



# Institutional changes towards responsible research and innovation

Achievements in Horizon 2020  
and recommendations on the way forward



Research and  
Innovation

**Institutional changes towards responsible research and innovation - Achievements in Horizon 2020 and recommendations on the way forward**

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# **Institutional changes towards responsible research and innovation**

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and recommendations on the way forward

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## **EXECUTIVE SUMMARY**

Research and innovation are essential to finding solutions to the pressing challenges we face. It requires opening up the research and innovation system to the participation and collective intelligence of society, embedding high integrity and ethics standards, raising interest in science, and supporting Europe's brightest minds engage in scientific careers. Put simply, Europe cannot thrive without ensuring the best possible match between the immense potential achievements science has to offer and the needs, values and aspirations of citizens.

The objective of this report is to convey the achievements of the Responsible Research and Innovation (RRI) projects funded under the Science with and for Society (hereinafter referred to as SwafS) part of Horizon 2020. Its purpose is to serve as input for the preparation of the Horizon Europe programme implementation.

### ***Overview of SwafS Implementation in Horizon 2020***

A budget of EUR 462 million was earmarked for SwafS in Horizon 2020. Close to 2,000 proposals submitted in response to the annual calls for proposals, conveys strong interest in SwafS matters.

The annual evaluations are deemed to be highly robust. So far, they resulted in 150 funded projects and close to 50 more projects are expected to stem from the final calls under Horizon 2020. Since the start of this Framework Programme, REA Unit B.5 manages the projects. SwafS projects are typically composed of large consortia with an average of 11 partners and tend to run for around 3 years.

### ***Institutional Changes towards Responsible Research and Innovation***

The Responsible Research and Innovation (RRI) approach supported by the European Commission since 2011 encourages societal actors to work together during the whole research and innovation (R&I) process to better align R&I and its outcomes with the values, needs and expectations of society. RRI topics have been geared towards establishing institutional changes in higher education institutes, research funding and performing organisations, industry, SMEs, as well as local and regional authorities, opening them up to closer co-operation with citizens and civil society. After analysing where organisations stand in terms of existing RRI practices, projects drafted action plans to support the implementation of institutional changes intended to last beyond the lifetime of project funding.

Projects focused on implementing institutional changes in research funding and performing organisations, higher education institutions, as well as research and technology organisations in terms of their governance systems related, for instance, to ethics, open science, citizen engagement and gender equality. Industry-focused projects produced practical tools and highlighted promising practices to enable the development of innovative products and services that directly address societal needs while contributing to environmental and economic sustainability. The territorial portfolio of projects supports around 10 per cent of all EU regions to develop more open and collaborative approaches to society by taking a Responsible Research and Innovation approach. Many of the projects from across this portfolio have taken disciplinary or sectoral approaches (e.g. focused on marine research institutes, the biosciences, or de-industrialising regions), suggesting that drawing on common links can foster productive environments for conceptualisation and implementation of institutional changes.

Furthermore, RRI projects produced an array of invaluable resources for organisations intending to implement RRI practices. Embedding RRI and implementing structural changes in the European R&I landscape requires building a strong evidence base, disseminating tools and practices, supporting networks of practitioners, and effectively

monitoring progress towards goals. For instance, FP7's MoRRI project implemented the [first RRI monitoring system in Europe and its successor Supper MoRRI](#), supported by SwafS, builds on this work. The portfolio of RRI projects as a whole is marked by a high level of global collaboration, helping influence the development of policies at national level and raising the EU's profile as a global R&I actor. The 'Pathways declaration' emerging from one of the projects, signed by more than 13 projects, called for RRI to remain a central objective in EU R&I and for the EU to continue to pursue its leading role in this effort.

### **Concluding remarks**

Since 2014, the projects funded under 'Science *with and for* Society' contributed to its primary aims set out in the [EU Regulation establishing Horizon 2020](#), notably by effectively build cooperation between science and society, recruit new talent for science and pair scientific excellence with social awareness and responsibility.<sup>1</sup> One of the key ways of working towards these three SwafS objectives, and ensuring impact, is the implementation of institutional changes<sup>2</sup> in beneficiaries reflected in the SwafS Key Performance Indicator: '*Percentage of research organisations funded implementing actions to promote Responsible Research and Innovation, and number of institutional change measures adopted as a result*'.<sup>3</sup>

The results of a sample of twelve RRI projects revealed that almost 250 individual institutional change actions are implemented or in the process of being implemented by this part of the SwafS portfolio.<sup>4</sup> Added to this, is the pioneer of institutional changes, the Gender Equality Plans (GEPs), with 130 institutions (78%) having implemented or in the process of implementing a GEP.

SwafS will well and truly surpass its target of 100 institutional changes in beneficiaries by the end of Horizon 2020.

Consequently, SwafS stakeholders are in an excellent position to take a leading role in supporting other entities envisaging institutional transformation. In conclusion, inclusiveness on all levels underpins SwafS. RRI dimensions (gender, open access, science education, ethics and public engagement), must be part of how research and innovation is realised in all domains as well as its implications for governance. Horizon Europe needs to leverage SwafS know-how and tap into the vast potential citizens and society have to offer and continue to ensure effective cooperation between science and society.

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<sup>1</sup> [Regulation \(EU\) No 1291/2013 of the European Parliament and of the Council establishing Horizon 2020](#)

<sup>2</sup> An institutional change is a change (with meaningful impact) in terms of how a beneficiary governs or structures itself in relation to any of the RRI dimensions (public engagement, open access, gender, ethics, science education), and lasts beyond the lifetime of project funding.

<sup>3</sup> [Horizon 2020 indicators](#)

<sup>4</sup> This data collection exercise did not cover projects dedicated to gender equality, ethics, or open access/open data, which, to various degrees, focus also on institutional changes.



## INTRODUCTION

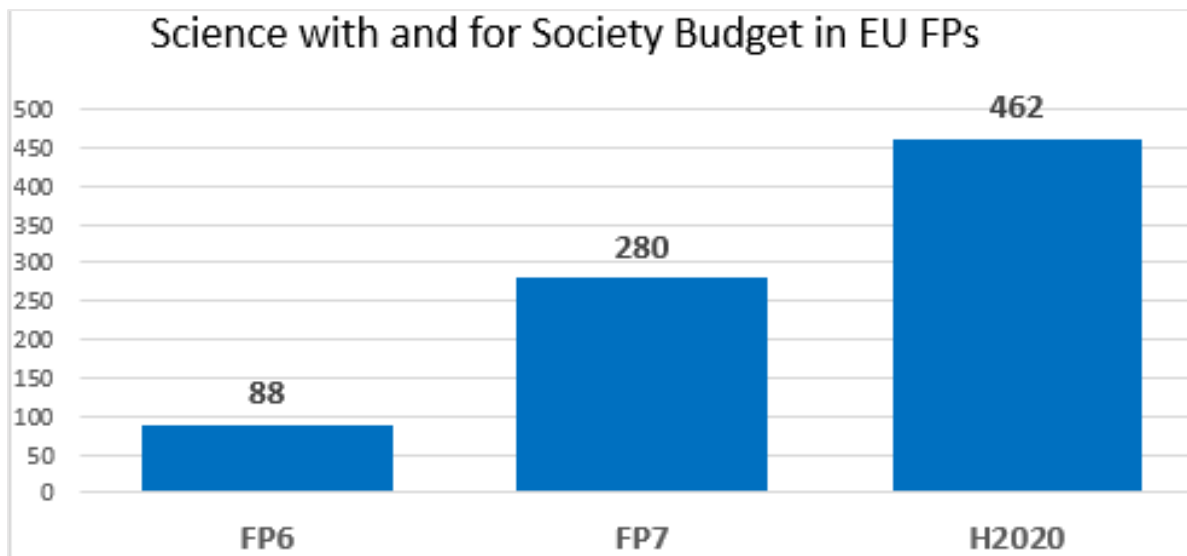
The Commission working paper in November 2000 '[Science, Society and the Citizen in Europe](#)' established the basis for the debate on the relationship of science and technology with society. On 26 June 2001, European research ministers adopted a [resolution on 'science and society and on women in science'](#) inviting both EU Member States and the European Commission to become more active in bringing science and society closer. As a response to the June 2001 invitation, in December 2001 the '[Science and Society](#)' Action Plan was launched to set out a common strategy to make a better connection between science and European citizens.

The '[Science and Society](#)' theme under 'Structuring the ERA' in the Sixth Framework Programme (FP6) became the first ever initiative of its kind on a European scale. With a budget of EUR 88 million, its goal was to increase society's acceptance of and engagement with science and to rectify gender imbalances in research. The Science and Society projects supported a wide range of studies and participatory events in areas including gender, ethics, young people and scientific participation.<sup>5</sup>

In 2007, under the 7<sup>th</sup> Framework Programme for Research and Technological Development (FP7), 'Science and Society' became 'Science in Society (SiS)' with the main objective to foster public engagement and a sustained two-way dialogue between science and civil society. Its budget almost tripled to 280 million euros. 183 projects were funded with an average EC contribution of 1.6 million euros. SiS demonstrated a clear European added value addressing science and society-relevant issues such as governance, ethics, public participation, awareness raising, gender equality, science education, open access to data, as well as dissemination of research and innovation.<sup>6</sup>

In 2012, the Communication on a reinforced ERA, included gender equality and gender mainstreaming in R&I as one of its five core priorities.<sup>7</sup>

Fig. 1: Evolution of budget allocated to 'Science with and for Society' in EU FPs



<sup>5</sup> [Report of the Expert Group](#): Evaluation of the Sixth Framework Programmes for research and technological development 2002-2006

<sup>6</sup> [Study 'Commitment and coherence: Ex-post-evaluation of the 7<sup>th</sup> EU Framework Programme \(2007-2013\)'](#)

<sup>7</sup> [COM\(2012\) 392 final](#) 'A Reinforced European Research Area Partnership for Excellence and Growth'

In parallel, SiS led to the development of a concept reconciling the aspirations and ambitions of European citizens and other Research and Innovation actors and towards the end of FP7, lessons learnt gave birth to an approach known as Responsible Research and Innovation (RRI), which was, on 21 November 2014, enshrined in the [Rome Declaration](#).

Under such a framework, all societal actors (researchers, citizens, policy makers, businesses, civil society organisations, etc.) 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<sup>8</sup>. In practice, RRI<sup>9</sup> is implemented as a package, aiming to better engage society in Research and Innovation activities, enabling easier access to scientific results, favouring a better uptake of the gender and ethics dimensions in Research and Innovation content, and spreading good practices in formal and informal education in science.

This concept of Responsible Research and Innovation (RRI) was tested and promoted during the last years of FP7. While RRI activities are concentrated in the 'Science and/in Society' parts, the intention was for the principles of RRI to be integrated into the overall research strategy across the Framework Programme.

The ex-post evaluation of FP7 found that future Framework Programmes should involve citizens and civil society organisations more substantially. They should engage citizens and stakeholders in a dialogue about the purpose and benefits of research and the way it is conducted, create incentives for science communication and support more strategic measures of communication addressing different audiences, foster the linkages between researchers, citizens and policy makers.

It recognised that citizen involvement in European research projects aims at increasing trust, acceptance, and ownership of research, a positive perception of science, better adoption of new knowledge and innovations, and improving relevance and creativity of research outcomes.<sup>10</sup>

Following on from this, Horizon 2020 includes a dedicated part on 'Science with and for Society'. Its overall 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.<sup>11</sup> SwafS has grown substantially to reach EUR 462 million (see [Fig. 1: Evolution of budget allocated to 'Science with and for Society' in EU FPs](#)), giving leverage to put RRI and all its dimensions into practice in Europe, notably through 'institutional changes' (a concept which was first piloted with Gender Equality Plans under FP7) in research and innovation organisations. In parallel, gender, RRI, and social sciences and humanities became cross-cutting issues promoted throughout the Horizon 2020 programme.<sup>12</sup>

New innovations are essential to Europe's international competitiveness. Europe cannot thrive without including citizens in the process of ensuring the best match possible between the immense potential achievements of science, and the needs and aspirations of society.

It is essential to realise societally robust science and innovation policy in the context of the European Research Area (ERA) and Innovation Union. The interim evaluation of Horizon 2020 conveys that 'Science with and for Society' is highly relevant to the

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<sup>8</sup> Brochure '[Responsible Research and Innovation: Europe's ability to respond to societal challenges](#)'

<sup>9</sup> The five dimensions of Responsible Research and Innovation are gender equality, science education, open access/open data, public engagement, and ethics.

<sup>10</sup> [Study 'Commitment and coherence: Ex-post-evaluation of the 7th EU Framework Programme \(2007-2013\)'](#)

<sup>11</sup> [Regulation \(EU\) No 1291/2013 of the European Parliament and of the Council establishing Horizon 2020](#)

<sup>12</sup> [European Commission website for SwafS](#)

overarching challenges facing Europe and calls for greater support for citizen science and user-led innovation.<sup>13</sup>

In response to this, Horizon Europe places citizens at its core. Like for FP6, where the programme was embedded in 'Structuring the ERA', 'Science with and for Society' will be embedded in the 'Strengthening the European Research Area - Reforming and Enhancing the European R&I system'. According to the legal basis establishing the framework for Horizon Europe, *'this part will also include activities on: [...] modernising European universities; supporting enhanced international cooperation; and science, society and citizens'*.<sup>14</sup>

The [Horizon Europe Impact Assessment report](#) states that the SwafS part on 'Accelerating and catalysing processes of institutional change' contributes to implementing the RRI keys (public engagement, science education, ethics including research integrity, gender equality, and open access) through institutional governance changes in Research Funding and Performing Organisations (RFPOs) in an integrated way.

Results contribute to the implementation of ERA priorities, a greater involvement of all stakeholders in R&I, and a better and more sustainable engagement with society. Under Horizon 2020, the key performance indicator for SwafS is the number of institutional change actions which are analysed notably under the RRI chapter. This will be a key bridge for SwafS as it moves into Horizon Europe.

The Horizon Europe legal basis sets out the aim of deepening the relationship between science and society, maximising benefits of their interactions through gender equality plans, diversity and inclusion strategies, and comprehensive approaches to institutional changes. It calls on the future Framework Programme to engage and involve citizens and civil society organisations in co-designing and co-creating responsible research and innovation agendas and content, promoting science education, making scientific knowledge publicly accessible, facilitating participation by citizens and civil society organisations in its activities and promoting gender equality and strengthening the gender dimension. It should do so both across the programme and through dedicated activities under the 'Strengthening the European Research Area' part.

The engagement of citizens and civil society in research and innovation should be coupled with public outreach activities to generate and sustain public support for Horizon Europe. The programme should also seek to remove barriers and boost synergies between science, technology, culture and the arts to obtain a new quality of sustainable innovation, as well as support an inclusive approach to gender equality in research and innovation.<sup>15</sup>

Further enriching the debate in the run-up to the start of Horizon Europe are two reports on mission-oriented R&I, authored by Mariana Mazzucato, which provide directions for how co-design, co-creation, and citizen involvement in implementation can play key roles in responding to the challenges of our times.<sup>16,17</sup>

The ERA cannot grow in a sound manner without citizens at its core embracing science education for all, promoting gender equality in our organisations, integrating ethical aspects in the research design phase and further developing a coherent EU ethics and integrity framework, opening up research and innovation to collective intelligence and

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<sup>13</sup> [Interim evaluation of H2020](#)

<sup>14</sup> [COM/2018/435 final 'Proposal for a regulation of the European Parliament and of the Council establishing Horizon Europe'](#)

<sup>15</sup> See supra note 14

<sup>16</sup> ['Mission-oriented Research & Innovation in the European Union', by Mariana Mazzucato](#)

<sup>17</sup> ['Governing Missions in the European Union, by Mariana Mazzucato](#)

capabilities, building trust in science through targeted communication and ultimately ensuring citizens are an integral part of the process to ensure better R&I.

The objective of this report is to convey the achievements of the Responsible Research and Innovation projects funded under SwafS in Horizon 2020 to serve as input for DG Research and Innovation for Horizon Europe, both across the future Framework Programme and in the first work programmes falling under the 'Strengthening the European Research Area' part.

The report commences with an outline of the methodological aspects of the analysis (the frame for the analysis, data sources, the analytical approach and its limitations). The first chapter presents an overview of SwafS implementation in Horizon 2020 in terms of both the evaluation process and project implementation. The core of the report presents the Responsible Research and Innovation policy objectives, analyses the projects' achievements and puts forward recommendations for the future Framework Programme. The final chapter presents concluding remarks as a complement to the highlights outlined in the executive summary.

At the time of writing this report, the COVID-19 pandemic, came to the fore with Member States going into lockdown, resulting in citizens across the EU being obliged to stay at home. There was an imminent need for effective online tools and many SwafS projects adopted contingency measures notably moving from physical to an online format for project activities in order to sustain the bridge between science and society.

## 0. METHODOLOGICAL NOTE

### Data sources

**Calls for proposal:** From the start of Horizon 2020 in 2014 until 2019, projects funded under the calls foreseen in the respective SwafS work programmes are included in the analysis (note that the calls dedicated to National Contact Points and those managed by DG R&I, featuring under the 'other actions' section of the work programmes are excluded):

Year	Call
2014	ISSI (1 topic): ISSI-5-2014; GARRI (1 topic): GARRI-1-2014
2015	ISSI (3 topics): ISSI-3-2015, ISSI-4-2015, ISSI-5-2015; GARRI (1 topic): GARRI-2-2015
2016	Single call (2 topics): SwafS-04-2016, SwafS-09-2016
2017	Single call (4 topics): SwafS-05-2017, SwafS-06-2017, SwafS-12-2017, SwafS-14-2017
2018	Two-stage call (1 topic): SwafS-20-2018-2019; Single call (3 topics) <sup>18</sup> : SwafS-14-2018-2019-2020, SwafS-21-2018, SwafS-22-2018
2019	Two-stage call (1 topic) <sup>19</sup> : SwafS-20-2018-2019; Single call (2 topics): SwafS-05-2018-2019, SwafS-14-2018-2019-2020
2020	Single call (2 topics) <sup>20</sup> : SwafS-14-2018-2019-2020, SwafS-31-2020

**Projects:** The projects included are those funded under the calls listed in [Table 1](#): Number of RRI projects in Horizon 2020, as of 15/07/2020. In terms of data sources, the Grant Agreement notably the Description of Action, project deliverables, review reports, project web sites, project policy briefs as well as input from REA Project Officers over-seeing the implementation of the projects have been the basis of the analysis.

**Reports:** Horizon 2020 legal basis, annual work programmes, Interim evaluation of Horizon 2020, Impact Assessment for Horizon Europe are the primary references. Other relevant documents are referenced directly in the respective chapters.

**Feedback from the evaluation:** Some recommendations made by experts during the panel meetings and the independent observers in their reports are also included.

**DG R&I Policy Officers** provided input in terms of key reference documents as well as the objectives of the respective themes and gave feedback on the draft chapters.

<sup>18</sup> Includes SwafS-22-2018 topic on Outermost Regions managed by DG R&I

<sup>19</sup> Grant Agreement Preparation on-going at the time of writing this report so these projects have not been included in the report.

<sup>20</sup> Evaluation still to be carried out at the time of writing this report.

Table 1: Number of RRI projects in Horizon 2020, as of 15/07/2020

# of projects	SwafS theme	RRI
Finished		12
Running (at least 1 review held)		8
Running (1st review to be completed)		7
Just started (Q4 2019 / Q1 2020)		8
<b>TOTAL</b> GAs signed, as of 15/05/2020		35
Forecast of 2019 2-stage <sup>21</sup> & 2020 calls		12
<b>TOTAL H2020</b>		<b>47</b>

### Analytical approach

The approach to the analysis is qualitative. Whenever possible, quantitative data has been included.

The analysis is primarily based on first-hand data on the currently running or completed projects under the Horizon 2020 Framework Programme. Each project was systematically assessed including the website, review reports and key deliverables. Deliverables singled out in the report are those deemed to be particularly pertinent by the project consortia (highlighted in project website) and/or by the independent expert involved in the project review and responsible REA Project Officer (highlighted in the review report). Policy and other pertinent reports have been consulted in order to integrate this analysis in a broader perspective.

In the project portfolio table and maps, a distinction is made between the coordinator (i.e. the entity coordinating the project consortium) and other partners. Note that 'other partners' includes project beneficiaries that are signatory to the grant agreement and does not include other entities e.g. third parties, that may be involved in project activities.

Finally, note that the project budget corresponds to the requested EU contribution.

### Limits of the analysis

The main limitation of this study lies in the lack of complete data as many projects have not yet concluded. The analysis was carried out prior to the 2020 evaluation, projects resulting from the 2019 call commenced close to the time of drafting this report and those funded following the 2018 call had not yet been subject to their first review.

<sup>21</sup> Grant agreement preparation is on-going for four projects selected for funding for the SwafS-2019 stage-2 topic which are not included in this report.

## 1. OVERVIEW OF SWAFS IMPLEMENTATION IN HORIZON 2020

### 1.1. Evaluation process

Since the start of Horizon 2020, SwafS has organised calls for proposal on an annual basis.

As indicated in the introduction, the underlying objective of all these calls is to build effective co-operation between science and society; Foster the recruitment of new talent for science; Pair scientific excellence with social awareness and responsibility.<sup>22</sup>

The Horizon 2020 specific programme<sup>23</sup> outlines eight activity lines for SwafS:

- 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 and promotion of an ethics framework for research and innovation;
- Anticipation of potential environmental, health and safety impacts;
- Improved knowledge on science communication

For the SwafS WP [2014-2015](#), four separate calls for proposal were organised each year, with a common call deadline, and focused 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)

As of 2016, the structure of the SwafS work programme moved from four distinct calls to individual topics under a single call. Under this new approach, the [SwafS WP 2016-2017](#), focused on the following main orientations:

- Institutional Change to Support Responsible Research and Innovation in Research Performing and Funding Organisations
- Embedding Responsible Research and Innovation in Horizon 2020 Research & Innovation
- Strengthening the Science with and for Society Knowledge-Base
- Developing Inclusive, Anticipatory Governance for Research & Innovation

The [SwafS WP 2018-2020](#) focused on the following five strategic orientations: Accelerating and catalysing processes of institutional change;

- Accelerating and catalysing processes of institutional change;
- Stepping up the support to Gender Equality in Research & Innovation policy;
- Building the territorial dimension of SwafS partnerships;

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<sup>22</sup> [Regulation \(EU\) No 1291/2013 of the European Parliament and of the Council establishing Horizon 2020](#)

<sup>23</sup> See supra note 22

- Exploring and supporting citizen science, and
- Building the knowledge base for SwafS.

**Table 2: SwafS proposals data in Horizon 2020** shows the number of proposals submitted, evaluated and funded as well as the corresponding EC grant amount and the volume of evaluation review requests. From the outset, it is clear that there is a strong interest in the SwafS fields peaking in the final year of Horizon 2020 with 407 proposals submitted.

Over the course of Horizon 2020, the pattern tends to be lower submission rates in the first year of the work programme compared to the following year. Furthermore, submission rates were lower overall for the 2016-2017 work programme topics

Table 2: SwafS proposals data in Horizon 2020

Year	Title of Call	Number of proposals			EC grant amount for retained proposals	Success rate	Evaluation review	
		Submitted	Evaluated	Retained for funding			Requests	Upheld but not re-evaluated
<b>2014</b>	SEAC-2014-1	140	140	8	14.719.360 €	5,7%	1	0
	GERI-2014-1	47	44	5	10.275.490 €	11,4%	1	0
	GARRI-2014-1	28	28	5	8.710.636 €	17,9%	0	0
	ISSI-2014-1	35	33	3	10.792.173 €	9,1%	0	0
<b>2014 TOTAL</b>		<b>250</b>	<b>245</b>	<b>21</b>	<b>44.497.659 €</b>	<b>8,6%</b>	<b>2</b>	<b>0</b>
<b>2015</b>	SEAC-2015-1	207	204	6	11.934.183 €	2,9%	1	0
	GERI-2015-1	46	46	4	8.359.319 €	8,7%	1	0
	GARRI-2015-1	31	31	6	9.174.322 €	19,4%	0	0
	ISSI-2015-1	109	99	7	23.315.000 €	7,1%	2	1
<b>2015 TOTAL</b>		<b>393</b>	<b>380</b>	<b>23</b>	<b>52.782.823 €</b>	<b>6,1%</b>	<b>4</b>	<b>1</b>
<b>2016</b>	SwafS-25-2016	9	8	1	497.626 €	12,5%	0	0
	SwafS-2016-1	132	129	22	44.285.828 €	17,1%	1	0
<b>2016 TOTAL</b>		<b>141</b>	<b>137</b>	<b>23</b>	<b>44.783.454 €</b>	<b>16,8%</b>	<b>1</b>	<b>0</b>
<b>2017 TOTAL</b>	SwafS-2017-1	221	216	24	61.167.321 €	11,1%	2	0
<b>2018</b>	SwafS-2018-1	121	114	26	55.674.892 €	22,8%	2	1
	SwafS-2018-2-stage-1	76	76	16	-	21,1%	0	0
	SwafS-2018-2-stage-2	16	16	5	7.049.141 €	31,3%	0	0
<b>2018 TOTAL</b>		<b>197</b>	<b>190</b>	<b>31</b>	<b>62.724.033 €</b>	<b>16,3%</b>	<b>2</b>	<b>1</b>
<b>2019</b>	SwafS-2019-1	194	193	27	52.272.299 €	14,0%	0	0
	SwafS-2019-2-stage-1	114	113	22	-	19,5%	1	0
	SwafS-2019-2-stage-2	22	21	8	10.804.446 €	38,1%	0	0
<b>2019 TOTAL</b>		<b>308</b>	<b>306</b>	<b>35</b>	<b>63.076.746 €</b>	<b>11,4%</b>	<b>1</b>	<b>0</b>
<b>2020</b>	SwafS-2020-1	262	-	-	-	-	-	-
	SwafS-2020-2-stage-1	145	-	-	-	-	-	-
<b>2020 TOTAL</b>		<b>407</b>						
<b>GRAND TOTAL</b>		<b>1917</b>	<b>1474</b>	<b>157</b>	<b>329.032.036 €</b>	<b>10,7%</b>	<b>12</b>	<b>2</b>

compared to the first (2014-2015) and final (2018-2020) work programmes in Horizon 2020. In 2020, the number of proposals submitted peaked with over 400 consortia putting forward proposals and bringing the total number of proposals submitted under Horizon 2020 up to almost 2,000.

Looking more closely at the 2019 call, for which the evaluation is completed, compared to the previous year, the number of proposals increased by 56%. This call includes 13 topics, two of which are subject to a two-stage evaluation (see 1.1.1).

Science Education remains the most popular topic with the highest number of proposals (93). Meanwhile, Citizen Science is the topic with the biggest growth in terms of proposals (78), which more than doubled compared to 2018 (33).

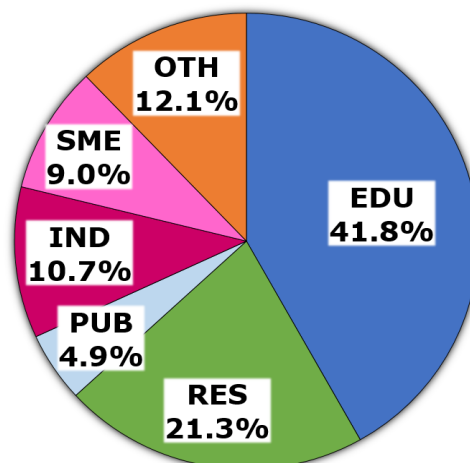
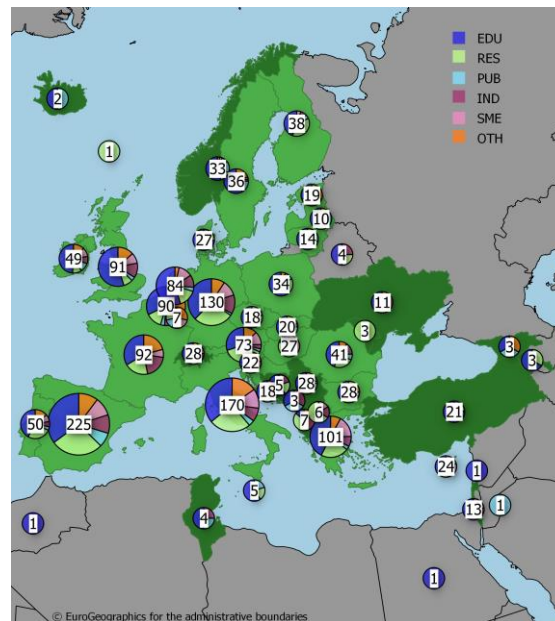
In the 2019 call, approximately one third of the topics identified international cooperation as particularly pertinent including one of the gender topics, dedicated to



dialogue with third countries. With applicants from 85 different countries from continents across the globe including Asia, Australia, Africa, South and North America, Science with and for Society follows the spirit of 'open to the world'. Looking at Europe in particular, the map below shows, applicants come from right across the continent.

Applicants represent stakeholders from all parts of the quadruple helix model<sup>24</sup>, including Civil Society Organisations (falling under the 'other' category in pie chart above) with the relative majority being educational institutes.

Fig. 2: Applicants for SwafS-2019 single call for proposals



- **EDU** Higher or Secondary Education
- **RES** Research Organisations
- **PUB** Public Bodies
- **IND** Industry
- **SME** Small and Medium Enterprise
- **OTH** All other entries

<sup>24</sup> The quadruple helix model considers particular services, products and solutions as being co-identified, co-developed and co-created through co-operation between industry, government (e.g. policy makers and institutions), universities and society (e.g. citizens and Civil Society Organisations (CSOs)).

After the 2014 evaluation, DG R&I delegated the management of SwafS to REA Unit B5. Since 2015, REA Unit B5 manages the evaluation and implementation of SwafS projects and to this end, continues to work in close cooperation with DG R&I responsible for the policy making and drafting of the work programmes.

In line with Horizon 2020 practices, three independent evaluators evaluate each proposal, selected for their expertise while the overall panel is well-balanced in terms of gender (i.e. at least 40% of males and females), geography and sector of activity.

With regard to the quality of the evaluation process, independent observers examine the fairness of the evaluation procedure. In the 2019 SwafS evaluation, the observer reported, 'that the design, planning and execution of the evaluation process was very robust and entirely consistent with peer review principles of transparency, equality of treatment and absence of conflicts of interest.' The evaluators themselves echoed this observation in the panel meetings in their invitation to EC services to better publicise the robustness of the evaluation procedure.

A quantitative indicator of the quality of the evaluation is the number of evaluation review requests filed. Applicants may file a complaint on the evaluation of their proposal from a procedural point-of-view. Over the course of the last 5 years, 0.8% of applicants (12) filed such a complaint.

An independent Evaluation Review Committee, consisting of REA staff (not involved in the evaluation) and DG R&I staff, assesses each evaluation review request.

The outcome shows that for 10 out of the 12 evaluation review requests, the respective Evaluation Review Committees found no grounds for the complaint. For the remaining two (0.1%), the Committees found some grounds for the complaint. However, this did not have an impact in terms of the proposal's possibility for funding and hence a re-evaluation of the proposal was not required.

#### *1.1.1. Two-stage evaluation process*

The aim of the two-stage process is to ease the burden for applicants in the initial stage of the proposal preparation although the overall period for the evaluation extends by approximately eight months. In stage 1 of the two-stage procedure, applicants submit a short proposal (maximum 10 pages) and, like the evaluation criteria, focuses only on 'excellence' and part of 'impact', notably in relation to the expected impact statement in the work programme.

Successful stage-1 proposals passing the thresholds (see [Annex H](#) of the General Annexes to the work programme), receive general common feedback and are invited to stage-2, which is the same as the single proposal procedure albeit that the full proposal must be consistent with the short proposal submitted in stage-1.

2018 saw the introduction of the two-stage evaluation process for SwafS in view of the traditionally over-subscribed topic, science education (3% success rate in 2015).

For science education, 67 applicants submitted a proposal to stage-1 (call deadline April 2018) of which 15 were invited to submit a full proposal in stage-2 (call deadline November 2018), 4 proposals were finally selected for funding (informed March 2019) and projects commenced in summer 2019.

A new bottom-up topic on 'building the SwafS knowledge base' was also included in the two-stage call as it was expected that such an open topic would result in a large volume of proposals which as it transpired was not the case.

## **1.2. Project implementation**

SwafS counts a total budget of EUR 462 million in Horizon 2020. Since the start of Horizon 2020, 150 projects have been funded amounting to a total budget of EUR 319 million, all are managed by REA Unit B.5 except for three which are managed by DG R&I.

SwafS projects are typically composed of large consortia with an average of approximately 11 partners per project. The duration tends to vary with the shortest project duration being 2 years and the longest project extending to 5 years while the average project duration is 3 years.

In terms of their nature, 30% are Research and Innovation Actions (RIA) focused on generating new knowledge while approximately 70% of funded projects are Coordination and Support Actions (CSA) tending to focus on 'accompanying measures' including for example networking, mutual learning exercises and awareness-raising type activities. The exception is [GENDER-NET Plus](#), an ERA-NET COFUND action, managed by DG Research and Innovation which aims at funding research projects promoting the integration of sex and gender analysis into research at an international level.

The REA Unit B.5 signs grants with consortia within the legal deadline of 8 months from the call deadline. Project officers partake in kick-off meetings and closely follow the project during the lifetime. Each project has defined reporting periods that conclude with a review meeting, the formal approval of the deliverables and the payment for the activities carried out. The REA calls upon the support of an independent expert to review the deliverables and reports. The quality of deliverables is closely monitored notably those that are public and are automatically published once approved.

The REA works closely with DG Research and Innovation to ensure policy makers are kept abreast of any feedback from the project relevant for their policy monitoring or future policy making activities.

DG Research and Innovation and the REA promote networking between projects to encourage sharing of best practices and to encourage projects to build on the available know-how. The REA and DG R&I have developed this practice by organising thematic one-day cluster events in Brussels. These cluster events are organised in co-creation mode with the projects and since 2018 five such events were organised including for ethics, gender, science education and citizen science projects.

Liaising with other SwafS projects was formally encouraged in the 2018-2020 work programme which foresees the inclusion of 'additional dissemination obligations' in Article 29.1 of the grant agreement for certain topics. This provision requires consortia to share their strategies and methodologies from the outset with a view to reaping the full benefits of synergies. Project co-ordinators have demonstrated strong willingness to work together in organising joint communication channels, events, meetings, and co-ordinating content-related activities. This grant condition was a key element in terms of aiming to build a knowledge and collaboration ecosystem. The results have been positive in the territorial and citizen portfolios for example where projects are pro-actively liaising with each other. The Super\_MoRRI project gathered 14 other SwafS projects together at its annual event in Leiden in January 2020.<sup>25</sup> This 'additional dissemination obligation' condition should be used more extensively in the future.

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<sup>25</sup> [Super MoRRI annual event, January 2020](#)

## **2. INSTITUTIONAL CHANGES TOWARDS RESPONSIBLE RESEARCH AND INNOVATION**

### **2.1. Policy objectives**

*'Early and continuous engagement of all stakeholders is essential for sustainable, desirable and acceptable innovation.'*<sup>26</sup> The Responsible Research and Innovation (RRI) approach supported by the European Commission since 2011 aims to encourage societal actors to work together during the whole research and innovation (R&I) process to better align R&I and its outcomes with the values, needs and expectations of society.

In practice, RRI is implemented as a package, aiming to better engage society in research and innovation processes, enabling easier access to scientific results, favouring better uptake of the gender and ethics dimensions in research and innovation content, and spreading good practices in formal and informal science education.

The eight activity lines for SwafS in the Horizon 2020 specific programme<sup>27</sup> take up all these dimensions of RRI in various forms.

One of the key ways of working towards the objectives for SwafS, and ensuring impact (and therefore value for money), is the implementation of institutional changes in beneficiaries. This is evidenced by the Key Performance Indicator for SwafS being *'Percentage of research organisations funded implementing actions to promote Responsible Research and Innovation, and number of institutional change measures adopted as a result'*.<sup>28</sup>

What does the EC mean by an 'institutional change'? While this was put in broad terms in early work programmes, by 2018-2020 it was described more precisely. In 2019, specific guidance was developed, based on observed practices and the approach taken in the work programme 2018-2020, stating that an institutional change is a change to how a beneficiary governs or structures itself. It is expected to have meaningful impact within the institution concerned and intended to last beyond the lifetime of project funding. Moreover, institutional changes towards RRI concern one or more of the EC's five dimensions of RRI (public engagement, open access, gender, ethics, science education), or manifest as an 'RRI package' covering all of these five dimensions.

This chapter focuses on three of the constituents of the quadruple helix model (firstly, higher education institutes and research funding and performing organisations, secondly, industry and SMEs, and thirdly, regional and territorial public authorities) and how they open up to the fourth constituent of the model (citizens and civil society). A large part of these projects focus on implementing institutional changes within the beneficiaries of the project funding, but others look more widely at the systemic changes required to open up governance to society more broadly. The final part of the chapter examines projects that sought to deepen the knowledge base on RRI and enhance co-ordination between RRI actors.

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<sup>26</sup> [Rome Declaration on Responsible Research and Innovation in Europe, November 2014](#)

<sup>27</sup> [Regulation \(EU\) no 1291/2013 of the European Parliament and of the Council establishing Horizon 2020](#)

<sup>28</sup> [Horizon 2020 indicators](#)

### *2.1.1. Research Funding and Performing Organisations and Higher Education Institutes<sup>29</sup>*

Both the 2014-2015 and 2016-2017 work programmes included topics that supported 'structural change' or 'opening' research funding and performing organisations to society. The [work programme 2016-2017](#) pointed to a need to overcome obstacles to engagement with society, for example due to lack of knowledge or behaviour types and to focus on spreading good RRI practices in Research Funding Organisations (RFOs) and Research Performing Organisations (RPOs). This aim was pursued in two topics that ran in the [work programme 2018-2020](#), and in 2020 the focus narrowed somewhat from RRI to citizen science.

### *2.1.2. Industry*

The [work programme 2014-2015](#), addressed Responsible Research and Innovation in an industrial context with a view to building the evidence base on how RRI can improve development processes and the quality of the research and innovation outcomes.

The [work programme 2016-2017](#) sought to progress further in integrating RRI in industrial contexts through two dedicated topics. Moreover, the work programme for 2020 includes a sub-topic focused on frugal innovation, bridging citizen science approaches to industry/SMEs.

### *2.1.3. Territorial governance*

While one project was funded from the 2014-2015 work programme on opening up territorial governance to society, it was not until the [work programme 2018-2020](#) that specific focus was put on this area. The goal was to work towards the establishment of self-sustaining R&I ecosystems, characterised by a high degree of openness and responsiveness to local needs. This required relevant quadruple helix R&I actors to work together. This inclusive approach ensures the buy-in of stakeholders and results in greater sustainability on all levels. In particular, projects focused on opening up territories through RRI and regional partners are expected to update their smart specialisation strategies based on the broad input of society.

### *2.1.4. Knowledge base*

Evidence from the Sixth Framework Programme Science and Society (S&S) and Seventh Framework Programme Science in Society (SiS) programmes shows that more consistent policy development in Science and Technology requires systematic cooperation and a shared knowledge base on which European, national and sub-national research and innovation policy decisions can be drawn from. In the [work programme 2014-2015](#), a topic was dedicated to fostering the sharing of 'Science with and for Society' experience and know-how in Europe, and beyond, notably by building a Knowledge Sharing Platform (KSP).

Several other topics in SwafS have focused on specific areas of interest, such as monitoring the evolution and benefits of RRI, and global governance towards RRI. Moreover, the [work programme 2018-2020](#) included topics that encouraged applicants to come up with areas of research that they thought were most needed and to 'connect the dots' between disparate initiatives and knowledge bases

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<sup>29</sup> RFPOs should be understood broadly as organisations developing or funding activities in the field of R&I as one of their objectives, including civil society organisations engaged in R&I.

## 2.2. Project portfolio

RRI is addressed in various SwafS work programmes, resulting in 35 funded projects (2019 2-stage and 2020 calls not included) which for the purposes of this analysis are categorised into four groups:

- Research Funding and Performing Organisations and Higher Education Institutes (12 projects – EUR 29.4 million);
- Industry (6 projects – EUR 12.6 million);
- Territorial governance (10 projects – EUR 24.3 million)
- Knowledge base (7 projects – EUR 23.7 million).

Their combined budget is approximately EUR 90 million.

Fig. 3: Number of coordinators in Member States (MS) and Associated Countries (AC)

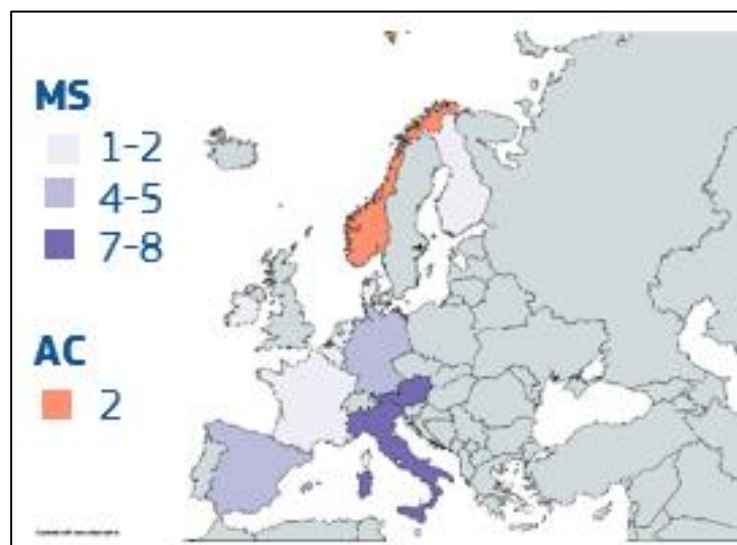


Fig. 4: Number of other partners in Member States (MS) and Associated Countries (AC)

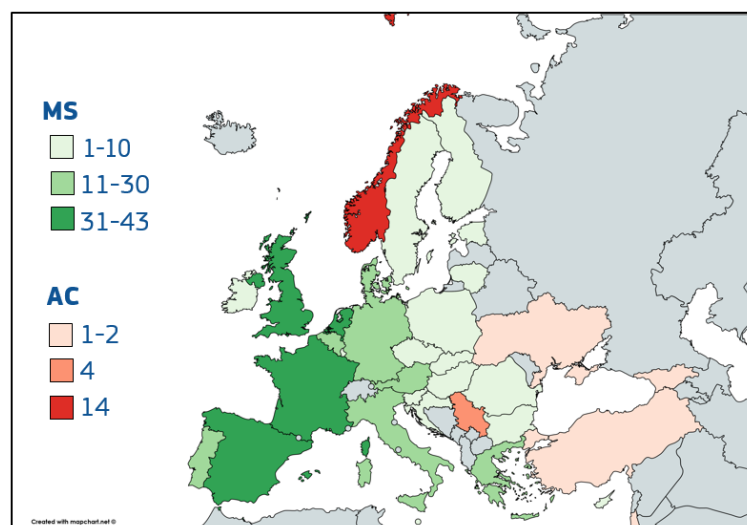


Fig. 5: Number of partners in Third Countries (TC)

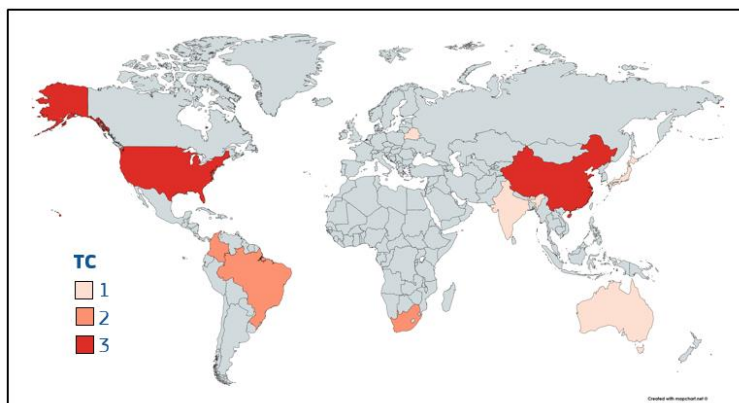


Table 3: Institutional changes in Research Funding and Performing Organisations and Higher Education Institutes RRI project portfolio

Project	Budget €	Dates	Coordinator	Country Coord.	Countries Other partners	Website
<b>ISSI-5-2014-2015</b> Supporting structural change in research organisations to promote Responsible Research and Innovation (CSA)						
NUCLEUS	4.0 M	01-09-2015 31-08-2019	RHINE-WAAL UNIVERSITY OF APPLIED SCIENCES	DE	<b>EU:</b> AT, DE(5), EL, FR(2), IE, IT, MT, NL(2), UK(5) <b>AC:</b> GE, RS <b>TC:</b> CN(2), ZA	<a href="http://nucleus-project.eu">nucleus- project.eu</a>
STARBIOS 2	3.5 M	01-05-2016 31-07-2020	UNIVERSITÀ DEGLI STUDI DI ROMA TOR VERGATA	IT	<b>EU:</b> BG, DE, DK, FR, IT(2), PL, SE, SI, UK <b>TC:</b> BR, US	<a href="http://starbios2.eu">starbios2.eu</a>
JERRI	2.4 M	01-06-2016 31-05-2019	FRAUNHOFER GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG	DE	<b>EU:</b> AT, NL, UK(2)	<a href="http://jerri-project.eu">jerri-project.eu</a>
RRI- PRACTICE	3.6 M	01-09-2016 31-08-2019	OSLOMET - STORBYUNIVERSITETET	NO	<b>EU:</b> BG, DE, FR, IT, NL(2), UK(2) <b>AC:</b> NO <b>TC:</b> AU, BR, CN, IN, US	<a href="http://rri-practice.eu">rri-practice.eu</a>
<b>GARRI-1-2014</b> Fostering RRI uptake in current research and innovation systems (CSA)						
FoTRRIS	2.0 M	01-10-2015 31-03-2018	VLAAMSE INSTELLING VOOR TECHNOLOGISCH ONDERZOEK	BE	<b>EU:</b> AT, BE, ES, FR, HU, IT	<a href="http://fotrris-h2020.eu">fotrris-h2020.eu</a>
<b>SwafS-4-2016</b> Opening Research Organisations in the European Research Area (CSA)						
FIT4RRI	3.2 M	01-05-2017 31-10-2020	UNIVERSITÀ DEGLI STUDI DI ROMA LA SAPIENZA	IT	<b>EU:</b> DE, EL, FI, FR, IT, NL, PT(3), UK(2) <b>AC:</b> NO	<a href="http://fit4rri.eu">fit4rri.eu</a>
ORION	3.2 M	01-05-2017 31-10-2021	FUNDACIÓ CENTRE DE REGULACIÓ GENÒMICA	ES	<b>EU:</b> CZ(2), DE, ES(2), IT, SE, UK	<a href="http://orion-&lt;br/&gt;openscience.eu">orion- openscience.eu</a>
<b>SwafS-5-2018-2019</b> Grounding RRI practises in RFOs and RPOs (CSA)						
GRACE	1.5 M	01-01-2019 31-12-2021	FONDATION EUROPÉENNE DE LA SCIENCE	FR	<b>EU:</b> BE, DK, EL, ES, IT(2), NL, SE, SI	<a href="http://grace-rri.eu">grace-rri.eu</a>
GRRIP	1.5 M	01-01-2019 31-12-2022	UNIVERSITY COLLEGE CORK	IE	<b>EU:</b> DE, ES, IE(2), IT, FR(2), NL, PT, UK(2)	<a href="http://grrip.eu">grrip.eu</a>
RESBIOS	1.5 M	01-01-2020 31-12-2022	UNIVERSITÀ DEGLI STUDI DI ROMA TOR VERGATA	IT	<b>EU:</b> AT, BG, DE, DK, EL, ES, HR, IT, PL, SI <b>AC:</b> UA	<a href="http://cordis.europa.eu/&lt;br/&gt;project/id/872146">cordis.europa.eu/ project/id/872146</a>
ETHNA System	1.5 M	01-01-2020 31-12-2022	UNIVERSITAT JAUME I DE CASTELLÓ	ES	<b>EU:</b> AT, BG, DE(2), DK, EE, ES, PT <b>AC:</b> NO	<a href="http://cordis.europa.eu/&lt;br/&gt;project/id/872360">cordis.europa.eu/ project/id/872360</a>
Co-Change	1.5 M	01-02-2020 31-01-2023	AUSTRIAN INSTITUTE OF TECHNOLOGY	AT	<b>EU:</b> AT, ES, FI(2), HU, NL <b>AC:</b> RS	<a href="http://cordis.europa.eu/&lt;br/&gt;project/id/873112">cordis.europa.eu/ project/id/873112</a>

Table 4: Institutional changes in industry RRI project portfolio

Project	Budget €	Dates	Coordinator	Country Coord.	Countries Other partners	Website
<b>GARRI-1-2014</b> Fostering RRI uptake in current research and innovation systems (CSA)						
PROSO	1.4 M	01-01-2016 28-02-2018	DIALOGIK GEMEINNÜTZIGE GESELLSCHAFT FÜR KOMMUNIKATIONS- UND KOOPERATIONSFORSCHU NG	DE	<b>EU:</b> AT, BE, BG, DE, UK(2), PT	<a href="http://proso-project.eu">proso- project.eu</a>
<b>GARRI-2-2015</b> Responsible Research and Innovation in industrial context (CSA)						
SMART- map	1.5 M	01-05-2016 31-10-2018	AARHUS UNIVERSITET	DK	<b>EU:</b> AT, DE, ES, HU, IT(2), UK(2)	<a href="http://projectsmartmap.eu">projectsmartma p.eu</a>
COMPAS S	1.5 M	01-05-2016 30-04-2019	WIRTSCHAFTSUNIVERSIT ÄT WIEN	AT	<b>EU:</b> BE(2), CY, ES, NL, UK	<a href="http://innovation-compass.eu/">innovation- compass.eu/</a>
PRISMA	1.7 M	01-08-2016 31-07-2019	TECHNISCHE UNIVERSITEIT DELFT	NL	<b>EU:</b> DE, IT, NL, UK	<a href="http://rri-prisma.eu">rri-prisma.eu</a>
<b>SwafS-06-2017</b> Engaging industry – Champions for RRI in industrial sectors (CSA)						
LIV.IN	3.5 M	01-05-2018 30-04-2021	WIRTSCHAFTSUNIVERSIT ÄT WIEN	AT	<b>EU:</b> AT, BE, DE(3), ES(3), HR, IT, NL, PL, RO, UK	<a href="http://living-innovation.net">living- innovation.net</a>
<b>SwafS-12-2017</b> Web of Innovations Value Chains and openings for RRI (RIA)						
I AM RRI	3.0 M	01-05-2018 30-04-2021	MONTANUNIVERSITÄT LEOBEN	AT	<b>EU:</b> AT(2), DE, DK, ES, FI(2), FR, IT(2), LT, NL, SI, UK <b>AC:</b> NO	<a href="http://iamrri.eu">iamrri.eu</a>

Table 5: Institutional changes in territorial governance RRI project portfolio

Project	Budget €	Dates	Coordinator	Country Coord.	Countries Other partners	Website
<b>ISSI-4-2015</b> On-line mechanisms for knowledge-based policy advice (RIA)						
ONLINE-S3	3.9 M	01-05-2016 30-06-2018	RESEARCH, TECHNOLOGY DEVELOPMENT AND INNOVATION	ES	<b>EU:</b> AT, BE, EL(3), FI, SI, SK, UK(3)	<a href="http://onlines3.eu">onlines3.eu</a>
<b>SwafS-22-2018</b> Mobilising Research Excellence in EU Outermost Regions (CSA)						
FORWARD (Managed by DG R&I)	4.3 M	01-01-2019 31-21-2021	GOBIERNO DE CANARIAS	ES	<b>EU:</b> FR(12), ES(6), PT(5)	<a href="http://forward-h2020.eu">forward-h2020.eu</a>
<b>SwafS-14-2018-2019-2020</b> Supporting the development of territorial Responsible Research and Innovation (CSA)						
SeeRRI	2.0 M	01-01-2019 30-06-2021	NORDLANDSFORS KNING	NO	<b>EU:</b> AT(3), ES(4), IT <b>AC:</b> IL, NO(2)	<a href="http://seerri.eu">seerri.eu</a>
TeRRIFICA	2.0 M	01-01-2019 30-06-2022	WISSENSCHAFTSL ADEN BONN	DE	<b>EU:</b> DE(2), ES, FR, PL <b>AC:</b> RS <b>TC:</b> BY	<a href="http://terrifica.eu">terrifica.eu</a>
TeRRItoria	2.0 M	01-02-2019 31-01-2022	FONDATION EUROPÉENNE DE LA SCIENCE	FR	<b>EU:</b> BE, BG(2), IT(2), DK(2), EL(2), RO <b>AC:</b> NO(2)	<a href="http://territoriaproject.eu">territoriaproject.eu</a>
CHERRIES	2.0 M	01-01-2020 31-12-2022	ZENTRUM FÜR SOZIALE INNOVATION GMBH	AT	<b>EU:</b> BE, CY(2), ES(4), IT, NL, SE(2)	<a href="http://cordis.europa.eu/project/id/872873">cordis.europa.eu/p roject/id/872873</a>
DigiTERRI	2.0 M	01-01-2020 31-12-2022	AUSTRIAN INSTITUTE OF TECHNOLOGY	AT	<b>EU:</b> AT(3), ES, FR(3), SE(3) <b>AC:</b> NO	<a href="http://cordis.europa.eu/project/id/873010">cordis.europa.eu/p roject/id/873010</a>
RRI2SCALE	2.0 M	01-01-2020 31-12-2022	AGENZIA PER LA PROMOZIONE DELLA RICERCA EUROPEA	IT	<b>EU:</b> AT, BE, EL(2), ES, NL(3) <b>AC:</b> NO(2)	<a href="http://cordis.europa.eu/project/id/872526">cordis.europa.eu/p roject/id/872526</a>
TRANSFORM	2.1 M	01-01-2020 31-12-2022	FONDAZIONE GIANNINO BASSETTI	IT	<b>EU:</b> BE(5), ES(3), IT(2), <b>AC:</b> NO <b>TC:</b> US	<a href="http://cordis.europa.eu/project/id/872687">cordis.europa.eu/p roject/id/872687</a>
TETRRIS	2.0 M	01-09-2020 31-08-2023	TEKNOLOGIAN TUTKIMUSKESKUS	FI	<b>EU:</b> BE, DE(2), ES(2), FI, HU, NL	<a href="http://cordis.europa.eu/project/id/872550">cordis.europa.eu/p roject/id/872550</a>



Table 6: Knowledge base RRI project portfolio

Project	Budget €	Dates	Coordinator	Country Coord.	Countries Other partners	Website
<b>ISSI-3-2015</b> Knowledge sharing platform (CSA)						
MARINA	3.0 M	01-05-2016 30-04-2019	CONSIGLIO NAZIONALE DELLE RICERCHE	IT	<b>EU:</b> BE, CY(2), DK, EE, ES, IE, FR, IT(2), PT, RO <b>AC:</b> TR	<a href="http://cordis.europa.eu/project/id/710566">cordis.europa.eu/ project/id/710566</a>
<b>SwafS-9-2016</b> Moving from constraints to openings, from red lines to new frames in Horizon 2020 (CSA)						
NewHoR Rizon	6.8 M	01-05-2017 30-04-2021	INSTITUT FÜR HÖHERE STUDIEN	AT	<b>EU:</b> AT(2), CZ, DE(2), DK, EE(2), ES, FI, FR(2), NL(5) <b>AC:</b> NO <b>TC:</b> CO, JM	<a href="http://newhorizon.eu">newhorizon.eu</a>
<b>SwafS-5-2017</b> New constellations of changing institutions and actors (CSA)						
MULTI- ACT	3.4 M	01-05-2018 30-04-2021	FONDAZIONE ITALIANA SCLEROSI MULTIPLA	IT	<b>EU:</b> BE(2), ES, FI, FR, IT(2), LU, PL, PT	<a href="http://multiact.eu">multiact.eu</a>
RiConfig ure	3.5 M	01-05-2018 30-04-2021	FONDEN TEKNOLOGIRADET	DK	<b>EU:</b> AT(2), DE, DK, ES, HU, IT, NL(2) <b>TC:</b> CO	<a href="http://riconfigure.eu">riconfigure.eu</a>
<b>SwafS-14-2017</b> A linked-up global world of RRI (RIA)						
RRING	3.0 M	01-05-2018 30-04-2021	UNIVERSITY COLLEGE CORK	IE	<b>EU:</b> DE(2), ES, FR(2), IE(2), IT, LT, NL(4), UK(4) <b>AC:</b> RS, UA <b>TC:</b> JP, ZA	<a href="http://rring.eu">rring.eu</a>
<b>SwafS-21-2018</b> Advancing the monitoring of the evolution and benefits of Responsible Research and Innovation (RIA)						
Super_M oRRI	3.0 M	01-01-2019 31-12-2023	FRAUNHOFER GESELLSCHAFT ZUR FÖRDERUNG DER ANGEWANDTEN FORSCHUNG	DE	<b>EU:</b> AT, DK, ES(2), NL(2), RO <b>AC:</b> NO	<a href="http://super-morri.eu">super-morri.eu</a>
<b>SwafS-20-2018-2019</b> Building the SwafS knowledge base (RIA)						
On- MERRIT	1.0 M	01-10-2019 31-03-2022	KNOW-CENTER GMBH RESEARCH CENTER FOR DATA-DRIVEN BUSINESS & BIG DATA ANALYTICS	AT	<b>EU:</b> AT, DE, PT, UK	<a href="http://cordis.europa.eu/project/id/824612">cordis.europa.eu/ project/id/824612</a>

Table 7: Examples of institutional changes in the RRI dimensions

Theme	Examples of institutional changes
Ethics	Introduction of a new code of ethics Ethics and integrity training established for all personnel
Gender equality	Introducing an action plan on gender equality Establishing a 'family room' in the institution Introducing training on implicit bias for senior management
Open access/Open data	Implementation of an open access policy plan Making data management plans compulsory Inclusion of open access measures in legal documents connected with funding decisions
Public engagement	Spin-off company created to link researchers with industry Involvement of atypical stakeholders in strategy advisory councils Recruitment of a citizen science facilitator in the institution
Science education	Establishment of an action plan on science education Introduction of PhD training on communication to diverse audiences Publication of educational materials on thematic issues on an institutional website
Full RRI package	Establishment of a new information centre to engage with the public Publication of a booklet on RRI recommendations for a faculty Implementation of an RRI policy development action plan

### 2.3. Achievements

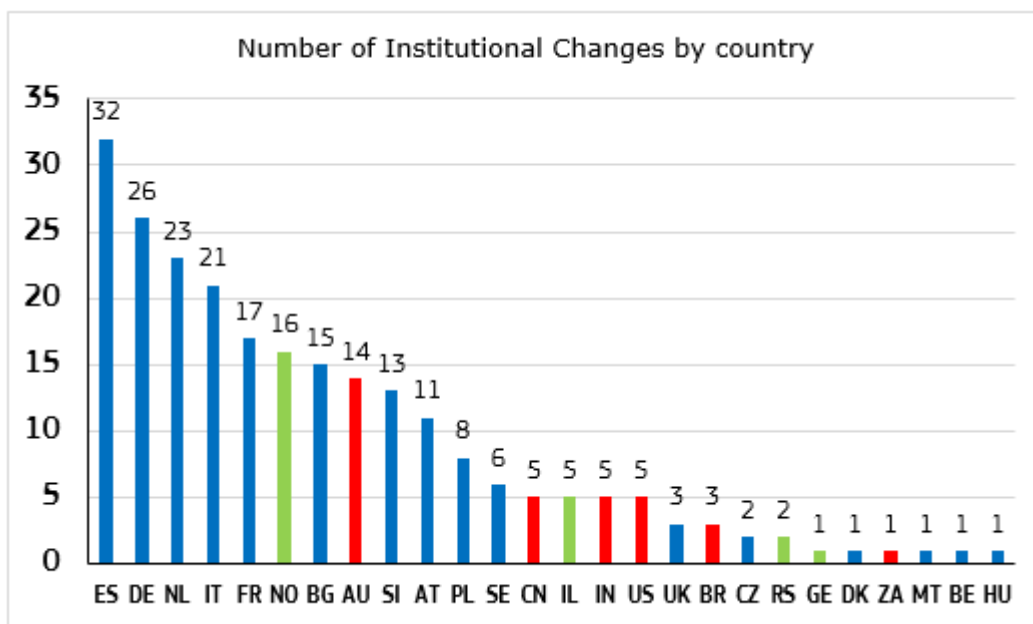
As previously stated, the key performance indicator for SwafS is the number of institutional change actions (see examples in [Table 7](#): Examples of institutional changes in the RRI dimensions): *'Percentage of research organisations funded implementing actions to promote Responsible Research and Innovation, and number of institutional change measures adopted as a result'*.<sup>30</sup>

To this end, REA.B.5 unit 'Spreading Excellence, Widening Participation, Science with and for Society' launched an exercise in 2019, in close co-operation with DG R&I unit 'Open Science', to gather data from SwafS projects focused on implementing institutional changes towards RRI in beneficiary organisations.

The results of this exercise showed that 238 individual institutional change actions had been or were being implemented by this part of the SwafS portfolio, and suggest that SwafS will well and truly surpass its target of 100 institutional changes in beneficiaries by the end of the programme.<sup>31</sup>

[Fig. 6](#) and [Fig. 7](#) show the results for a sample of 12 RRI projects<sup>32</sup>, by country and by RRI dimension.

Fig. 6: Number of institutional changes produced by 12 RRI projects in Member States (blue), Associated Countries (green) and Third Countries (red).

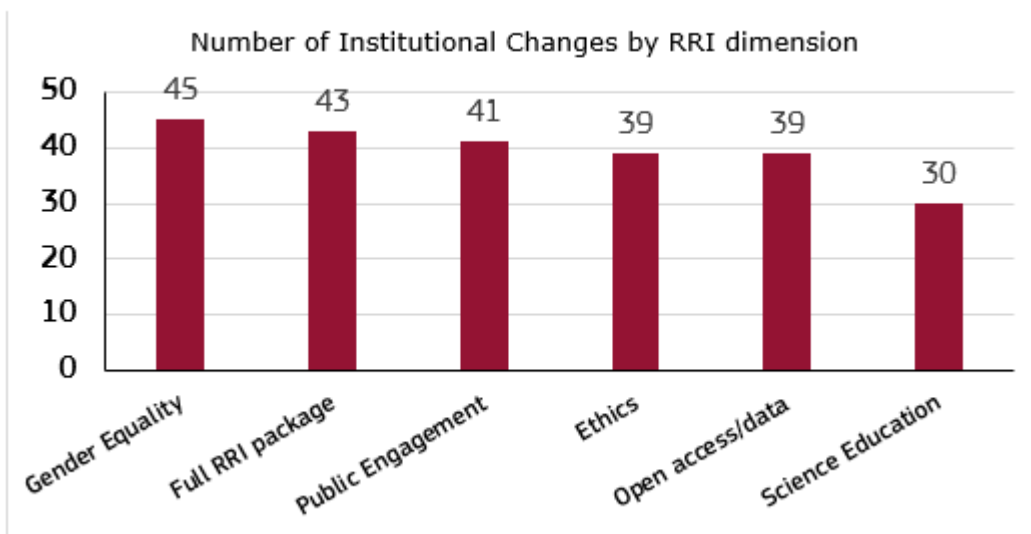


<sup>30</sup> [Horizon 2020 indicators](#)

<sup>31</sup> This data collection exercise only covered projects in the RRI portfolio focused on institutional changes, and did not cover projects dedicated to gender equality, ethics, or open access/open data, which, to various degrees, focus also on institutional changes.

<sup>32</sup> The 12 projects considered are: STARBIOS 2, RRI-Practice, FoTRRIS, FIT4RRI, ORION, RConfigure, JERRI, SeeRRI, TeRRIFICA, NUCLEUS, PROSO, GRACE.

Fig. 7: Number of institutional changes produced by 12 RRI projects in the RRI dimensions.



### *2.3.1. Research Funding and Performing Organisations and Higher Education Institutes*

Projects funded under this category aim to change the institutional practices and cultures in research funding and research performing organisations (RFPOs) with a view to fostering and embedding RRI on a sustained basis.

The projects aiming to open up RFPOs use a variety of approaches and methods in implementing institutional changes towards RRI. These include identifying best practices and analysing obstacles and barriers in successfully implementing RRI principles. As such, one of the main outcomes of the portfolio of projects is a strong evidence-based inventory of impactful practices for the uptake of RRI. They show that different changes require varying amounts of effort, that changes in some institutions are easier to implement than in another, and that all manner of changes can be impactful depending on the context. For many of the projects in SwafS, the changes introduced represent significant steps forward towards RRI for the organisations concerned.

For the purposes of the analysis of the group of projects targeting institutional changes in higher education institutes and RFPOs, the projects are grouped according to four main areas of focus: good practices in RFPOs; setting up action plans; training and education on RRI and finally those with a particularly innovative approach.

#### *2.3.1.1. Good practices in RFPOs*

[NUCLEUS](#) developed a new understanding of engagement in universities and scientific institutions. Its main goal was to implement this understanding by embedding RRI in the governance and culture of research institutions across Europe, China and South Africa. The NUCLEUS project tested the principles of RRI through experiments in ten research institutions across Europe, as well as in South Africa and China.

These experiments involved implementing approaches and activities that would help overcome institutional obstacles and demonstrate the benefits of RRI to each partner institution. NUCLEUS developed a [web-tool](#) for RRI implementation.

[RRI Practice](#) reviewed RRI-related work in 22 RFPOs and developed objectives, targets and indicators for each organisation. One of the main outcomes of the project is the [RRI Handbook](#) for organisations that are considering implementing policies or practices related to RRI. Together with the NUCLEUS project, they organised the 'Pathways to Transformation' conference.

The conference explored the pathways that institutions may follow towards being more socially responsive, with two main questions acting as the driving force: firstly, what can research performing organisations learn from the projects' institutional RRI experiments ('Practical Pathways')? And secondly, how can research policy incentivise stakeholders to contribute to more responsive science and innovation systems ('Policy Pathways')? The 'Pathways declaration' emerging from the conference, signed by more than 13 projects funded under SwafS, called for RRI to remain a central objective in EU R&I and for the EU to continue to pursue its leading role in this effort (section 6.4 outlines the recommendations put forward for the European Commission). This formed the basis for a '[Joint Declaration on Mainstreaming RRI across Horizon Europe](#)' recently published in the Journal of Responsible Innovation.

[JERRI](#) orchestrated a deep RRI transition process within two major European Research and Technology Organisations: the German Fraunhofer Gesellschaft and the Netherlands Organisation for Applied Scientific Research.

Transition roadmaps were developed detailing pathways to the envisaged long-term goals of both entities to guide the process beyond the project's lifetime as well as producing [best practices](#) (Deliverable 9.1: Global RRI Goals and Practices).

#### *2.3.1.2. Setting up action plans*

After analysing where their institutions stand in terms of existing RRI practices, many of the projects drafted action plans to support their organisations in implementing structural changes.

[STARBIOS 2](#) produced six action plans geared to putting in place structural changes in one or more of the RRI dimensions in partner institutions based in Europe and developed three action plans for non-European partners, all active in the field of the biosciences. STARBIOS 2 is in the process of developing an [RRI model for the biosciences](#), with the potential of contributing to structural changes in bioscience institutions in Europe and beyond. Examples of institutional changes include the implementation of an open access policy at one of the RPOs, the setting up of an ethical commission at a higher education partner, and the creation of a start-up to connect the university's research to enterprises: [InNutRes](#) (Responsible Innovation in Nutrition). Finally, STARBIOS 2 organised a session on 'Epigenetics in Infection, Diets and Environment: Responsible Research and Innovation' at the American Association for the Advancement of Science (AAAS) Annual Meeting 2019 in Washington DC.<sup>33</sup>

[GRRIP](#) focuses on embedding RRI practices through action plans in five RFPOs active in the marine and maritime sectors. GRRIP aims to contribute to the implementation of RRI in partner institutions by providing evidence of societal, democratic, economic

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<sup>33</sup> [STARBIOS2 at AAAS Annual Meeting 2019](#)

and scientific impacts of institutional changes through a monitoring and evaluation methodology developed in co-creation mode with input from all quadruple helix stakeholders.

Actions plans are also the focus of [GRACE](#), which involves ten RFPOS in Europe. Each institution will develop customised RRI profiles for implementing RPFOs based on their needs, expectations and specific characteristics, which they will then implement. The novelty of the GRACE project is that these action plans will lead to an 8 year RRI roadmap for each implementing RPFO. GRACE intends to co-organise a side event at the [III International Triple Helix Summit in Bologna](#) (November 2020) together with another project funded under the same topic as part of its 'additional dissemination obligations'<sup>34</sup>, foreseen for some SwafS projects.

[ETHNA System](#) started in January 2020 and will develop and implement an Ethics Governance System for grounding good practices in RRI in Higher Education and Funding and Research Centres. The project will implement and validate a new formal organisational structure within the management structure of its six partner institutions.

#### *2.3.1.3. Training and education on RRI*

Embedding RRI in institutions and implementing structural changes along the RRI dimensions can only take place if the organisations themselves are comfortable with what RRI entails and know about the tools available in the implementation of RRI-related changes. Educating future researchers to be attuned to RRI is also important, as is grounding RRI in higher education curricula.

Many projects focus on the training aspect, not only in capacity building for staff in higher education to teach RRI but also in training the RFPOs by providing tools, guidelines etc.

[FIT4RRI](#) focuses on the training of RFPOs through workshops, with an online RFPO training programme to follow. Similarly, [ORION](#) is creating training content for researchers and professional staff at funding agencies on RRI and Open Science concepts, practices and tools.

To date, ORION produced [case studies, checklists, factsheets, podcasts](#), and are planning to launch a Massive Open Online Course (MOOC).

#### *2.3.1.4. Innovative approaches*

Embedding RRI creates a need for intermediary structures, reconnecting established knowledge institutions with broader society for the co-creation of local answers to global challenges. Several projects adopted an innovative approach to the challenge of embedding RRI in RFPOs.

[FoTRRIS](#) developed and tested such an intermediary structure: a [Co-RRI Competence Cell](#). This was prototyped in five regional case studies on various challenges, including renewable energy, refugees, and women with disabilities, local economy, sustainable food and material scarcity. FoTRRIS designed and

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<sup>34</sup> The 2018-2020 work programme foresees additional dissemination obligations: consortia must make active efforts to freely share, in a timely manner and as appropriate, the research strategies, methodologies, and raw and analysed data deriving from their activities (including any evaluation activities), with the other projects funded by SwafS subject to these same additional dissemination obligations. Applicants must acknowledge and incorporate these obligations in their proposal, outlining the efforts they will make towards this in Annex 1 of the proposal. The respective option of Article 29.1 of the Model Grant Agreement applies.

implemented co-RRI competence cells within its partner organisations, with changes to these organisations' governance in the way research and innovation practice occurs. These have resulted in commitments from the organisations to promote and sustain their institutional changes, to varying degrees depending on the specifics of the institutional context (e.g. their business model and size). Furthermore, FoTRRIS produced a set of highly [innovative materials](#), including a co-RRI 'cook book' to assist stakeholders in implementing RRI.

[Co-change](#), which recently commenced, centres on the concept of change labs to generate transformative capacity for institutional change in terms of practices, procedures, rules and norms.

### 2.3.2. Industry

The 2015 topic dedicated to 'Responsible Research and Innovation in the industrial context'<sup>35</sup>, resulted in the funding of [PRISMA](#), [SMART-map](#) and [COMPASS](#).

The goal of [PRISMA](#) was to identify lessons on implementing RRI in industry ranging from small enterprises to large corporations and universities. The structured methodology was the result of eight pilots in companies active in emerging technologies (nanotechnologies, synthetic biology, Internet of things, and autonomous vehicles). PRISMA produced a number of [practical tools and promising practices for companies](#) to include RRI in their (business) strategies, notably a [roadmap](#) consisting of a 6-step approach for defining an RRI-strategy. The PRISMA R&I [toolkit](#) is geared for SMEs aspiring to develop innovative products and services with which societal needs are addressed together with a contribution to environmental and economic sustainability. The project also designed a [MOOC on 'CSR and RRI: Building tomorrow's responsible firms'](#).

A re-run of the course is planned in 2020. The project team were very active with close to 30 publications produced in journals and conference articles. Finally, the project aims at sustainability through the development of CEN (the European Committee for Standardisation) standards on responsible industry based on the outcomes of the project's work.

[SMART-map](#) defined and implemented concrete roadmaps for the responsible development of technologies and services in three fields: precision medicine, synthetic biology and 3D printing in biomedicine. [Industrial Dialogues](#) i.e. collaborative dialogue between industry and societal actors, resulted in the co-design of a [SMART map](#) to help companies address questions of social and environmental responsibility in their innovation processes.

[COMPASS](#) developed an interactive online platform, the Responsible Innovation Compass, deploying RRI visions and roadmaps for three innovation fields (healthcare, nanotechnology, ICT) with a particular focus on SMEs. The [Responsible Innovation Self-Check Tool for SMEs](#) is a key outcome, providing concrete inputs and examples on how to translate RRI principles into actual business practices.

Falling under the 2014 topic 'Fostering RRI uptake in current research and innovations systems'<sup>36</sup>, [PROSO](#) aimed to foster the engagement of citizens and 'third sector organisations', notably non-governmental organisations (NGOs) and civil society organisations (CSOs), in Europe's research and innovation processes across three domains of research and innovation: nanotechnology, food and health and the bio-economy. The [PROSO Support Tool](#) outlined practices that encourage the

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<sup>35</sup> [SwafS work programme 2014-2015](#)

<sup>36</sup> See supra note 35

engagement of citizens and third sector actors in publicly-funded research and in research and innovation policy in the European Union.

[LIV.IN](#) launched a [Virtual Community Platform](#) to co-create new solutions that are beneficial to society and create new business opportunities in the areas of smart homes, smart health and designing responsible, sustainable solutions for future living. The platform was created on the basis of the [RRI Community Building Handbook](#), a guide to the design, development and maintenance of a sectoral virtual community. The initiative gives citizens the chance to be involved in the design of technology that will shape their future lives while giving industry the possibility to respond directly to changes and the needs of users and expectations of society.<sup>37</sup>

[I AM RRI](#) is investigating the additive manufacturing (AM)<sup>38</sup> innovation network in order to develop a dynamic model of webs of innovation value chains in AM based on open innovation considerations and stage-gate approaches to include openings for responsible research and innovation. Additive manufacturing in the automotive and medical industry will serve as pilot cases to refine and validate the model.<sup>39</sup>

### 2.3.3. Territorial governance

Complementing the European Commission's guidance<sup>40</sup> on the methodological design of RIS3 (research and innovation strategies for smart specialisation), [ONLINE-S3](#) developed an e-policy platform hosting a [toolbox](#) consisting of 28 tools covering the complete RIS3 process, a [roadmap](#) and a 6-phase [guide](#) to assist national and regional authorities in the EU elaborate their smart specialisation agenda. Online-S3's web services and tools to implement RIS3 methodologies were tested in four regions: Scotland (United Kingdom), Central Macedonia (Greece), Galicia (Spain), and Northern Netherlands. Over 12,000 users were involved, of which over 1,000 contributed with suggestions and conveyed high levels of satisfaction.<sup>41</sup>

The following projects are supported by topic SwafS-14-2018-2019-2020 that will likely see around 10 per cent of all EU regions developing more open and collaborative territorial governance through institutional and governance changes by taking a Responsible Research and Innovation approach.

[TeRRItoria](#) will connect RRI to the general strategy of Smart Specialisation of regions by developing a set of transformative experiments<sup>42</sup> and implementing institutional changes in five European selected territories in order to embed RRI in their planning process. The territories, represented by a territorial organisation, are located in Central Macedonia (Greece), Emilia-Romagna (Italy), Trøndelag (Norway), Region of North-East Romania and the Municipality of Gabrovo (Bulgaria). So far, TeRRItoria has produced an inventory of [43 RRI Governance Innovation Practices](#), on the basis of good practices observed in other RRI projects in the design and implementation of five transformative experiments foreseen.

[SeeRRI](#) aims to establish a foundation for self-sustaining R&I ecosystems in Europe by developing a framework for integrating the RRI approach into regional development policies in three European territories: Nordland in Norway; B30 in Catalonia; Ecoplus from Lower Austria. The aim is to provide a set of core principles and a roadmap that regions can use to develop a sustainable research and

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<sup>37</sup> [Liv.In website](#)

<sup>38</sup> [AM is a key enabling technology in high value manufacturing](#)

<sup>39</sup> [I am RRI website](#)

<sup>40</sup> [Guide on Research and Innovation Strategies for Smart Specialisation](#)

<sup>41</sup> [Intelligence and co-creation in Smart Specialisation Strategies: Towards the next stage of RIS3](#)

<sup>42</sup> [TeRRItoria Project experiments](#)

innovation ecosystem based on RRI principles.<sup>43</sup> SeeRRI published an article explaining how organisations can become responsible innovators and demonstrating that practicing RRI may give companies a competitive advantage.<sup>44</sup>

In October 2019, SeeRRI and TeRRItoria partook in the European Week of Regions and Cities, in a workshop on 'In Science for Citizens: how science meets regions and cities', emphasising the importance of involving all actors in the 'quadruple helix' in transition processes.<sup>45</sup>

[TeRRIFICA](#) will increase competencies for climate action and climate change adaptation in six pilot cities and regions: Barcelona (Spain), Brittany, Normandy and Pays de Loire (France), South Oldenburg (Germany), Poznań Agglomeration (Poland), Minsk (Belarus) and Belgrade (Serbia). TeRRIFICA produced a [guide on engagement and co-creation](#) aimed at fostering stakeholders' engagement and co-creation within the context of climate mitigation and adaptation. In the knowledge gathering phase, it examined the local contexts in the six pilot regions<sup>46</sup> and identified case studies of community-academia research partnership related to climate change, highlighting common elements for the development of future climate actions.<sup>47</sup>

The outcomes of this project should be particularly interesting to future work on a climate-focused mission in Horizon Europe and the European Green Deal.

[RRI2SCALE](#) aims to implement successful regional R&I policies that spearhead sustainable development and economic growth while advancing inclusiveness in four regions: Hordaland (Norway), Overijssel (Netherlands), Crete (Greece) and Galicia (Spain). RRI2SCALE will examine the integration of RRI principles within the regions as well as the key components of territorial R&I ecosystems. This will be followed by a large-scale citizen survey on RRI principles and their interaction with R&I ecosystems. All the project's results, together with a training compendium, will form the RRI2SCALE Toolkit which can be used for replicating the move towards RRI by other territories.

[TRANSFORM](#) will bring Lombardy (Italy), Brussels (Belgium) and Catalonia (Spain) together to design, test and disseminate participatory research agenda setting; design for social innovation; and citizen science as co-creation methodological frameworks for the implementation of Smart Specialisation Strategies (RIS3). Regional governments involved in TRANSFORM will adopt RRI approaches in their R&I policies and actions including integration into the strategic roadmaps for the implementation of RRI within RIS3.

[CHERRIES](#) will support healthcare research and innovation policy and pilot actions by interlinking RRI, demand-side policy and territorial innovation models including smart specialisation. This pilot innovation process will be implemented and tested in the territories of Murcia (Spain), Örebro (Sweden) and the Republic of Cyprus.

[DigiTeRRI](#) will develop a framework for the responsible transition of traditional industrial regions into digitised R&I ecosystems together with the impacted industries, territorial authorities and citizens affected in Värmland (Sweden), Région Grand Est (France) and Styria (Austria). DigiTeRRI will produce a strategy for

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<sup>43</sup> [SeeRRI website](#)

<sup>44</sup> [The responsible learning organization: Can Senge \(1990\) teach organizations how to become responsible innovators?'](#)

<sup>45</sup> [18<sup>th</sup> European Week of Regions and Cities, 12-15 October 2019](#)

<sup>46</sup> [TeRRIFICA 'Report on institutional framework conditions, relevant local and regional processes, instruments and co-creation factors related to or adaptable for climate action'](#)

<sup>47</sup> [TeRRIFICA 'Case studies report'](#)



implementing resilient R&I ecosystems for digitalised industries in traditionally industrial-oriented territories.

[TETRRIS](#), due to start later in 2020, will support four European pilot territories to integrate RRI practices into their territorial research and innovation systems and development approaches. The regions are Tampere (Finland), Karlsruhe (Germany), Cantabria (Spain) and Szeged-Timişoara (Hungary-Romania). TETRRIS will also develop tools and good practices and policy recommendations for other European territories to integrate RRI in their regional development.

Looking further afield, [FORWARD](#) (managed by DG R&I), launched as part of the [EU's strategy for outermost regions](#), aims to foster research excellence in [EU Outermost Regions \(ORs\)](#). The project involves the regional governments from the nine ORs in charge of R&I regional policies together with key R&I actors.

FORWARD will perform an initial analysis of R&I ecosystems and, based on these results, will put in place tailored actions including a joint strategy and thematic action plans, capacity building and networking activities, as well as approaches for connecting research and policy making. Importantly, and in line with SwafS, emphasis is placed on the involvement of civil society organisations within these processes.

#### 2.3.4. Knowledge base

[MARINA](#) developed a [Knowledge Sharing Platform](#) in order to facilitate the cooperation of those involved in marine issues and ensure the integration of citizens' ideas. The platform includes a section on tools and good practices for RRI implementation.<sup>48</sup> Now that the project is over, the project team guarantees the sustainability of the communities federated in the platform and of the platform itself.

[NewHoRRizon](#) sets out to promote the acceptance of RRI in Horizon 2020 and beyond. It will work out the conceptual and operational basis to fully integrate RRI into European and national research and innovation (R&I) funding practices. In order to accomplish this goal, NewHoRRizon established 19 Social Labs, each dedicated to a different part of H2020 (e.g. ERC, LEIT ICT, Societal Challenge 6).<sup>49</sup> For every section of H2020, different stakeholders gather in a Social Lab to define the social challenges at stake and develop social experiments to overcome them. NewHoRRizon also [analysed](#) the specifics of the current use and practices of RRI within the various Horizon 2020 programme lines.

One important outcome of the project is the [Societal Readiness Thinking Tool](#), a practical online tool that can be used by research projects and funders to ensure that they have adequately taken into account different aspects of responsibility through the research and innovation process, so as to ensure that the outcomes of the research and innovation will align with the needs, values and expectations of society ('societal readiness').

[MULTI-ACT](#) aims to increase the impact of health research on people with brain diseases through patient participation. Starting with multiple sclerosis as its first case study, MULTI-ACT will create and implement a new model allowing for the effective cooperation of all relevant stakeholders in defining the scope of health research as well as new metrics for the evaluation of its results.<sup>50</sup>

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<sup>48</sup> [Marina website](#)

<sup>49</sup> [New Horizon website](#)

<sup>50</sup> [MULTI-ACT website](#)

So far, MULTI-ACT produced a [Master Scorecard](#) for use at the beginning or during the development of a research initiative, engaging multiple stakeholders in defining impact indicators towards a given mission through a collective bottom-up approach.

[RiConfigure](#) aims to include civil society in the innovation process in order to let innovative solutions flourish and in doing so bring different voices together in new types of collaborations to avoid blind spots and exploit the specific competences of the various actors.<sup>51</sup> RiConfigure produced a [social lab methodology manual](#) for designing and implementing social labs.

[RRING](#) aims to bring RRI to the global level to promote mutual learning and collaboration in RRI through a global RRING community network and a global Open Access RRI knowledge base.<sup>52</sup> An important part of RRING is its bottom-up approach to share and engage in learning about responsibility, aligned to the states' commitments to implement [UNESCO's Recommendation on Science and Scientific Researchers](#) (2017).

On 13 February 2020, RRING ran a [workshop](#) at the American Association for the Advancement of Science (AAAS) Annual Meeting in Seattle (USA), which brought together various stakeholders of science technology and innovation systems for learning on responsibility in research and innovation.

FP7's [MoRRI](#) project (2014-2018) conceptualised and implemented the first RRI monitoring system in Europe, consisting of more than 36 indicators for the key areas of RRI.<sup>53</sup> [SUPER MoRRI](#) builds on this work, ensuring sustained data collection, curation, further assessment and refinement of the MoRRI indicators.

Super\_MoRRI aims to continue cross-European data collection on the evolution and benefits of RRI, enhance understanding of its societal, democratic, economic and scientific benefits and ultimately improve the monitoring system.

In addition, it will create a user-friendly, interactive dashboard<sup>54</sup>. The annual event in Leiden in January 2020 gathered 14 other SwafS projects, focused on institutional change, the territorial dimension of open and responsible research and innovation, and citizen science.<sup>55</sup>

The project has been particularly active in developing an active ecosystem of sharing and learning, so as to inform and co-develop the indicator system with SwafS stakeholders.

[ON-MERRIT](#), targets an equitable scientific system that rewards merit rather than the 'Matthew Effect'<sup>56</sup> of cumulative advantage.

ON-MERRIT deploys a combination of qualitative and computational methods that use stakeholder participation and co-design to engage researchers, industry, policy makers and citizens in examining the extent of the Matthew Effect in key RRI elements with the aim of providing evidence-based policy recommendations for stakeholders on mitigate these effects. ON-MERRIT was the only project to be supported from the 2018 call of SwafS-20-2018-2019.

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<sup>51</sup> [RiConfigure website](#)

<sup>52</sup> [RRING website](#)

<sup>53</sup> ['Monitoring the evolution and benefits of responsible Research and Innovation'](#)

<sup>54</sup> [Super\\_MoRRI website](#)

<sup>55</sup> [Super\\_MoRRI events](#)

<sup>56</sup> The idea that the rich get richer and the poor get poorer is a social phenomenon linked to the Matthew effect. Essentially, it refers to the concept that those who already have status can gain more, whereas those without status struggle more to gain it. In other words, it is the accumulated advantage.

## **2.4. Recommendations**

### *2.4.1. Policy recommendations*

NUCLEUS highlighted in its [policy brief](#) the importance of impressing upon stakeholders the meaning and principles of RRI rather than focusing on the term itself, which can create unnecessary barriers.

The [Pathways Declaration](#), recently published in the Journal of Responsible Innovation as a 'Joint declaration on mainstreaming RRI across Horizon Europe'<sup>57</sup>, calls for the funding of a hub on RRI to ensure quality in the mainstreaming of RRI, co-creation, public engagement and citizen science in the next Framework Programme. This hub should build on and further cultivate the RRI knowledge base. It should advise, train, consult, assess and provide quality control and serve as a resource for those who include RRI-related activities in Horizon Europe projects.

It should also provide experts for the assessment of these aspects in proposals and project activities as well as for relevant committees and boards.

RRI-Practice produced a [policy brief](#) echoing some ideas from the Pathways Declaration, notably establishing a network of train-the-trainers in all Member States to train stakeholders in RRI. The project also proposed that the European Commission launch a tender for professional marketing, dissemination and training of RRI.

It proposed for DG R&I to fund a conference with a global scope, with the goal of developing a Declaration on Research Quality and Impact (in a similar format as the Rome Declaration on RRI). Another idea proposed was setting up an annual RRI award to incentivise and promote RRI.

With respect to regional governance, the European Commission should envisage greater synergies between the SwafS calls and ESF (European Social Fund), ERDF (European Regional Development Fund) and Erasmus+. RRI practices, for example stakeholder engagement, should be part of the evaluation for Structural Funds, and RRI is a key tool towards opening up cohesion policy to the input of society. ONLINE S3's platform and other project outputs of potential interest to regional governments should be referenced on the European Commission's [Smart Specialisation Platform](#).

While progress has made in terms of the participation of Civil Society Organisations (CSOs) in Horizon 2020 projects, efforts should continue to ensure the inclusion of this group of actors. Appropriate funding mechanisms to encourage CSOs to partake in quadruple helix collaborations should be promoted, notably the cascading grant mechanism, a useful instrument to engage such stakeholders.

Furthermore, a clearer definition of CSOs in the context of particular topics would be commendable and could help clarify the types of CSOs expected. Finally, a compendia of 'best practices' should be made available to the research community at large, including effective methodologies to support the active participation of CSOs within quadruple helix collaborations.<sup>58</sup>

### *2.4.2. Recommendations for Horizon Europe*

The [Pathways Declaration](#) (recently published as '[Joint declaration on mainstreaming RRI across Horizon Europe](#)') pointed to the following specific recommendations to the European Commission in relation to strengthening RRI in Horizon Europe:

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<sup>57</sup> [Joint declaration on mainstreaming RRI across Horizon Europe](#)

<sup>58</sup> [RiConfigure Policy Brief](#)

- In cases in which RRI-related concepts are included in future topics, applicants should outline how their projects relate to RRI, based on guidelines for how to embed RRI effectively and to measure societal impact.
- Clear criteria for assessing RRI-related concepts should be communicated to applicants and evaluators.
- Interdisciplinary collaboration should be encouraged. For instance, including researchers from Social Sciences and Humanities (SSH) usually increases the quality of RRI actions.
- Treat RRI components as research, for example the methods and results of RRI measures in an integrated project should be published.
- Open science, citizen science and co-creation agendas should be considered in a broader perspective with reference to RRI.
- The different advisory boards and committees in Horizon Europe, especially in relation to emerging science and technologies, as well as the mission-oriented programmes, should be well-versed in RRI.

NewHoRRizon may potentially have a significant impact on future R&I policy in Europe. EC staff should be more involved in the pilots and an EC contact person nominated for each social lab.

NewHoRRizon advises a shift from RRI being a general 'cross-cutting issue' to becoming an explicit policy goal, outlined in clear guidelines for action and that the European Commission should develop and actively disseminate information on RRI implementation tools.<sup>59</sup>

Finally, NewHoRRizon recommends including the [Societal Readiness Thinking Tool](#) in the Horizon Europe evaluation process by requiring applicants to include project-specific RRI-related questions and reflections with the support of this tool. This step would encourage researchers to reflect on their work in relation to societal needs.

With respect to regional governance specifically, in collaboration with EU services dealing with regional policy, the link between the region's design and implementation of smart specialisation strategies and projects funded under Horizon Europe geared towards developing RRI practices in RIS3 strategies should be strengthened.

A conference organised in February 2020 by the Commission's Directorate-General for Regional and Urban Policy on 'Engaging citizens for good governance in Cohesion Policy', aimed to identify new solutions and approaches to better involve citizens in the decision-making process related to the implementation of the cohesion policy.<sup>60</sup>

However, there appeared to be little knowledge of the projects supported in SwafS that are showing how to do this in practice and this know-how should be better exploited across Commission services.

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<sup>59</sup> [Second NewHoRRizon Policy Brief](#)

<sup>60</sup> [High-level conference "Engaging citizens for good governance in Cohesion Policy", Brussels, 6 February 2020](#)

## CONCLUDING REMARKS

Since 2014, the projects funded under 'Science *with and for* Society' contributed to its primary aims set out in the [EU Regulation establishing Horizon 2020](#), notably to effectively build cooperation between science and society, recruit new talent for science and pair scientific excellence with social awareness and responsibility.<sup>61</sup>

One of the key ways of working towards these three SwafS objectives, and ensuring impact, is the implementation of **institutional changes** in beneficiaries. This is demonstrated by the Key Performance Indicator for SwafS being '*Percentage of research organisations funded implementing actions to promote Responsible Research and Innovation, and number of institutional change measures adopted as a result*'.<sup>62</sup>

The results of a sample of twelve RRI projects revealed that almost 250 individual institutional change actions are implemented or in the process of being implemented by this part of the SwafS portfolio<sup>63</sup>.

The pioneers of institutional changes are Gender Equality projects dedicated to the implementation of Gender Equality Plans (GEPs). Out of 168 institutions involved in GEP projects, 130 institutions (78%) implemented or are in the process of implementing a GEP.

SwafS will well and truly surpass its target of 100 institutional changes in beneficiaries by the end of Horizon 2020.

SwafS stakeholders are in an excellent position to take a leading role in supporting other entities, for example universities envisaging institutional transformation. As Commissioner Gabriel's portfolio encompasses innovation, research, culture, education and youth, exploiting synergies between research and innovation and education is particularly pertinent.

**Networking** is key to ensure that projects learn from each other and build on existing know-how. Liaising with other SwafS projects was formally encouraged in the 2018-2020 work programme which foresees the inclusion of 'additional dissemination obligations' requiring consortia to share their strategies and methodologies from the outset with a view to reaping the full benefits of synergies. This grant condition was a key element in efforts to build a knowledge and collaboration ecosystem. Project co-ordinators demonstrated strong willingness to work together.

**International cooperation** is one of the priorities of Commissioner Gabriel. SwafS projects have embraced international cooperation and involve partners from around the world.

In practice, RRI is implemented as a package across its five dimensions: science education, gender equality, ethics, open access/open data and public engagement.

**Science Education** is the basis for recruiting new talent for science. It is crucial to continue to invest in science education to nourish young curious minds and invest in Europe's future researchers. The high submission rate of proposals throughout Horizon 2020 convey the research community's strong interest in this domain.

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<sup>61</sup> [Regulation \(EU\) No 1291/2013 of the European Parliament and of the Council establishing Horizon 2020](#)

<sup>62</sup> [Horizon 2020 indicators](#)

<sup>63</sup> This data collection exercise did not cover projects dedicated to gender equality, ethics, or open access/open data, which, to various degrees, focus also on institutional changes.

Integration services offered by the pan-European network of EURAXESS support centres for researchers' careers and their families is an investment in the R&I system and a key enabler of brain and knowledge circulation and should be considered part of the much-needed transformations and scale-up mechanisms to ensure an inclusive, healthy and attractive work environment for excellent research in the renewed ERA.

**Gender Equality**, enshrined as one of the key priorities of the ERA with a clear commitment from the von der Leyen Commission reinforces the growing importance attached to the Gender Equality Plans (GEPs). GEPs have been a pioneering tool towards institutional change and with Horizon Europe, the aim is to achieve sustainable impact and a multiplier effect.

**Research Ethics and Research Integrity** are fundamental to the credibility of researchers work. Horizon 2020 achievements include establishing a research ethics and research integrity community, developing frameworks and operating procedures as well as training. Horizon Europe needs to build on this solid base to ensure ethics and integrity are part of the research approach from the outset.

**Open access** to research outputs contributes to better science and innovation. Continued efforts are needed in terms of improving the knowledge and skills of researchers on open access matters.

**Engaging citizens** is a priority across the European Commission and a key component of Horizon Europe. Missions, constituted under Horizon Europe, provide a unique opportunity to test and refine mechanisms for consulting and engaging with citizens. Use of citizens' engagement for the definition and implementation of missions under Horizon Europe is crucial. Effective citizen engagement involves three stages of intervention: communication and awareness raising; co-design and co-creation; and co-implementation. Toolkits and guidelines produced by SwafS funded projects will be useful resources to effectively implement these missions.

**Inclusiveness** on all levels underpins SwafS. We need science education for all, gender equality in our organisations, ethics and integrity embedded in research, communication we can trust, open science and ultimately place citizens at the core to ensure excellent Research and Innovation to tackle the challenges of today for a better future.

## **GLOSSARY**

AM: Additive manufacturing

CSA: Coordination and Support Action

CSO: Civil Society Organisation

DG: Directorate-General

DG R&I: DG Research and Innovation

EC: European Commission

ERDF: European Regional Development Fund

ESF: European Social Fund

FP: Framework Programme

GA: Grant Agreement

GE: Gender Equality

GEP: Gender Equality Plan

H2020: Horizon 2020

HEI: Higher Education Institutes

ICT: Information and Communication Technology

KSP: Knowledge Sharing Platform

MOOC: Massive Open Online Course

NGO: Non-Governmental Organisation

OR: Outermost Regions

R&I: Research and Innovation

REA: Research Executive Agency

RFO: Research Funding Organisation

RFPO: Research Funding and Performing Organisation

RIA: Research and Innovation Action

RIS3: Research and innovation strategies for smart specialisation

RPO: Research Performing Organisation

RRI: Responsible Research and Innovation

S&S: Science and Society

SiS: Science in Society

SoP: Standard Operating Procedures

SSH: Social Sciences and Humanities

STEM: Science, Technology, Engineering and Mathematics

SwafS: Science with and for Society

WP: Work Programme

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<b>BE</b>	Belgium	<b>IT</b>	Italy
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<b>BR</b>	Brazil	<b>JP</b>	Japan
<b>BY</b>	Belarus	<b>LT</b>	Lithuania
<b>CN</b>	China	<b>LU</b>	Luxembourg
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		<b>ZA</b>	South Africa



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Inclusiveness on all levels underpins SwafS. We need science education for all, gender equality in our organisations, ethics and integrity embedded in research, communication we can trust, open science and ultimately place citizens at the core to ensure excellent Research and Innovation to tackle the challenges of today for a better future.

Europe can only thrive by matching the immense potential of science with the values, needs, and aspirations of society.

Horizon Europe must strengthen efforts to tap into the vast potential citizens have to offer and ensure effective cooperation between science and society.

*Studies and reports*

