both technological and non-technological innovation at all levels of European society, and with a stronger focus on the citizen and responsible and sustainable business - a quadruple helix and place-based approach to science, research and innovation. This goes further than the procedural challenge how each part of Horizon 2020 can engage citizens and civil society in its activities.
2. Posing the right RRI diagnosis in Innovation Union commitments and Horizon 2020 parts/lines: there seems to be many questions regarding the availability and validity of RRI knowledge and diagnosis in the Innovation Union commitments. These questions may be specific to the different parts, but are also cross-cutting, and will then allow further strengthening of the links between the different parts that are now being explored.
3. Integrating RRI in Horizon 2020 activities includes the need to articulate the way it is connected to citizens and society (providing evidence). Monitoring and evaluations of proposals and activities should also pay attention to RRI. An interesting possibility is that the Work Programme includes topics implementing the strategy linked to RRI including through joint calls and Focus Areas.
4. Institutional changes: institutions specific to the Horizon 2020 fields should receive support to evolve and integrate RRI including gender in their governance settings.

5 Conclusion

The SWAFS EAG vision focuses on mutual engagement between science institutions, scientists, citizens and society driving Europe towards its Europe 2020 goals of a smart, sustainable and inclusive society.

The diagnosis on the relationship between science and society shows that there is a strong need to explore the relationship between science and society and society and science with a greater attention to the intermediaries involved in developing and brokering this relationship. The accumulated knowledge base is sufficient for a 'scaling up' and a more general uptake of these issues among all stakeholders.

At Community level (with the creation of 'Part V Science with and for society' and the cross-cutting issue 'Responsible Research and Innovation including Gender') the present context is rather favourable to the development and to the integration of the science and society issues across Horizon 2020 and in the European Research Area.

On the basis of the meetings and exchange between its members, the SWAFS EAG suggests adopting the following strategic priority lines for the period 2016-17:

Recommendations for SWAFS and RRI strategy:

Part V 'Science with and for Society' should:

1. Support institutional changes in research and science institutions for embedding RRI;
2. Network local, regional and national 'SWAFS-type' programmes;
3. Refine the understanding of the evolution of science and society.

The other parts of Horizon 2020 should:

1. Be pro-active and add a broader view of innovation and substantial interactions with citizens;
2. Pose the right RRI diagnosis in their own fields;
3. Integrate RRI in all their activities;
4. Promote targeted institutional changes to embed RRI.

The SWAFS EAG is looking for further exchange, including after the discussion with Member States during the second half of 2014, on defining the potential priorities for the work programme 2016-2017.

6 Annexes

Annex I: Horizon 2020 Specific Programme:

Part V 'Science With and For Society'

Annex II: Horizon 2020 Specific Programme:

'2. Complementarities, Cross-cutting Issues and Support Measures'

Annex I: Horizon 2020 Specific Programme – Part V 'Science With and For Society'

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.

The strength of the European science and technology system depends on its capacity to harness talent and ideas from wherever they exist. This can only be achieved if a fruitful and rich dialogue and active cooperation between science and society is developed to ensure a more responsible science and to enable the development of policies more relevant to citizens. Rapid advances in contemporary scientific research and innovation have led to a rise of important ethical, legal and social issues that affect the relationship between science and society.

Improving the cooperation between science and society to enable a widening of the social and political support to science and technology in all Member States is an increasingly crucial issue which the current economic crisis has greatly exacerbated. Public investment in science requires a vast social and political constituency sharing the values of science, educated and engaged in its processes and able to recognise its contributions to knowledge, society and economic progress.

The focus of activities shall be to:

- (a) make scientific and technological careers attractive to young students, and foster sustainable interaction between schools, research institutions, industry and civil society organisations;
- (b) promote gender equality, in particular by supporting structural changes in the organisation of research institutions and in the content and design of research activities;
- (c) integrate society in science and innovation issues, policies and activities in order to integrate citizens' interests and values and to increase the quality, relevance, social acceptability and sustainability of research and innovation outcomes in various fields of activity from social innovation to areas such as biotechnology and nanotechnology;
- (d) encourage citizens to engage in science through formal and informal science education, and promote the diffusion of science-based activities, namely in science centres and through other appropriate channels;
- (e) develop the accessibility and the use of the results of publicly-funded research;
- (f) develop the governance for the advancement of responsible research and innovation by all stakeholders (researchers, public authorities, industry and civil society organisations), which is sensitive to society needs and demands, and promote an ethics framework for research and innovation;
- (g) take due and proportional precautions in research and innovation activities by anticipating and assessing potential environmental, health and safety impacts;
- (h) improve knowledge on science communication in order to improve the quality and effectiveness of interactions between scientists, general media and the public.'

Annex II: Horizon 2020 Specific Programme – '2. Complementarities, Cross-cutting Issues and Support Measures'

'2. COMPLEMENTARITIES, CROSS-CUTTING ISSUES AND SUPPORT MEASURES

Horizon 2020 is structured around the objectives defined for its three priorities: "Excellent science", "Industrial leadership" and "Societal challenges". Particular attention will be paid to ensuring adequate coordination between these priorities and fully exploiting the synergies generated between all specific objectives to maximise their combined impact on the higher level policy objectives of the Union. The objectives of Horizon 2020 will therefore be addressed through a strong emphasis on finding efficient solutions, going well beyond an approach based simply on traditional scientific and technological disciplines and economic sectors.

Cross-cutting actions will be promoted across Part I 'Excellent Science', Part II 'Industrial Leadership', Part III 'Societal Challenges', Part IV 'Spreading excellence and widening participation' and Part V 'Science with and for society' to develop jointly new knowledge, future and emerging technologies, research infrastructures and key competences. Research infrastructures will also be leveraged for broader usage in society, for example in public services, promotion of science, civil security and culture. Furthermore, priority setting during implementation for the direct actions of the JRC and the activities of the European Institute of Innovation and Technology (EIT) will be adequately coordinated with the other parts of Horizon 2020.

Furthermore, in many cases, contributing effectively to the objectives of Europe 2020 and the flagship initiative "Innovation Union" will require solutions to be developed which are interdisciplinary in nature and therefore cut across multiple specific objectives of Horizon 2020. Horizon 2020 includes specific provisions to incentivise such cross-cutting actions, including by an efficient bundling of budgets. This includes also for instance the possibility for the priority "Societal challenges" and the specific objective "Leadership in enabling and industrial technologies" to make use of the provisions for financial instruments and the dedicated SME instrument.

Cross-cutting actions will also be vital in stimulating the interactions between the priority "Societal challenges" and the specific objective "Leadership in enabling and industrial technologies", needed to generate major technological breakthroughs. Examples of where such interactions may be developed are: the domain of e-Health, smart grids, intelligent transport systems, mainstreaming of climate actions, nanomedicine, advanced materials for lightweight vehicles or the development of bio-based industrial processes and products. Strong synergies will therefore be fostered between the priority "Societal challenges" and the development of generic enabling and industrial technologies. This will be explicitly taken into account in developing the multi-annual strategies and the priority setting for each of these specific objectives. It will require that stakeholders representing the different perspectives are fully involved in the implementation, and in many cases it will also require actions which bring together funding from the specific objective "Leadership in enabling and industrial technologies" and the relevant specific objectives of the priority "Societal challenges".

Particular attention will also be paid to the coordination of activities funded through Horizon 2020 with those supported under other Union funding programmes, such as the Common Agricultural Policy, the Common Fisheries Policy, the Life Programme, the Erasmus+ programme or the Health for Growth Programme and the Union's external and development funding programmes. This includes an appropriate articulation with the cohesion policy in the context of national and regional R&I strategies

for smart specialisation, where support to capacity-building for research and innovation at regional level may act as a 'stairway to excellence', the establishment of regional centres of excellence may help close the innovation divide in Europe, or support to large-scale demonstration and pilot line projects may aid in achieving the objective of generating industrial leadership in Europe.

B. Science and society

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.

C. Gender

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.

