

N NEW HORIZON

D5.5 Actions and Activities to Realize RRI in Diversity of Approaches

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1 Scope of this document

In 2017 The [NewHoRRizon](#) project started its courageous endeavor to promote the implementation of Responsible Research and Innovation (RRI) in Horizon 2020 (H2020) and beyond; on European, Member State and international level. The project invited a broad variety of stakeholders in research and innovation to work together in altogether 19 so-called Social Labs to co-create actions and activities that address the challenges of implementing RRI in terms of its keys of gender equality, public engagement, science education, open access, governance and ethics on the political, institutional and individual levels. The Social Labs were conceptualized as creative and communicative spaces in which different stakeholders were encouraged to identify the impediments of RRI and to start social experiments (Pilot Actions) to address these very challenges. The 19 Social Labs, one in each of the H2020 Program Lines, worked for more than two years to assemble altogether 725 stakeholders from research, innovation, education, funding, policy making, education and CSOs. They created altogether more than 60 pilot activities which tackle the challenges of RRI, identified by Social Lab participants, on the levels of e.g., awareness, training, career assessment, dissemination, policy making, funding. Pilot Actions addressed a range of RRI aspects and located them in many different fields ranging, e.g., from nuclear energy to health, autonomous mobility to artificial intelligence and philosophy. They address a variety of target groups ranging, e.g., from junior and senior researchers, funders, educators, high-school students, industry, graduate and undergraduate students and kinder garden children.

This Deliverable tells about the journey of the Social Labs from their very beginning, in which we struggled to first get an understanding of the particular Funding Line of H2020 and tried to “diagnose” its uptake of RRI, continuing with the identification of our stakeholders and our attempt to incentivize them to participate in the Social Labs. In this Deliverable, we explain which methods we used in our Social Lab Workshops to raise and discuss the question of responsibility in research and innovation and to generate ideas for Pilot Actions, which experiences we made with these group methods and, most importantly, which Pilot Actions the Social Lab participants created, developed, changed and implemented in order to realize their ambitions of RRI and a responsible research and innovation system.

This Deliverable is divided into several parts. The main sections are dedicated to individual Social Labs. Each description of a Social Lab starts with the state of RRI in the Programme Line when we started our Social Lab and continues with a description of the Social Lab workshops we carried out with details of the workshop participants. The report continues with the objectives of the Social Lab workshops, their design and the development of individual Pilot Actions. Thereafter, we reflect on critical moments and challenges during the Social Lab, achievement of our objectives, the potential impact Pilot Actions, issues of workshop methodology and group dynamics. Finally, the pilot activities are concisely described in individual “two-pagers”.

Readers interested in the NewHoRRizon Social Labs will find a description of the methodology of the Social Lab and supporting material in D7.3 (Griessler et al. 2021). Social Lab experiences generated across the 19 Social Labs are analyzed in D7.4 (Marschalek et al. 2021). Storylines and Narratives of the Social Labs are synthesized in D8.3 (Loeber and Cohen 2021). More information about the project and additional resources can be found at the [website](#) and, by May 2021, on the virtual exhibition RRI.EX.

2 Basic information about WP 5 and short summary

Table 1 provides an overview on the dates and the venues in which the workshops in the six Social Labs of WP 5 were organized. The workshops took place from October 2019 to October 2020 in Denmark, Germany, Poland and Serbia. Due to the starting COVID 19 pandemic, the Workshop of SL 17 had to be carried out online. The workshops lasted between one and two days.

Table 1 - Workshop details (date and venue) in WP5

	Date	venue
Social Lab 14 (WIDENING)		
1 st Workshop	22.03 - 23.03.2018	Madrid, Spain
2 nd Workshop	29.11 - 30.11.2018	Prague, Czech Republic
3 rd Workshop	24.10 – 25.10.2019	Novi Sad, Serbia
Social Lab 15 (SWAFS)		
1 st Workshop	15.11 - 16.11.2018	Berlin, Germany
2 nd Workshop	01.04 - 02.04.2019	Ljubljana, Slovenia
3 rd Workshop	20.01 – 21.01.2020	Bonn, Germany
Social Lab 16 (EIT)		
1 st Workshop	17.04 - 18.04.2018	Budapest, Hungary
2 nd Workshop	10.12 - 11.12.2018	Munich, Germany
3 rd Workshop	08.01 – 09.01.2020	Aarhus, Denmark
Social Lab 17 (JRC)		
1 st Workshop	24.09 - 25.09.2018	Ispra, Italy
2 nd Workshop	06.05 - 07.05.2019	Ispra, Italy
3 rd Workshop	23.10.2020	Virtual, Vienna, Austria
Social Lab 18 (Instruments of H2020)		
1 st Workshop	19.04 - 20.04.2018	Budapest, Hungary
2 nd Workshop	19.11 - 20.11.2018	Munich, Germany
3 rd Workshop	10.12.2019	Lyngby, Denmark
Social Lab 19 (EURATOM)		
1 st Workshop	17.05 - 18.05.2018	Brussels, Belgium
2 nd Workshop	29.01 - 30.01.2019	Vienna, Austria
3 rd Workshop	19.11 – 20.11.2019	Warsaw, Poland

Table 2 gives an overview on the total number of participants. In total 203 people participated in the Social Labs of WP 5.

Table 2 - Participant numbers (WP5)

	1 st Workshop	2 nd Workshop	3 rd Workshop
Social Lab 14	14	13	12
Social Lab 15	17	12	15
Social Lab 16	17	10	8
Social Lab 17	N/A	14	11
Social Lab 18	22	13	3
Social Lab 19	9	7	6
Totals	79	69	55

Table 3 - Participants by stakeholder group (WP5)

specification		Academia	Business/	Policy	Other					
		/research	Industry		EC	other	independent	CSO	funding	lay person
Social Lab 14 (WIDENING)										
1 st workshop	12									
2 nd workshop	10			1		3				
3 rd workshop	14									
Social Lab 15 (SWAFS)										
1 st workshop	8		1				4	1		3
2 nd workshop	5		1				1	1		2
3 rd workshop	9		1				2	1		2
Social Lab 16 (EIT)										
1 st workshop	4		4	1			1	7		
2 nd workshop	2		1			1		6		
3 rd workshop	5					1		2		
Social Lab 17 (JRC)										
1 st workshop	13			14	2					
2 nd workshop	9			12	2					
3 rd workshop	6			11	0					
Social Lab 18 (INSTRUMENTS)										
1 st workshop	12		6				2			
2 nd workshop	5		5				3			
3 rd workshop	2						1			
Social Lab 19 (EURATOM)										
1 st workshop	5		2	2			1			
2 nd workshop	5			2						
3 rd workshop	4			2						

Table 4 - Participants per country of work (WP5)

	SL14 – 1 st Workshop	SL14 – 2 nd Workshop	SL14 – 3 rd Workshop	SL15 – 1 st Workshop	SL15 – 2 nd Workshop	SL15 – 3 rd Workshop	SL16 – 1 st Workshop	SL16 – 2 nd Workshop	SL16 – 3 rd Workshop	SL17 – 1 st Workshop	SL17 – 2 nd Workshop	SL17 – 3 rd Workshop	SL18 – 1 st Workshop	SL18 – 2 nd Workshop	SL18 – 3 rd Workshop	SL19 – 1 st Workshop	SL19 – 2 nd Workshop	SL19 – 3 rd Workshop	Total per country
AUT				3	2	2		1								1			9
BEL								2	1		1		3	2	1	1	2	1	14
BUL	2	2																	4
CZR	3	1																	4
DEN									2				1	1	2				6
FIN				2	1	1													4
FRA																3	1		4
GER				4	3	2		1	1							1			12
HUN								2					5	2					9
ICE					1														1
ITA				1		1			2		1		6	5					26
LIT			1																1
NED				1	2	2		1					2	1			1	2	12
POL				1		1		2	1							1	2	2	10
ROM	3	1																	4
SER	1	5				1													7
SLO				2	2	2													6
SPA	1		2	1	3				1				4	2					14
SWZ								1			1								2
SWE				1													1	1	3
UK											1								1
Other	3	2											1			2			8

3 Social Lab 14 - WIDENING

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3.1 State of RRI in the Programme Line before NewHorizon

3.1.1 Method of diagnosis

The “Spreading Excellence and WIDENING Participation” (in short SEWP or WIDENING) programme line is part of Horizon 2020 and aims at tackling the inequalities in participation that were highlighted in the interim evaluation of FP7. Although specific measures in the Framework Programme have been carried out, there are still several gaps in access to European funding, and a series of national and institutional barriers to embedding RRI and its specific keys.

The methods used in the diagnosis have been a combination of quantitative and qualitative methods. Several steps have been taken in order to proceed with an accurate diagnosis of the WP. **First**, members of the research team used the key terms provided by the bibliometric work of KU Leuven in order to gain some insights about how the RRI keys are present in the abstracts of the projects. **Second**, the team has analyzed the scoping paper as well as the work programme of this subsection of Horizon 2020.¹ **Third**, ten interviews have been carried out with the participants of the Social Lab as well as other agents of the WP such as National Contact Points (NCPs), project officers, project coordinators, project participants, funding organizations and other relevant agents who are interested and have a role in this WP. All interviews have been recorded and transcribed. Even more significantly, many insights have been gained through direct work with WIDENING participants in current pilots. **Lastly**, the Social Lab management have allowed the research team to develop participatory observation techniques for exploring the participants’ behavior, as well as conducting ethnographic research on their attitudes and values as regards RRI.

3.1.2 General scope of the programme

The WIDENING programme aims at closing the divide in European research and innovation in order to safeguard the quality and sustainability of science within the entire territory of the EU. The programme is considered a precondition for regional growth and prosperity, and for eradicating the economic divide across Europe that has led to elevated social tensions in recent years. Its goal is to ensure that (1) citizens have access to high-quality, research-led education, (2) excellent researchers from all over Europe can succeed in applying for EU funds, and (3) Europe achieves its full potential by harnessing the talent and knowledge of its citizens³.

There is a large discrepancy in R&D spending between Member States, which might be explained to some extent by structural factors such as the varying share of R&D intensive sectors. In the period 2008-2014 lower R&D intensity levels, below 1 %, were mostly recorded in Member States in eastern and southern Europe, for instance in Romania, Cyprus, Greece and Malta.² Growth in R&D expenditure over the same period has been most pronounced among countries with generally low R&D spending such as Slovakia, Bulgaria, Malta and the Czech Republic. However, despite such increases most of these Member States would require significant acceleration of R&D intensity growth in order to meet their respective national targets³

¹ <http://ec.europa.eu/programmes/horizon2020/en/h2020-section/spreading-excellence-and-widening-participation>
² [Archive:Europe 2020 indicators - research and development - Statistics Explained \(europa.eu\)](https://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&code=sdg_8.4.1)

³ www.ewi-vlaanderen.be/sites/default/files/science_research_and_innovations_performance_of_the_eu.pdf

Despite serious efforts by the EU and its Member States, there were still significant gaps among European regions, caused by different levels of economic development and deep structural differences due to many diverse factors (geography, specific localisation issues, socio-economic and cultural aspects, etc.). A composite indicator was developed to measure research excellence in Europe, meaning the effects of European and national policies on the modernisation of research institutions, the vitality of the research environment and the quality of research outputs in both basic and applied research. The indicator consisted of four variables⁴:

- Highly cited publications from a country as a share of the top 10% of most cited publications as normalised by GDP
- Number of world class universities and public research institutes in a country as normalised by population in the world's top 250 universities and research institutes
- Patent applications per million
- Total value of ERC grants received, divided by public R&D undertaken by the higher education and government sectors

The threshold for defining the WIDENING countries is below 70% of the EU average.

The SEWP programme was introduced as part of Horizon 2020 to address a number of causes such as weak expertise in preparing successful proposals, lack of professional contacts and research networks, low focus on R&D in policy and business, limited options for exploitation of research results at the national level, etc.

It has the aim of ensuring that the benefits of an innovation-led economy are both maximized and widely distributed across the EU. Synergies with European Structural and Investment funds are an important component. The programme seeks to maximize investments in research and innovation and to enable the EU to function in a more streamlined and homogeneous way.

The divide between EU Member States in terms of research and innovation performance is reflected in FP success and participation rates. The most recent data on the first Horizon 2020 calls for proposals suggest that in terms of budget share, EU-15 countries ("old Member States") received 90% of the EU financial contribution while EU-13 countries ("new Member States") received 4%. This is similar to the situation in FP7.⁵

There are no limitations on the scientific scope of WIDENING calls, and the subject coverage for funded projects is broad. Widening encompasses three main actions, i.e. Teaming, Twinning and ERA Chairs, as described below⁶:

- **Teaming** invests in Europe's research and innovation potential by supporting the creation of new (or the upgrading of existing) Centres of Excellence in low R&I performing Member States and Associated Countries on the basis of partnerships with internationally leading institutions.
- **Teaming** aims to build on the huge potential of networking for excellence through knowledge transfer and exchange of best practice between research institutions and leading partners.
- **ERA Chairs** bring outstanding researchers to universities and other research organisations in those countries that have high potential for research excellence, in order to help them attract,

⁴ NCP WIDE.NET (2013). [How to participate in the Spreading Excellence and Widening Participation activities](#)

⁵ EC (2017) [Scoping paper for the Horizon 2020 work programme 2018-2020, Spreading Excellence and WIDENING Participation](#)

⁶ https://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-sewp_en.pdf

maintain and increase high quality human resources and implement the structural changes necessary to achieve excellence on a sustainable basis.

The specific measures of the WIDENING programme target low-performing Member States in terms of research and innovation. Member States currently eligible for WIDENING support are Bulgaria, Croatia, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Luxembourg, Malta, Poland, Portugal, Romania, Slovakia and Slovenia. Associated countries currently eligible for WIDENING support are (subject to valid association agreements of Third Countries with Horizon 2020): Albania, Armenia, Bosnia and Herzegovina, Faroe Islands, Former Yugoslav Republic of Macedonia, Georgia, Moldova, Montenegro, Serbia, Tunisia, Turkey and Ukraine.

3.1.3 State of the WIDENING Programme

In most WIDENING countries the visibility of RRI is limited. The concept of RRI is poorly understood and inadequately adopted in the WIDENING programme. There is a lack of awareness even among the NCPs.

If policy level is understood as the generic definition of SEWP then RRI is not explicitly defined in any of the identified framework documents. Widening countries focused on ways of eliminating barriers to participation and performances. The concept of RRI is still a remote objective for them, and this is perceivable in all of the reviewed documents and primary data obtained during the interviews and the management of pilots. The RRI descriptions in the work programmes are brief and generic, and some implicit references of minor importance such as “societal challenges” can be found on a topic level. The three O’s - Open Innovation, Open Science and Open to the World are not considered in the Widening program. The Work programme 2018-2020 is the framework document demonstrating the highest awareness of RRI requirements. It provides a definition of the RRI concept and specifies that it is in line with *“the Horizon 2020 Responsible Research and Innovation (RRI) cross-cutting issue, engaging society, integrating the gender and ethical dimensions, ensuring the access to research outcomes and encouraging formal and informal science education”*⁷.

The WIDENING countries experience difficulties in accessing Horizon 2020 funding, especially the less developed countries in South-Eastern Europe. This makes it especially difficult for them to assimilate and prepare for the requirements of RRI⁸. Conditions for successful RRI work are not provided in many of the analysed organizations, nor in their national context, and in many cases RRI keys are only supported by committed individuals.

There is a significant disparity among the analysed institutions/countries, and in some parts of the WIDENING area we are dealing with poor countries, with weak R&D and scientific structures, while others are relatively well-functioning and economically stable democracies with vibrant R&D institutions, empowered universities and societies. In the context of the WIDENING programme there is an enormous difference in economic development and innovation performance of the beneficiaries, which needs to be considered in this analysis. In the framework of the NewHorizon Social Labs, we are dealing with organisations like IMDEA Networks (Spain), a top international research centre, and

⁷ https://ec.europa.eu/research/participants/data/ref/h2020/wp/2018-2020/main/h2020-wp1820-sewp_en.pdf

⁸ [8 EC \(2017\) Scoping paper for the Horizon 2020 work programme 2018-2020, Spreading Excellence and WIDENING Participation](#)

also with The Institute of Plant Physiology and Genetics (IPPG) of the Bulgarian Academy of Sciences (BAS), which is struggling for its survival and inclusion in the EU Scientific Community.

As a result of our research, some of the obstacles for embedding RRI in WIDENING countries can be summarised as follows:

- **No specific national actions or instruments developed** for tackling social issues
- **Low capacity** of universities and research organisations for engaging with civil society
- **Weak accountability mechanisms** in R&D
- Lack of a culture of **responsiveness to the needs of society**
- Insufficient use of **deliberative approaches** in science and governance
- **Insufficient R&D investment**
- **Information barriers and lack of synergies with RRI projects in “advanced counties”**

The state of RRI in most WIDENING countries can be illustrated and explained by Maslow's hierarchy of needs⁹ and the posterior research of many other authors that linked these needs to countries and organisations. The first four levels are often referred to as deficiency needs (D-needs), and the top level is known as growth or being needs (B-needs). Carroll¹⁰ considers that in organisational terms, economic, legal, and ethical needs have to be met in order to reach the level of “Philanthropic responsibilities”, whereby concepts such as Corporate Social Responsibility (CSR) and Responsible Research and Innovation (RRI) can be placed. This explains why the requirement of RRI is very challenging for some low performing countries, as Bulgaria and Serbia, for example, where scientific organisations are primarily concerned with their economic survival. The logical point here is that sensitivity to RRI, responsibility in general, and concern about the well-being of society increases with the level of development. When researchers and their organisations do not have enough funding for scientific work, basic utilities or international travel, RRI and the three O's - Open Innovation, Open Science and Open to the World, are not yet a priority. When responsibility is imposed externally as evaluation criteria without understanding these stages in the development of countries and societies, RRI can be adopted only “artificially” without true commitment to the social outcome.

3.2 Social Lab and Social Lab Participants

Social Lab 14 “Spreading Excellence and WIDENING Participation” brings together stakeholders from research including WIDENING grantees, team members and applicants, representatives from research funding organizations (RFO), industry and civil society organizations – to develop pilot activities that might help to implement elements of RRI into WIDENING actions, and more generally into research funding, as well as in research performing organizations in the countries that are the recipients of this work programme.

The selection and recruitment of participants was mainly based on the results of interviews, desk research on projects and on contacts and suggestions from participants.

⁹ Maslow, A.H. (1943). "A theory of human motivation". *Psychological Review*. 50 (4): 370–96.

¹⁰ Carroll, A. B. (1991). The Pyramid of Corporate Social Responsibility: Toward the Moral Management of Organizational Stakeholders. *Business Horizons*, 34, p. 39-48.

The cross-sector and cross-function nature of the group is important for bringing a diverse, systems perspective to the workshops and when developing Pilot Actions.

Table 5 - Workshop Dates (date and venue) (WIDENING)

	Date	Venue
1 st Workshop	22.3 – 23.3.2018	Madrid, Spain
2 nd Workshop	29.11-30.11.2018	Prague, Czech Republic
3 rd Workshop	24.10-25.10.2019	Novi Sad, Serbia

The first workshop was held in Madrid on March 22nd/23rd 2018, and involved 12 participants (seven female and five male) from a variety of organizations such as research performing organisations (RPOs), including research organisations and academia, NPC and others. Three members of the Social Lab team also participated in the workshop (Social Lab Manager, Social Lab Assistant and Facilitator). Participants came from the following countries: Bulgaria (2), Czech Republic (2), Serbia (2), Spain (2), Romania (2), Greece (1) and Portugal (1).

In **the second workshop**, Prague, 29th /30th November 2018, 14 invited stakeholders participated (eleven women and three men); two of them were invited experts. Ten participants came from RPO, three from the governance/research policy sector. Additionally, three members of the Social Lab team participated in the workshop (Social Lab Manager, Social Lab Assistant and Facilitator). Participants came from the following countries: Armenia (1), Bulgaria (2), Czech Republic (2), Serbia (2), Spain (1), Belgium (1) Romania (2), The Netherlands (1) and Ukraine (2). Four participants had already participated in the first workshop; ten were new to the Social Lab. In three instances different individuals represented the same institution in the first and second workshop. In total, four institutions dropped out from the Social Lab.

The **third workshop** was organized on October 24th/25th, 2019 in Novi-Sad, Serbia. In this workshop, 14 people participated; two of them invited experts and all of them came from RPOs. The workshop had six female and eight male participants from Armenia (1), Bulgaria (2), Czech Republic (1), Romania (1), Lithuania (1), Serbia (5), Germany (1), Netherlands (1) and Tunisia (1). Furthermore, three members of the SL team also participated in the workshop (a Social Lab Manager, Social Lab Assistant and Facilitator).

The Social Lab had a core group of seven to nine participants that attended two or three Workshops. The reasons for dropping out of the Social Lab include (1) lack of interest in RRI initiatives, (2) busy schedules, (3) lack of internal institutional support and (4) theoretical concerns about the difference between the concepts of “good science” and RRI.

The total number of dropouts from Social Lab 14 was six people. This number is calculated based on the fact that several participants, who did not attend the 2nd or 3rd Workshop, continued contact with the Social Lab and worked on Pilot Actions. Dropouts between the first and second Workshop mainly happened because some participants had no interest in continuing to work within the Social Lab. Four people that initially confirmed their participation in the 3rd Workshop were ultimately unable to attend the event because of other commitments. In contrast to the 2nd Workshop, none of the participants left the Social Lab between the 2nd and 3rd Workshop due to a loss of interest in the Social Lab. The reasons why some participants could not make it to 3rd Workshop were related to full agendas.

Throughout the Social Lab, the Social Lab Managers regularly invited a new stakeholder. In addition, new participants were recruited during other events that the Social Management team organised or participated in. New invitees included people that the existing participants knew and trusted, as well as including information from other networks connected to RRI and RRI-like activities. These new participants were recruited because they had shown an interest in participating in the Social Lab, especially NCPs from the WIDENING programme that had attended the general NCP training. These people were tasked with providing information and advice to research funding applicants and were equally interested in RRI philosophical questions and in how these translate to research proposal writing.

The number of workshop participants varied between 12 and 14 (see Table 6)

Table 6 - Participant numbers, gender, drop out and newly recruited participants (WIDENING)

	Number of male participants	Number of female participants	Total number of participants	Number of SL dropouts	Number of newly recruited participants
1 st Workshop	5	7	12	1	-
2 nd Workshop	3	11	14	4	10
3 rd Workshop	8	6	14	4	2

The majority of the Social Lab participants came from academia and research (see Table 7)

Table 7 - Participants by stakeholder group (WIDENING)

specification	Academia/Research	Business/ Industry	Policy					
			EC	other	independent	CSO	funding	lay person
1 st workshop	12							
2 nd workshop	10		1		3			
3 rd workshop	14							
Totals	36		1		3			

Table 8 presents information about participants' country of residence.

Table 8- Participants of SL14 (per country)

Country	1 st workshop	2 nd workshop	3 rd workshop
ROM	2	2	1
SRB	2	2	5
ESP	2	1	
BGR	2	2	2
PRT	1		
GRC	1		
CZE	2	2	1
ARM		1	1
UKR		2	
BEL		1	
NLD		1	1
DEU			1
TUN			1
LTU			1
Total	12	14	14

3.3 Workshop objectives

Participants in the WIDENING SL started to grasp the RRI concept and the SL ecosystem thanks to the first workshop that was held in Madrid. The specific objectives were:

- To share and deepen empirical diagnosis of RRI in the specific Horizon 2020 programme section, including the concepts and practices of, as well as experiences with, RRI, its benefits and barriers.
- To generate RRI pilots in the specific Horizon 2020 programme section.

The second workshop explored several keys of the RRI paradigm, with the collaboration of some invited experts who shared their experience and expertise with the workshop participants. The specific objectives of the workshop were to:

- Evaluate Pilot Actions and harvest lessons learned.
- Deepen participants' knowledge of RRI and its dimensions.
- Continue to work on existing pilots and create and plan new Pilot Actions.

New Pilot Actions were also identified during this second workshop, to be promoted during the interval between the second and third workshop, as well as promoting RRI in the countries that are the recipients of the WIDENING work programme.

The 3rd workshop focused on reviewing and reflecting on everyone's experiences with Pilot Actions. In this workshop Pilot Actions and activities were re-assessed and consolidated, and we evaluated the Pilot Actions. Social Lab participants who engaged in one of the active Pilot Actions were invited to participate. The objectives of this workshop were:

- To evaluate the Pilot Actions and harvest lessons learned.
- To deepen the participants' knowledge of RRI and its dimensions.
- To set up a network of RRI ambassadors and to establish mechanisms of support.

3.4 Social Lab design

The selected participants were unfamiliar with the concept of RRI, but they all showed interest and were motivated to learn more. Some of them were involved in science education or science communication activities beforehand, but were not familiar with RRI as an umbrella concept. There were two main questions posed at the beginning of the workshop to stimulate discussion and reflections between participants:

- What are my thoughts and feelings about participating in this Social Lab?
- How do I live responsibility in my work?

The objective was to break the ice; get to know each other, and bring to light our individual attitudes towards RRI. The workshop was designed around two main sections, the first one devoted to exploring the RRI challenge, and the second to creating common ground and generating Pilot Actions.

For the first part, the Social Lab Manager informed participants about those aspects of the research that are relevant for creating pilots in order to work on the potentials, visions and benefits of RRI in WIDENING, and the group reflected on:

- Needs, opportunities, obstacles/barriers and current reservations concerning RRI in research in general.
- Why is it relevant for us here?
- Difficulties and barriers, in order to establish a creative tension between the current reality and future vision as a prerequisite for pilots.

The second part used synergies and collective intelligence to create a common ground and Pilot Actions. Specifically, the group explored pilot ideas and worked on the following questions:

- What are the objectives?
- Who is pilot owner/driver? Who is co-driver, and who is part of the team?
- What support is required from the SL Manager?
- What are the next steps?

The second workshop was held on November 29th/30th 2018 in Prague at the office of the Technology Agency of the Czech Republic (TA CR). After the first workshop, the Social Lab team members acknowledged that there was still confusion about what shape a Pilot Action could take, and exactly how it should be put into action. When participants of the first workshop went back home and shared the idea of RRI with their colleagues, organizations reacted in different ways, but in general there was support for this second workshop to explore "What this trendy RRI is all about", and new people from previously present organizations were in attendance.

The Social Lab team admitted that perhaps in the first workshop there was not enough "actionable information" about RRI, resulting in its slow progress. To tackle this issue, new elements to the structure of the second workshop were implemented so as to involve other members of the NewHoRRizon consortium, as well as external experts that could bring their knowledge, tools and networks to engage and inspire the participants.

The latter included the invitation of Tung Tung Chan from Leiden University to introduce the Societal Readiness Thinking Tool, and Maria Zolotonosa from ECSITE to speak about different ways to help promote public engagement, and the participants received feedback from them. Ezekiela Arrizabalaga and Raúl Tabarés, from TECNALIA, also deepened the RRI keys of gender and open access to illustrate

how it can be operationalised and institutionalised. The balance between content and participatory activities was the main challenge to deal with throughout the event at Prague.

In addition, pilot drivers also revealed the advances of their different Pilot Actions and shared with the group the obstacles, challenges and opportunities that they have been facing since the beginning of the Social Lab in March 2018. Analysis of the Pilot Actions, including the ones that did not progress well, was based on the following questions:

- What does the Pilot Action look like now as compared to at the 1st workshop?
- What is the RRI issue at stake?
- Which barriers and which enablers to RRI did/does it address?
- Which organisations and actors were/are involved and why?
- What was frustrating / inspiring?
- What are our insights about obstacles and success factors? What are our ideas for improvement?
- What are our current challenges/questions?

The 3rd workshop was organized on October 24th/25th, 2019 in Novi-Sad, Serbia. It was designed around the following two questions: What have we learned about applying RRI so far? How can we integrate RRI into our work? After the warm-up exercise, participants were asked to represent their pilot experiences in the flipcharts. The objective was to answer the following questions:

- What was the intention of the pilot?
- What did we do?
- What was the energy level?
- What was the outcome?

Participants were also encouraged to engage with the discussion with the following question in mind: What works best in RRI? Joshua Cohen was invited to present the narrative evaluation approach and the context-based evaluation. Joshua explained that narratives are composed by a plot and are structured around four blocks: situatedness, sequence, disruptive quality and transferability. There was an animated debate about the role of narratives in society. The group was attracted by the idea of shrugging off narratives but questions remained about how to proceed with them and how to evaluate them.

Andreas Röss from Fraunhofer talked about the JERRI project experience and the practicalities of how to embed RRI into research organizations; after these two inspiring contributions the workshop was encouraged to work on the findings and the SL process and reflections about:

- How the Social Lab has helped you to gain skills for your research career development?
- What have you learned during this journey?
- Has RRI been useful for reflecting about particular issues that are at stake in your organisation or profession?
- Has RRI been useful for overcoming any dilemmas that you have been facing in recent years?
- What cannot be integrated from RRI into your work?
- What is most important about RRI for you?
- What is not important about RRI for you?
- What can you do to extend the RRI paradigm in your organization after this experience?

The workshop concluded with a group figurative exercise called “Kings and Queens of RRI”, in which figurative kings and queens can be an example or can be role models for inspiring RRI legacies. The question was: If you were the king or queen of RRI, how would you extend your realm?

The idea was to suggest an imaginary and utopian context for this exercise, trying to investigate different opinions, measures and recommendations for providing policy recommendations, and answering the following:

- How would you treat your servants (researchers)?
- Which measures would you impose so as to maximise RRI in your country (benefits)?
- How will you ensure that RRI is correctly implemented (punishments)?
- Which kinds of members will make up your cohort (actors)?
- What kind of wars you would be taking part in for RRI (struggles)?
- Which alliances would you pursue during your reign (workarounds)?
- What will it be your greatest legacy (purpose)?

3.5 Pilot Action Development

In the 1st workshop, the Social Lab altogether created four Pilot Action ideas and started work on two of them. During the 2nd workshop the participants developed four new Pilot Actions, but one of them was abandoned and the other two evolved into different ideas. At the end of the 3rd workshop the Social Lab had four Pilot Actions running.

The evolution of the Pilot Actions can also be seen in their title, which changed from the “Development of a European network for RRI support” to “RRI Training 2.0 for National Contact Points (NCPs)”; “Human Sustainable Development” changed to “Attracting a larger public at Technical University of Cluj-Napoca”. “Chat with a researcher” was transformed into the “Promotion of openness and ethics in science at Institute of Plant Physiology and Genetics (IPPG)”.

Table 9 - Pilot Actions (WIDENING)

Pilot Action Number	Pilot Action name
1	Introducing RRI (completed)
2	Assessment of Societal Readiness Level for RRI (abandoned)
3	Development of a European network for RRI support (transformed/evolved into RRI Training 2.0 for NCPs)
4	Dialogue skills (completed)
5	Human Sustainable Development (changed to Attracting more public in TUCN)
6	Chat with a researcher (transformed into Promotion of openness and ethics in Science at Institute of Plant Physiology and Genetics (IPPG))
7	Turning the tables (reverse scientific café) (abandoned)
8	Promotion of Openness and ethics in Science at Institute of Plant Physiology and Genetics (IPPG) (completed)
9	RRI Training 2.0 for NCPs (completed)
10	“RRlizing” the University of Novi Sad (running)
11	Attracting a larger public at Technical University of Cluj-Napoca (TUCN) (completed)

3.5.1 Pilot Action 1: Introducing RRI

This pilot has been completed. Its goal was to explain the RRI concept, diagnose the degree of readiness, develop roadmaps, evaluate and assess.

Many participants and institutions that were involved in the first workshop were unaware of RRI and its keys. They were usually familiar with some of the keys but using a completely different approach. Therefore, this first Pilot Action was a kind of joint pilot for many to disseminate the concept. Workshop participants saw RRI as an opportunity to produce better science and technology, and to involve society in their work. They also saw RRI as a kind of social innovation for their field.

This Pilot Action tried to introduce the RRI concept to organizations that are not aware of it or its potential. It also wanted to diagnose the level of readiness of an organization, develop roadmaps that favour its dissemination, and provide an evaluation assessment about how successfully it has been disseminated amongst peers and colleagues.

This first pilot has evolved in a significant manner across different participants and institutions that have grasped the concept and tailored it to their particularities and needs. In this pilot, participants from Rumania, Bulgaria, Serbia and Spain developed several initial activities that spawned more ambitious ones and others that have been dropped. These first activities have been conceived as the necessary “initial awareness stage”.

This pilot has produced several activities with considerable impact:

- May 30th, Madrid, Seminar on RRI at IMDEA Networks, 25 participants;
- July 10th, Sofia, Bulgaria, 18 Participants. Seminar on RRI at The Institute of Plant Physiology and Genetics (IPPG) of the Bulgarian Academy of Sciences (BAS);
- June 25th, Novi Sad, Serbia. Meeting between the management team and Antonia Bierwirth to discuss the future strategy of the University;
- June 26th, Novi Sad, Serbia. Presentation on “Responsible Research and Innovation (RRI) concept and application” during the Symposium on Advances on Meteorological application to Agriculture, “H2020 TWINNING - SERBIA FOR EXCELL final workshop”

3.5.2 Pilot Action 2: Assessment of SRL for RRI

This Pilot Action has been abandoned. In the first workshop it was initially oriented towards developing tools that could help to obtain feedback from the general public and adapt the concept of RRI to different target groups, to facilitate scientific communication and public engagement in Serbia. This Pilot Action wanted to work using the Societal Readiness Level Tool that was planned in the NewHoRRizon project. The tool was seen by the participants of the University of Novi Sad as an innovative asset that could facilitate the socio-ethical integration of other components.

This Pilot Action was abandoned after the first workshop, because Tecnalia tried to negotiate collaborations on several occasions between SL14 and the NewHoRRizon team developing the SRL tool, without success.

3.5.3 Pilot Action 3: Development of a European network for RRI support

This Pilot Action was transformed into Pilot Action 9 “RRI Training 2.0 for NCPs”. In the first workshop it decided that it wanted to help institutions to support the implementation of the RRI concept; increase levels of awareness about the concept; offer training, workshops and dedicated events; generate links with RRI experts; and conduct some kind of self-assessment about the concept in the host institution.

The majority of the NCPs that participated in the first workshop were unfamiliar with the RRI concept, despite the fact that it is mentioned in the SEWP work programme. This is because some NCPs lack dedicated resources for working with the topic. Some of them are appointed as national representatives without dedicated materials, training or networking.

NCP participants saw RRI as an opportunity to strengthen the quality of SEWP proposals and therefore contribute to their national research organisations’ ability to compete for EU funds. Some of them were somewhat aware of RRI, but this was mainly due to personal relationships with their counterparts and the SWAFS NCP network. The ones that did not have the benefit of these contacts were not familiar with the RRI concept.

Several NCPs started to work with RRI training materials. The TECNALIA team conducted a dedicated training event at Innsbruck on 3 and 4 July 2018 so as to familiarize the NCP WIDENING Network with the concept. This has motivated several NCPs to incorporate the RRI concept into their InfoDays. Czech, Spanish, Armenian, Polish and Lithuanian representatives have developed specific materials for this purpose.¹¹ The TECNALIA team has attended the Spanish event in Sevilla (24 September 2018) with a dedicated talk on RRI¹². This Pilot Action was evolved into the Pilot Action “RRI Training 2.0 for NCPs” (see Pilot Action 9).

3.5.4 Pilot Action 4: Dialogue skills

This Pilot Action was completed. Workshop facilitation techniques are seen as important requirements in the academic context. Universities see RRI as an opportunity to develop soft skills that can be valuable for promoting inter-trans-multidisciplinary projects.

This Pilot Action intended to improve the level of researchers’ communication skills but also their relationships with other departments, clients, academics, citizens and society as a whole. The need for this Pilot Action stems from the constant communication problems that occur between many university departments. This work on communication skills will pave the way for the RRI paradigm and the pilot driver is working on contacting facilitation experts to get supporters and allies in this endeavor.

This pilot was created and promoted by the University of Novi Sad. Different options for organizing training with Markus Hausner or other experts in facilitation skills were explored but failed due to lack of local experts in Serbia. The pilot was a key element in the institutionalisation strategy of the

¹¹ <https://www.h2020.cz/cs/eit-jrc-horizontalni-aktivita-euratom/sireni-excelence-a-podpora-ucasti/akce/seminar-k-priprave-projektu-do-vyzyv-twinning>

¹² <https://eshorizonte2020.es/mas-europa/difundiendo-la-excelencia-y-ampliando-la-participacion/eventos/taller-responsible-research-and-innovation-rri-en-la-preparacion-de-propuestas-al-programa-spreading-excellence-and-widening-participation>

University of Novi Sad. Finally, participants interested in this issue attended the workshop series “Moving dialogue online” (13 October to 10 December 2020), organized by the Belgium consultancy StickyDot. “Moving dialogue online” was a five-part series of workshops designed for professionals working in projects that connect science with society. The participants learned how to conduct participatory processes and dialogue events online, which increased their skills and confidence. The experts are now actively using these skills in their work with students, and are planning to organise several public events online in the coming years. What follows is a description of the different sessions:

- Session 1: A SHIFT IN MINDSET, 13 October 2020, 15:00-17:00 CET. This session looked at the paradigm shift from in-person engagement to online. How is this change shaping our sector? What can we expect from online sessions and what are their limitations?
- Session 2: TOOLS FOR WORKSHOPS, Thursday 29 October 2020, 15:00-17:00 CET. This session explored a range of tools for online engagement, with a focus on stand-alone workshops in which the participants had not necessarily worked together previously. Zoom, Jitsi, Hangouts - which platform is best for what context? What about Google docs, or more sophisticated tools for online collaboration such as Padlet - what should we bear in mind when opting for one or the other?
- Session 3: TOOLS FOR PARTICIPATORY PROCESSES, Thursday 12 November 2020, 15:00-17:00 CET. The third session looked at online tools and platforms, this time with longer-term processes in mind. What should we consider when engaging mixed stakeholder groups alongside the public? How can digital whiteboards or collaborative tools such as Miro and Mural help us engage stakeholder groups in co-design and deliberation processes for the first time? What training is required and how do we make sure that participation is not limited due to lack of digital literacy?
- Session 4: FACILITATION SKILLS, Thursday 26 November 2020, 15:00-17:00 CET. This session worked on the skills required to facilitate an online workshop. Even if we are not in the same room, certain techniques can help to ensure a constructive atmosphere where everyone’s voice is equal.
- Session 5: INCLUSION AND EVALUATION, Thursday 10 December 2020, 15:00-17:00 CET. How do we ensure that we are adapting our online workshops to the needs of our participants? The final session focused on how evaluation and planning for your activities changes when you cannot hold them face-to-face anymore.

3.5.5 Pilot Action 5: Human Sustainable Development

The first Pilot Action was transformed into Pilot Action 11 “Attracting a larger public at Technical University of Cluj-Napoca” (TUCN). During the second workshop the identified aims were to enrich and deepen the sustainability and social dimensions of the scientific and technological curricula. The Romanian University of Cluj-Napoca (TUCN) perceived RRI as an opportunity to make a difference in their field by introducing socio-ethical aspects. They believe that RRI is a way to meet some of the inequalities that occur in the educational system, where not many girls are attracted to technical studies.

The Pilot Action was looking for the support of experts in the region in sustainability and Social Science and Humanities (SSH) to establish a concept and an approach. This Pilot Action aimed at broadening the curricula materials delivered at the technical university, and at the same time making these disciplines more appealing to young people and especially to young women, who are currently not particularly addressed by the technical degrees.

This Pilot Action evolved into Pilot Action 11 “Attracting a larger public at Technical University of Cluj-Napoca (TUCN)”.

3.5.6 Pilot Action 6: Chat with a researcher

This Pilot Action was transformed into Pilot Action 8, the “Promotion of openness and ethics in Science at Institute of Plant Physiology and Genetics (IPPG)”. It was created in the second workshop and was meant to encourage Science Picnics, events which happen in several eastern countries. This Pilot Action aimed to provide offline (twitter chats) and online public engagements (Picnics) for researchers, so as to provide forums where people ask scientists questions or learn something new about science, technology and innovation.

The dominant culture of science institutions in WIDENING countries is still somewhat hierarchical and centralised, which discourages the sharing of research outputs and in turn communicating these findings to the general public. The Pilot Action promoted public engagement in the research process and wanted to further develop public engagement activities that already take place in several eastern European countries.

The pilot began work, motivated by the researchers’ enthusiasm to the initiative, but was ultimately transformed after the second workshop into Pilot Action 8, the “Promotion of openness and ethics in science at Institute of Plant Physiology and Genetics (IPPG)”.

3.5.7 Pilot Action 7: Turning the tables (reverse science-café)

The University of Novi Sad is highly motivated to work closer with industry partners. The final Pilot Action chosen during the second workshop aimed to connect academia with industry, to increase the presence of the former within the networks of the latter, and as a way to encourage collaborations between these two different worlds. The objective of the Pilot Action was to promote such stable collaborations in Serbia, so that the business paradigm can be permeated with scientific culture. This Pilot Action was abandoned after the second workshop due to the difficulty of connecting with experts and of getting funding.

3.5.8 Pilot Action 8: Promotion of openness and ethics in science at Institute of Plant Physiology and Genetics (IPPG)

The pilot started with a presentation and a public discussion organised by Tecnalía on 10 July 2018 in Sofia, Bulgaria at the RRI of The Institute of Plant Physiology and Genetics (IPPG) of the Bulgarian Academy of Sciences (BAS). In Bulgaria science and technology research often fails to address socio-ethical issues. The pilot was designed to tackle this gap and to promote ethical, transparent and accessible research by raising public awareness. The IPPG Institute organized several communication and outreach activities to support this aim, such as, for example, a public forum in which people can learn about science, technology and innovation as well as ask scientists questions. The Pilot Action disseminates the concepts of RRI and Open Science at the Institute in a dedicated Facebook group¹³ and seminars on Open Science and ethics¹⁴. The Institute organised an open-air exhibition in Sofia about the activities and history of the Institute on 14 October 2019, on the occasion of the 150th Anniversary of the Bulgarian Academy of Sciences (BAS). In December 2019 it also arranged more activities related to open science such as:

¹³ <https://www.facebook.com/ippg.bas.1>

¹⁴ http://www.bio21.bas.bg/ippg/bg/?page_id=1758

- A round table on the relationship between IPPG and the International Atomic Energy Agency (IAEA), discussing past, present and future collaborations between both institutions.
- A screening of a documentary film about a patron of the former institute of Genetics, Doncho Kostoff;
- A visit by high school students from the American College and the National School for Ancient Languages and Cultures in Sofia to the Institute.

Furthermore, in March 2019, the Institute created an ethics committee to monitor and evaluate ethical problems in and between the different research units of the Bulgarian Academy of Science. It also developed an ethical code with ethical principles for biomedical research involving human subjects in the Institute.

The third Social Lab workshop in Novi Sad significantly enhanced the RRI capacities of IPPG. The Institute is keen to keep developing more open science activities; lack of time and resources, together with the current COVID measures, are the main limitation.

3.5.9 Pilot Action 9: 2 RRI Training 2.0 for NCPs (completed)

This initiative continues Pilot Action 1 “Introducing RRI”, which a participant created after the first workshop. Several members of the EU NCP WIDENING network observed during the workshop that there was very little information about RRI available in the WIDENING programme. In particular, they thought there was a lack of information in languages other than English. Therefore, the Pilot Action produced and disseminated information about RRI in different languages for the WIDENING programme. The Pilot Action is orchestrated by the NCPs network.

After the first Workshop the TECNALIA team travelled to different countries to promote RRI in the WIDENING community. During this period, they were invited by the WIDENING NCP network to help NCPs get more familiar with the topic of RRI. As a result, training sessions took place in the summer of 2018 on RRI for the entire NCP network. This training was held on 3 and 4 July 2018 in Innsbruck, Austria. The aim was to provide an overall understanding of RRI and its different pillars (public engagement, open access, gender equality, science education, ethics, and governance). The event was attended by 16 NCPs.

Thereafter, the Czech NCP created a complete module on RRI in the Czech language for WIDENING applicants. After the second Social Lab workshop, the Spanish NCP translated this module into Spanish, and other participants considered providing more translations as teaching material in their standard training activities for grant proposal writing. In addition, the Social Lab team supported similar events in different EU member states and third countries, such as Lithuania and Armenia. The Social Lab management either participated in these events or supported the Social Lab team in other ways by providing them with RRI-related content to accompany European Commission requirements.

The RRI Training 2.0 for NCPs Pilot was organized in cooperation with the WIDENING NCP network NCP.WIDE_NET on 3 and 4 July 2018. The following workshops have been conducted by the National NCP:

- Workshops in Prague, Czechia, 19 June 2019 and 14 October 2019 on proposal writing for TWINNING (70 participants) and ERA Chairs calls, respectively.

- Spanish WIDENING Info day that was held on the 24 of September 2019 in Seville. The TECNALIA team was present, with a dedicated talk about RRI. 33 potential applicants participated.
- SiS.Net SWAFS NCP Network project meeting in Yerevan, Armenia, February 2020.
- Lithuanian info day for H2020 thematic areas: Inclusive, innovative and reflective societies (SC6) and Science for and with Society (SwafS), 18 February 2020, Vilnius (Lithuania).

After the third workshop the Social Lab team assessed the status of the pilot very positively, and the NCPs involved were encouraged to disseminate the idea of RRI in their training courses on grant proposal writing. The Pilot Action introduced the idea of RRI into a variety of organizations and enabled researchers from several EU countries to include it in their WIDENING grant proposals. Several actions have benefited from this pilot, focusing on the practical aspect and sharing existing knowledge and resources on RRI. The first general training helped NCPs to relate RRI to their own context and operationalise it in their own practices, and then led many WIDENING applicants to consider involving aspects of RRI in their research applications.

3.5.10 Pilot Action 10: “RRIzing” the University of Novi Sad (in process)

Higher education institutions in Serbia are often barely acquainted with the concept of RRI and its individual keys. At the beginning of the Social Lab, the University of Novi Sad likewise had little knowledge about and experience with RRI. However, it did already promote related concepts such as open innovation. In this Pilot Action, the University of Novi Sad encouraged its academics to start embracing RRI and to embed and nurture RRI in its own institution. The Pilot Action was ideated between the second and third Workshop and is expected to have a significant impact on the university by introducing RRI principles to its staff and students, and to stimulate them into making activities at the university more responsible.

In order to start to “RRIze” its institution, an ad-hoc “RRI team” at university level was set up. The team focused on each individual RRI key and selected an additional topic, the generational gap. The team carried out an RRI diagnosis of the entire university. This exercise provided useful insights about how to introduce individual keys at the university. The RRI team promoted keys such as gender equality or public engagement, which they thought deserved particular attention. But the Pilot Action also provided a vehicle to work on other pressing issues such as the brain drain that greatly affects Serbia. So far, a number of actions have been carried out: the RRI diagnosis, a dedicated leaflet created to inform University staff about RRI, and a workshop in Autumn 2019 on the University’s RRI Strategy to exchange experiences about RRI and discuss the introduction of the RRIzing process amongst staff members from different faculties.

Currently eleven people are involved in the initiative at the University of Novi Sad, eight are allocated to the individual keys, and three are working as managers and administrative staff. Each person oversees one RRI dimension. The university formed its own RRI team and delegated roles focused specifically on the keys, plus one extra (concerning the generational gap). So far, the Pilot Action has successfully disseminated RRI. It is one of the few Pilot Actions that took an “institutional approach” towards RRI, trying to introduce RRI at an institution. The RRI diagnosis they conducted was very helpful for this purpose. Currently, more activities have been proposed, but funds requested from the Social Lab and are pending due to COVID-19.

3.5.11 Pilot Action 11: Attracting a larger public at the TUCN research (completed)

This is a continuation of the Pilot Action 5 “Human Sustainable Development”. Current curricula and teaching materials at the Technical University of Cluj-Napoca (Romania) often fail to address socio-ethical issues of science and technology. Moreover, only few women take up courses because the current technical degrees are not attractive for this group and there are, in general, few female role models in science and technology.

The problem definition of the Pilot Action has evolved during the Social Labs. During the second workshop, the team from TUCN broadened the “Human Sustainable Development” to enrich and deepen the sustainability and social dimensions of the scientific and technological curricula that were delivered in this university. Between the second and third workshop, TUCN organized two science education and public engagement activities with university students and different pupils from different socio-economic and gender backgrounds. The workshops were focused on the design of a future electric vehicle and a future city and were organized with the help of PhD students.

a) 30 April to 30 May 2019, co-working with university students in order to disseminate the research activities of the Electrical Engineering Faculty of TUCN. University students were trained in the design, optimization and testing of electrical machines, including sustainability, equality and environmental aspects in the process. After the workshop they had the opportunity to build a model in a month in the research group laboratories under the supervision of the researchers. 60 students attended the course, 30 students-built prototypes, and more than 60 students attended the final assessment, with high female participation.

b) 31 October 2019 to 19 January 2020 “The green city in TUCN”. This workshop aimed to present the importance of research in the field of Electrical Engineering and its socio-ethical impact on the future. Several children at schools with different socio-economic status participated in 3 groups of 20 pupils from different environments (urban/rural). The workshop was focused on the design of a future electric vehicle and a green city.

The action tried to develop science education and public engagement activities to enrich teaching materials delivered at the university by adding sustainability and social aspects. Members of the Social Lab team see RRI as an opportunity to address these problems by introducing socio-ethical aspects in technology, and using RRI as a vehicle to attract people to technical research fields. They also see RRI as a way to meet some of the inequalities that occur in the educational system. In addition, they think that RRI could be a vehicle to work with different pupils that come from different socio-economic backgrounds.

The driving element of this Pilot Action is the research institution’s need to attract young talent to their disciplines and research. They have mainly worked towards public engagement, science education and gender equality. The participants in the Pilot Actions were particularly interested in gender equality.

The Social Lab team assessed the status of the Pilot Action after the third workshop as promising and the likelihood that the Social Lab team will continue to work on it are good. However, the team will need additional resources to carry on.

3.6 Reflection

3.6.1 Challenges/critical moments

During participant recruitment we found enthusiasm and positive expectations from potential participants. They were curious about the Social Lab process and the results to be obtained. In initial communication with potential participants they asked about the methodology and expectations on our side. In general, the culture in WIDENING countries has less room for flexible and open interventions. This was an essential factor since participants felt comfortable in the safe space offered by the Social Lab. In any case, building a community needs time, guidance and designated financial support in order to prepare for the requirements of RRI and the commitment to participate in a Social Lab.

After the first workshop there was **confusion about what exactly a Pilot Action is** and how it should be put into motion; there was also enthusiasm all round and big expectations on the participants' side that RRI could solve big problems. We were invited to talks, discussions and meetings at management level in several institutions. We travelled a lot, rather like missionaries, RRIZing the WIDENING community despite our tight agenda. Thus, the beginning was very good. However, after this initial wave of enthusiasm, which lasted from April to July 2018, the situation reverted to "pre-RRI age" and the pilots became "stuck".

There are many speculations as to why this happened. We assume that RRI as it was presented during the first workshop did not offer sufficient **capacity building** to participants so that they could continue actions in any of the specific areas. An analogy might be that it was like being expected to write an essay in a language in which you know a very limited number of words. Our participants have a very minimal understanding of what gender in the research context means, or what is expected from them in order to be able to enact open science or public engagement. All of these "magic" words were attractive but lacked content. The challenge therefore was to organise a second workshop early enough to keep the initial enthusiasm and provide some guidance.

Participants reported that they were engaged in many ways in several contexts. They valued the dynamisation process and the work that is carried out throughout participatory methodologies and work in groups. They also provided appreciative feedback about the experts from inside and outside the consortium who shared their expertise and knowledge about different issues such as public engagement, science communication and open access. They also pointed at the progress made from the first workshop to the second workshop when it comes to the design of the content and participants' needs, which is really positive, since this has comprised a lot of work in the past. In this sense, the TECNALIA team also **experienced the anxieties and uncertainties about how to design and deliver the workshops**, offering and mixing contents, dynamics and calls for action without being completely sure if the chosen approach would be successful. The work conducted in the design, preparation and facilitation of the workshop has been also a learning process about participants' expectations, drivers and motivations. Spending time in the design and reflection of the workshops has delivered important insights about how to approach various workshops following on from the observations and feedback of previous workshops, meaning that we have "learned by doing". This is an on-going process that is informed by experimental learning. The participants are learning, and so are we, the facilitators, managers and assistants, about how to maximize the impact of the workshops. Some of the participants have also provided some kind comments that support our work during the design and development of the workshops, such as:

“RRI offers new solutions to open science in new ways”

“Now I know that ethics is not only the ethics tick in the application form”

One of the great dilemmas the Social Lab team faced in the course of the Social Lab and between workshops was **how to create a sense of continuity between the workshops and how to create “stable relationships”** between participants. In order to do this, the Social Lab team conducted monthly teleconferences and maintained regular mail contact, but it turned out to be very difficult to achieve these goals because we have not been able to use a kind of structure or common guidance that can help our participants in this journey. The absence of follow-up guidance for Pilot Actions or a digital platform to provide support in the form of a “virtual Social Lab” to assist participants have been one of the main difficulties faced by the Social Lab team. Having a set of guidelines or regular input to pilots in the form of training, tips, assistance or coaching in a more structured way could have helped the development of Pilot Actions.

At the same time, reporting the Pilot Actions has been really difficult because communication between participants has not been very fluid. Many participants did several kinds of actions on their own, without our knowledge and with little support at management levels from their own institutions, provoking discontinuities and compromises when implementing the Pilot Actions. Sometimes they have succeeded in attracting the attention of managers and top directors but sometimes not. This therefore necessitated considerable effort on their part. Furthermore, many participants were not eager to share their activities or even downplayed them because they considered them not sufficiently significant to report, or less important than the actions of other Social Lab members.

To our surprise, on many occasions we discovered at the workshops that participants **followed through on many things regarding the Pilot Actions** without us knowing about this momentum. This was a nice surprise but a real challenge in terms of monitoring. Apart from participation in the workshops and activities related to the project some partners contacted us for advice and feedback about “responsibility issues” regarding their regular work.

A very positive critical moment for most participants (even for the TECNALIA team) was the **“demystification” of public engagement**. Although we all know that public engagement is at the core of RRI, in reality, very few have practical knowledge about how to do it. Meeting a public engagement practitioner who openly shares her knowledge and explains when to use various tools and how to prepare and guide the practice had an impressive effect on the majority of the audience.

Our facilitating method was flexible enough to capture and manage critical moments. When we noticed that practical public engagement tips created a lot of enthusiasm, we spent extra time working on possible activities in this area. Many participants used informal time during lunch to talk about concrete ideas and possible implementation. The speaker shared contact details and declared that she would be ready to collaborate with our Social Lab participants in future projects.

After the second workshop, participants were more aware that public engagement can be implemented in numerous ways depending on space, audience and the objectives of the activity. We hope that this knowledge will be used in their future projects and we will see them invite artists to their research centres, play discussion games at project workshops and organise reverse science cafés, on their own or in collaboration with an experienced partner.

Among many key moments, the ones that should be particularly mentioned are the exciting **discussions on open science and gender**.

Most scientists shared the view that it is very difficult to remove all barriers in science when the publishing business is in many ways corrupt. Scientists are very committed to sharing their research results openly, but their careers are conditioned by the publishing industry.

A similar case is the gender equality requirement. Most female researchers expressed the view that the requirement for gender equality is rather artificial because institutions and society are not prepared to apply it. This creates negative effects, frustration and polarized opinions when it comes to practical implementation.

The **WIDENING community needs time, guidance and designated financial support to prepare for dealing with the requirements of RRI**. Our participants came mainly from Eastern Europe where the budget for research and innovation is very limited, and some institutions are struggling to survive financially. During the Social Lab we realized that our intervention is actually a “Spreading Excellence & WIDENING Participation” activity in the field of RRI. Our challenges and the resulting pilots are mainly focused on RRI institution building and RRI institution networking, just like the two core actions of the “WIDENING program”, “Teaming” and “Twinning”.

The WIDENING countries experience **difficulties in accessing Horizon 2020 funding**, especially the less developed countries in South-Eastern Europe. This makes it extra difficult for them to catch up and prepare for the requirements of RRI. Several challenges were tackled: problems related to the vagueness of the concept of the six keys of RRI; diagnosis still recognizes several gaps in access to European funding and a series of national and institutional barriers for embedding RRI and its specific keys. Cultural differences have been revealed as important issues. Some participants really work alone, and that is helpful at these events, but others favour different approaches to supporting them. It seems that the collaborative and democratic mindset that is widespread in central European countries is not yet common in Eastern European countries, partly due to the previous Soviet regime. A possible conclusion is that sensitivity to RRI and responsibility differs according to the level of economic development and cultural connection. Despite this contextual situation, some researchers and institutions were still interested in engaging more with RRI and questions about the relationship between science and society.

The main outcome of our RRI actions is that we realized that for some of the low-performing countries, such as Bulgaria and Serbia, the requirement of RRI is very difficult. In these countries, scientific organizations are primarily concerned with their economic survival. The logical point here is that sensitivity to RRI, responsibility in general and concern about the well-being of society increases with the level of development. RRI is not a priority when researchers and their organizations lack sufficient funding for scientific work, basic utilities or international travel. When responsibility is externally imposed as evaluation criteria without understanding these stages in the development of countries and societies, RRI can be adopted only “artificially” without true commitment to the social outcome.

There have been a lot of barriers and difficulties from an institutional perspective, no incentives to participate, lack of organisational routines and adequate processes as well as cultural differences. WIDENING has a different approach compared to other H2020 subsections, and has several particularities:

- For most WIDENING countries RRI is a new or non-familiar concept.
- Some countries have cultural particularities that can hinder RRI keys (e.g. gender)

- It is challenging to approach WIDENING countries as a uniform group (given the socio-economic, geo-politic and cultural differences), and the normative vision of RRI does not help here.
- Many WIDENING countries lack appropriate R&D investments, or an infrastructure and ecosystem to include RRI.
- When there are difficulties with embedding RRI at institutional level, things happen on a voluntary basis. More research is needed in terms of RRI institutionalisation.
- There is also an ambivalence about the institutionalisation of RRI, since several aspects can evolve that are not clearly defined (hard rules, new perspectives, new processes...)

In this sense, we have always advised our participants to try to persuade allies to contribute to their efforts. This advice has been useful in the majority of cases.

3.7 Achievement of objectives

We organised three workshops in the Social Lab supporting social innovation and experimentation. We were able to recruit 36 people from 14 different countries and different stakeholder groups, mostly from academia and research, but also other groups. They developed in a very dynamic way 11 Pilot Actions that foster the integration of RRI into WIDENING Research and Innovation practice and funding, and that raise awareness on Responsible Research and Innovation and mainstream RRI. During the workshops, the Social Lab participants repeatedly expressed the difficulties they faced in their Pilot Actions. Nevertheless, we were always surprised by the work they had done between workshops and had not revealed beforehand. The diagnosis demonstrated that the role of RRI in WIDENING is limited at the policy and project implementation level, and that many researchers did not know about the concept. One of the reasons for this is that RRI deals with responsibility associated with research and innovation from a European Commission perspective, but many of the WIDENING countries lack appropriate R&I investments and connections to the rest of Europe. This does not mean that they are all alike, since between and within WIDENING countries there are also enormous differences as regards connections to other European countries' research.

As stated before, the WIDENING community needs time, guidance and designated financial support in order to prepare for the requirements of RRI. In the Social Lab we cannot provide financial support, but we have provided guidance and capacity-building, and in this respect the expectations of the participants were fully met. Ultimately, the outcome for the TECNALIA team was better than expected. Again, we learned how to coach groups in the difficult terrain of RRI which is too "idealistic" to be applied directly. But yes, we managed it, and we and in general the participants were satisfied with their progress and outcomes.

3.8 Potential impact

The WIDENING countries lag behind in many respects as regards being able to effectively harness the whole potential of the European Research Area. An effort must be made to increase participation of low R&I performing organisations, yet the RRI concept is still "too idealistic" to be easily adapted in the institutional context. In this Social Lab we made significant progress in making RRI more practical, but still there is much more work to be done.

We believe that we have “planted the seed of responsibility”, and are observing significant progress in the way participants understand and deal with different RRI issues. However, it is hard to say if this change in mentality will bring traceable changes in such a short period of time, given our limited resources.

By bringing our participants in contact with leading EU organizations we hope that some joint ideas/synergies will emerge, and that they will have more opportunities to be invited to EU proposals. Through capacity-building we hope that we have enabled participants to become more confident in coordinating proposals and more eligible for RRI related initiatives. It has been important to emphasise the “Fidelization” the participants. If you believe in the content, then you can persuade people to be engaged in the process.

The Pilot Actions developed in the Social Lab are very diverse and have different objectives, but might have impact(ed) in the following ways:

- **Promotion of Openness and ethics in science at Institute of Plant Physiology and Genetics (IPPG):** previous activities reveal the relevance of what IPPG is doing in Bulgarian society and how public engagement can be increased on the research institute level. It may influence the development of public engagement activities that are ongoing in the WIDENING context. By increasing the visibility of the institute, people became more aware of the long-term relevance of research and demonstrated to a young audience that basic research can be an interesting career choice. By tapping into the existing discourse of RRI and an interest in public engagement and ethics they thus learned to open up research institutes to the outside world and to reflect more on the ethical issues in research.
- **It is hard to predict the future of the Pilot Action due to its very dynamic character. The promoters asked for additional funding for a summer school in 2020. However, as already mentioned, due to the unpredictability of the COVID 19 situation it is hard for the Social Lab manager to predict following the third workshop whether such an event would be feasible. The Social Lab managers continued their contact with the Social Lab team after the third workshop.**
RRI Training 2.0 for National Contact Points (NCPs): First, NCPs from different countries have become aware of the importance of RRI and have added a specific module on RRI in their training and advice practices. This helped to share existing knowledge and resources on RRI, and the training helped NCPs to relate RRI to their own context and operationalise it in their own practices. It also might have an impact on WIDENING programme applicants starting to consider involving aspects of RRI such as gender equality, public engagement and ethics more profoundly in their research applications.
- **“RRIzing” the University of Novi Sad is a great example on how you can change your own university to make it more responsible. This university has begun a journey to implement RRI in a practical way that will surely have a lasting impact on the institutional level, promoting structural organisational change thanks to the fact that they will have resources to accomplish this process after the third workshop. The Social Lab team is rather satisfied with the status of this Pilot Action. The University of Novi Sad is cooperating with TECNALIA on a recently funded new RRI EU project called CO-CHANGE, and more resources will be allocated to the university since they are part of a Change Lab. However, there are also challenges ahead. The objectives for the Pilot Action were probably too ambitious, but it turned out that they were able to find significant back-up.**

- Now that they are engaged in CO-CHANGE it will probably accelerate their engagement in the concept, and serve as a showcase for improvement on all these aspects at the national level. The University of Novi Sad has also been granted another Horizon 2020 project, “Embedding RRI in Western Balkan Countries: Enhancement of Self-Sustaining R&I Ecosystems”, with the acronym WBC-RRI.NET <http://www.wbc-rri.net/>, which will start in March 2021.
- **Attracting a larger public in the Technical University of Cluj-Napoca (TUCN)** offers a good example of science education activities that can attract people to research fields, particularly involving girls in STEAM and disseminating research to the public. It might have an impact on developing public engagement activities that already happen in the WIDENING context.

The Pilot Action helped to push several latent actions at the institution by using the RRI paradigm. The problem of a lack of female students in STEAM has been discussed at the institution for some time. The Social Lab was able to put this topic firmly on the agenda.

3.9 Lessons for pilot development and implementation

Co-creation plays a critical role in the Social Lab process. The Social Lab has to invest a lot of work in understanding the context that participants are embedded in. Furthermore, it is important to create a sense of trust and cooperation between participants. Understanding the circumstances and creating trust takes time. Therefore, more than three workshops are needed for a Social Lab. We found that it was important to offer **capacity building** to participants so that they could continue actions in any of the specific areas related to RRI. We found that motivation is very important to pilot development and implementation. Throughout the process, it is fundamentally necessary to find a common language and common grounds of understanding, and this takes time. “Fidelization” is crucial: if you believe in the content, then you can persuade people to be engaged in the process.

The work conducted in the design, preparation and facilitation of the workshop has also been a learning process about participants’ expectations, drivers and motivations. Spending time on the design and analysing the workshops has delivered important insights about how to approach different workshops.

3.10 Workshop methodology

The generic design of the workshop worked well and there were some elements such as the warm-up, the work in groups and the speed dating session for pilot ideas that gained a lot of importance for the final outcomes.

People involved in the workshop really felt curious and excited about the methodology behind the Social Lab, but also about the possibilities that RRI can provide to strengthen bonds between science and society. The vast majority of participants were not aware of RRI or the Social Lab methodology, and this was the element that captured their attention for introducing the basics behind RRI and its keys. The background of the participants provided an interesting diversity that combined several disciplines. At the end of the workshop, all participants were able to contribute to the piloting phase and propose at least one viable idea to be delivered as a pilot.

Establishing flexible a process has been successful, and the Social Lab process was flexible enough to allow many different kinds of social experiments regarding RRI in different institutional contexts. However, it was difficult for the Social Lab management to offer strong support or follow-up for the Pilot Action because it lacked shared resources and guidelines that could be mobilised to support our participants.

This was particularly true between workshops and in the digital space. Something that has been mentioned previously in the Challenges section, is that it has been a constant challenge for the Social Lab team members to adapt, assess and guide participants from a distance in the process of Pilot Action development.

All sessions were very fruitful and created a satisfactory outcome. Here are some statements as evidence:

"I feel inspired to continue working in my pilot"

"For me this workshop was much better than the previous one because there were new people that brought new and interesting ideas"

"RRI offers new solutions to open science in new ways"

"My first SL changed my mind but my second one has taught me the importance of being reflective"

"In my next infodays I will be including the RRI module" (NCP)

Participants were engaged in many ways, as they have reported in several contexts. They value the work that is carried out throughout the participatory dynamics and the work in groups. They also provided appreciative feedback about the experts from inside and outside the consortium to share their expertise and knowledge about different issues, such as public engagement, science communication and open access. They also pointed to the progress made between the first and second workshops as per the content design and participants' needs, which is excellent, as this required considerable work. In this sense, the TECNALIA team also experienced the anxieties and uncertainties over how to design and deliver the workshops, offer and mix the contents, dynamics and calls for action, without being completely certain if the chosen approach would be successful.

The work conducted in the design, preparation and facilitation of the workshop has also been a learning process about participants' expectations, drivers and motivations. This has delivered important insights into how to approach different WS according to the observations and feedback from previous WS. This is an ongoing process that is informed by experimental learning. It is not only the participants that are learning; we, as facilitators, managers and assistants are also learning about how to maximize the impacts of the WS.

Some of the participants have also provided some appreciative comments that back up our work during the design and development of the workshops, such as:

"RRI offers new solutions to open science in new ways"

"Now I know that ethics is not only the ethics tick in the application form"

"Before the first SL I was afraid but before the second SL I have been more and more afraid"

We observe that NCPs in general take up the role of RRI advocates more readily than researchers. Some of them promote RRI without much questioning of its validity and applicability. They also have considerable influence, which should not be underestimated. However, in our opinion NCPs do not receive enough information and opportunities for capacity-building in RRI; they have to do it on their own, and some manage, but others do not find the time or motivation. This view is based on the level of responses to invitations that we received from NCPs, and also from the Social Lab that we organised specifically for NCPs on the "WIDENING" program.

Participants from more advanced “WIDENING” countries are more prepared to embrace and implement the concept of RRI because their community and organisations have been exposed to similar issues before. However, for others, for example Bulgaria, these requirements are very difficult to achieve due to a number of institutional and cultural limitations. For example, the general public in Bulgaria heavily misunderstands the word gender and perceives it as something against the traditional values of society. It is often associated with “third sex” rights and the introduction of a foreign “gender ideology” that could ruin the basic morals of society. This legal, cultural and social landscape makes it difficult to transfer some of the values that the EU is promoting in research and innovation across the European Research Area in some SEWP countries.

3.11 Group dynamics and diversity

The workshops have been characterized by diversity, with more than seven nationalities, different staff roles in the programme and diverse opinions. During the workshops it became obvious that cultural differences (or maybe differences in collective and personal values) can play an important role for group dynamics.

Group dynamics and diversity have been very stimulating for all members of the Social Lab team, as well as for the participants. The Social Lab approach has allowed us to develop a community of practice around RRI for engaging participants in mutually beneficial processes of learning, training and organisational change support, and it has been designed as an open, inclusive, flexible and “safe” space, thanks to very effective facilitation.

In general, the atmosphere in the Social Lab and the workshops was relaxed, and participants were highly committed to the workshop activities and interested in contributing, which provided mutual learning experiences.

4 Social Lab 15 – Science with and for Society (SWAFS)

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4.1 State of RRI in SwafS before NewHoRRizon

4.1.1 Method of diagnosis

Methods used in the diagnosis are desk research of programme calls, projects and programme related documents as well as position documents by stakeholders.

Between March and October 2018, we also carried out 15 semi-structured Interviews with NCPs, evaluators, advisory groups, funded participants and applicants, and other experts.

A further very insightful source were informal exchanges with the European Commission, the Research Executive Agency, NCPs as well as experts involved in advisory processes at the EC.

4.1.2 SwafS

The "Science with and for society" (SwafS) programme is in line with DG RTDs determination to bridge the gap between the scientific community and society at large. The programme is a continuation of the "Science in Society" (SiS) programme of FP7, which started in 2007 with the main objective to foster public engagement and a sustained two-way dialogue between science and civil society. SiS's predecessor was the "Science and Society" Action Plan launched in 2001 to set a common strategy to make a better connection between science and the European citizens.

The focus of SwafS is "to develop a concept reconciling the aspirations and ambitions of European citizens and other Research and Innovation actors: a framework for RRI".¹⁵ RRI was already tested and promoted during the last years of FP7 and is now a cross-cutting issue under H2020. In addition, SwafS aims at giving RRI leverage to be put into practice.

In fact, SwafS is the main programme within H2020 dealing with issues regarding achievement of a "fruitful and rich dialogue and active cooperation between science and society to ensure a more responsible science and to enable the development of policies more relevant to citizens" which is necessary, as the "strength of the European Union and technology system depends on its capacity to harness talent and ideas from wherever they exist" (European Commission 2017a, p.1118).

The Regulation on H2020 describes the three overarching specific objectives for SwafS as follows:

1. To build effective co-operation between science and society;
2. To foster the recruitment of new talents for science and
3. To pair scientific excellence with social awareness and responsibility.

To achieve these aims, the programme indicates that the focus of activities will be on eight specific lines:

1. science careers,
2. gender equality,
3. public engagement,
4. science education,

¹⁵ <http://ec.europa.eu/research/SwafS/index.cfm?pg=about>

5. open access/open data,
6. governance and ethics,
7. due and proportional precaution,
8. science communication.

Overall, in the three programming phases of Horizon 2020, the programme focus has shifted from specific to ever more encompassing themes. There were four major themes in the Work programme 2014-2015, among them two more specific (science education and careers, gender equality) and two broader topics (governance in support of RRI and integration of society in science and innovation). In 2016-2017, four themes were framed in the following broad and ambitious way: "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 Knowledgebase" and "Developing Inclusive, Anticipatory Governance for Research & Innovation". The 2018-2020 work programme reinforced the focus on institutional change (as a key performance indicator of the programme), and gender equality, gave again more weight to building a substantive SwafS knowledge base by opening thematically open bottom-up calls and introducing two more topics: the territorial dimension of SwafS and RRI and citizen science.

All this happens with a limited budget: SwafS has been designed as a small programme with an overall estimated budget of 433 Mio. EUR for the whole duration of the seven-year programme. The programme has been constantly over-subscribed with success rates ranging below 10%.

SwafS beneficiaries come primarily from Higher Education and research organisations. Nevertheless, the interim evaluation of Horizon 2020 noted about 20% new-comers, coming from the private sector and "other", e.g. non-for-profit organisations, and civil society. Further, the programme is dominated by EU-15 beneficiaries, especially the group of coordinators.

The interim evaluation remarks that in order to achieve the SwafS objectives, a more diverse composition of stakeholders in the project participation is necessary. Higher Education-type organisations and "theory groups" still seem to dominate (European Commission 2017a, p.1146). In general, the SwafS programme is regarded as highly relevant to the overarching challenges facing Europe, in particular the need for greater support in citizen science and user led innovation. It is questioned "whether the programme sufficiently involved real 'societal' stakeholders and requested clarification as to whether all societal groups can and should participate in SwafS." (European Commission 2017b, p.51).

In terms of effectiveness, many projects funded under SwafS appear to be "one-offs", without working towards sustainable change. Lack of involvement of for-profits and CSOs/citizens could be considered both a cause and consequence of the lack of sustainability (European Commission 2017a, p.1162).

The interim evaluation finally comments on the Key Performance Indicators (KPIs) for the implementation of H2020, which in general relate to the number of publications or patents or to inputs to the S&T system: "The EC was invited to provide KPIs for Horizon 2020 during negotiations. The agreed SwafS KPI was the "Number of institutional change actions promoted by the programme"; examples include the introduction of specific rules, governance arrangements or practices favoring open access, gender equality or public engagement.

This KPI attests to the importance of supporting institutional changes in R&I organisations and of the need to ensure that the outcomes of SwafS live on beyond the lifetime of funding. Although institutional change in R&I organisations appears to be a valid and relevant response to the needs outlined above [...], the SwafS KPI does not capture all SwafS activities. For instance, the SwafS KPI does not cover many activities funded by RIAs, even though they may support the implementation of institutional change actions as a longer-term outcome. Even the CSAs do not always work towards institutional changes," (European Commission 2017a, p. 1490f).

We may add to this one observation stemming from the first workshop in the social lab process, where it became clear that SwafS today is much more than RIA activities, as its profile encompasses also a growing number of science education projects, including research parts, but focusing often and in a diverse manner on practical applications in the field of science education.

4.1.3 State of RRI in SwafS

The programme line SwafS has a relatively high degree of awareness for RRI. SwafS and RRI are practically inseparable, RRI can be seen as a, or rather the central, sub-set of SwafS - therefore RRI is very present in SwafS policy documents, work programmes, calls and projects. The RRI-definition of SwafS is a co-construction process oriented towards aligning "both the process and its outcomes with the values, needs and expectations of European society."

As the five keys have a history dating back to the predecessors of the SwafS programme, they play an important role. The diagnosis showed that the five keys of RRI are very present in SwafS policy documents, work programmes, calls and projects since RRI is the central mission and vision in the programme line itself. The three O's gained importance in the recent work programme (2018-2020) and find their manifestation mainly in the aim to foster citizen science, multinational cooperation, funding for Open Data and Open Access projects and the participation in the Pilot on Open Research Data.

Beyond the keys, SwafS is the locus for conceptualising RRI. In H2020, there is a focus on the institutional embedding of RRI and organisational change as an indicator for RRI not to remain at the activity level but to go deeper into the processes, structures and culture of organisations.

Obviously, the main challenge for SwafS at the start of the NewHoRRizon project was that the programme might not continue in FP9. The diagnosis and preparation for the first Workshop took place at a time when the European Commission had already drafted a first version of Framework Programme for research and innovation funding by the name of Horizon Europe. It was just going up for debate in the European Parliament. Interestingly, the term "Responsible Research and Innovation" was mentioned only once in the new programme, and, more importantly, the Science with and for Society programme had disappeared altogether. A similar situation had appeared five years earlier, when the first draft of Horizon Europe was launched without a Science in Society programme. At that time, the European Parliament reacted (following petitions and lobby work) and included the SwafS-Programme into H2020. Ironically, it was said that at that time, RRI was the rescuer of the programme dealing with science-society-interactions.

We had to ask ourselves whether there was relevance in pursuing a Social Lab for a topic that has the risk of disappearing. This issue became even more pressing, when the European Commission decided to dissolve its RRI unit even when negotiations for the next Framework Programme were still ongoing. This more or less signaled that they would in any case no longer pursue the concept of RRI as a whole.

In the interviews that were conducted to prepare for the Social Lab, the concerns about these developments became quite clear. Reasons that were shared were multiple: the concept of RRI was not too clear outside of the 'RRI bubble', it was hard to implement at the project level because of different layers (personal, organisational, structural, procedural aspects) and the personal preference of a top-ranking EC official who was more focused on the 3 O's. These factors seemed to play a role in the demise of RRI as a policy concept.

At the same time, interview partners as well as NewHoRRizon partners and external observers all agreed that an activity about SwafS in the context of the Social Labs should be pursued and even can become a relevant part in the political debate. As SwafS is the programme which funds NewHoRRizon, we acted on SwafS' strategic issues in close communication with the project's principal investigator.

4.2 Social Lab and Social Lab Participants

Our Social Lab activities started in 2017 with the diagnosis phase in which we assessed the state of RRI in the SwafS program line. The recruitment process also started during this phase, as we invited some of our interview partners to take part in the social lab itself. Similar to other program lines, the political changes that were questioning the future of RRI in the next framework programme, made it more difficult to mobilise participants.

Further, we wanted to avoid the trap of collecting our own networks in the Workshop. As the NewHoRRizon project itself is located in SwafS and many project partners belong to the community, we felt it important to not make the social lab a gathering of old friends and colleagues. In our discussion with the project officer at REA (Research Executive Agency) we agreed thus to send out a call for participation to current and closed SwafS projects. In an amazing effort, he mobilised his colleagues to send our call to their projects. This happened just three weeks before the workshop and it turned out to be very successful. We believe that it made a huge difference for the success of this call, that it was sent by REA. The call for participation led to an impressive response. Subscriptions for the workshop increased from 9 up to 17 (and 10 more were interested in joining the social lab activities after the first workshop), so in the end almost half of the workshop participants joined us on this way.

In consequence, the composition of the group in terms of different aspects of diversity was far less controllable. Nevertheless, we achieved an unexpectedly high diversity in the group, in particular in regard to expertise on specific RRI dimensions (public engagement, science education, gender, ethics, open access/ open science and governance), place of residence and duration of professional practice (but less so in the gender dimension, with four male and 13 female participants). We had a group of people, engaged with current and/or past SwafS projects as well as those with specific knowledge about one or more of the RRI key dimensions. They were complemented by people looking at SwafS from a more holistic point of view such as NCPs, evaluators or representatives of civil society. We also found it particularly fruitful for the dynamics and outcomes of the workshop that some participants have had a long-standing experience with science-society relations in the European framework programmes, others were newcomers and just recently engaged with SwafS and thus had a fresh view on the issue.

Table 10 - Workshop Dates (date and venue) (SWAFS)

	Date	Venue
1 st Workshop	November 15 th /16 th , 2018	Berlin, Germany
2 nd Workshop	April 1st/2 nd , 2019	Ljubljana, Slovenia
3 rd Workshop	January, 20 th /21 st , 2020	Bonn, Germany

The Workshop series in Social Lab 15 took place between November 2018 and January 2020. While the opening and closing workshop, both took place in Germany, one in a community center (an old, but renovated and spacious building with church windows) in Berlin and one in the Science Shop in Bonn, the second workshop was held in a kindergarten in Ljubljana, Slovenia, the workplace of one of our pilot hosts.

Social Lab Managers were Stephanie Daimer and Susanne Bühner, social lab assistant was Merve Yorulmaz, and social lab facilitator were Philine Warnke, Kerstin Cuhls and Andreas RöB.

In sum, 42 people participated throughout all three workshops. Three social lab team members (managers, facilitators) assisted workshops 1 and 2 each, the last workshop was accompanied by five people from the social lab team and thus had the highest number of attendees. Women formed the greater majority in the first two workshops. While the gender distribution was highly skewed in the beginning, men and women were equally represented in the last workshop (see Table 11).

Table 11 - Participant numbers, gender, drop out and new recruited participants (SWAFS)

	Number of male participants	Number of female participants	Total number of participants	Number of SL dropouts	Number of newly recruited participants
1 st workshop	4	13	17	-	-
2 nd workshop	2	8	10	3	5
3 rd workshop	7	8	15	2	2

We experienced a very low and easily manageable number of dropouts, which could be compensated by the same or a higher number of newly recruited participants. We assume that participants left after the first workshop because of the feeling of a lack of agency in her own organisation (1), a lack of people supporting one's own idea for a Pilot Action (1) a lacking attachment to the social lab approach (1). Reasons for the two dropouts after Workshop 2 were more personal and due to re-orientation in the job or quitting the job altogether. More people changed throughout the three phases, but participants made sure to send replacements where possible. We do not count last minute cancellations as dropouts, because most of these participants stayed committed to the social lab and their Pilot Actions.

Overall, we had four people (or people representing the same organisation) present at all three workshops, and eleven people (or representatives) participating in two workshops.

New participants came because of intrinsic motivation and had contacted us on their own. Moreover, we had recruited one participant from the SuperMoRRI project for workshop 3 to support the dissemination of one Pilot Action.

About half of workshop participants came from academia and research and formed the majority group in all three workshops. The second highest group were persons working in the field of education or representatives from civil society organisations (including science shops and foundations). Representation from the European Commission or other policy-making bodies, funding and business remained rather low (see Table 12).

Table 12 - Participants by stakeholder group (SWAFS)

specification	Academia/Research	Business/ Industry	Policy		Other				
			EC	other	independent	CSO	funding	lay person	education
1 st workshop	8	1				4	1		3
2 nd workshop	5	1				1	1		2
3 rd workshop	9	1				2	1		2
Totals	22	3				7	3		7

We also had a great diversity in participants' country of residence throughout all three workshops: we experienced a good, complementary distribution of stakeholders from all regions of the EU (though with some bias towards EU-15), while cultural diversity was much higher given that, in some cases, stakeholders had a different nationality. Participants from Spain, Austria and Germany formed the largest groups (see Table 13).

Table 13 - Participants of SL15 (per country of workplace)

Country ¹⁶	1 st Workshop	2 nd Workshop	3 rd Workshop
AUT	3	2	2
DEU	4	2	2
FIN	2	1	1
ITA	1		1
NLD	1	1	2
POL	1		1
SVN	2	2	2
SRB			1
ESP	2	2	3
SWE	1		
Total	17	10	15

¹⁶ https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Country_codes Please use the codes provided in this list

4.3 Workshop objectives

The specific objectives of the SwafS social lab are informed by and embedded into the overall objectives of the NewHoRRizon project. The social labs are designed to provide spaces for creative collaboration and experimentation that allow stakeholders to co-develop new approaches to accommodate and integrate aspects of responsibility into research and innovation. In the specific situation of SwafS, despite the existential threat, we observed a high level of creativity and motivation in regard to ideas for Pilot Actions from the very first workshop.

Each of the three workshops focused on different objectives:

1. The objectives of the first workshop were informed by the recent debate on the future of the program line. The workshop set the ground for a first brainstorming and collection of potential pilot activities and the creation of a shared understanding and interpretation of the notion of responsibility / RRI. We ended up with a set of five proposed Pilot Actions.
2. In the second workshop, the social lab team further specified the social lab methodology and overall process of upcoming lab and pilot activities. Beyond integrating new participants, it served to provide an overview of (1) different understandings of RRI from a policy, academic or bottom-up perspective, and (2) current developments in other social labs, Pilot Actions and SwafS. The workshop provided space for a fruitful discussion of the status of our Pilot Actions as well as their potential for continuation. The meeting also served to better get to know the work of our pilot hosts and invest in good working relationships. With workshop 2, it was possible to set up the pilot teams and get Pilot Actions 1-3 started.
3. The third workshop had a more hands-on and practical approach with a strong stocktaking and reflective component. It brought together the Pilot Action teams to share their ideas, experiences and challenges with the Pilot Actions and co-create narratives about RRI in SwafS. It also aimed to stimulate a process of dissemination and communication about RRI in participants' working contexts to sensitise larger audiences for the relevance and benefits of RRI.

4.4 Social Lab design

Before each workshop the Social Lab team worked out a detailed design that should help to achieve workshop objectives. In the following, we summarise this design for each workshop.

4.4.1 1st workshop

The first social lab workshop lasted for two full days and had three major parts. It took place in Berlin, Germany, with a group of 17 participants.

The first part was dedicated to the introduction and getting to know each other. The most important design element here was an RRI landscape on the floor, including the keys, but also other terms, where people could position themselves, add more themes and make connections to other people or between individual RRI topics. We also worked with personal attachments of the participants to the RRI topics, asking what responsibility means to them and to which elements they feel most attached to. This was done first as a private exercise, then in groups of two, and finally brought to a whiteboard, where people could indicate afterwards their personal priorities. Furthermore, we captured people's expectations of the workshop on a whiteboard visible for all throughout the workshop.

The second step of identifying the challenges of the SwafS programme was methodologically fine-grained in several steps. In order to establish a creative tension between the vision for the programme line SwafS and the current reality, we first heard an introductory presentation, which summarised the results from the diagnosis. Then, we added in group work first important aspects to the vision, and in a later round the current reality, i.e. the actual problems people perceive when working with SwafS. The comparison at the end of the day brought about barriers and challenges.

In a guided tour, a refugee from Syria showed us his perspective on Berlin and NATO politics, an experience which triggered completely different topics for the evening and the talks over dinner.

On the next morning, we had to refresh our minds about the challenges identified for SwafS on the day before. We introduced pilot activities. Having learned from other social labs, that it is not easy to understand what a Pilot Action can mean, we tried to approach this more extensively and gave examples. Afterwards, we formed groups with accidental composition, where first ideas for Pilot Actions should be collected and three ideas should be prioritised. This was brought to a marketplace, where all the short-listed ideas were presented. The next step focused on discussing the ideas, checking for complementarities and potentially merging the ideas. We talked, while standing as a group in a loose circle, wandering a bit in between flipcharts, which made this session quite dynamic. For the selection of Pilot Actions, we had prepared criteria, following the social lab design. We asked participants to rate the Pilot Actions according to four different criteria: ideas, which will make the biggest difference, ideas most interesting for participants' organisation, ideas that participants are most excited about, and ideas most feasible to achieve in the project. We checked whether those pilots with acknowledged highest potential were among those three with the most supporters. In the end, participants were eager to not drop five activities, of which four were discussed more in depth in the last phase of the workshop in order to design them. Design features were in the end presented, discussed and amended in a reflecting team session before the workshop closed with a common wrap-up which included checking on how far expectations had been met and agreeing on next steps.

4.4.2 2nd workshop

After the first workshop, the Social Lab managers did not fully succeed in utilizing participants' first engagement and commitment to the Social Lab. This was partly a response to signals from the participants, who had committed to Pilot Actions under the condition that they could not make them immediately a priority of their work. Hence, we opted for organising the second workshop soon after the first in order to create new spin.

Another challenge was to find a date for the second workshop. The kindergarten in Ljubljana, one of the key actors for Pilot Action 2 had kindly offered to host the second workshop. They wanted to present their science education work, a puppet animating children to define their own research questions, live in action. The search for a date ended with only one that fitted the calendars of the kindergarten and the Social Lab team. Many participants had difficulties to reconcile this date with other commitments as it conflicted with a SwafS deadline.

Mobilizing pilot hosts and other supportive participants, including some who did not make it to the first workshop, was hampered by this timing issue. Apart from the timing, some participants faced the issue that travelling to Ljubljana requires more time than to more central European destinations (for some one day before the event and one day after).

In order to realise a good participation at the second workshop we approached all participants of the first workshop individually, seeking to secure their interest in the Social Lab and the pilot activities they were committed to. Building on the personal relationship established with them during the first workshop seemed to work very well, as the majority of participants were highly committed.

We announced the workshop in the wider Social Lab (a group of more than 30, beyond the participants of the first workshop), and approached a couple of people individually, whom we considered to be a good match with the ongoing pilot activities. This group was highly busy with the SwafS deadline as well and some could not afford to invest time to travel to Ljubljana. Nevertheless, we managed to get five additional participants. We believe that this worked mainly, because they felt already committed to the Social Lab, either, because we had interviewed them in the diagnosis phase or because they had already tried to participate in the first workshop, however, could not make it at that time.

As soon as we realised that travel time to Ljubljana might be an issue, we had adjusted the agenda to a lunch-to-lunch event, to leave two half-days for travelling. This adjustment helped several participants because they did not have to invest a third (or even fourth) day for travelling. To address the need to work on Pilot Actions, we reserved most of the time on the agenda for this task. These adjustments resulted in mobilizing a good group for the second workshop and enabling good discussions on each of the five pilots, which helped to shape directions and next steps.

In the workshop, we needed to acquaint new participants with the pilots, and to check to which of the five pilot participants felt most committed to. In order to address it, we introduced the Pilot Actions and we asked the participants on which they would like to work. We received, following our expectations three groups, leaving pilots 4 and 5 without commitment. We invested some time nevertheless to discuss about pilots 4 and 5 and to explore whether we could do them together with other social labs. To this end, the social lab managers had prepared an overview on activities going on in other Social Labs and highlighting those who might be relevant for cooperation - actually not only for pilots 4 and 5, but also for the other 3.

Moreover, we introduced the idea of the energizing model, provided by Christoph Mandl. This model borrows an idea from physics and put simply, focuses on trajectories of objects and describes how new spin (= more energy) can accelerate movement or induce change in the original direction. Later, each pilot group got the task to think about what kind of action people around the table felt most excited about and to move the pilot into that direction.

What brought a lot of energy to the participants was to see science education in action at the Trnovo kindergarten, when participants were allowed to visit the puppet engaging with the children.

Moreover, as participants had asked for more networking opportunities, we had a very lively speed-dating session, a joint walk and joint dinner.

4.4.3 3rd workshop

The 3rd Workshop of the SwafS Social Lab was organised at the Science Shop in Bonn, Germany. This time, we started with a social dinner on the evening before the workshop, as well as, on the next morning, a guided tour at the Beethoven museum, actually the house, where Beethoven has been born and raised in the old part of the city of Bonn. Thus, group dynamics were very vivid right from the start of the actual workshop.

The Social Lab management dedicated a particular time slot to the reflection of the status of the work carried out. In order to arrive at structured and constructive discussion about the Pilot Actions, facilitators supported the presentation by Social Lab participants and managers by visualizing key aspects of what has been said on colored text cards. This was most helpful to stimulate open discussion (Questions & Answers), reflection and discussion of the Pilot Actions.

The second part of the workshop (on day 2) was reserved to discuss the narratives of the social lab. These have been created in the project based on reports of the social lab managers and facilitators and on reflections by the social lab team. The project team working on narratives has structured these thoughts and has worked out the stories and motivations for each Pilot Action. Workshop participants were invited to reflect on these texts in a process involving pilot group and plenary discussions. This reflection process was not easy but resulted in intensive discussions and brought new insights to the surface, both for participants and social lab team.

The workshop closed by a general – and again very intensive – discussion on the benefits of the social lab process as well as its pitfalls.

4.5 Pilot Action Development

This section focuses on how our pilots developed over the project's lifespan.

Pilot Action development in SwafS was marked by the political developments indicating that the framework programme Horizon Europe would neither continue with RRI as a cross-cutting issue nor with a SwafS Programme. Thus, the activities evolved around a better identification of the benefits of RRI, the future of RRI and the acknowledged lack of transdisciplinarity of RRI. There was also a pilot dedicated to the role of RRI in science education, and the idea of an RRI training for applicants of the Framework programme.

Workshop 1 set the stage for the development of our initial set of five Pilot Action ideas, among which three were actively pursued and one was shifted to another social lab (see Table 14). After the 2nd workshop, Pilot Action 4 “Interdisciplinary Dialogues” was not followed up as an own activity, but by taking part in Social Lab EURATOM'S Pilot Action “Nuclear Dating”, which also had a strong interdisciplinary focus. Pilot Action 5 “RRI Training” was abandoned, as there was no clear commitment of a participant to drive this forward.

At the end of the third workshop, Pilot Action 2 was finalised and Pilot Action 1 and 3 were still running. More precisely, Pilot Action 1 is planning to further refine the template to measure the benefits / impacts of RRI in exchange with the SUPERMoRRI project, while Pilot Action 3 is still engaged in a series of publication and communication activities of the scenario work that has been developed.

Table 14 - Overview on Pilot Actions worked on in Social Lab SwafS

Pilot Action Number	Pilot Action Name	Created in	Status
1	Sharing the benefits of RRI	1 st workshop	Running
2	RRI Education	1 st workshop	Finalised
3	The future of Science? Society	1 st workshop	Running
4	Interdisciplinary Dialogues	1 st workshop	Shifted to SL 19, Pilot Action “Nuclear Dating”. Finalised

In the next section, we present the evolution of our pilots over the project's lifetime in more detail.

4.5.1 Pilot Action 1: Sharing the benefits of RRI

The first Pilot Action was inspired by previous indicator work done in the [MoRRI](#) project. In the first workshop, some of the participants shared their interest in a tool/template that would allow them to assess the benefits of their RRI projects. Thus the group began discussing how to develop an easy-to-use template for sharing the benefits of RRI and demonstrate its usability by enriching it with the pilot champions' own fieldwork. The pilot's major purpose was thus to widely communicate the various benefits of RRI to academic and non-academic audiences, beyond sectoral and disciplinary borders. It also aimed to promote closer exchange between existing SwafS projects or RRI knowledge hubs.

Acknowledging the abstract nature of RRI, we believed that working with illustrative (project) examples would be an important contribution in making RRI and its benefits more comprehensible and tangible, while at the same time engaging in networking and exchange across RRI/SwafS projects.

At the second workshop in April, the activity took off. However, we decided to organise an extra one-day-workshop in July, 2019 in Berlin to discuss our work with all its potentials and challenges in more depth. The discussions revealed the difficulty of working with indicators and tracking, mapping and monitoring benefits or long-term impacts – particularly in regard to their (limited) predictability, directionality and intentionality.

The phase between the second and third workshop was thus characterised by stagnation, which was partially caused by the well-known problem that many colleagues have too many tasks on their desks at once and that voluntary / honorary activities without clear deadlines fall then behind. In parallel, we noticed the two following developments: Firstly, the NewHoRRizon project was developing the [Societal Readiness Thinking Tool](#). This raised the question whether this would be the sort of tool which we were imagining and how this would affect our work. Secondly, the [SuperMoRRI](#) project also took off in that phase and involved basically the same people engaged in the tool's development. The SuperMoRRI project is very much into producing not a list of indicators but developing procedural aspects on RRI. These developments and the pressing question “what do we actually want and what can we add to what is already happening”, the productivity in the Pilot Action halted.

Based on the reflections during the July meeting in Berlin, the social lab team translated the results into a first draft template. It is structured along an O-O-I logic (output, outcome, impact) and adopted the existing MoRRI indicators for the following dimensions: scientific, economic and societal impacts. It primarily captures intended (project) effects and results.

Adopting this logic provided specificity, structure and greater conceptual clarity, which was however also the result of further insights gained from ongoing activities of the SUPER MoRRI project. Nevertheless, we are well aware that the model's linear and rigid character might contribute to an oversimplification of processes that are much more complex, non-linear and dynamic.

During the 3rd workshop the emphasis of the Pilot Action changed. Since the social lab participants who initially had the idea to use the Pilot Action to show illustrative cases of how to apply the template were less involved in the Social lab, this aspect lost prominence. Now, the template itself became the main result of the pilot.

The discussions went on – accompanied by all these procedural and methodological uncertainties – and resulted in the consideration to reflect these changes in the pilot's title. Hence, we changed the name from "Sharing the benefits of RRI" to "Measuring the impacts of RRI". Towards the final phases of the social lab work, we realised that the nature of our work was more about the various effects of RRI and how to measure them rather than benefits only, which we perceived as being too narrow and evaluative. In our final reflection about the utility of the thinking tool, which was presented and discussed during the meeting in July, we concluded that it served other purposes and that our template which would serve primarily self-evaluation purposes would still provide an added value.

After the 3rd Workshop, the Pilot Action is still in progress. The content of the template is not yet available in a final format. It will be circulated in the Pilot Action team, re-designed and made ready for further application at the earliest possible occasion. It is planned that participants of the Pilot Action will pass on the template to the SUPER MoRRI project.

4.5.2 Pilot Action 2: RRI Education

The RRI Education Pilot was organised by the Trnovo Kindergarten in Ljubljana, Slovenia. It was complemented by activities coordinated by the [i-consent project](#) in Valencia, Spain and by the [Edu-Arctic project](#) coordinated from Warsaw, Poland.

All throughout Europe, many people are working on the question of how science education for children and teenagers can be given shape. Even though there are many different initiatives, the basic question is whether today's approaches towards science education for children and teenagers provide enough opportunities for them to develop a sense of responsibility like care for the environment or attention to inclusion. Moreover, as these aspects are rather abstract, they might need special practical formats to make them accessible.

This pilot started at the time of the first Social Lab workshop as an exchange of experts for science education of children and teenagers, who are working in very different formats and settings towards integrating responsibility and RRI into science education. Focal centre was the Trnovo Kindergarten in Ljubljana. Their aim was to find cooperation partners across Europe.

We organised our second Social Lab workshop at the kindergarten and were allowed to see with our own eyes we their approach while local educators translated for us what was happening. As a part of their educational programme, the kindergarten allows the children to playfully experiment with different materials. In particular and facilitated by an educator animating a puppet which asks questions, the educators seek to empower children to identify not only the problems they find relevant but also to experiment with potential solutions.

On the day of the Social Lab participants' visit to the kindergarten, children could try things out in each room by actively playing with and shaping different materials, liquids and colours to learn about measurement concepts. Experiencing this in real-life with our Social Lab participants was really enlightening. Especially seeing the enthusiasm of the educators and the children was fantastic, to see how the children were not taught in a top-down way but encouraged to discover and speak for themselves.

Implementing workshop 2 at the premises of the kindergarten was very helpful for the further development of the pilot. This gave momentum for a more focused discussion on how to share the knowledge and the good practice of this kindergarten. At Workshop 2, the i-consent project team started an intensive discussion with the Trnovo kindergarten on a mutual exchange process. Fisabio is coordinating the i-Consent project, which aims to improve the information that patients receive from clinical studies. The cooperation in this Pilot Action was targeted especially at improving the guidelines for children. The project leader came to visit the kindergarten and after some discussions, it became clear that they had different approaches towards science education: the classical understanding posits that knowledge is pre-structured, e.g. into different school subjects and curricula. In contrast, the inquiry-based learning approach (adopted by the kindergarten) posits that children must have a learning experience, which builds on their curiosity and allows them to explore freely, decide for themselves what they find meaningful and ask their own research questions. Especially the latter is considered to open up more opportunities and space for notions of responsibility in teaching and education. Given these differences, they were unable to find a shared ground for future collaboration and decided to stop their collaboration.

Thereafter, the social lab manager put i-consent and Edu-Arctic into contact, and they explored whether pre-tests of the informed consent could be done in Polish schools (via the network of Edu-Arctic). This did not work out, because i-consent could not provide documents in Polish. Moreover, the i-consent project went into an accelerated phase, so additional exchange activities were no longer possible.

The different approaches are documented on our Social Lab 15 website:

- Trnovo kindergarten Ljubljana: Inquiry based learning involving a puppet (featured outcomes: [video](#) and didactic comments on the approach)
- [i-consent project](#): information in clinical trials for children (featured outcome: video for 12-13 year olds)
- Edu-Arctic project: Webinars and a "[Polarpedia](#)" on STEM education topics for secondary schools

Different teams were present at the different workshops. In Workshop 1, there was the kindergarten and Edu-Arctic, Workshop 2 took place at the kindergarten and involved the i-consent project.

At Workshop 3, all three teams were present and reflected jointly the process. With the documentation on our website, the Pilot Action is now finalised.

4.5.3 Pilot Action 3: The future of science? Society

Our third Pilot Action was also created in the first workshop.

The question mark between “science” and “society” in the title of the Pilot Action is meant to be programmatic, as with this pilot, we intended to organise a broader debate within the SwafS-/ RRI-community about the future of SwafS and RRI: Is it science for society, science in society, science with and for society? And where at all is society, if a programme like SwafS or a concept like RRI risk to become marginalised in the next European framework programme for research and innovation?

This pilot therefore had two elements: first, it contributed to lobby activities for a new and advanced SwafS-like programme in the next framework programme, such as the [Pathways Declaration](#) and the call in our networks to [participate in the public consultation on Horizon Europe](#). Second, it developed scenarios for alternative futures of science-society interactions in the European Union to feed and illustrate debates about societally engaged research. To this end, the group organised a scenario workshop at the Fraunhofer Institute for Systems and Innovation Research ISI in Karlsruhe, Germany on 27/28 November 2019. Thus, we aimed to demonstrate how the SwafS-community deals constructively with the promises and pitfalls of the SwafS programme and of the RRI concept.

During the first workshop, it was not yet clear, how a joint lobby activity could look like. At the second workshop we started writing our own manifesto with four participants from different communities and backgrounds. It appeared that it was difficult to write in a way that would attract different communities, for example: should they use the term RRI or not? As a result, they didn't formulate text but a list of target groups that should hear of the text and they formulated requirements.

The group continued work on this after the second workshop, but it was not possible to find an agreement. At the same time, the NewHoRRizon project was approached by the coordinators of two SwafS projects ([RRI Practice](#) and [NUCLEUS](#)) who had the idea to initiate a joint support activity for RRI and SwafS. We liked the idea and we supported the initiative by providing and editing text and by establishing links to further SwafS projects. To bring together all these projects, was the great achievement of this declaration, although there was at the same criticism that it only spoke to those inside the "RRI bubble", i.e. those who see a lot of value in societally engaged research, but it could not reach out to other communities. The social lab manager (Stephanie Daimer) presented the declaration at the Pathways Conference in June 26, 2019 in Brussels.

Further, we engaged with other partners of the NewHoRRizon project to mobilise SwafS stakeholders to take part in the public consultation process on Horizon Europe. We provided texts ready for usage in the consultation and were able to mobilise a considerable number of people and to be heard by the European Commission (see [“Take Action for future making through SwafS and RRI”](#)). The summary of the public consultation contained text passages from our templates and reported that a considerable number of participants had asked for a more pronounced approach to societal concerns in Horizon Europe (European Commission 2019).

Between the second and third workshop, we also created four different scenarios of the political, societal and research landscape in 2038 in the European Union. When presenting the scenarios to the other social lab participants, we realised how much of a communication effort will be needed to contextualise the scenarios and to transport messages for the future of RRI. We invested more work and observed a series of ripple effects:

Firstly, we have applied for the last SwafS call, which unfortunately did not result in grant. Then we applied successfully for a contribution to the special issue on the future of RRI in the Journal of Responsible Innovation. In this article, we present these four scenarios and discuss challenges and opportunities related to the different political and ideological paradigms predominating in the four different futures. Our article "Multiple futures for society, research, and innovation in the European Union: Jumping ahead to 2038" submitted in February 2021 is expected to be published soon.

In order to more effectively communicate our Pilot Action output to wider audiences, we are currently reworking the scenarios into a brochure and a website with supporting material. The scenario full texts and illustrations will be added to our overview of Pilot Actions on our [Social Lab 15 website](#).

4.5.4 Pilot Action 4: Interdisciplinary Dialogue

This Pilot Action was developed in the first workshop, but it never really took off. However, it was never abandoned completely, as there were always participants interested in bringing it forward. Given visible connections and shared foci, we connected to the activities of [social lab 19 EURATOM](#), which was planning the transversal "Nuclear Dating" event on 19-20 September 2019 in Brussels.

In light of research becoming ever more interdisciplinary, "Nuclear Dating" brought together early career researchers from different disciplines with the purpose of sharing insights on, and approaches to, research on ionising radiation and nuclear technology. Successful sharing should connect and integrate different perspectives and forms of knowledge, stimulate critical thinking and possibly lead to the development of new projects.

In the months after the event took place, a smaller group of interested participants from both disciplines reflected on their experiences on interdisciplinary collaboration and RRI in submitted a commentary on the experiences of interdisciplinary collaboration on RRI in the nuclear field for publication in the [Journal of Responsible Innovation](#). The submission remained unanswered so far.

4.6 Reflection

4.6.1 Challenges and critical moments

In general, we were able to set up and smoothly and successfully run the Social Lab. The overarching external challenge of the uncertainty of the future of SwafS was accompanied by a series of internal, mostly resolvable challenges. Table 15 provides an overview of these critical moments and challenges at the time when they were particularly pressing.

Table 15 - List of challenges and critical moments (SWAFS)

Nr.	Challenges and critical moments	Workshops
1	Creating meaningful Pilot Actions in light of the discontinuation of SwafS	WS1
2	Lack of mutual understanding as a source of ongoing frictions in pilot collaboration	WS 1, WS2, WS3
3	Lack of time, resources and agency	WS 1, WS2, WS3
4	Managing diversity in stakeholders and expertise on RRI & SwafS	WS1

From the very start of the lab process, the first challenging task was to set up the social lab and create (meaningful) Pilot Actions against the background of the 'existential threat' SwafS was confronted with. In the time between the first and second workshop, challenges were mostly related to lack of resources and time for either joining activities and meetings or engaging in continuous work. While in general, we did not encounter any challenges or problems related to collaboration or working climate, the frictions and tensions in Pilot Action 2 that were caused by significant differences in participants' interpretation of 'education' endured over the course of the workshops. Dynamics were particularly positive and stimulating in the last workshop – a stage at which considerable work had been done and important milestones had been reached – and resembled a 'reunion of friends'.

In the following, the challenges that occurred over the three workshops are presented in more detail.

4.6.2 Creating meaningful Pilot Actions in light of the discontinuation of SwafS

Obviously, the main challenge for SwafS at the start of the NewHoRRizon project was that the programme might not continue in the new framework programme. We had to ask ourselves whether there was relevance in pursuing a Social Lab for a topic that has the risk of disappearing. At the same time, interview partners as well as NewHoRRizon partners and external observers all agreed that an activity about SwafS in the context of the Social Labs should be pursued and even can become a relevant part in the political debate. There were suggestions to act on SwafS' strategic issues when choosing the Pilot Actions.

The social lab participants considered this challenge in a productive manner, while at the same time discussing other challenges related to SwafS, thus the first workshop never risked falling into a pessimistic atmosphere. Instead, participants regarded the threat as a chance to create something new.

In particular, the Pilot Action "The future of science? Society" was designed based on these considerations. However, all other Pilot Actions have also taken up issues, whose relevance will not disappear, although it is meanwhile clear that RRI and SwafS have become marginalised in Horizon Europe.

4.6.3 Lack of mutual understanding as a source of ongoing frictions in pilot collaboration

Pilot 2 was basically a collection of one on-going activity and two ideas on how to integrate RRI elements into science education for children and teenagers. In the first workshop, it was not made sufficiently clear what was the aim of the pilot. In retrospective, this lack of a shared vision was the main reason, which prevented the activity from really taking off.

However, what happened next seemed to mitigate this challenge: One new participant interested in this pilot joined us for workshop 2. Very specifically, we hoped that seeing the work of the kindergarten live in action would set free a lot of energy and ideas on how to move on with this pilot. Indeed, the pilot group unfolded a great dynamic during the workshop. One of the social lab managers spent the whole group phase with this group and supported the discussion. This happened based on the assumption that the participants had signalled that they would need assistance in order to approach an RRI focus of the pilot activity.

After workshop 2, the group continued work on a self-organised basis to transfer knowledge from the Slovenian kindergarten to the Spanish research team involved in the i-consent project.

However, this stopped at some point, and it was finally at the third workshop, when we discussed the narratives, that the reasons for the discontinuation became clear. The two groups had experienced that they had a fundamentally different understanding of education. While this felt disappointing for the team, in particular as they had invested a lot in the activity, from a social lab perspective, this Pilot Action provides interesting learnings, in particular to be pragmatic and try to search for common goals despite all differences. The Pilot Action also showed how much the narrative development process helped to trigger reflection in the social lab.

4.6.4 Lack of time, resources and agency

Reflecting on the dynamics in Pilot Actions 1 and 3, and the work process in between workshops, the Social Lab team struggled primarily with limited organisational capacities at its own end and a rather low degree of agency and responsiveness from Pilot Action participants.

The first challenge was not due to a lack of resources in the project. It rather stemmed from the working mode of the social lab team's organisation, that required to focus on a couple of projects at a time. As we experienced, that the social lab processes require constant support and communication, we enlarged the team responsible for the lab, which helped to mitigate the problem.

Although participants of pilots 1 and 3 were very open and engaged, many of them clearly expressed that they expect us as social lab managers to drive the pilots and to do the main part of the (coordination) work. The challenge was insofar addressed as we opted to dedicate considerable parts of the 2nd and 3rd workshop to reflect on the status of our work and to drive it further. Moreover, we successfully mobilised the key protagonists of the Pilot Action to join the third workshop and, in one case, to mobilise an additional participant who can support the dissemination activities.

4.6.5 Managing diversity in stakeholders and expertise on RRI & SwafS

Our first workshop gathered a group of people, engaged with current and/or past SwafS projects as well as those with specific knowledge about one or more than one of the RRI key dimensions. They were complemented by people looking at SwafS from a more holistic point of view such as NCPs, evaluators or representatives of civil society. Many of the participants represented more than one of these viewpoints. Some participants have had a long-standing experience with science-society relations in the European framework programmes, others were newcomers and just recently engaged with SwafS and thus had a fresh view on the issue.

While it was surprising for us to find that the SwafS programme had mobilised groups who were not acquainted with RRI, this is obviously a very positive observation. In the workshop, we could address this diversity by adding a small input on the development of the RRI idea and how the concept has been defined from different angles. Eventually, the most helpful element of the workshop for engaging people in a discussion about RRI was collecting their personal attachments to the concept - an element, which we had planned to do anyway.

4.7 Achievement of objectives

In this section we reflect to what extent the aim of the Social Lab was accomplished.

4.7.1 1st Workshop

In Workshop 1, almost all objectives were achieved:

- Team spirit and team building
- Developing an understanding of RRI
- Identifying the vision for SwafS and current reality
- Defining relevant Pilot Actions in response to the challenges

Only one objective was partially met:

- getting people into action on the pilots

Regarding this objective, many participants did not feel in a position to commit. This only worked when they saw that they can do the pilot work within the context of a running project.

4.7.2 2nd Workshop

In our second workshop, we specified the overall ideas of a social lab such as community building, vision building, joint action and fun into the following workshop objectives:

- Integrating participants who have not been at the first workshop (in terms of group dynamics and networking and in terms of summarizing the first workshop and in particular the social lab idea);
- Giving an overview of what is happening in other social labs (Pilot Actions);
- Offering different understandings of RRI (policy perspective, academic perspective and bottom-up perspectives on RRI as discussed in our and other social labs of NewHoRRizon);
- Presenting and discussing the status of our Pilot Actions, and decide about going on, changing or abandoning;
- Discussing the state of play in regard to the threat of discontinuation of the SwafS programme in FP9 and the de-emphasis of the RRI concept;
- Working on Pilot Actions;
- Getting to know the work of our hosts (Trnovo Kindergarten in Ljubljana).

It was possible for us to reach all of these objectives. Most importantly, we started Pilot Actions 1, 2 and 3 and gathered people around them, particularly those who had not been at the first workshop. The workshop atmosphere at the kindergarten had an energizing effect on all of the participants and on group dynamics. Participants were also happy that they could exchange at the speed dating about their backgrounds and interests. Participants also appreciated very much that they learned about what was going on in other Social Labs and about the state of play as regards the threat of discontinuation of the SwafS programme in FP9 and the de-emphasis of the RRI concept. In sum, workshop 2 was very a very successful milestone and we made considerable progress in all directions.

4.7.3 3rd Workshop

The 3rd workshop reached the objectives set with regard to sharing ideas and experiences, continuing work on Pilot Actions and reflection of experiences and creating narrative.

Results are rather mixed with regard to anchoring the pilots within the organisations, which might require much more time, institutional support and long-term organisational or behavioral changes (see section 1.6.3. potential impact for a more detailed elaboration on the fulfillment of our objectives).

4.8 Potential impact

Reflecting on the overall lab process, a great majority of our objectives was met. Despite minor challenges experienced along the way, we were able to initiate numerous activities with the ability to spread the word about RRI and to raise awareness for the benefits of integrating the notion of responsibility into research (or teaching) activities. We noted that the Pilot Action members went through a very intense learning process on RRI and SwafS and felt empowered to push the idea of responsibility in R&I forward. The lab created a series of outputs related to teaching, educating, awareness raising and mobilizing as well as tangible outputs in terms of websites, tools, templates and lastly, scientific output in terms of publications - which all can endure over the end of the project's lifetime. In this sense, all of our pilots contribute to making RRI more visible and relevant, all in their own specific ways and within their sphere of activity and influence. Since some of our outputs will endure over the end of the project, we believe that their effects can aggregate to greater impacts or set the groundwork for 1) a greater emphasis on and usage of indicators to assess the impacts of RRI in project contexts, 2) the further inclusion and utilization of RRI principles in well-established education and teaching approaches, and 3) ongoing and more nuanced debates on the future of RRI and science-society-interactions and resulting actions from policy-makers.

In the following, we present the potential impacts of all three pilot activities in more detail.

4.8.1 Pilot Action 1

The ambition of Pilot Action 1 to adapt the MoRRI indicators for RRI impact measurement to project level has been highly welcomed by different actors, e.g. the evaluator at the interim review highlighted such an adaption as desirable output of the project. The group has not yet completed this challenges and huge task but started to cooperate with other initiatives who work on the same issue, most notably the SuperMoRRI project. In this way, the SuperMoRRI project can take up and continue what has been done in the Pilot Action Beyond ensuring a closer exchange and alignment of past and present work on (impacts of) RRI, our work uncovers the observed need for a more nuanced and systematic approach on identifying and assessing the benefits and impacts of RRI (on project level). With an increased awareness for these needs and utilities, the Pilot Action can also set the basis for the deepening of the work in future practical contexts

Still, in the end phase of NewHoRRizon, it is hard (or too early) to tell whether and to which extent Pilot Action 1 can be institutionalised, given the foregoing 'turbulences' related to inactivity, slow pace of prior (and current) development and methodological difficulty.

4.8.2 Pilot Action 2

The merit of the pilot is that it has created a platform for different actors to reflect their approaches and contributions to science education from the perspective of responsibility and RRI in more particular. Beyond the core actors of this Pilot Action, at the first workshop, more participants took part in the initial discussion of the pilot, thus underlining how important the topic is.

The Pilot Action also enabled networking and inspired a small group to reflect on how to organise a transfer of knowledge. Although the partners of the Pilot Action decided to stop their cooperation as they were unable to find a shared ground, this should not be regarded as a failure, but a trial in which all actors took away learnings.

4.8.3 Pilot Action 3

With regard to the first part of Pilot Action 3, i.e. mobilizing for public consultation during the development of the 9th Framework Programme Horizon Europe, the Pilot Action was able to raise the issue of RRI again on the Horizon Europe agenda (European Commission 2019: 36). In total, around 8,000 people participated in the consultation processes and a remarkable number of them has used the text or template developed in the Pilot Action when participating in the consultation process. In this sense, the Pilot Action was a success and helped to speak up for the cause of RRI in European research and innovation policy making. These attempts were also noted in the relevant texts, but it is unclear to what extent they were able to influence decision making.

Moreover, beyond reaching our set objectives, we have observed a series of ripple effects. Firstly, we have applied for the [SwafS-31 call "Bottom-up approach to build SwafS knowledge base"](#), which unfortunately did not result in a grant. With regard to the second part of Pilot Action 3, after an inspiring scenario workshop on the future of science-society interactions, we engaged in a series of further productive exchanges with a smaller team composed of the social lab management and the Pilot Action team. We have created four different scenarios of the political, societal and research landscape in 2038 in the European Union. Now, after workshop 3, we are about to publish an article in the Journal of Responsible Innovation, in which we present these four scenarios and discuss challenges and opportunities related to the different political and ideological paradigms predominating in the four different futures. In order to more effectively communicate our Pilot Action output to wider audiences, we are currently reworking the scenarios into a brochure to be disseminated in the consortium and other areas.

4.9 Lessons for pilot development and implementation

In the following, we have synthesised our core learnings for pilot development and implementation (see Table 16).

Table 16 - Lessons learned (SwafS)

Lessons	
1	Distinguish between theory and practice of RRI to hold nuanced discussions
2	Let go of preconditioning and dogmatic views: be open and receptive for learning and diverging voices to exploit your full collaborative potential
3	Ensure process clarity and transparency through proper expectation management and clear roles
4	Get out of the 'RRI Bubble' and start communicating to the skeptics of RRI about the value added of societally engaged research practices

4.9.1 Distinguish between the theory and practice of RRI to hold nuanced discussions

We should encourage a discussion about RRI that differentiates between the terminology and practice of RRI. What do we mean by saying "RRI will not survive?" Do we refer to the idea of doing science for the benefit of society? Or do we only refer to the term RRI? Indeed, the underlying idea of RRI is broadly applied in (research) practice, even if not under this name. In contrast, the term RRI is suffering and struggling in the mainstream. A more conscious and appropriate language and perspective will allow us to have more precise and likely more plausible discussions on RRI (also beyond the RRI bubble).

4.9.2 Let go of preconditioning and dogmatic views: be open and receptive for learning and diverging voices to exploit your full collaborative potential

In our lab activities, we have witnessed how substantially different views on or ideas of 'something' can hamper productive exchange, result in frustration and ultimately, in ending a project, despite possible untapped potentials. Sometimes we need to have the courage and willingness to let go of our preconditions and open ourselves for different views and perspectives if we want to collaborate and proceed in an agreeable manner. Also, social lab management can provide needed support and facilitation for conflicts or situations alike. Openness and pragmatism are decisive for building bridges, while too dogmatic approaches can hamper exchange entirely.

4.9.3 Ensure process clarity and transparency through proper expectation management and clear roles

Throughout the lab process, we have realised that expectation management is vital to ensure process clarity and transparency. The Social Lab manager has to make continuous efforts to communicate with the Social Lab team, keeping in mind constantly responsible people and the capacities they need. Providing sufficient information and ensuring understanding of the processes on the Social Lab and Pilot Actions level can be considered a good predictor for an effective and efficient realization of the Pilot Actions.

Particularly at the beginning of pilot activities, it is crucial to set clear objectives and communicate them in a transparent and open manner. Not engaging in distributing roles and responsibility at the early stages of pilot work can accumulate to greater problems over time.

It is imperative to ensure continues and sustained commitment, motivation and engagement, reducing the mentioned barriers and potential sources of discouragement. Finally, the function and importance of leadership should not be underestimated. It strongly affects success, progress and the "pace" of the Pilot Action. It requires a lot of efforts and constant follow-up communication from the social lab manager, not to forget the needed capacities and responsible persons on the Pilot Action side. In some cases, participants openly communicated their need for more guidance and mobilization. It is important to create an environment and relationship that allows for openly sharing criticism and feedback.

4.9.4 Get out of the "RRI Bubble" and start communicating to the skeptics of RRI about the value added of societally engaged research practices

There are value-laden debates within and in between communities, who are in principle attached and open to the idea of societally engaged research. These debates are for specialists and remain often in the sphere of academic observation and study of RRI instead of "doing RRI". This might require leaving the sphere of dogmatism and conceptual academic debates about the core meaning of RRI, embracing different storylines and approaches, and building bridges by focusing on what they have in common with RRI. The brochure of SL 11 "RRI for jobs and growth" is an example of such "undogmatic communication".

4.10 Workshop methodology

4.10.1 2nd workshop

Our visit to the kindergarten in Ljubljana was very helpful. It brought a lot of energy and allowed to get a better idea of the practical work done in the kindergarten. Moreover, we reserved time for reviewing, discussing and working on the pilots.

We saw that the initial session in which we provided participants with more insights on RRI, SwafS, the Social Lab methodology and Pilot Actions as particularly effective. This was also very helpful to promote communication about RRI and the uptake of RRI in institutional structures.

A speed-dating format to support networking was highly appreciated by participants.

4.10.2 3rd workshop

As the Pilot Actions were not finished during the 3rd workshops, we needed a format to support the progress of the pilots. In order to arrive at structured and constructive discussion about the Pilot Actions, facilitators supported the presentation by Social Lab participants and managers by visualizing key aspects of what has been said on coloured text cards. This was most helpful to stimulate open discussion (Questions & Answers), reflection and discussion of the Pilot Actions.

In the specific case of Pilot Action 2, the education team created a didactic comment on their inquiry-based learning approach for kindergarten children, which they complemented with a vivid demonstration video. In this video, the team presents its action-based classroom learning approach by using a puppet. We consider this video as very helpful as it provides a fantastic, authentic demonstration of both educators' playful approach on teaching and children's experience of learning and discovery in a highly creative, out-of-the box and experimental setting.

In a general sense, the solution-oriented and inclusive social lab methodology with formats allowing for reflection, such as the narrative session that took place in the third workshop was experienced as very effective and stimulating. Throughout all three workshops, the space given for intense and deep work on Pilot Actions - along with proper facilitation - proved to be especially helpful.

4.11 Group dynamics and diversity

In sum, 42 people participated throughout all three workshops. While the group size was lowest in the second workshop (10), the participant base was slightly higher in workshop 1 and 3. We saw that the initially low representation of men in the first and second workshop changed into equal gender balance in the last workshop.

Representation from academia, education or civil society organisations was particularly high. Almost half of all workshop participants were working in research. Accordingly, other stakeholder groups were less represented, which might have resulted in a concentration of perspectives (from disciplinary lenses) to specific areas or fields of knowledge. Yet, the considerable differences in understandings and interpretation of 'education', which was a very prominent observation and challenge in Pilot Action 2, testifies that we still encountered a great diversity (or heterogeneity) in perspectives and approaches within thematic and disciplinary borders.

National and cultural diversity was very good throughout all meetings. In the last workshop, we had stakeholders from nine different countries participating (Germany, Austria, Netherlands, Spain, Finland, Slovenia, Serbia, Poland, Italy), just as in workshop 1. There is even more variety, if we consider the nationality of the participants (plus Bulgaria, Brasil, Colombia, Greece, Turkey, UK; counting includes the social lab team).

What remained stable over time was participants' high degree of intrinsic motivation and enthusiasm for the process and the opportunity to work together on a shared challenge and vision.

Every new participant who joined the workshops or pilot groups was considered to be a valuable contribution and enrichment to the social lab activities.

In particular, the phase between the second and third workshop proved to be an important phase for further development of running and stagnating pilot activities and provided space for critical appraisal and corrective measures. Reflecting on the overall process, including further participants and distributing responsibility in a clearer manner right from the beginning might have stimulated or accelerated halting activities, however, the dynamics in every single pilot (sub-)group were very specific and affected by many other variables.

The team worked very well together and with time passing and uncertainties reducing, dynamics and identification with the work improved. Towards the end of the collaboration, dynamics were even better, since the group (inter-)acted in a very cohesive, engaging and enjoyable manner. Group dynamics at the third workshop very particularly positive and vivid right from the start of the actual workshop, not least because of joint activities outside the formal workshop sessions.

In summary, the multifaceted participant base of social lab 15 – their ideas, motivations and expertise – made it possible to tap into unknown waters and develop different sorts of valuable and relevant outputs. In individual cases, however, it cannot be excluded that diversity of viewpoints may pose a challenge to smooth and successful cooperation. Thus, a positive handling and utilization of diversity requires a minimum degree of cohesion and unity, accompanied with the willingness to open up and detach yourself from your preconditioning.

Stakeholder diversity is necessary if we want to ensure creative collaboration and critical reflection from different angles. It has also emerged as a fertile ground for future collaboration and networking, since some of the lab participants are now in the planning phase to engage in new collaborations in different project contexts.

5 Social Lab 16 – EIT

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5.1 State of RRI in the Programme Line before NewHoRRizon

The European Institute of Innovation and Technology (EIT) was established in 2008 as an independent funding body with a budget of 308.7 million EURO from 2008-2013. In 2013, the EIT was consolidated as an EU entity under the principles and legal framework of Horizon 2020 and received an increased budget of 2.7 billion euros towards 2020 (European Institute of Innovation and Technology, 2013; European Commission, 2013). The idea of EIT was to address the so-called “European Paradox”: the perceived inability of European countries to turn academic research and discoveries into commercial opportunities and marketable products. The aim was, and is, to increase the innovation capacity of Europe by educating a new generation of entrepreneurs, by developing new products and services, and establishing new start-up companies leading to strengthened competitiveness, economic growth, and job creation (Reillon, 2016).

EIT seeks to reach these goals via Knowledge and Innovation Communities (KICs), which are networks of collaboration between all three parts of the so-called knowledge triangle: private companies, universities, and research centres. The KICs are networks but also physical innovation hubs located across Europe, which run as single legal entities with a high degree of autonomy. Each KIC is led by a CEO who receives and distributes the EIT funding among partners, prepares the annual business plan of the KIC, and reports on their activities. EIT assess the performance of the KICs according to their business plan and Key Performance Indicators (KPIs) and host an annual hearing where the EIT Governing Board, the principal governing body, can issue strategic recommendations on areas that need to be improved (ibid.). When the NewHoRRizon project started, EIT had six operating KICs: EIT ClimateKIC, EIT Digital, EIT Food, EIT RawMaterials, EIT InnoEnergy, and EIT Health. Since then, two more have been initiated: EIT Manufacturing and EIT UrbanMobility (European Institute of Innovation and Technology, 2021).

Before starting the Social Lab process, we conducted a diagnosis of the status of Responsible Research and Innovation (RRI) in the EIT. This regards both the six operational keys: Public Engagement, Gender Equality, Science Education, Ethics, Open Access, and Governance and the three Os: Open Innovation, Open Science, and Open to the world (European Union, 2012; European Commission, 2016). Included are also the broader principles of “*aligning research and innovation to the values, needs, and expectations of society*” (Italian Presidency of the Council of the European Union, 2014). In order to comprehend how RRI is understood, prioritised, and sought advanced in the EIT, we conducted an analysis of a limited number of documents at the policy-, scoping-, work programme-, call-, proposal template-, and evaluation level; all about EIT as an organization. We did not have access to KIC proposals nor information about the specific projects that individual KICs fund except from a few success stories and factsheets available at the EIT website. We also executed 14 interviews with EIT headquarter (HQ) and KIC staff, governing board members, and project partners during the fall of 2017 and winter 2017/2018. For a description of the methodology and a full list of all analysed texts, see section 7 in Griessler et al., 2018.

Each KIC is designed to address a major societal challenge, defined in the Horizon 2020 framework and Europe 2020 strategy, and this is thus one of the most prominent RRI principles throughout the documents. However, these challenges are often quite vaguely formulated and appear together with the economic goals of strengthening competitiveness of European businesses, increasing economic growth, creating jobs, new products, services, and start-ups. Indeed, the collaboration between researchers, educators, and innovators is seen as a tool to increase the innovation capacity of Europe, which is the primary goal, and perhaps a prerequisite for solving societal challenges, which seems to be a secondary goal. A few of the interviewees, in the diagnosis study, stressed that there is an inherent conflict between some of the long-term goals of the KICs (e.g. reducing carbon emission) and the short-term financial goals (e.g. developing and marketing new products). The funding mechanisms of EIT and the KPIs for the KICs primarily focus on the latter, which takes time and focus from the over-all visions of solving societal challenges.

Open Innovation is also a prominent principle throughout the documents and the interviews. In fact, this lies in the KIC structure itself with its extensive collaboration between hundreds of partners from research institutions, universities, and private companies in co-location centres across Europe. These communities are open to new partners and diversity in terms of sector, age, gender, and career-level is valued. While there is no doubt that stakeholder inclusion and collaboration across sectors are considered important, it is less clear what role the end-users, costumers, or citizens, who are also important in Open Innovation, play in this equation and whether it is a general strategy to actively involve them in the innovation process and in that case, when and how. While the user-centric approach and Public Engagement are mentioned a few times, it does not appear to be a consistent priority and it is not clearly required or encouraged in strategic documents. There are exceptions, however, in the Climate KIC it is acknowledge that a technology pull is needed to mitigate climate change and that it is necessary to engage cities, citizens, and companies as agents of change. Likewise, the winning consortium for EIT Food: FoodConnects, specify, as a strategic priority, to: *“Build a consumer centric connected food system, develop a digital food supply network with consumers and industry as equal partners”* (European Institute of Innovation and Technology, 2016).

Stakeholder inclusion is highly related to the general principle of widely sharing knowledge, best practices, and result in the innovation communities and to regional-, national-, and EU-policymakers and authorities. These are important principles, primarily highlighted in the analysed documents. Publishing results in reports and papers, in traditional and social media, hosting an interactive website, and a stakeholder forum are some of the tools used to further openness. Likewise, it is a requirement that proposals for new KICs include a communication strategy and an outreach and dissemination plan. This relates to sharing experiences with the innovation model of the KICs and to spread good innovation practices across Europe. There is thus an inherent goal of nurturing good governance principles and practices in the innovation scene of Europe. This is obviously linked to openness in general (Open Innovation and Open Research), and perhaps a precondition for engagement of stakeholders and a broader public. The interview study revealed, however, that several KICs experience a permanent conflict between openly sharing their work and involving business partners who are concerned about protecting their intellectual property and profit. They struggle to find a balance and to get businesses involved despite this e.g. by working with problems that businesses cannot solve themselves but are dependent on collaboration with universities and research centres to address.

The six keys of RRI are not traceable as a vision or strategy throughout EIT. While some keys are mentioned in strategic documents at the policy-level (e.g. Gender Equality at management levels), they are not substantially brought into calls nor the evaluation criteria for KIC proposals. Some initiatives seem to be initiated bottom-up, though, as several KICs have started activities to further RRI-related aspects. Public Engagement seems to be the most important key where EIT Health for instance offer funding for Living Labs and EIT Food collaborate with consumer groups and local ambassadors like restaurants and chefs to involve consumers in their work. Likewise, the case briefs (success stories) revealed that the project Moabit West under Climate KIC has strong dimensions of citizen involvement (EIT Climate, n.d.b). There are also examples of Science Education, mentioned in interviews, e.g. the RawMaterials training programme for primary school pupils in Italy as well as a few MOOCs.

The primary challenge to further RRI in the EIT is a lack of financial resources to allocate to this work, which is not considered a core task of EIT. This is not to say that RRI is perceived as unimportant. Some interviewees do express an urgency of these matters and a willingness to address them. It is this foundation that our Social Lab is built on.

5.2 Social Lab and Social Lab Participants

The first workshop of Social Lab 16 took place in Budapest in the spring of 2018 and was managed by Malene Vinther Christensen and Mathias Wullum Nielsen, assisted by Maria Lehmann Nielsen and facilitated by Hanna Mandl. We had chosen this location because the EIT HQ is located in Budapest, making it easier for staff members to attend. 17 people from diverse sectors attended. The EIT HQ and all operating KICs were represented by either a staff member or project partner from academia, industry, or a non-profit or Civil Society Organization just as an EC Policy Officer attended, see the participants by stakeholder group in Table 17. The participants were recruited by e-mail invites and encourage to spread the word among colleagues as well as bringing a “plus one” for the workshop.

Table 17 – Workshop Dates (date and venue) (EIT)

	Date	Venue
1 st workshop	April 17 th /18 th , 2018	Budapest, Hungary
2 nd workshop	December 10 th /11 th , 2018	Munich, Germany
3 rd workshop	January 8 th /9 th , 2020	Aarhus, Denmark

The second workshop took place in Munich in December the same year and was managed by the same team. Munich was chosen as a central location allowing easy access by plane or train for most participants across Europe. Most of the participants from the first workshop also attended the second, though, there were a few drop-outs in the process (namely because of time constraints and other commitments) and a few newcomers to replace the KICs that were no longer represented in the group. We did not manage to get EIT Digital on board, unfortunately.

The third workshop took place in Aarhus in January 2020 to invite the Social Lab participants to the city of the management team. This time the workshop was managed by Malene Vinther Christensen, assisted by Astrid Lykke Birkving, and facilitated by Hanna Mandl. The Social Lab had, at this point, experienced quite a few drop-out, primarily because some of the participants had either changed jobs or had other tasks/positions at their current job, no longer allowing them to take part. A few new participants were invited to take part because they worked in specific projects relevant to the Pilot Action, primarily recruited through the network of the existing participants. Table 18 presents an

overview of workshop participants. The number of drop-outs are those we lost contact with or who actively resigned after the given workshop.

Table 18 - Participant numbers, gender, drop out and new recruited participants (EIT)

	Number of male participants	Number of female participants	Total number of participants	Number of SL dropouts	Number of newly recruited participants
1 st workshop	10	7	17	7	-
2 nd workshop	5	5	10	6	2
3 rd workshop	3	5	8	-	4

Table 19 - Participants by stakeholder group (EIT)

specification	Academia/Research	Business/ Industry	Policy		Other				
			EC	other	independent	CSO	funding	lay person	education
1 st workshop	4	4	1			1	7		
2 nd workshop	2	1		1			6		
3 rd workshop	5			1			2		
Totals	11	5	2	2		1	15		

Table 20 presents the, at the time, current country of residence of the participants not their country of origin nor nationality/citizenship, which we did not ask for nor register.

Table 20 - Participants of SL16 (per country)

Country [1]	1 st workshop	2 nd workshop	3 rd workshop
AUT		1	
BEL	2	2	1
CHE	3	1	
DEU	1	1	1
DNK			2
ESP	1		1
HUN	6	2	
ITA			2
NLD	1	1	
POL	2	2	1
GBR	1		
Total	17	10	8

5.3 Workshop objectives

Our aspiration for the first workshop was (1) to create a common understanding of RRI and the purpose of the NewHoRRizon project, (2) to discuss the relevance and usefulness of RRI in the contexts of EIT, (3) to develop ideas for Pilot Actions, and lastly (4) to have a preliminary plan for the further work with the Pilot Actions. It was important to have participants leave with new knowledge and inspiration but also a motivation and drive to continue the work towards workshop two. It was also very important, for us as Social Lab managers, to leave with a clear image of the Pilot Actions and plan for their implementation at the end of the workshop so we could support the participants in this work.

Between the first and second workshop not much work was done on the Pilot Actions, however. We found it difficult to engage the Social Lab participants in the effort, as they were busy with other tasks and commitments. Thus, the primary purposes of the second workshop was to (1) elaborate the Pilot Action ideas and make them clearer, (2) figure out if the motivation was still there to continue working on them, and (3) if so, map out tasks, distribute responsibility (including choosing a pilot driver) and make a time-frame for the work that we, as supporters of the Pilot Actions, could hold the participants accountable for.

The third workshop mainly aimed at (1) finalizing the Pilot Action, that is, deciding where to publish the eight RRI stories we had collected, edited, and made ready for publication since the second workshop. (2) talk about the future of RRI in EIT including a discussion with EIT Headquarter, and finally 3) wrapping-up the Social Lab process and celebrate our work.

5.4 Social Lab design

The (generic) design of the first workshop was developed primarily by the facilitator-team: Christoph Mandl, Hannah Mandl, and Marcus Hauser. We started with introductions to the project and its purpose, to each other, to RRI and to the results of the diagnosis of RRI in EIT. The workshop program primarily aimed at sparking reflection on RRI: on one's personal attitudes towards RRI, on the potentials and benefits of RRI in the participants' work, and in that sense, it sought to establish a creative tension between current reality and vision as a prerequisite for developing Pilot Actions. This was done via (1) sharing views and experiences in smaller groups, (2) a plenary dialogue with a talking stick, (3) Maxmix groups, and (4) a generative dialogue. The initial ideas for pilots were then developed in the end of the first day through an individual exercise where each participant wrote down his/her emerging ideas for Pilot Actions on post-its. On the second day of the workshop, everybody exchanged their ideas with several other participants in a "speed-dating" exercise before describing their idea in greater detail on a flipchart. Similar ideas were grouped and the participants then chose which pilot they found most promising and wanted to continue working with. For this more detailed work, the managers and assistant had developed a "Thinking and Agreement Tool", a template for describing the Pilot Actions: tasks, timeline, responsible people, and needed resources and support. The Pilot Actions were further refined in several rounds of reflection groups where participants could offer feedback to each other before wrapping-up the workshop with reflections and feedback from the participants.

As already mentioned, it was difficult to sustain the engagement of the participants between workshops. The primary aim of the second workshop was thus to regain motivation, either for the existing Pilot Actions or new ideas, and to elaborate Pilot Actions and mapping out tasks, distribute responsibilities, and make time-frames for the work, allowing the management team to monitor and support the implementation of the Pilot Actions towards the third workshop.

This naturally affected the workshop program. We started, after introductions, with an inspirational talk by an external speaker, Lotte Krabbenborg from Radboud University, who is an RRI expert and brought examples of RRI in innovation with private companies to raise knowledge and excitement around RRI. The Pilot Actions groups then had time to reflect on the pilot ideas and the progress since last workshop, where it was decided to merge the two Pilot Actions into one, before working on the Pilot Action in groups. In order to kick-start this, we had developed a two-pager on RRI stories, which contained a short summary of the RRI concept and a table with questions to get the participants to reflect on RRI examples (good or bad) from their own work. We had asked six participants to fill in the table (or otherwise use the reflections questions as they see fit) and bring at least one example to present at the workshop as a starting-point for the group work. The participants were then given the opportunity to continue, modify, or drop the current Pilot Action, if they are no longer interested in them and wanted to brainstorm new ideas instead. They made out their decisions first alone in silence before choosing a green card (continue), yellow card (modify) or red card (abandon). They chose to continue with smaller modifications. On the second day, we started with a guided tour in the exhibition on Energy Technologies at the Deutsche Museum. It had a specific focus on controversies in science and innovation and aimed to spark reflection and hopefully engagement on important issues relevant to most KICs. This was discussed while walking back to the workshop venue. The remainder of the workshop was used to detail the Pilot Action and implementation plan and how to increase its impact.

The third workshop aimed primarily at finalizing the Social Lab in a proper manner. We started, after introductions, with an open reflection in groups on what it had been like to be part of the Social Lab before turning to the narrative reflection: discussion of additions and revisions to the short descriptions of the Pilot Action, the Social Lab process, and the context. We then celebrated what we already achieved by giving each other awards for our roles in the Social Lab at the end of day one. On day two, we had a dialogue, using a talking stick, on where to publish the eight RRI stories (case examples of RRI across three KICs) to increase their impact followed by an online talk with a member of the EIT HQ on the future of RRI in EIT. We finished the workshop by creating a to-do-list with the final things that needed to be done to finalize the Pilot Action.

5.5 Pilot Action Development

At the first workshop, ten ideas for Pilot Actions emerged, many of which dealt with raising awareness about RRI in EIT. The participants started to work with two such quite similar ideas: RRI-up-your-life and RRI Show. At the second workshop, the two pilots were merged into one. Table 21 provides an overview of the Pilot Actions.

Table 21 - Overview on Pilot Actions worked on in Social Lab EIT

Pilot Action Number	Pilot Action Name	Created in	Status
1	RRI Show	1st workshop	Running
2	RRI-up your life	1st workshop	Merged into RRI Show

5.5.1 Pilot Action 1: RRI Show

We developed two ideas at the first Social Lab workshop in Budapest: “RRI-up-your-life” and “RRI Show”, two fairly similar ideas that were focused on first investigating and showcasing the possibilities of RRI across KICs and later finding ways to include RRI-related criteria in the evaluation of new project proposals. Despite the two incipient ideas, we had a hard time working on something specific after the first workshop, which we, unfortunately, left without sufficient clarity.

During the workshop, the social lab participants had a feeling that ‘now is the time to develop a work plan’ but did not feel they were allowed to because of the facilitation, which was highly focused on abstract thinking and reflection. While the facilitation was good for generating ideas, it did not leave enough time for elaborating them and planning their execution. This, together with the fact that the participants were very busy with other tasks and commitments, meant that not much work was done on the Pilot Actions after the first workshop.

At the second workshop, in order to re-start the work, and with an eye on the time and resources available, we decided to collectively work on “RRI Show”. The basic design of the Pilot Action is to collect stories or case examples from across the EIT KICs, which address one or more aspects of RRI, and showcasing them online on the EIT website. This is to demonstrate the feasibility and the benefit of RRI in the KICs and elevate RRI on the research agenda in the EIT as well as to inspire potential new partners and projects to consider responsibility in new proposals or existing work. The normative reason for choosing this Pilot Action is that while each KIC was originally designed to address a specific societal challenge, recently other considerations – such as securing financial sustainability of the operations – has gained greater priority. In the eyes of the Social Labs participants, the focus of EIT is shifting and needs to be resettled on the original aim. The instrumental or strategic reason for choosing the format of the stories is that it is quite similar to the existing format of “success stories” on the EIT website, making it easier to get the EIT Headquarter on board posting them online.

In order to reach the aim, the Social Lab management team set up online meetings and developed a two-pager on RRI including a template with questions to reflect on and find RRI examples from the participants’ own work, which was shared with a selection of participants prior to the second workshop. During the second workshop, we discussed these and made a more specific plan, distributing responsibilities of tasks. After the workshop, we still had a bit of a hard time sticking to the plan, though, once everyone returned to their home organization and their busy work schedules. To spur the further development of the stories we met in June 2019 in Aarhus to work on them together.

Finally, we managed to gather a total of eight different interesting stories on diverse topics of RRI. In the words of one of our group members, they were emblematic for what the EIT is supposed to do: tackling societal challenges. During the third workshop, we then discussed plans for publication. Positions differed between those in favour of writing a scientific paper to justify the time spent on them to their employer and perhaps increase the legitimacy of the work to convince the EIT HQ. Others were leaning towards a more action-oriented policy brief or position paper to change the direction EIT was moving in towards more attention on tackling societal challenges. No decision was made, and the RRI stories have, so far, been published in NewHoRRizon outlets.

5.5.2 Pilot Action 2: RRI-up-your-life

“RRI-up-your-life” had the same basic idea as “RRI show”, though, instead of showcasing RRI examples online on the EIT website, they wished to exhibit them physically in the EIT House in Brussels. They too saw this as a starting point for working RRI-related principles into calls and proposal evaluation criteria, though, these plans were never concretized and mapped-out.

5.6 Reflection

5.6.1 Challenges/critical moments

The management team went to the first Social Lab workshop with an open mind and with excitement. The interview study for the diagnosis report had taught us that the KICs find the regulation and auditing of their work quite strict and time consuming, thus restricting their work, and that this is not perceived as a major problem at the EIT HQ, who sees KICs as independent and autonomous. We were prepared that this issue or discussion might emerge but did not expect it to be so explicitly raised: participants voiced their **concern that focussing on RRI is impossible under the given governance structure**, that they do not have time and money for it, and that it would not be successful unless the EIT HQ is actively involved. It was hard to enrol EIT HQ staff as participants, however, three were signed-up for the first workshop but only one attended and had to leave after half a day. This was the first challenge we encountered.

Another challenge was a rather **widespread confusion and scepticism towards the purpose of the NewHoRRizon project**: What is the end goal? What are the participants supposed to achieve? What do we expect of them? Will their performance be measured? Questions that are hard to answer initially in a Social Lab with an open and experimental approach where the participants themselves have to define goals and activities. Some participants also claimed that they were not the right people to be involved in the Social Lab as they did not have decision power in their organizations making it impossible for them to create changes in their organizations. We, in the management team, were not clear enough in describing the project before the workshop and stressing the fact that Pilot Actions could be small steps not necessarily initiatives to “revolutionize” your organization. We tried to elaborate on this during the workshop. We also met scepticism among some participants who saw RRI as being in conflict with economic profit and thus irrelevant for private companies, others claimed that EIT already performed well on RRI and that there was no need to do more.

During the first workshop, we also experienced **problems with the formation of groups for developing Pilot Actions**. There seemed to be clusters of ideas developing, which unfortunately somehow disengaged in the group formation, which got confused. We, in the management team, should have stepped in and taken more control over the process, instead of leaving it to the facilitator or the participants themselves, because we ended up with two groups with very similar pilot ideas where clearer and more diverse ideas might have been formed.

The primary challenge between the first and second workshop was to **retain the participants' engagement and commitment to the Pilot Actions**. After the first workshop, we made a Slack workspace for each of the two pilot groups to exchange ideas, inspirational material, and to discuss online. Though most people joined, after several e-mail reminders, only two shared content and took part in the discussions. A couple of months after the first workshop, in June 2018, we posted a Doodle and a general invitation to take part in a Skype-call to discuss the progress of the pilots and to get the participants' input for the second workshop. Only a few participants reacted to the invitation, and we eventually had to drop the Doodle and ask those participants we deemed most interested in the RRI agenda directly to take part. At this point, we had accepted that there were one or two people from each pilot group, we would probably not hear from again and we had learned that it was hard to maintain motivation. This was not entirely unexpected, though. The shared (RRI-related) vision or aspiration was not very clear when we left the first workshop and the pilot ideas were still too vague.

It was our impression, in the management team, that we spent too much time at the first workshop on reflections about RRI in general and “thinking big” and too little time on elaborating pilot ideas and planning their implementation. This, in combination with a perhaps low degree of motivation or prioritization of RRI on the organizations’ agendas, made it difficult for the participants to continue the work when returning to their home organizations and their busy work schedules.

Because of this challenge, the primary aim of the second workshop was to kick-start the work: to make the pilot ideas clearer, to start working on the pilots, and to map-out the next steps of implementation towards the third workshop. We, in the management team, were a bit disappointed then when the first group discussion - which aimed to recap what had happened since the first workshop and what the Pilot Actions now looked like - turned into a discussing about the RRI concept and whether it could even be considered relevant in the EIT. There seemed to be a rather prevalent perception, at least among those participants who voiced their opinion, that RRI was already achieved in the EIT and further action obsolete. It was clear that this first group discussion had not functioned as intended. **We did not mean to open up a broad discussion about the meaning and purpose of RRI again**, as this was the focus of the first workshop. Our goal was to move beyond this initial issue and work on the pilots. Our facilitator tried to steer the conversation in the desired direction by collecting insights and question that had popped-up since the first workshop in a plenum round, which we had not initially planned. We had to remind the participants of the results of the diagnosis report: according to our study, there was room for improvement and specific problems to address. We had to encourage them to be more ambitious.

After this, we returned to discuss the pilots. For this aim, as already mentioned, we developed a “two-pager on RRI” with a short recap of the concept as well as a table with reflection questions as a tool to start collecting RRI stories. We asked six participants to fill out this table and bring at least one RRI example from their work to the workshop and present it in a smaller group. This was meant to kick-start the discussion about RRI in EIT and inspire others to share similar examples in the group discussion and to help the participants get started on collecting RRI stories (having at least six examples to work on during the workshop). This was not entirely successful as only two participants had actually looked at the template and there was a widespread confusion about the document, and why it was only sent to some participant and not everyone. In hindsight, we should have shared it with all participants prior to the workshop instead of just those who participated in the October Skype-call. It turned out to be a useful tool in the end, though, as they used it in the future work towards workshop three.

We also included a section at the workshop, where the participants individually could choose a green card if they wanted to continue working with the pilots, a yellow if they wanted to modify it, or a red if they wanted to leave it altogether. This gave the participants who did not feel strongly about the pilot ideas, or lacked motivation to implement them, an opportunity to opt out of the work and instead brainstorm new ideas, which they cared more for. The individual decisions to continue, modify, or abandon the Pilot Action ideas was a critical moment because, somewhat unexpected to the management team, all participants chose to continue with their existing Pilot Action, either in their current form or with smaller modifications. This “declaration” of interest seemed to spark commitment and promote a shared understanding that on day two of the workshop, we really needed to work efficiently and come to an agreement on the purpose and desired outcome of collecting the RRI stories, define and distribute tasks, and make a timeframe for the work towards workshop three. It was also decided to work collectively on “RRI Show” instead of two Pilot Actions.

We allocated substantial time for planning on day two and managed to agree on an outline for tasks, assign responsibilities, and make a timeframe including assigning a project manager and a working group as well as scheduling Skype and face-to-face meetings.

The Social Lab team decided at the second workshop, that the Social Lab manager should keep the group accountable for the decisions made. It quickly became clear, however, that people could not stick to the time plan and were hard to reach, most likely due to time constraints. This was not entirely surprising given the difficulties previously experienced with sustaining engagement and commitment when people returned home after the first workshop. We had experienced that work was simply easier and motivation higher when people got a chance to meet face-to-face, so we arranged a physical meeting in Aarhus in June 2019. Here, the working group members brought examples of RRI in the KICs, and worked on how to communicate and present them clearly in a non-technical way to a broad audience. The Social Lab team also assessed the most important RRI dimensions of the stories and found gaps: dimensions that were not represented in the stories we already collected e.g. stories on gender equality and stories from EIT Climate KIC. New participants were recruited, primarily through the network of existing participants, to supply stories to fill these gaps. People left the meeting with a clearer idea of the task at hand but getting them to supply the stories for editing took a long time and a lot of reminders, which continued throughout the fall of 2019.

When the third workshop started, the Social Lab had completed altogether eight edited RRI stories ready for publication, and time was allocated at the workshop to discuss the publication: the proper outlet, dissemination, impact as well as the future of the Social Lab team and of RRI in EIT. The group discussed these issues during three hours on the second day of the workshop. The group also talked to a Social Lab participant at EIT HQ who was unable to attend the workshop but joined in an online call. The facilitator encouraged an open dialogue and the group discussed whether the stories should be published in a scientific paper or in a shorter policy brief/position paper. The management team tried to be the proponent of a perhaps more experimental, activist's approach: writing a position paper, sharing the stories with the targeted audience, and creating a change bottom-up, which was also raised by some participants. Meanwhile the majority, less comfortable with this approach, supported a more top-down solution where they would first publish the stories as a scientific paper in a peer reviewed journal to gain the legitimacy of the work to convince the EIT HQ to get on board. Unfortunately, there was not enough time to reach consensus, as opinions diverged.

5.7 Achievement of objectives

The aim of the first workshop was of course to create a common understanding of RRI and the purpose of the NewHoRRizon project, which succeeded – despite the initial confusion about the project – as the participant accepted the open and experimental approach of the Social Lab. We also had the objective to discuss the relevance and usefulness of RRI in the contexts of EIT and to develop ideas for Pilot Actions, which we did: identifying a lack of awareness about RRI in the EIT and proposing the solution of showcasing RRI examples. However, the final objective to have a preliminary plan for the further work with the Pilot Actions was less successful as the ideas were not sufficiently clear and the plans not sufficiently detailed – a task we continued working on at the second workshop.

At the second workshop, all Social Lab participants indicated that they wished to continue working with the Pilot Action (now singular as the previous two pilots were merged into one). This was an important decision, demonstrating that there was still motivation to continue the work.

We also succeeded in elaborating the pilot idea, outlining tasks, and distributing responsibilities for these establishing a working group and assigning a pilot driver.

At the third workshop, we did not reach the primary objective: reaching a decision about format and outlet for the publication of the RRI stories and mapping out the final steps to get it done.

5.8 Potential impact

While the stories were not published during the Social Lab process, they still had an impact. As one of the participants expressed in the discussion of the narratives at the third workshop, there are several intangible and indirect outcomes of the project worth mentioning:

- The Social Lab participants have become a part of a new useful network of people to work with and have, in the future, the potential for creating a cross-KIC activity on RRI.
- They have learned about RRI and started reflecting on some of their own and their organizations' practices, and for some of them this process has spurred a genuine interest and concern about RRI and a motivation to do something about it. One of the participants was quite sceptical towards RRI in the beginning but kept coming back for workshops and meetings and was eventually convinced about the importance of RRI.
- Emanating from this new knowledge about and interest in RRI, one of the Social Lab participants planned and executed a training workshop on RRI and Public Engagement for postdocs in food sciences (EIT Food).
- The Social Lab also brought the discussions about RRI to higher levels of the EIT, at least to some degree. The Social Lab participant from the EIT HQ talked about starting a more permanent working group about RRI in EIT, though, the initiative should come from the KICs. He also invited the pilot driver to present the RRI stories at a meeting to other EIT stakeholders in Brussels in October 2019.

The Social Lab managers sees the inspiration of individuals, which creates ripple effects, as the most important achievement of the Social Lab.

5.9 Lessons for pilot development and implementation

We learned several things doing the Social Lab process, which might be beneficial tips or lessons learned for others who want to embark on a similar endeavour as we have.

First, managing the Social Lab process online is very difficult. In Slack we meet a “wall of silence” even when sharing materials that the participants themselves requested (on Midstream modulation and value-based design), and we found that deep discussions and actual planning was almost impossible over Skype. Now, this might look very different after a year of pandemic-lockdown where we have all gotten used to working exclusively from home but at the time, we found this difficult. Our experience in the management team was that motivation and commitment was much higher when people met face-to-face and when they do, they have carved out time to actually work on the Pilot Actions, time they might not be able to find at home. This is a good thing to keep in mind: to encourage pilot groups to set up regular physical meetings and to allocate some of the pilot/project funds for this purpose.

Pilot Actions, which tap into the participants' existing work or lie very close to this is probably going to be easier to implement and more successful as it does not require a huge extra volunteer effort in addition to their normal tasks. Another option is to get the top management of a given organization on board from the beginning thus allowing employees to spend their time working on the pilots.

The Pilot Actions will probably be driven by a few individuals (two-three participants) who are genuinely interested in RRI and have the capacities to actually carry out Pilot Actions. We should acknowledge and support their individual effort, even if they decide to go with a smaller initiative in their own organization. Encouraging such smaller individual steps as Pilot Actions, or alongside a group-based Pilot Action, could be very valuable.

5.10 Workshop methodology

It has been an interesting process to apply a Social Lab methodology to experiment with developing and implementing initiatives for RRI. The method was, however, at times seen as too abstract by the Social Lab participants, and it might have been beneficial to relax the requirements of the Social Lab methodology to reflect, think big, and experiment and instead having offered a little more guidance and structure. The Social Lab participants for instance requested more concrete examples of RRI from the very beginning, more leadership from the side of the management team, more clear expectations, and more time to work on the pilots. While the facilitation and exercises were good for kick-starting reflection and brainstorming ideas, it did not always help reach decisions nor elaborating on or concretizing ideas. Perhaps an approach more tailor-made to the needs of the specific participants might have yielded greater progress and impact of the Pilot Action, though, we can obviously not know for sure.

Having presented this feedback from the participants, it is important also to highlight some of the exercises that worked very well in the Social Lab process. This is namely, first, the silent brainstorming on pilot ideas and subsequent sharing of ideas in a speed-dating format at the first workshop. This was very helpful in forming new ideas and creating a lively and engaged discussion. Second, the choice of a green, yellow, or red card on workshop two, indicating whether the participants wanted to continue, modify, or abandon the Pilot Action. This was a good tool to get them to decide and the decisions to continue creates a much-needed momentum to get to work. Third, the group discussion about the context narrative in the third workshop was a good discussion-starter as some of the participants did not quite recognize the image painted there, especially the sections from the diagnosis report, and wanted to revise it. They helped the management team understand the basic motivation for working with the Pilot Action because the RRI stories would be emblematic for the original focus of each KIC to address a societal challenge, a focus that had recently become second priority to other considerations such as securing financial sustainability of the EIT operations.

5.11 Group dynamics and diversity

At the first workshop, 17 people attended and both the EIT HQ and all operating KICs were represented by either a staff member or project partner from academia, industry, or a non-profit or Civil Society Organization just as an EC Policy Officer attended. The participants were thus from diverse sectors and had very different opinions and experiences on RRI. This ranged from those who found RRI incompatible with goals of profit in private companies and had a hard time seeing the relevance to those who were already convinced of the importance of RRI principles and worked to incorporate them in KICs. This created a very lively discussion. There was a tendency, however, that the sceptical voices were the loudest and we were afraid, in the management team, that they would set the tone for the workshop and discourage the other participants. Luckily, this did not happen.

At the second workshop, most of the attendees also took part in the first workshop and was thus, at this point, familiar with the purpose of the project and the Pilot Actions. Diversity was decent in terms of both gender and in representing different KICs and research areas.

We did not manage to get EIT Digital on board, though, after several attempts to contact them and find someone willing to take part. There was also an overweight of KIC staff members and only a few representatives of KIC partner organizations, which may have affected the group dynamic. The views of KIC staff members on what is considered feasible Pilot Actions and desired impact might be different from those representing an external university, research centre, or Civil Society Organization with a looser connection to EIT as an organization. KIC staff members might, for one, be more focussed on across-KIC initiatives and two be more limited by what they consider possible within the EIT and KIC structure and bureaucracy. Steering the conversation in this direction might exclude smaller local initiatives in specific partner organizations.

The group of the third workshop had a good diversity in terms of nationality and balance between KIC staff and partners as well as a decent balance between genders, though, with a majority of women. The Social Lab participants shared their general opinions, gave feedback to the narratives, and constructive criticism to the whole process in an honest and proper manner. The group was very well functioning and worked in a good atmosphere.

6 Social Lab 17 – Joint Research Center (JRC)

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6.1 State of RRI in JRC before NewHoRRizon

6.1.1 Method of diagnosis

At the initial point of the diagnosis, the NewHoRRizon project partners decided to split Joint Research Center (JRC) activities regarding the work of EURATOM (nuclear energy related topics) and other research agendas of the JRC. This report focuses on activities that are not related to nuclear research.

The JRC's 2030 Strategy acknowledges the distinction between these two activities, yet it claims not to demarcate the nuclear and non-nuclear activities: "While DG JRC's nuclear and non-nuclear activities are distinct from one another in certain respects, they should not be viewed as entirely separate. Indeed, they benefit one another" (JRC, 2016, p3). NewHoRRizon has nevertheless decided to split its Social Labs since much content and funding are in many respects kept separate although there are many overlaps and cooperation.

This document is based on an initial quantitative document analysis that reviewed 15 JRC policy documents, which included, among other documents, the work programs of JRC from 2014-15, 2016-17 and 2018-20, and the 2030 Strategy, as well as reports of external JRC evaluations. Search keywords were selected deductively from literature on RRI, including the term itself as well as related terms such as the RRI "key aspects" of the EC (ethics, societal engagement, gender equality, open access/science and science education) and the "3O's", open innovation, open science, open to the world (European Commission, 2016). This approach provides a perspective about the *use* of these terms in the context of public JRC documents. In a first analytical step the documents were auto-coded by these keywords described above. Since many activities implicitly address RRI and relate to these in other terminology, a second step analysis explored the content of JRC documents in-depth (e.g. European Commission 2016b, 2018b; JRC 2016, 2017b).

Further desktop research has been conducted using the 15 documents described above and amended by JRC web content, using qualitative coding techniques in order to better understand the major narratives present within these artefacts.

In total, we conducted 14 interviews with JRC staff from knowledge production units and management, as well as other persons professionally engaged with the JRC (e.g., evaluators, non-JRC scientists). Furthermore, these are also based on in-depth document research of JRC web content, work programmes and evaluation reports. The interviews were documented using a common template provided by NewHoRRizon partners.

6.1.2 The JRC and the status of RRI in this organisation

The JRC is a Directorate General of the European Commission, and describes itself as science and knowledge service for policy. The JRC is spread across six sites in Europe. Recently, the JRC has reorganized its governance structures and integrated new research areas and units. One key aspect of the transformation is the demarcation based on knowledge production and knowledge management.

The diagnosis developed an RRI perspective on the JRC. The spreading of RRI across the JRC was, by the time of the diagnosis, to some extent a double-edged issue. The recent restructuring process undertaken by the JRC applies an approach that uses a more open, democratic approach to knowledge

hierarchies and makes efforts to create space for inter- and transdisciplinary research as well as outreach beyond researchers and expert communities. These activities indeed foster visions and keys of RRI while not using the explicit RRI terminology. Respective documented activities align with values and keys of RRI. Furthermore, our interviews and field experience show that some knowledge about the concept/term of RRI is apparent across JRC staff but that it is not something everyone at JRC is aware of. Throughout the interviews and the review of documents, we documented a number of aspects, such as Foresight activities, a gender equality program, open science policies, and the inauguration of new spaces that foster participatory and open research, such as the Policy Lab or the Centre for Advanced Studies (CAS). The declared aim of these new activities is to 'break silos' and to foster multidisciplinary.

However, our research also indicates that not all units and activities follow the approach sketched out above and that parts of JRC could, from an RRI-perspective, increase visibility of some actions and its exchange with external actors, particularly from the civil society. Also, while some newer units follow an open and inclusive approach to research, we also document that some research could benefit from a less top-down and more stakeholder inclusive approach. RRI as a term and concept is not used by JRC in publicly available documents and not all interview partners were aware of the concept. Overall, the diagnosis assesses that the JRC pursues a number of activities that align with the RRI concept and it seems that these activities are supported by the new JRC governance structure and that these are increasing per trend.

The comparison of JRC documents and interviews shows that the awareness of RRI keys and aspects is quite equal across documents and the interview, with some minor differences in its intensity.

Table 22 - Comparison Assessment of RRI in JRC documents and interviews

Category	JRC Documents and web content	Interviews
A	<p>High awareness:</p> <ul style="list-style-type: none"> • Governance: restructuring process of the JRC places much attention on governance issues • Open Science: JRC policy documents herald a shift towards open science at the JRC. Indeed, JRC has launched a number of activities to make JRC knowledge, data and infrastructure available for “the outside world”. 	<p>High awareness:</p> <ul style="list-style-type: none"> • Governance: The restructuring process of the JRC was present in most interviews and led to high awareness of the importance of governance. • Open Science: The recent trend towards open science has been acknowledged by several interview partners • (public) engagement: While engagement is in some instances foremost targeted towards external experts, policy makers and scientists, there are also references to engaging less-established actors such as citizens.
B	<p>Some awareness</p> <ul style="list-style-type: none"> • (Public) engagement: Recent efforts to emphasize and strengthen the link of the JRC to the “outside-world” can be observed in JRC narratives across policy documents. • Gender: JRC actively emphasizes equal opportunities for all gender based on quotes and programs and there is a large number of female personnel in management positions at the JRC. 	<p>Some awareness</p> <ul style="list-style-type: none"> • Gender: Gender related programs of JRC have been mentioned in some interviews • Science literacy: The general trend to open-up the JRC activities was also addressed from a science literacy perspective
C	<p>Limited awareness</p> <ul style="list-style-type: none"> • Ethics: The European Group on Ethics is the major point of reference for ethical questions in the EC - yet the JRC addresses ethical questions in several policy documents. • Science literacy: JRC policy documents name the importance of communicating JRC activities and to reach out to “the outside world”. • RRI as a policy concept: RRI as a concept is not used in JRC documents. 	<p>Limited awareness</p> <ul style="list-style-type: none"> • RRI as a concept: While some interview partners were aware of the RRI concept, most of them agreed that JRC does not apply RRI explicitly. However, a number of (newer) JRC activities are in line with the ideas and values of RRI. • Ethics: Ethical aspects were not discussed intensively during the interviews.
D	<p>No awareness: Reflexivity / anticipation as responsible innovation concepts beyond the RRI keys: These concepts are not used in JRC policy documents.</p>	<p>No awareness: Reflexivity / anticipation as responsible innovation concepts beyond the RRI keys: These concepts were not discussed in the interviews.</p>

As overall assessment: there is an emerging uptake of RRI related activities across the institution and many of the RRI-keys are implicitly present within a number of JRC activities, units and its current strategy. However, RRI is not explicitly used and applied as an overarching concept within the JRC and there are activities and units that do not or only limitedly refer to or act upon RRI keys.

6.2 Social Lab and Social Lab Participants

The Manager of Social Lab 17 (Robert Braun) contacted, via the project officer, the Commissioner and his Cabinet responsible for JRC in due order in 2017 and informed them about the planned research activities. However, there has been little response nor support by this time and we were advised by JRC officials to proceed with our research.

In late 2017, an analysis of JRC documents started and subsequently JRC members of different units and policy levels were contacted for telephone interviews selected by snowball method and other sampling criteria (awareness of RRI/publications). No central assistance by JRC was provided at this time. The response to our interview requests was quite low and we thus contacted a good number of JRC officials. In total, 13 interviews with JRC staff and other persons working at the intersection of JRC were conducted until April 2018.

First persons were already invited for the first Social Lab workshop that was initially scheduled for July 16-17 2018 in Brussels. Since we invited persons from various units and governance levels, a good number of JRC staff became aware of our initiative. Erich Griessler, the project coordinator, contacted the Directorate level of JRC already in March 2017, asking for support for our recruitment process. Since there was no immediate reply to this email we proceeded with recruitment following the methodology of our interview approach. However, starting in April 2018, we were advised by different persons from the JRC we reached out to, to wait for the Directorate to inform us about our collaboration with JRC staff.

On April 26th 2018, we received an answer from the Directorate. It included an apology for the late response, which was explained with the matter that it took them longer to understand what NewHoRRizon is doing. The Directorate level of JRC declined participation to the workshop at this time also referring to the short timeframe and the already set JRC work programme (including the time resources of JRC staff). It was stated that JRC is committed to RRI and that it has incorporated relevant approaches in several projects and aims to even strengthen these. Instead of the workshop, help was offered to conduct more interviews with JRC staff.

Following the events described above (decline of workshop participation) the Social Lab Management together with the project coordinator discussed how to respond to this email. It was agreed that we should insist on the workshop and clarify that our methodology allows enough flexibility to include diverse programme lines. A meeting was set for May 15th, 2018 in JRC-Brussels with two persons involved in Knowledge Management and Work Programme policy level. The manager, facilitator and researcher of the Social Lab participated in this meeting and introduced the project and its methodology. It was agreed that the JRC will seek an ongoing action or project that can be linked to a Social Lab workshop and respective pilots. A month later we received answer that a colleague from the JRC Scientific Development unit will meet the Social Lab Management at IHS in Vienna.

The first Social Lab workshop was finally scheduled September 24th to 25th, 2018 in JRC-Ispra. The planning of the workshop was initiated in July 2018. The preparation of the workshop, including the diagnosis report, was performed with full support by representatives of JRC management.

Also, the Social Lab manager was offered the possibility to give an internal public lecture at the JRC on RRI. As discussed on the meeting with JRC management, the pilot(s) to be initiated at the workshop will be focusing on a project from the Exploratory Research unit on autonomous road transport systems.

While these processes of negotiation did indeed result in a delay of the 1st Social Lab workshop, they did, however, increase our knowledge about how the JRC “works” as institution and how to better engage with it. We thus do not consider this development as a disadvantage, but the other way, particularly since it finally turned out that JRC entered full cooperation and support in terms of engaging with the NewHoRRizon project, reviewing the diagnosis report, hosting the Social Lab workshop, and thus covering a good amount of organizational work. We estimate that Social Lab would not have this kind of access to information and JRC participants otherwise.

The series of Social Lab workshops went on from May 2018 to January 2020. All workshops were held in Vienna at the Social Lab Management’s premises because of practical reasons. Table 23 provides an overview on workshop dates.

Table 23 - Workshop Dates (date and venue) (JRC)

	Date	Venue
1 st workshop	May 22nd/23rd, 2018	Vienna, Austria
2 nd workshop	April 11 th /12 th , 2019	Vienna, Austria
3 rd workshop	January 23 rd /24 th , 2020	Vienna, Austria

The number of workshop participants varied between 16 and eleven and the composition of the Social Lab was in constant flux; people left the Social Lab for various reasons and new invitees joined (see Table 24). A core group of eight participants participated in all three workshops.

Table 24 - Participant numbers, gender, drop out and new recruited participants (JRC)

	Number of male participants	Number of female participants	Total number of participants	Number of SL drop outs	Number of newly recruited participants
1 st workshop	9	7	16		
2 nd workshop	7	7	14	8	dk
3 rd workshop	3	8	11	7	dk

The 1st workshop took place at the JRC site Ispra (Italy) –in the building of the JRC Centre for Advanced Studies (CAS) and the JRC’s Visitors Centre. While the workshop was planned in cooperation with JRC (particularly JRC CAS and JRC Exploratory Research), due to security standards at JRC Ispra, we could only ask for adjustments of the workshop room based on images we received ahead to the workshop.

Since JRC was co-organizing this workshop, most participants were JRC staff. This included persons from “Strategy and Coordination” level, “Knowledge Production” (research) and “–Management”. While there was a great variety of JRC personnel in terms of positions, most of them (although not all) were in favor of inclusive approaches to science, which most likely represents a selective sample of JRC staff. Apart from internal participants, there was one university Professor who was involved in a JRC evaluation 2015 and a review in 2017, as well as an expert on Open Innovation. Invitation was mainly carried out by JRC Exploratory Research and focused JRC staff.

During the actual workshop it was widely acknowledged that “the world” is changing and that science must adapt. One JRC member of the management level said that science is indeed changing too slowly and that complex solutions are needed rather than silo thinking (please note that “breaking silos” is one major attempt of the current restructuring process of JRC governance as described in the diagnosis report).

Another aspect that was repeatedly mentioned referred to the visibility of science and the JRC more particularly. While JRC indeed provides much information about its governance and output online, still there seems to be awareness across JRC members that many activities could benefit from wider recognition (one JRC member from management named e.g. the JRC education outreach in that regard).

The education of future generations was discussed at several occasions. It was agreed that debates about science and research have to be linked to questions about how to pass this kind of knowledge on to younger generations. There was expressed consent about including arts in education linking to the US debate on STEM vs STEAM (Science, Technology, Engineering, (Arts), Maths).

It became evident in this early stage that the sample of participants was open for ideas such as RRI to a wide extent. However, there were also critical voices that fostered another paradigmatic understanding of science and research. E.g.: Later during the day there were discussions about excellence of science. While some saw traditional notions of scientific excellence as reasonable, others fostered the need to rethink excellence (“we need other ideas of excellence”).

The majority of participants came from JRC which includes scientists and policy personnel. Non-JRC participants were from academia and research (see Table 25).

Table 25 - Participants by stakeholder group (JRC)

	Academia/Research	Business/ Industry	Policy	
Specification			JRC	academia
1 st workshop	13		14	2
2 nd workshop	9		12	2
3 rd workshop	6		11	0
Totals	28		37	4

Most participants were working at the JRC site in Ispra, Italy (

Table 26). However, participants had different nationalities that were not collected systematically.

Table 26- Participants of SL JRC (per country of residence)

Country	1 st Workshop	2 nd Workshop	3 rd Workshop
ITA	10	11	10
BEL	3	1	1
POL	1		
AUT	1		
GBR		1	
CHE		1	
other	1		
Total	16	14	11

6.3 Workshop objectives

The general aim of the Social Lab was to reflect on the role of RRI in the JRC and how aspects of RRI may be brought into an ongoing JRC project on connected and automated vehicles (CAVs). The individual workshops addressed the following issues:

As stated in the invitation letter to the **first workshop**, the aim was to develop an understanding of how the RRI concept and related ideas have been taken on board in the daily work of the JRC. This may include, for example, discussions about the inclusiveness of JRC activities and the access of various actors to JRC knowledge and tools.

After a Pilot Action, which added aspects of RRI to an ongoing JRC project on CAVs, was started, the **second workshop** then aimed to reflect the Pilot Action on CAVs and the Future of Mobility, as well as to discuss its impact on the JRC CAVs-project and the JRC at large.

Finally, the **third workshop** reflected on the potential of RRI to inform and assist better social embeddedness of research in the JRC, to discuss the experiences with the experimental and participatory Pilot Action that emerged in the project, to develop lessons for institutional change based on the RRI concept and to potentially plan next steps in preparing a general RRI guide (practice compendium) for RRI actions or units.

More specifically, we reflected the Pilot Action and social lab process, and created output to be visible to wider audiences at JRC and beyond. The pilots provided a test case for RRI at the JRC which is in line with some major transformations currently happening in this institution. The pilot stimulated aspects of RRI to be integrated in the JRC unit for Transport which will likely influence future projects as well. There will be a scientific publication drawing on aspects of the pilot; JRC and IHS will continue to collaborate in a H2020 call (deadline March 2021); different JRC members declared interest to integrate RRI aspects in their work which is in line with a more general trend towards this direction in JRC.

The Pilot Actions are finished, the next steps are as follows:

1. A report authored by JRC and IHS which summarizes key learnings from the pilot
2. A scientific publication authored by JRC and IHS staff based on the learnings from the pilot
3. JRC aims to pick up the knowledge for further participatory actions related to mobility and transport.
4. Since JRC is involved in drafting of the HE Programme, potentially some aspects stemming from the pilots, translate to this policy level as well.

6.4 Social Lab design

Before each workshop the Social Lab team worked out a detailed design that should help to achieve workshop objectives. In the following, we summarize this design for each workshop.

6.4.1 1st workshop

Before the actual workshop started, the social lab manager held an open lecture (with a web-stream available to all JRC sites) in the JRC Visitor's Centre. This lecture was titled "challenging the republic of science" and provided a genealogy of science and alternatives (like RRI) to hegemonic understandings of science. Approximately 20 persons were present at this lecture and a web-stream was provided for all JRC sites. The responses by the audience revealed some openness towards more democratic science and research, yet, at the same time, concerns were raised. While it was widely agreed that science should open up towards wider audiences (such as publics), this was also associated with citizen's ignorance about certain technologies or people voting for politicians perceived as problematic. Responsibility was thus also framed as a potential argument against certain debated fields of science (such as GMO). One major benefit of current modes of science and research named by one participant was the independence of science (e.g. of economy) that could, from this perspective, be threatened by ideas such as RRI.

After some input about the JRC, participants were split in two groups to create visions for science in 2050. They drew their visions on a flipchart and thus produced a visualization of their ideas. The advantage of this method is to have the vision present during the workshop pinned to the wall.

The discussion about the vision was foremost about science more generally (as intended). Also, the IHS team had the impression that the timeframe (2050 – and thus more than 30 years in the future) was hardly imagined since the vision addressed issues that could already be realized within the coming decade. Maybe this should have been emphasized more as 30 years in the past there have been no mobile phones and publicly available internet.

The pilots were planned in four smaller groups and these groups were later merged to two groups. Participants were advised to address the challenges they came up with in the last day. The participants thus started with more general ideas and developed the pilots in more detail over time. It was particularly helpful to have a given JRC project (Autonomous Road Transport ART) which fostered the pilots to be planned "hands on". As stated earlier, there was wide consensus among the group that science needs to develop further in order to be able to address current issues and problems. The role of the JRC was thereby perceived as twofold. While on the one hand, the current restructuring at JRC (including e.g., breaking silos, bottom-up and interdisciplinary research) was emphasized as a step towards this direction, it was also claimed that due to heavy workloads and given structures, change is indeed hard work and needs leadership (which participants felt is provided at JRC). There were also voices that did not share the necessity of change and which framed science as "the most successful endeavor of mankind". In line with that it was warned not to mess too much with science in order not to risk the success of it.

Two visions that were created about the future of science led to a debate about whether science should rather be improved (slightly) or whether paradigmatic change would be more beneficial. Here science was, again, framed as "the most successful endeavor of mankind" and that "we should not mess too much with it". Others agreed that science is successful and that many people benefit from its output.

However, these voices also named possible threats stemming from research such as unrestricted use of antibiotics. The moderator pointed out that the vision one calls for a paradigm shift since it contains a great level of inclusiveness, whereas the other vision merely frames science in 2050 as “more of the same”. This triggered a debate about how science is governed and the fear that science might be governed by a few (such as it is already in economy where a small group of actors holds major parts of the global capital).

The group discussed challenges related to these visions for science and these challenges were distributed, by the participants, across the six EC keys for RRI. The quantitative distribution revealed that questions of governance were far more often named (13 times) than challenges related to other keys such as public engagement (5 times), ethics (5 times), science education (3 times), open access (2 times). No challenge was explicitly related to the key gender.

At the afternoon of day one, JRC members presented an upcoming project from JRC Exploratory Research about autonomous road transport (ART) titled “Connected, Cooperative and Automated Mobility”. The presentation addressed also “societal impact” which mainly addressed economic questions and questions of acceptance. This project was the reference point for the pilot activities.

The breakout groups developed four posters with ideas for pilots. Each poster contained ideas and tasks but no definite list of pilots at this stage.

The collection of ideas was then merged by the facilitator to the following six pilot ideas related to the ART project:

- Ethics committee
- stakeholder/citizen engagement on site
- stakeholder/citizen needs mapping (off site)
- Behavioural study “intellectual tramp”
- testing alternative narratives (non-techno fix)
- incubator space for alternative visions

Pilot ideas 2, 3 and 5 were selected by the participants: stakeholder/citizen engagement on site, stakeholder/citizen needs mapping (off site), testing alternative narratives (non-techno fix). This was followed by a discussion about the final responsibilities and it was concluded that these pilots should be merged into one pilot as there were so many overlaps.

Since the pilot ideas have been merged and since these are integrated into an already planned JRC project, this pilot aims to broaden the ART project by adding inclusive elements already in its initial phase. The major aim is to add multiple perspectives to ART - even non-techno-fix approaches. Since this pilot is linked to a JRC project, resources, knowledge etc. will be provided by JRC. Those people involved in the pilot planned a meeting in Ispra where they aim to discuss and set structures and responsibilities for this pilot.

6.4.2 2nd workshop

Major aims of the second Social Lab Workshop were to (1) ensure that the Pilot is running, (2) find out if the Pilot owners need any support, (3) and to reflect and potentially adapt aspects of the Pilot Action.

Ad 1) The Pilot Action started a few weeks before the actual second Social Lab Workshop with the planning of the Eurobarometer Survey and the narrative analysis.

The day before the Social Lab Workshop, there was a kick-off event at the same venue that discussed the JRC project on Connected and Automated Vehicles (CAVs) and the future of road transport more widely. Different JRC staff, industry representatives (e.g., Intel and Mobile-eye) and researchers attended this event. While the overall assessment of CAV was quite optimistic, Robert Braun gave a more critical lecture on CAV and democracy. While there have already been some activities related to the Pilot Action beforehand, the kick-off Workshop was in many regards the starting point of this Pilot Action, visualized also by a poster.

Ad 2) The Pilot Action Workshop at May 6th 2019 and the following Social Lab Workshop on May 7th allowed us a deeper glimpse into the planned pilot activity and its subtasks. It also allowed those people involved to learn more about the parts that together constitute this Pilot Action. We were able to identify some challenges (e.g., communication across sub-parts of the Pilot Action, as described above; and limited time & personal resources). As many of the pilot related activities had just started, we mainly identified challenges, rather than 'solving' them. However, it was good to identify challenging aspects.

Ad 3) As the Pilot Action also includes scientists involved in the CAV initiative of the JRC, the RRI aspects and the findings of different engagement activities (such as a critical analysis of narratives related to CAV) were visible for those working on CAV from a more technical perspective. Some participants expressed the perception that social scientists and tech-scientists have been constructed as opposed actors ("scientists don't communicate well") rather than working together. In a wider sense it was argued that the social scientists somewhat critically reflected the work of the tech-scientists and it would have been good to rather co-create together.

It was indeed reflected during the Social Lab Workshop, how this Pilot can and should impact further activities. However, the major aim of this 2nd Workshop was to reflect the Pilot at this stage, not its future impact. It was, nevertheless, anticipated to produce some sort of "good practice" booklet where the experiences from the Social Lab/Pilot Action should be made accessible for other JRC activities in order to foster the consideration of RRI related aspects across JRC.

6.4.3 3rd workshop

Due to COVID-19, JRC staff members had less workforce (also due to private care duties) and also worked mainly from home. In order to address this challenge, we decided, in exchange with JRC, to shorten the 3rd workshop and transform it to a digital format. We thus had a two-hour online session Wednesday, September 21st 2020 and Thursday September 22nd, 2020 totalling four hours online. We used multiple tools like Zoom and Miro to stimulate discussion and co-creation. The major aim (envisioned in the 2nd workshop) was to create an output document in order to make the learnings related to CAV and RRI available to JRC and wider audiences.

Major objectives of the workshop were (a) to reflect the Past Pilot/Social Lab process and to, (b) ideate about making this available to wider audiences. All objectives were met. We had a productive and transparent reflection on the past actions and agreed to create a report on the pilots (RRI and CAV at JRC) as well as a scientific publication in a transport related journal.

There was wide appreciation of the RRI related actions that took place. During the workshop, major lessons have been discussed, including the fostering of trans-disciplinary knowledge creation, openness for complexity, the need for management and coordination of RRI actions as well as dedicated work-power resources, the usefulness of toolboxes of methods and good practice for public

engagement as well as of reflection meetings to bring together the strings of RRI actions (such as Social Lab workshops). Finally, it was debated that proper communication to policy and other actors is key for impact. We thus agreed to create two output documents based on the Pilot Actions, targeted towards policy level, another one targeted towards researchers.

6.5 Pilot Action Development

In this section we describe how the initial three Pilot Actions have been merged into one larger Pilot Action that was linked to an ongoing research project at the JRC on Connected and Automated Vehicles (CAVs), which was by this time, conducted solely from an engineering perspective. The Pilot Action is finished but there remains impact at various levels.

Table 27 - Overview on Pilot Actions worked on in Social Lab JRC

Number	Pilot Action Name	Created in	Status
1	Stakeholder/citizen engagement on site	1 st workshop	merged
2	Stakeholder/citizen needs mapping (off site)	1 st workshop	merged
3	Testing alternative narratives	1 st workshop	merged
4	RRI and connected and automated vehicles (CAV)	After workshop	1st Finished but impact remains

In the next section we present in more detail how these four Pilot Actions developed during the Social Lab process.

6.5.1 Pilot Action 1: RRI and CAV

The initial three Pilot ideas of SL17 have been merged into one large Pilot Action that was conducted by several JRC staff members from different units and sites (mainly Ispra). The Pilot Action was tied with an ongoing JRC project of engineers on connected and automated vehicles (CAV) and added aspects of RRI. The Pilot included research on public opinion (Eurobarometer Survey) and a literature review of expert narratives on autonomous vehicles. Engagement with different stakeholders has been done in workshops and focus groups including also members of the general public. These actions included a critical reflection of narratives related to autonomous mobility which highlight alternative mobility solutions beyond technology.

The findings will be made available through a report and a planned scientific publication (envisioned for 2021).

The ongoing JRC project about Connected and Automated Vehicles (CAVs) was the starting point for our Pilot Action, which merely is a kind of intervention in order to include social and ethical aspects in research and innovation and institutions at large. The pilot was planned and conducted by a number of persons from JRC involved in various units and levels. A major aim of this pilot was to engage a wide set of stakeholders, explore mobility narratives and thus to analyse how this can inspire the knowledge on- and policy recommendations for future deployment in the field of CAVs. The following key issues were addressed:

- How do current (expert) narratives and assumptions relate to expectations of actors from broader society?
- Which matters of concern can be explored?
- How can governance better account for citizen engagement?
- How can this pilot inspire the living lab at JRC?

Starting point was an observation of narratives of multiple stakeholders from the mobility sector (mainly experts like actors from policy or industry) via desk research and interviews (N=10). Based on the analysis of narratives, a series of participatory actions was started in three phases.

- First, there was a workshop that will bring together those involved in the pilot as well as policy stakeholders from, other interested JRC staff, and citizens.
- Second there was a group meeting following a focus group format at the JRC Maker Space moderated by JRC.H1 and JRC.C4. These meetings involved wider stakeholders and included also robots that mimic the topics of debate, to learn about wider narratives on CAVs and future mobility.
- Third, another set of focus groups was performed in 2019 in another Makerspace of JRC with non-JRC colleagues.
- A final workshop was held in 2020 involving multiple stakeholders that have participated or been engaged in this pilot.

The major idea was to foster collaboration across different units across JRC and to open up to wider stakeholders including civil society. Using methods such as focus groups, survey, workshops and literature review, a knowledge base and critical reflection of existing discourses on connected and automated vehicles was created. This new knowledge enhanced the technological perspective of the JRC mobility project and raised awareness for alternative thoughts on the future of mobility and social innovation.

Based on the previous tasks and this workshop, the involved team developed a Toolbox that includes a description of the methodology and the findings. This may also be presented as a graphical document including video and should serve as a blueprint for other JRC activities.

6.6 Reflection

6.6.1 Challenges and critical moments

Overall, we consider the Social Lab 17 a successful experimentation with RRI with potential mid- to long term impact. Yet, we faced a number of challenges throughout the process. This section describes the critical moments in the Pilot Action development, how they came up and how they were resolved. Table 28 provides an overview of these challenges and when they were critical.

Table 28 - List of challenges and critical moments (JRC)

Nr.	Challenges and critical moments	Workshops
1	Delay of Pilot Action	WS 2
2	Cooperation with institutions	WS 1, WS 2. WS 3
3	Pilot fatigue	WS 2
4	COVID-19	WS 3
5	Administrative barriers	WS 3

6.6.2 Delay of Pilot Action

While there were initial challenges with recruitment for the Social Lab (SL) workshop 1 and the following meetings with the JRC, all this did not apply to the planning of the second Social Lab workshop. However, this was not clear at the beginning.

In late 2018, we contacted the Social Lab Workshop I participants responsible for the Pilot Actions as planned in the first workshop. It was, at this point, unclear whether the three planned Pilot Actions

were kept separate, or if these were merged into one larger pilot. However, our contacts informed us that they have an intense working time and that the pilot will not start until 2019. As there was no communication for a few months, the status of the pilot was unclear. However, in late February 2019, we received a detailed concept for a larger Pilot Action that includes the content of the three initially planned actions. The second Social Lab Workshop was then planned together with a larger kick-off workshop set one day ahead of the Social Lab Workshop.

In the end, while there were no negative implications by the delay, in retrospective, it was only a period of uncertainty. However, while it turned out fine, this case shows how people (researchers) are burdened with high workloads. Considering RRI, or adding RRI actions, is often not part of the "usual workload", but something that has to be done "on top". A sustainable implementation of RRI thus requires readily planned (time) resources so RRI is not implemented in a way where individuals are overburdened with work.

6.6.3 Cooperation with institutions

The ongoing collaboration with the JRC is productive, friendly, and we perceive much openness towards RRI from our contacts. While the people involved in the Pilot Action seem to be very busy, we still received a detailed and ambitious plan for a larger Pilot Action linked to a JRC project on Connected and Automated Vehicles (CAVs). This design was accompanied by a time plan and later complemented by flyers and posters with professional layout - it took shape step by step. While the institutional machine was running, there was little room for interventions from our side as the pilot was managed autonomously by some of its participants. While this is indeed desirable, it is, at the same time, challenging for us as Social Lab Managers in order to keep track and to keep it aligned with the NewHoRRizon agenda. It is to add here that we have been actively asked for feedback on the plan - there was indeed openness to include the Social Lab-Team in the planning.

We provided feedback to the Pilot Action design but since the Pilot Action was already planned to a good extent, many suggestions were not (could not be) taken up. However, there have been minor changes as initially planned, such as a stronger focus on citizens. Besides these minor adaptations, the Pilot Action was intended to start as planned by its sponsors.

The 2nd Social Lab workshop (07.05.2019) was setup right after the kick-off workshop (06.05.2019) in order to have a platform for providing feedback and for reflecting the planned pilot and its potential impact on the CAV project and JRC at large. This strategy was set in exchange with the JRC and the people involved in the pilot.

6.6.4 Pilot fatigue

While the Pilot Action initially started in time and several actions were implemented, after some time, the process slowed down due to heavy workload and pilot being done on top of regular duties. Also, administrative hurdles like complex and lengthy refunding process of pilot money slowed down the process.

6.6.5 COVID-19

Due to the severe COVID-19 situation in Italy and worldwide, most JRC staff was working in home office and several people had limited time resources due to care work. We decided, in exchange with JRC, to shorten the 3rd Social Lab Workshop and transform it to a digital format. We used multiple tools like Zoom and Miro to stimulate discussion and co-creation. This choice of actions during the 3rd Workshop resulted in no time resources to implement the narrative reflection. Yet, overall, we managed to set

necessary decisions in order to anticipate next steps to make learnings of the social lab available to JRC and interested audiences beyond.

6.6.6 Administrative barriers

Already during the pilot phase, some JRC staff had difficulties in raising the pilot money for the Pilot Action as the refunding process was time intense and complex. In the 3rd Workshop, it was envisioned to use the available resources to support the creation of the two envisioned output documents of the pilot, but it was unclear if administrative and refunding barriers might make that impossible. IHS agreed to take over the task of finding a solution in order to support making the envisioned output feasible.

6.7 Achievement of objectives

In this section we reflect to what extent the aim of the Social Lab was accomplished.

6.7.1 1st Workshop

The aim of the 1st Workshop was to develop an understanding of how the RRI concept and related ideas have been taken on board in the daily work of the JRC. This has been achieved by a critical discussion on RRI uptake as well as the diagnosis, reflections on JRC ambitions and visions created by workshop participants, as well as discussions following the presentation of the social lab manager on RRI. RRI has been extensively discussed in the workshop and, given the institutional arrangement and top-down organizational nature of the JRC, RRI uptake has been connected to institutional options both on the level of exploratory research and individual projects. It was suggested that a guidance document would serve RRI uptake in the JRC well.

6.7.2 2nd workshop

The 2nd workshop aimed to reflect the Pilot Action on CAVs and the Future of Mobility, as well as to discuss its impact on the JRC CAVs-project and the JRC at large. This objective was partly met as, given the institutional setting, a project even when involving multiple units and several people can only have a partial impact on JRC as a whole institution. There has been extensive internal communication of the (pilot) project, also as it involves opening up the institution to external visitors and creating a new space for citizen's engagement with CAVs in the "maker space laboratory".

This aim was further discussed and one of the output objectives were to create a document for the whole of the JRC that may assist RRI uptake, describing (RRI related) learnings from the CAV project.

6.7.3 3rd Workshop

The 3rd workshop aimed to discuss the experiences with the experimental and participatory Pilot Action that emerged in the project, to develop lessons for institutional change based on the RRI concept and to potentially plan next steps in preparing a general RRI guide (practice compendium) for RRI actions or units.

This objective was met as the Pilot Action has been extensively reflected upon as well as institutional change potential discussed. The compendium creation workflow has been planned as well as selected and discussed in detail theme(s) for the academic publication. Both processes were set in motion.

6.8 Potential impact

On a general level potential impact may be that while large institutions hold many resources (in terms of knowledge, work-power and finances), its members are at the same time busy with daily routine

business. Dedicated workforce, budget and managerial force can help to ensure availability of relevant persons and to organize necessary support to initiate change processes. RRI has been a cross-cutting issue in the objectives of Horizon 2020. The JRC has continuously been developing into an open and future oriented institution. Particularly, the JRC strategy 2030 and the most recent JRC reorganization have contributed to creating conditions for facilitating responsibility and social robustness of the research and innovation process and engaging societal actors in co-designing, co-creating and co-determining socially desirable outputs. As an outcome of the Social Lab process, Social Lab participants have created a toolkit that aims to give an understanding of how to implement citizen engagement by delineating five research design phases. It describes the journey in conducting these activities in the JRC on the topic of CAVs and the future of mobility. In each research design phase, the toolkit details important methodological tools and approaches that can be used by other researchers, including narrative analysis, media analysis, surveys, interviews focus groups and variants. The toolkit provides JRC colleagues with case studies, practical tips and further reading to implement RRI in their research.

6.8.1 CAVs

As part of the pilot process and its outcome, citizen engagement has become to be seen as an important part of the JRC Sustainable Transport unit's work to find innovative mobility solutions and opportunities to improve governance on key mobility issues in the EU. Before the implementation of the Pilot Action, citizen engagement had limited application in only a few activities. The Pilot Action improved the unit's understanding on how to consider scientific enquiry in a wider context, in order to better adjust both innovation development process and its outcomes (i.e. the innovations) with societal expectations, values and needs. One of the outcomes is the continued use of focus group activities by the unit. In 2020 the unit organised, together with the German Aerospace Centre and the University of Cantabria, 15 Focus Group discussions on CAVs with 72 participants living in 24 EU and non-EU countries. This activity was developed based on and complementary to the Eurobarometer Survey 496 and the sentiment analysis. The focus group discussions served to uncover personal attitudes and beliefs. Through group interaction, the JRC has obtained a better understanding of the reasoning behind users' choices.

The CAVs pilot project also sparked the Living Labs (LL) initiative including a Future Mobility Solutions Living Lab (FMS-Lab) at the JRC Ispra site, entailing the genuine involvement of all relevant stakeholders in their research activities like private actors, public authorities, academia and citizens. Three projects related to mobility have been positively evaluated by an internal JRC evaluation board. Another effect is that the inclusiveness of the LL approach has also uncovered other social and ethical dimensions, like gender equality, for more careful consideration.

6.9 Lessons for Pilot Action development and implementation

We derived several lessons from Pilot Action development and implementation (see Table 29).

Table 29 - Lessons learned (JRC)

Lessons	
1	Alternative mobility futures
2	Challenging 'solutionist' narratives
3	New methodologies and practices in JRC
4	Engaging with citizens' matters of concern as new standard for researchers
5	Citizen engagement allow institutions to question prevailing ways of working

6.9.1 Lesson 1 -- Alternative mobility futures

Participatory approaches to policymaking are necessary to deal with the complex problems that JRC researchers often encounter. Citizen interventions are essential in order to examine and question the existing policy framework and to challenge solutions that do not consider the matters of concern of European citizens. The H2020 CAVs Pilot Project's implementation of RRI pillars yielded a project which explored the alternative mobility futures of citizens.

6.9.2 Lesson 2 -- Challenging 'solutionist' narratives

The JRC pilot on Connected and Automated Vehicles has focused on the implementation of the three RRI keys namely engagement, ethics and governance. The project challenged 'solutionist' narratives dealing with emerging technologies and used citizens' imagination to explore alternative mobility futures. Indeed, citizens can offer new insights into novel (mis)uses of technologies and provide alternative mobility future(s) that do not necessarily depend on technological innovation.

6.9.3 Lesson 3 -- New methodologies and practices in JRC

The focus groups showed that the purported expertly developed drivers of CAVs do not always resonate with the relevant actors and especially not ordinary citizens, who may challenge technocentric solutions and offer alternative visions of mobility. Such visions included eliminating car use in cities and moving less. The pilot project has shown how a variety of new methodologies and practices can be implemented in different JRC units and how citizen engagement can be put at the centre of research and innovation. Based on the experiences gained, the project has developed proposals for changing the way the JRC conducts research to inform policymaking. A "practical" result of this pilot study is this toolkit which aims to provide JRC colleagues with case studies, practical tips and further reading to implement responsible research practices in their research.

6.9.4 Lesson 4 -- Engaging with citizens' matters of concern as new standard for researchers

Engaging deeply with citizens' matters of concern should become a new standard for researchers at the JRC that are investigating pressing issues impacting the lives of Europeans as it will also yield higher quality research.

6.9.5 Lesson 5 -- Citizen engagement allow institutions to question prevailing ways of working

Ultimately, adopting RRI like frameworks is an act of humility in the face of complexity and uncertainty, as well as an act of institutional reflexivity. The pillars of RRI, especially citizen engagement and ethical assessment, allow institutions to question and even contest prevailing ways of working in order to narrow the gap between the institutions and the social and political aspects of everyday life.

6.9.6 Lesson 6 - Administrative barriers should be low

Administration and refunding in relation to engagement processes are complex and often time consuming. As the engagement processes as such are already complex and intense, it would be helpful to limit any administrative barriers. Thus, flexible budgets for such causes, like lump sums, would be helpful.

6.10 Workshop methodology

6.10.1 1st workshop

While we conceived the opportunity to have the workshop in Ispra on site, it also implied that we lost some amount of control over the workshop setting and the sampling of participants. This resulted in a sample dominated by JRC staff. While the workshop participants originated from various units of JRC, many of them were either in leading positions or part of units and actions that allow a certain amount of freedom to the scientists such as JRC Knowledge Management, Exploratory Research, the JRC Policy Lab, and the Centre for Advanced Studies (CAS). Only two non-JRC participants were invited for the workshop.

A talking stick was used whenever the discussion became intense and fast. While the group widely accepted the stick, this also caused some irritations as one participant claimed: “you have to let us debate”. Once it was explained that the stick has the function to slow down the process, this was accepted and all participants used the stick when talking.

6.10.2 2nd workshop

Overall, we received positive feedback from the participants in that they enjoyed and valued the Social Lab and its impact. After the longer process of negotiating the collaboration with the JRC, the Social Lab was finally organized and planned in full cooperation with the JRC at the site in Ispra and thus, was well adapted to the needs of the institutional context. The Social Lab was grounded in the Diagnosis Report, acknowledging RRI-related activities and re-structuring at JRC, and yet critically challenging how to foster the implementation of RRI related aspects even further. In general, it seemed very helpful to link RRI with an ongoing project of the JRC, which allowed them to experience RRI in a hands-on setting. For each Social Lab workshop, we started at a more general level, reflecting RRI, narrowing it down to the CAV project and the related Pilot Action.

6.10.3 3rd workshop

During our 3rd Social Lab workshop, we discussed major lessons stemming from different participatory and inclusive pilot activities that have been created in connection with an ongoing JRC project on connected and automated vehicles. We used the conferencing tool Zoom and combined it with an online whiteboard (Miro) to foster co-creation and the engagement of all participants. Both tools and the online setting worked very well and offered a good “space” for reflection and action planning.

The format was inclusive and learnings on the commentary on the RRification of research and workshops, published in the *Journal of Responsible Innovation*¹⁷, were incorporated in the planning and execution process.

6.11 Group dynamics and diversity

This 1st Social Lab Workshop included 19 JRC staff, only two external persons and the IHS team. The outside perspective was thus comparably limited. Since JRC is an EU DG, participants had origins in various European countries and beyond. However, the sample of persons indeed consisted of highly educated people and did not include external or JRC internal persons beyond academia (e.g. administrative or facility related person). Workshops had a good mix in relation to gender. Besides the facilitators from IHS, all participants were JRC members as we aimed to focus reflection and output. In

¹⁷ Cf. <https://www.tandfonline.com/doi/full/10.1080/23299460.2020.1789387>

the two physical workshops there were critical and reflective statements regarding discussing the very fundamentals of an institution with external persons. One participant indicated that: "touching on governance it always gets political". Another participant also revealed that (s)he was sometimes reluctant to explain in detail to external individuals what (s)he meant in order not to expose oneself. (S)he said that the workshop process sometimes felt like being part of an engagement process.

One pilot host said that the Social Lab was "an interesting opportunity to engage other people at JRC with aspects of RRI". Another pilot host said: that it was like "discovering a totally new world", and that he/she "was doing research in a totally different sense" and that he/she "thought that research on perceptions etc., is for other researchers" than him/her. Also, he/she said that when they said that "we do that activity [pilot], everyone is immediately interested". Also, that, "taking with people adds a lot of new perspectives".

7 Social Lab 18 – Instruments of H2020

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7.1 State of RRI in the Programme Line before NewHorizon

Under the Work Programme of Horizon2020 from 2016 to 2017, the Instruments of Horizon2020 – Cross-Cutting Activities programme line (CCA) had three focus areas:

1. Industry 2020 in the Circular Economy (IND), which aims to “boost economic growth and renew Europe’s industrial capacities in a world of finite resources (...)” by “(...) demonstrating the economic and environmental feasibility of the circular economy approach”.
2. Internet of Things (IoT), which seeks to support “the combination of different technologies such as internet, components, big data, cloud or advanced computing, and their integration in innovative use cases addressing major societal challenges”, and
3. Smart and Sustainable Cities (SSC), which brings “together cities, industry and citizens to demonstrate the feasibility of developing (...) successful solutions for smart and sustainable cities in Europe” and “creating urban spaces powered by secure, affordable and clean energy, with smart electro-mobility and showcasing effective, innovative nature-based solutions.” (Horizon 2020, 2017)

The programme allocated funding for coordination and support actions and Research and Innovation projects involving a variety of stakeholders in research, industry, public bodies and civil society organisations (CSOs). The estimated total budget of the Cross-Cutting Activities programme line for 2016 and 2017 extends to 1,053 billion euros allocated in the following way:

1. Industry 2020 in the Circular Economy: 41 calls, 678.5 million euros (estimated). The call received 909 Proposals of which 105 projects were funded.
2. Internet of Things: Three calls, 141 million euros (estimated). The call received 178 proposals of which seven projects were funded.
3. Smart and Sustainable Cities: Six calls, 293.5 million Euros (estimated). The call received 129 proposals of which nine projects were funded.

In total, 1,216 proposals were submitted under this programme by the fall of 2017 of which 121 projects received funding according to the [CORDIS](#) database.

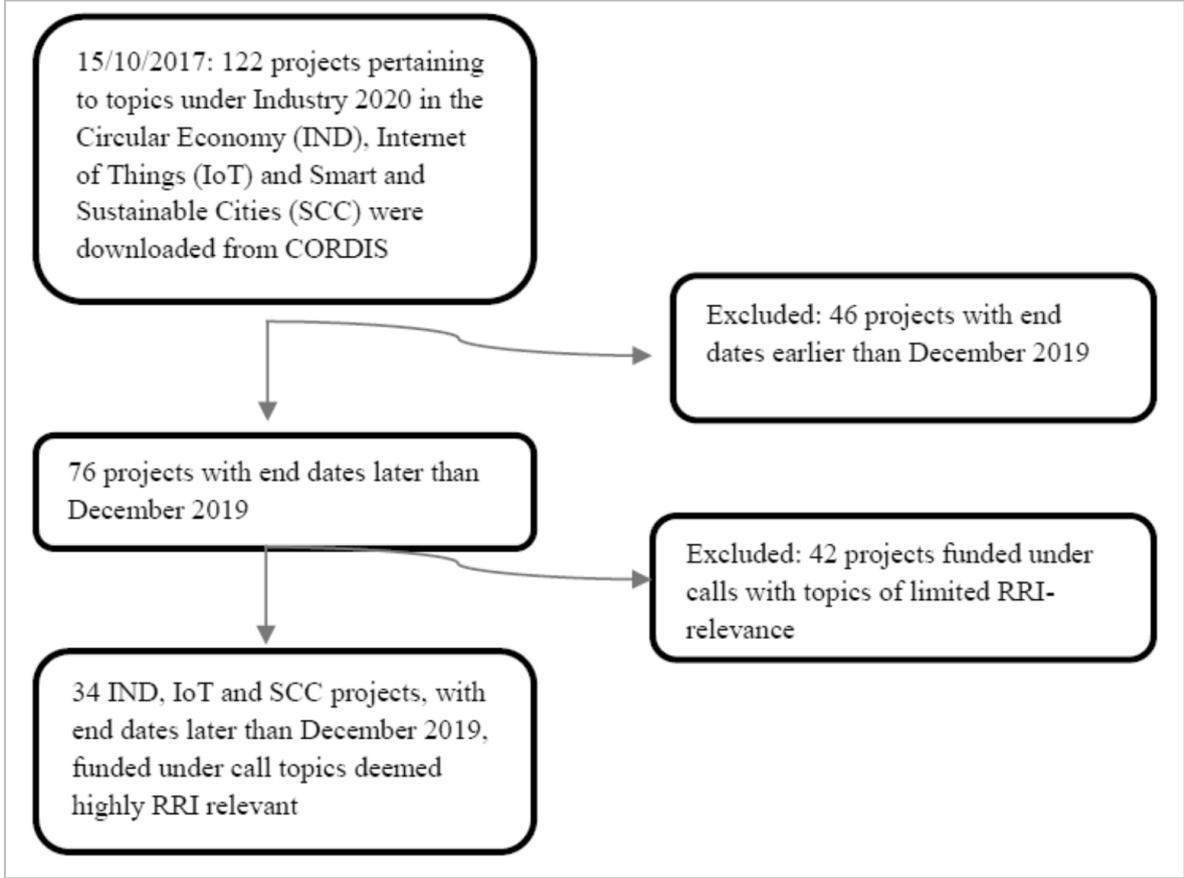
In order to identify the status and awareness of RRI, and how these understandings shape the research and innovation projects in the Instruments of Horizon2020 – Cross-Cutting Activities programme line, we conducted a diagnosis in the fall and winter of 2017/2018 before starting the Social Lab process. The aim of the diagnosis was to provide illustrative examples of when and how the RRI concept and/or components of RRI appear in the three CCA focus areas: Internet of Things, Smart and Sustainable Cities, and Industry 2020 in the Circular Economy as a starting point for further promotion and development of RRI in H2020 activities.

We collected and analysed data in multiple steps. The document analysis pertaining to the policy-level and scope-level indicates very limited attention to RRI aspects in two of the programmes:

Fast Track to Innovation Pilot (FTI) and Smart Cyber-Physical Systems (CPS). This is why we decided to restrict the analysis to proposals funded under the CCA program. Based on the full population of 122

CCA-funded projects registered in CORDIS in November 2017, we carefully selected 34 projects for document analysis. We limited our focus to projects with end dates later than December 2019. We have made this decision to ensure that potential project participants recruited for the social labs will be able to participate in RRI-activities throughout the NewHoRRizon project. Further, we decided to only include projects with accessible material and documents that include either RRI keys or O's or related RRI-aspects (European Commission, 2016; European Union, 2012). We have decided to include a majority of projects funded under calls and topics indicating a high level of relevance in an RRI perspective. We made this decision to ensure that potential interviewees and social lab participants would be prone to the notion of RRI, and as such would have a stake in engaging in a dialogue about potentials and limitations of RRI. As such, the purpose of identifying stakeholders relevant for the Social Lab was of higher priority than conducting a full analysis, which, considering the substantial number of projects would have also been out of the scope of the diagnosis report. The flow chart in figure 1 summarizes the selection process leading to the final 34 CCA projects analysed. For the full list of analysed documents, see section 9 in Griessler et al., 2018.

Figure 1: Flow chart specifying the selection process leading to the final 34 projects



For the interview study, we invited a broad variety of informants, including experts, evaluators, project members, and stakeholders involved in the CCA program.

We succeeded to carry out interviews with 15 different interviewees, including four H2020 experts in CCA, five interviewees involved in projects funded under the Industry 2020 in the Circular Economy focus area, three interviewees involved in projects funded under the Internet of Things focus area, and

three interviewees involved in Smart and Sustainable Cities funded projects. The qualitative analysis of the interview material is based on transcripts.

The analysis showed that there are components of RRI (keys and O's) in all three focus areas, even if the understandings as well as the details of the components vary between focus areas and projects. Some focus area documents and projects only integrate RRI components to a very limited extent without explicating whether these components are actually prioritised and/or how they are to be achieved. In others, Public Engagement and stakeholder involvement appear to be integral methods in the projects. The most prioritised or frequently used RRI components are Open Innovation and Public Engagement (e.g. involving users and relevant stakeholders), as well as Governance, and Ethics (e.g. data protection). As the concept of RRI does not permeate the CCA programme as such, the keys and O's of RRI are interpreted in various ways by project participants and stakeholders and we find that understandings of key components and aspects of Openness overlap, for instance that Public Engagement is closely related to stakeholder involvement (i.e. to Open Innovation).

The SSC focus area stands out in this diagnosis as we find a more intentional use of RRI components. In SSC projects, we find that methods for addressing societal challenges involve Open Innovation, Public Engagement and involvement of relevant stakeholders in general. Here, openness, Public Engagement and stakeholder involvement is not just tick-boxed in official documents but are integral to the project work (i.e. methods for developing societal solutions are carried out closely to and often in direct collaboration with the relevant societal stakeholders including civic stakeholders). This strong involvement with RRI components in SSC might be explained by the focus areas' strongly intended or imbedded priority of addressing societal challenges, which requires goodwill and public acceptance.

Even so, with very few exceptions, in most of the focus areas, RRI as a *concept* is not present. Overall, the diagnosis revealed that addressing societal challenges in R&I activities in general received more attention than the RRI concept. As such, we find that there is no evident connection between targeting societal challenges and implementing the concept of RRI (even if projects in the SSC focus area connect the two to some degree). When considering these findings, it should be kept in mind, firstly, that most of the projects received funding relatively shortly before the analysis was carried out and as such might proceed in new and different directions than the status presented in this diagnosis shows. Secondly, that neither the document nor interview analyses can be considered representative nor exhaustive for the entire program line.

In the interview study, we gained some insights and potential ideas for improvements based on lessons learned and/or motivations for integrating RRI aspects in the future that could function as an out-set for the Social Lab, namely:

- Engaging stakeholders at an early stage of research and innovation can help avoid challenges such as confusions or lack of common ground.
- The challenge of being responsible or complying with RRI as well as keeping competitive advantages must be addressed on different levels. There is a need for awareness of this cross-cutting challenge in relation to e.g. open data versus knowledge protection.
- In order to avoid (unwanted) competition (e.g. competition that hinders open innovation or knowledge sharing) there is a need for supporting cooperation and sharing information.
- In general, RRI enables addressing challenges and barriers openly.

7.2 Social Lab and Social Lab Participants

The first workshop of Social Lab 18 took place in Budapest in the spring of 2018 and was managed by Maria Lehmann Nielsen and Mathias Wullum Nielsen, assisted by Malene Vinther Christensen, and facilitated by Christoph Mandl. The workshop was back to back with the first workshop in Social Lab 16 on the European Institute of Innovation and Technology (EIT), managed by the same team, and held in Budapest because the EIT headquarter is located there. We managed to put together a diverse group of 20 participants from seven different projects representing all three focus areas: IND, IoT, and SSC. The participants were representatives from universities, companies (consultancies and hubs/networks), as well as non-profit organisations (and networks), see the distribution in Table 32. The participants also represented different levels/stages of their careers (e.g. PhDs, Associate professors/postdocs, Professors, project managers, CEOs, partners, experts, consultants, and grant/fundraising officers) and we had a fine gender balance.

Participants were invited by an e-mail invitation letter explaining the project and the workshop. As part of our snowballing recruitment, participants were invited to bring a „plus one” to boost the number of relevant participants, with which we succeeded. When invited people declined or were unable to attend the workshop, we asked them to forward the invitation to colleagues involved in or benefitting from their projects.

Table 30 - Workshop Dates (date and venue) (INSTRUMENTS)

	Date	Venue
1 st Workshop	April 19 th /20 th , 2018	Budapest, Hungary
2 nd Workshop	November 19 th /20 th , 2018	Munich, Germany
3 rd Workshop	December 10 th , 2019	Copenhagen, Denmark

The second workshop took place in Munich in December the same year and was managed by the same team. Munich was chosen as a central location allowing easy access by plane or train for most participants across Europe. Most participants in the second workshop also attended the first, though nine people dropped-out in between, mostly because of other commitments. Two newcomers also joined the Social Lab; both colleagues of one of the participants who had invited them to take part.

After the 2nd Workshop, two Pilot Actions: BudaMatrix and REDASH were discontinued, which decreased the number of Social Lab participants. Likewise, one participant in the group around the Pilot Action RRI Lab took up a new job and the group temporarily lost momentum leaving other participants abandoning the Social Lab as a consequence. Nine people dropped out between the second and third workshop. The Social Lab recruited new participants, however. The Pilot drivers of the two remaining running Pilot Actions involved their network of students, colleagues, and partners from other projects to continue the work. Of these, unfortunately, only three could make it to the final workshop, amongst other reasons, because all the students had exams during this period.

The third Workshop was organized on December 10th, 2019 at the Danish Technical University (DTU) in Kongens Lyngby near Copenhagen in Denmark, so as to visit the institution of one of the pilot drivers. This time the workshop was managed by Malene Vinther Christensen, assisted by Astrid Lykke Birkving, and still facilitated by Christoph Mandl. Only three people attended, representatives of much larger teams, and despite this small number of people, the discussion was engaging and lively.

Table 31 - Participant numbers, gender, drop out and new recruited participants (INSTRUMENTS)

	Number of male participants	Number of female participants	Total number of participants	Number of SL dropouts	Number of newly recruited participants
1 st workshop	9	11	20	9	-
2 nd workshop	7	6	13	9	2
3 rd workshop	2	1	3	-	Estimated 9

Table 32 - Participants by stakeholder group (INSTRUMENTS)

specification	Academia/Research		Business/ Industry		Policy		Other				
					EC	other	independent	CSO	funding	lay person	education
1 st workshop	12		6					2			
2 nd workshop	5		5					3			
3 rd workshop	2							1			
Totals	19		11					6			

Table 33 presents the, at the time, current country of residence of the participants not their country of origin nor nationality/citizenship, which we did not ask for or register.

Table 33- Participants of SL16 (per country)

Country	1 st Workshop	2 nd Workshop	3 rd Workshop
BEL	3	2	1
DNK	1	1	2
ESP	4	2	
HUN	4	2	
ITA	6	5	
NLD	2	1	
Total	20	13	3

7.3 Workshop objectives

Our aspirations for the first workshop was (1) to create a common understanding of RRI and the purpose of the NewHoRRizon project, (2) to discuss the relevance and usefulness of RRI in the Cross-cutting activities programme, (3) to develop ideas for Pilot Actions, and lastly (4) to have a preliminary plan for their implementation. It was important for the management team that the participants left with new knowledge and inspiration but also a motivation and drive to continue the work towards workshop two. It was also very important for the managers, to leave with a clear image of the pilots and plans for their implementation in order to support the participants in their efforts.

At the second workshop, we had three overriding objectives, which directed the planning of the workshop and its program: (1) to deepen participants' understanding of RRI, (2) to rescale overambitious Pilot Actions, and (3) to outline tasks, assign responsibilities, and make a Pilot Action-specific timeframe for the coming year.

The primary aim of the third workshop was to allow the Social Lab participants to share their work with each other, as Pilot Actions were finalized at the time, celebrate their efforts, and wrap-up the Social Lab process a nice manner.

7.4 Social Lab design

Social Lab facilitator Christoph Mandl developed the workshop program and chose most of the methods and tools applied. The program had the following elements:

Day one:

1. Welcome and introductions: Introductions to the project, to each other, and to RRI
2. Group work addressing how RRI could enrich and burden one's work
3. Plenary dialogue with talking stick on the process/SL experience so far
4. Power point presentation of the diagnosis findings by Maria Lehmann Nielsen
5. "MaxMix groups" discussing potentials, visions, and benefits of RRI for the participants work
6. Generative plenary dialogue with talking stick about what comes to mind when seeing the gap between RRI visions and current reality.
7. Individual exercise where each participant wrote down their ideas for pilot activities

Day two:

1. Speed dating: Sharing ideas for emerging pilot activities with other participants
2. Selecting pilot activities: participants 'voted with their feet' on which pilot idea they would like to support
3. Detailing the pilots in groups in several rounds of reflecting teams
4. Integration of insights in "Thinking and agreement tool" developed by the management

The structure of the workshop functioned very well; allocating the first days to the broader discussions about RRI and for brainstorming ideas and the second for "getting your hands dirty"; concretizing those ideas and making specific plans. To map-out these plans, the Social Lab managers brought a „thinking and agreement tool" to have something tangible for the further work with the groups towards the second workshop. It would have been beneficial to have more time, in the end of the workshop, for the groups to also share and get feedback on what they decided and wrote down in these documents. Some participants expressed great interest and satisfaction with experiencing the Social Lab method.

It was creative and very collaborative as well as reflexive with a good mix of group work and plenary discussions. It was our overall understanding that the participants – especially those interested in the Social Lab method – benefitted from this experience.

The program of the second workshop was made in cooperation between the Social Lab managers, assistant, and the facilitator. We allocated a substantial amount of time to work on elaborating pilot ideas and make plans for the next steps in the pilot groups. The workshop also aimed to deepen participants' understandings of RRI, as the concept was completely new for some at the first workshop. In order to do this in an engaging way we asked two of the Social Lab participants, experienced in the field of RRI, to each give a talk on RRI just as we had a guided tour with a focus on controversies and dilemmas in science in the exhibition on Energy Technologies at the Deutsche Museum. The program on day one had the following elements:

1. Welcome and introduction
2. Inspirational talk on RRI in innovation including plenum reflection and an excessive using a card game to spark discussion about ethical dilemmas in a case of new medical technology
3. Work in pilot groups, part I: Recap from the first workshop and the progress since then
4. Decision to continue, modify, or abandon Pilot Actions
5. Inspirational talk on RRI Training
6. Work in pilot groups, part II: Elaboration the pilot ideas

Day two:

1. Guided tour in the exhibition on Energy Technologies at Deutsche Museum including walk-and-talk reflections
2. Work in pilot groups, part III: Making a plan
3. Presentation and questions in plenum
4. Final modifications and agreements in pilot groups

It was our experience that several activities at the second workshop helped stimulate general reflection on responsibility in research and innovation. The first speaker did a presentation on stakeholder inclusion and medical innovation exemplified by a discovery of a new biomarker for early detection of Alzheimer's disease. We then discussed ethical issues, values, and societal impact of such a technology. This was extremely beneficial; it raised lively debate and helped the participants think about RRI in broader terms often as options or consequences you weigh in your work not as definitive answers. The session also served as an excellent showcase of all the possible dilemmas and disagreements involved when working actively to support and encourage RRI in practice. Further, we had a special guided tour about controversies in energy technology at the Deutsche Museum in Munich. This museum visit was an important revelation to many of the participants with respect to actual importance and timeliness of RRI in a global perspective.

By the time we reached the third workshop, the two remaining Pilot Actions were finalised and the primary aim was thus to allow the participants to share this good work with each other, celebrate their achievements, and to get the participants' inputs to the narratives describing the Social Lab, the pilots, and the context in which they took place. This was doable in one day with the following program:

1. Welcome and introduction
2. Presentation of RRI Lab by Ines Vaittinen including a reflective exercise on RRI
3. Presentation of BINTELLIGENT by Vincent Essonanawe Edjabo
4. Narrative part one: Discussion on Pilot Action in two groups
5. Round table, sharing reflections in plenary
6. Celebration of our good work with a Pilot Action award
7. Narratives part two: Discussion on context and social lab experience
8. RRI in future work: “What did you learn?”

At the workshop, Ines Vaittinen, the pilot driver of RRI Lab, presented an idea for a new Pilot Action: Tips & Tricks for Responsible Research and Innovation, a card game with thought-provoking statements and illustrations to spark discussion about RRI in diverse settings. She brought a similar card game about public engagement, which we tried, after which we helped brainstorm statements on RRI for the new card game. This offered a very nice discussion, which also enlightened the newcomer to the Social Lab about key RRI principles.

7.5 Pilot Action Development

At the first workshop, 11 diverse ideas for Pilot Actions emerged of which the participants chose to continue with four. Between the second and third workshop two of these were abandoned while a new one emerged at the third workshop. Table 34 provides an overview of the Pilot Actions.

Table 34 - Overview on Pilot Actions worked on in Social Lab INSTRUMENTS

Pilot Action number	Pilot Action name	Created in	Status
1	BINTELLIGENT	1st workshop	Finished
2	RRI Lab	1st workshop	Finished
3	Tips & Tricks for RRI	3 rd workshop	Running
4	REDASH	1st workshop	Abandoned
5	BudaMatrix	1st workshop	Abandoned

7.5.1 Pilot Action 1: BINTELLIGENT

During the first Workshop, the idea emerged to develop innovative waste bins equipped with sensors, which can tell its users how well they sort their waste to increase the amount of properly sorted garbage and thus cleaner residual materials that can re-enter the resource loop. It thus addresses issues of sustainability and waste management and seek to raise awareness around this. Vincent Essonanawe Edjabo, from the Danish Technical University (DTU), would be responsible for planning, developing, and testing the solution at DTU and quickly became the pilot driver. He elaborated the idea together with other Social Lab participants and developed the proto-type in cooperation with university students who could incorporate this in their study program.

At first, the waste bins were programmed, using an open source programming language, to “speak” to its user and to be used in a private kitchen. But when the demo model was first tested at DTU it was clear that the talking aspect of the waste bin, first applied, was too disturbing to be used at home. In response, Vincent and his group of students decided to test the waste bin in a more dynamic environment – the Roskilde Festival: a large musical festival in Denmark – and to add screens instead of audio feedback.

In 2017 Roskilde Festival generated more than 20 tons of waste and only 18 % was sorted and recycled. Because of that, Roskilde's ambition is now to sort 10 % more garbage every year. If the festival will achieve the goal, new projects will have to rethink the waste system. Every year, the Festival is taking up the challenge of responsible innovation by bringing in projects aiming to contribute to social challenges. In July 2019, BINTELLIGENT was one of almost 15 projects at the festival's Food Court.

After a lengthy and at times difficult developing process, BINTELLIGENT was finalized just in time for the festival. It consisted of two separate waste bins placed next to each other: one for organic waste and one for residual waste both marked with illustrations. On each of the bins, the user could press a button to learn more about garbage sorting and a screen would tell him or her how much carbon emission they saved from sorting their waste properly. During the festival, Vincent and his students talked to guests about the project and got people to try out the bins. By testing the waste bins at a festival and seeking to get guests to participate, the process of the project directly engaged with the public. None of the guests saw the waste bins as controlling or unpleasant behavioural regulation Roskilde Festival has, without a doubt, been a good environment to test the project and to engage with visitors and getting their opinion on the bins and raising awareness about sustainability.

7.5.2 Pilot Action 2: RRI Lab

This Pilot Action was originally focused on providing support, knowledge exchange, and networking on RRI for several Living Labs projects by establishing a real-world "RRI house". In other words, a complete building (a co-working space) with resources and expertise in RRI, that research and innovation stakeholders could visit to gain knowledge on how to integrate RRI in their work. A very ambitious idea that would require good connections, time, and resources to be turned into reality. At the second workshop, this actually seemed possible as one of the participants worked at the Solar Decathlon Europe. The aim of the Solar Decathlon is to design and build energy efficient houses driven on sustainable energy sources. In 2019, the event was hosted near Budapest in Hungary and there was a possibility to use one of these houses for a temporary RRI exhibition and discussion space. The specific group member got a new job, however, and the pilot and management team could not reach her and lost contact. The Pilot Action largely dependent on her connection to the Solar Decathlon Europe and other participants dropped out of the Social Lab on that account. The pilot lost momentum for a while.

Then, in the summer of 2019, between the second and third workshop, Ines Vaittinen from the European Network of Living Labs took the lead on the project as she found several connections to activities she was already doing in her organisation. She also continued to believe on the importance of facilitating discussion on RRI among her network of Living Labs – and even beyond, such as the smart cities community. She was, at that time, planning the Open Living Lab Days (OLLD19) for the fall, which was an obvious venue to implement the RRI House, now renamed RRI Lab, conference concept. Ines thus reached out to other people in her network to pool resources and expertise. This included several partners to host the booth at the OLLD19, which she could not as she was an organizer of the conference, and resources for booth materials and preparation, also supported by the NewHoRRizon project.

She involved ENOLL's own projects; iSCAPE, SISCODE, and UNaLab and ENOLL members; KTP, Genevelab, Thess-Ahal, and PA4ALL. They picked relevant speakers based on expertise and field of work so GeneveLab spoke about public sector Living Labs, KTP about the Krakow air pollution policy plan, and SISCODE on bottom-up vs. top-down initiatives. This was a learning experience both for the speakers but also the attendees at the booth.

Due to the very busy conference agenda at OLLD it was noticed that scheduled talks at booths were falling at times that participants preferred to enjoy their coffee instead – bringing only a small fraction of the conference attendees in. This learning was taken on board for the Smart City Expo where the team focused on interactive formats for facilitating discussion at the booth that were not bound to scheduled talks, but could be run with participants as they come in. All projects at the booth brought materials to draw people in: from iSCAPE air pollution sensors to discuss citizen engagement with low-cost sensors to games on governance & public engagement. The UNaLab “Urban Living Lab Playground” game was organized within the official conference program, in collaboration with several ENoLL members and stakeholders, drawing in a full room of participants. At the same time, the idea of discussion prompts that was successful in engaging participants at the OLLD was further developed by featuring Tips & Tricks card on public engagement for discussion for booth visitors. Inspired by these Tips & Tricks, Ines later started developing a similar deck of cards specifically for RRI: “The Tips & Tricks for Responsible Research & Innovation.”

7.5.3 Pilot Action 3: Tips&Tricks for Responsible Research and Innovation

The success of the Tips & Tricks cards that were utilized at the RRI Lab booth led to the realization that a dedicated set of cards for RRI should be developed to further spread the knowledge and facilitate discussion on RRI specifically. Some collaborators from the previous experience on the RRI Lab booth continued to collaborate together with ENoLL in making these cards a reality, namely KWMC (ENoLL member Living Lab behind the Tips & Tricks), Thess-Ahall (ENoLL member Living Lab and partner in the SISCODE project). Together with its Living Labs, ENoLL also continued the collaboration with SISCODE project (co-design for society in innovation and science) in the co-creation process. Many partners from the SISCODE project contributed to the development of the cards, through the deliverables that were submitted on RRI and consulted in desk research to participation and co-facilitation of several workshops with various backgrounds and fields of expertise. Beyond the experiences shared by partners in the internal SISCODE workshops, several workshops were held together with partners involving external audiences as well. These ranged from workshops discussing the integration of RRI into funding programmes and/or projects to integration of RRI in technological challenges (such as ethical and social implications of using AI in Smart Information Systems) and finally, workshops preparing the creation of an RRI network (the CoRRI network). All these experiences with various stakeholders provided valuable insight to the topics and concrete thought provocations that would later become the Tips & Tricks for Responsible Research & Innovation. Initial workshops included open discussions on RRI from which key words and thoughts were picked up for further development in the form of cards – and later workshops presented prototypes of the cards, testing and discussing their content with participants in iteratively improving the cards together. From the initial set of 52 draft cards several workshops followed, culminating in the final selection of the 20 Tips & Tricks included in the pack. All this was done after the third workshop.

7.5.4 Pilot Action 4: REDASH – Responsible Data Sharing

REDASH emerged at the first workshop and aimed to make decisions about data sharing more reflective, informed, and inclusive in the IoT focus area, specifically in the research areas active engagement (health), nature based (smart cities) solutions, and internet of food & farming. The Pilot Actions members started by using their existing networks and contacts into Large Scale Pilots (LSP) to try to integrate the idea into existing initiatives and projects but this turned out to be extremely difficult. First, because they needed extensive additional funding, which they could not procure.

Second, because it was difficult to get other project partner on board fitting the idea into projects that were already running. This would mean that the LSP would need to postpone some of their planned activities to be able to take the inputs from the Pilot Action into account, and that the stakeholders engaged would have to agree to share some of their data, which not everyone was particularly interested in. There was some scepticism towards the pilot idea (probably the scope and timing of it) in some sub-organisations of IoT making it difficult to get key actors on board and secure the necessary commitment to implement the pilot idea.

At the second workshop they thus re-scaled the Pilot Action to instead develop and distribute concept cards about responsible data sharing in the IoT Large-Scale Pilots Programme to raise awareness of relevant RRI principles and incorporate them in data sharing decisions at the local level where data is collected. They wanted to first carry out interviews with a few IoT project representatives with responsibility for data to collect their concerns, then develop concept cards, and lastly validate them at local workshops before distributing them. The Pilot Action never took off, though, and the group disengaged after the second workshop.

7.5.5 Pilot Action 5: Mapping RRI: The BudaMatrix

BudaMatrix also emerged at the first workshop in Budapest, hence the name. The purpose was to create a greater understanding of RRI and to offer concrete tools for incorporating RRI into (non-RRI) project, which could be used by different actors across disciplines and contexts. These tools would be derived from existing projects and the first step was thus to map these projects, categorize them, and develop the matrix on this basis. In other words, mapping RRI components for each of the projects the Social Lab participants were in and derive best practices from this. The Pilot Action never took off and it was abandoned after the second workshop.

7.6 Reflection

7.6.1 Challenges/critical moments

The first workshop was good and quite successful, though, of course we did experience minor challenges. First, there was some initial confusion about the project (purpose, future development, pilot activities, outcome, evaluation, time frame, tasks etc.), which we had to elaborate several times during the workshop. For instance, we stressed for the participants, that pilot activities could be small scale and that it should be something they could realize themselves, of course with help and support needed. We found that the material sent out to the participants beforehand and the short introduction to NewHoRRizon at the workshop was not sufficient to clarify all their questions about the Social Lab method and the open and experimenting approach to developing Pilot Actions. Building on our experiences from Social Lab 6, we let the programme unfold, accepting and providing the sufficient space for the initial confusion on the first day and, and as we experienced in Social Lab 16, the participants had no problems creating good Pilot Actions once we got to it.

Group diversity was another challenge: Some knew RRI very well and worked within the field already, others tried to implement RRI aspects but faced challenges, and again others had never heard of RRI before. This put the management team to the test; making sure that everyone gained new knowledge and insight on the workshop and found it beneficial to participate regardless of the level of RRI awareness they started out with. Overall, we tried to support an atmosphere where differences, as well as critical perceptions, doubts, and questions, were welcome. We also supplied those who were interested in receiving more information about RRI with material after the workshop.

Between the first and second workshop, we had contact with the Social Lab participants including those who wished to be a part of the process but could not attend the first workshop and a few extra people that joined after the first workshop. In order to enable active communication between Pilot Action group members as well, we set up Slack groups and invited participants from each Pilot Action to join. Here, we shared information from the first workshop and other inspirational material, set up dates for Skype meetings and shared minutes from meetings. We also tried sharing written questions for reflections and encourage the Pilot Action members to directly post their thoughts and comments to these or pose other questions. We send out several e-mail reminders concerning the invitations for the Slack groups and also sent out e-mails when we wanted to set up a skype meeting with Pilot Action members. Some of them responded immediately and were very flexible – others were hard to reach and either responded slowly or not at all. We set up meetings with those who made themselves available. Having skype meetings with only a few people from a Pilot Action group was not ideal, however, as it was difficult to make agreements and distribute tasks.

During this process, we found that the set-up with just three workshops, where Social Lab participants can meet in person and communicate and cooperate directly, is difficult for the task at hand in the NewHoRRizon project. Skype, e-mail, Slack etc. work for some forms of communication it is not ideal for the kind of activities we would like the Pilot Action members to engage in, in between workshops. More scheduled physical meetings would have been beneficial, especially in the first rather delicate period after the first workshop where everything is new and participants have not had much time to get to know each other nor develop a clear and realistic strategy and distribution of tasks for the implementation of their initiatives.

In the planning of the second workshop, we were very keen on ensuring sufficient time for the workshop participants to revise and refine their original Pilot Actions. As mentioned previously, some of the Pilot Actions were very ambitious and proved to be difficult to implement given the available time and resources among the participants. Prior to the second workshop, we made particular efforts to encourage several of the Pilot Action groups to “scale down” their activities. In the program for the second workshop, we devoted a substantial amount of time for the participants to reflect on the Pilot Action developments thus far and make realistic and feasible decisions on the best ways to move forward. As part of this process, we also asked the participants to reflect on what the current Pilot Actions looked like compared to their original format and design at the first workshop. Finally, we asked to reflect on possible barriers to progress between the first and workshop. Following these reflections, we asked the participants to make a personal decision concerning their pilot activities. Specifically, we asked each participant to choose either a green, yellow, or a red card, to signal whether they wanted to continue, modify or abandon their Pilot Action. This exercise proved to be a great way of recommitting the participants to their pilot activities. All of them chose to continue with their existing pilots, although two groups expressed a need for modifications.

Given the modest progress in the Pilot Actions between the first and second workshop, we, in the management team, had expected some frustration or passivity among the participants at the second workshop. Surprisingly, three out of four Pilot Actions started working efficiently on revising and strengthening their Pilot Actions as soon as they had a chance. Indeed, some of them did not even find it necessary to reflect on developments and challenges so far. Instead, they invested all time in trying to make a more realistic and feasible design for their Pilot Action towards the third workshop. It seems as if the scope and purpose of the pilots had become much clearer to most participants since the first workshop.

The participants wanted to get the most out of their time together and therefore kept their focus on the main activity: strengthening their pilots (and for a few of the groups revising them to better suit the available time and resources among the participants). In this sense, the second workshop demonstrated the crucial importance of bringing people together in the same room and allowing sufficient time for them to make critical decisions on design and coordinate future activities. It was our experience, that most Pilot Actions made more progress at the second workshop than they had between workshop one and two.

We also observed, though, that the degree of active engagement in working on the Pilot Actions varied substantially between Pilot Action groups as well as between the individual Pilot Action members between workshops. There can be several reasons for high or low engagement in between workshops for instance a lack of time, motivation, or support in the team, or discouragement because you meet resistance to your initiative. It might also be related to clarity around the Pilot Action when we left the first workshop (e.g. questions such as: How can we work on the Pilot Action? Which steps do we need to take? Do we all (need to) agree to take these steps? Do we have interest/support/time to put the work required into realizing the Pilot Action idea? Who are the people involved what are their competencies? Are we optimistic about the idea or was it more a fun exercise to do at the workshop? etc.). The first workshop worked very well for participants to freely explore their interest in RRI and develop shared visions of what the ideal circumstances for supporting the uptake of RRI would look like. However, some of them may have been too ambitious and not feasible. This might also explain the relatively low activity between the Pilot Action members between the two workshops.

Between the second and third workshop, the communication with some participants became harder, and as already mentioned, the Pilot Actions BudaMatrix and REDASH were abandoned during this period. This underlines the impression, the management team had, that while we met face-to-face at workshops the motivation and dedication was high but that it faded once people returned to their home organizations. The pilot drivers of the remaining two Pilot Actions BINTELLIGENT and RRI Lab, however, were very successful in engaging a new team member around them and implemented their Pilot Actions quite independently from the Social Lab and the Social Lab managers.

There were no grave challenges between the second and third workshop, nor on the third workshop, though, the management team would have liked more participants there. Some of the Social Lab team members were hard to reach or had other commitments at the time of the workshop, e.g. students at DTU who had exams, which is why we had so few attendees. We made a few changes to the program e.g. discussing the process and context narratives in plenum because the groups would otherwise have been too small. We accepted that there was only going to be three participants. It ended up being a good workshop nonetheless.

7.7 Achievement of objectives

We had a successful first workshop where we reached our aims of creating an understanding of RRI, discussing its usefulness, and developing a range of interesting and ambitious Pilot Actions as well as preliminary plans for their implementation.

In the second workshop, we sought to build on what we had already achieved at the first workshop by deepening the participants' understanding of RRI, rescaling potentially overambitious Pilot Action ideas, and to continue outlining tasks, assign responsibilities and make Pilot Action specific timeframes for the coming year. We reached all of the objectives.

Our decision to allow considerable time for group work on both days was crucial in this regard. Further, the two expert talks and the visit at Munich's science museum sparked deeper reflections on RRI among the participants.

At the third workshop both BINTELLIGENT and RRI Lab were successfully implemented according to plan and the primary aim of the workshop was to share the experience and celebrate the achievements, which we did.

7.8 Potential impact

Generally, the Social Lab participant's knowledge about RRI has increased and their insights in and reflections on RRI and responsibility in general is stronger now than when we started. Insights and reflection that can potentially create ripple effects in their networks.

Regarding BINTELLIGENT, this is a concrete and tangible project that can be further developed and contribute to raising awareness about waste management and sustainability and contribute to better waste sorting in public spaces in Denmark or elsewhere. The debate on climate change and sustainability will certainly not decrease in the near future and a change in our behaviour is necessary to reach climate goals. BINTELLIGENT helps us in several ways: It increases awareness of the problem, provide concrete knowledge when sorting our waste, and encourages us to change behaviour in a fun and innovative way. The results of the Pilot Action have also been anchored beyond the duration of the project. After the successful Pilot Action at DTU environment and the Roskilde Festival, the head of DTU Environment suggested the team to present BINTELLIGENT at "Folkemødet", a highly visited democracy festival in Bornholm, Denmark and to high school students visiting DTU Environment. BINTELLIGENT will also soon be used in primary schools to introduce pupils to environmental problem and programming using open sources tools.

The RRI Lab is a conference booth format, which can be adapted to many settings and used by diverse stakeholders to create awareness on and discussion about RRI in their particular field. While during the Covid-19 pandemic, have not been many physical conferences to attend, the results of this Pilot Action have still been anchored beyond the duration of the project by creating a "spin-off" project with Tips & Tricks for Responsible Research and Innovation. One of the most successful methods of engagement around the conference booth was identified as the use of discussion prompts and thought-provoking cards, such as the Tips & Tricks, that invite participants to reflect and to share thoughts and ideas on topics presented in front of them. From this, we have identified the following ripple effects: The Tips & Tricks card deck that followed from this experience will continue to facilitate discussion on RRI among the many conference booths and interactive workshops in the future around ENoLL and its network of Living Labs.

The [Tips & Tricks for Responsible Research and Innovation](#), developed primarily after the third workshop, is a very tangible outcome of NewHoRRizon. It is a deck of 20 cards containing one thought provocation each, organized according to five main categories: "ethics" (pink background), "societal engagement" (yellow background), "gender equality" (green background), "openness" (red background), and "science education" (blue background). The cards can be used without paying attention to the background colours and groupings of the cards, or they can be played with these groupings in mind. The remaining four cards in the deck introduce the Tips & Tricks (what they are), provide three different methodologies to follow in their use (how to use) and link to an online padlet board facilitating virtual collaboration and discussion of the same.

The cards can also be purchased or printed at home for free. It is thus easily accessible, easy to use, both offline and online, and can be used by many different people in different settings. Through the involvement of many motivated and engaged partners on board the development process, a snowball effect on interest and potential future use of the cards has started already from the early days of initiation and co-design. The cards will continue to serve the ENoLL Living Labs network and its members through many events to come. Beyond the community of Living Labs, discussions on Responsible Research & Innovation are expected to continue well beyond the project with the print-at-home version.

7.9 Lessons for pilot development and implementation

Generally, we have learned that **Institutional support is critical** for the success of Pilot Actions. In order to gain this support, it is important to argue that the Pilot Actions can be **easily implemented in existing projects or are aligned with existing institutional aims**. Receiving funding from the NewHoRRizon project can also act as an internal leverage for the participants in their home organizations in terms of allowing them time to work on the project and in the sense that ‘we have received money for the pilot, now we have to deliver’.

Networks have been of great importance all three finalized Pilot Actions. The Social Lab participants activated an extended network of stakeholders within and outside their own institutions. The narrative reflection and discussion at the third workshop helped the participants to be explicit in the importance of institutional support and mobilizing resources for the Pilot Actions through collaboration.

The social lab participants involved in the development of BINTELLIGENT give the following advice to other who want to try out a similar challenge:

1. Develop a plan with clear goals and responsibilities: by focusing on the development of a specific bin, we were able to use our research capacities to tackle a part of the challenge of sustainability.
2. Do a stakeholder analysis and include multiple stakeholders: by pilot testing the bin first at DTU and later by involving festivalgoers we managed to create a better product.
3. Balance energy and accept limitations: perhaps we did not solve the environmental issue as such, but we made a concrete step towards a solution through RRI.
4. Institutionalize the activity in the curriculum: this gave motivated students the possibility to work on research and develop their public engagement and design capacities.

The RRI Lab team notes the following advice:

1. Don't be afraid to dream big! Starting with a grand idea can be motivating and it can be narrowed down to an implementable outcome later. Dreaming big can keep your options open to adapt according to your learnings along the way.
2. Make the initiative a part of your ongoing work: Ines was already organizing a conference and saw an opportunity to rework the idea to fit this work. She also saw facilitating discussion on RRI within the communities of Living Labs and smart cities as a valuable activity to fit in her professional agenda.
3. Motivation only works with organizational and financial support: because of the extra NewHoRRizon funding Ines could justify her work on the Pilot Action to her employer. The financial support from NewHoRRizon was successful in bringing further resources to the table, bringing more projects and Living Labs together in joint efforts.

4. Concretizing RRI is useful: Using physical objects like games, the pollution sensors, a map of Living Labs or discussion cards are very helpful in engaging people in discussion about RRI.

And from the Tips & Tricks for Responsible Research and Innovation:

1. Learn from your experience: observe and pin-point those success factors that are valuable for future development. Tips & Tricks proved their worth in the previous pilot, creating a spin-off of their own!
2. Use your network: identify and mobilize people in your network who has expertise, resources, and care about the agenda. They can help you a lot!
3. Use interesting tools to facilitate discussion: using a concrete tool, like a deck of cards, is a simple and effective way to facilitate reflection and discussion about RRI in an engaging way in many different settings.
4. Think beyond the end date of the project already while working on it: through collaboration with engaged and motivated partners on board the future dissemination and uptake of the result is already guaranteed!

7.10 Workshop methodology

The Social Lab methodology and pilot process worked well in the institutional contexts in which the participants worked, especially because the groups have adapted the Pilot Actions to function in their existing work. At DTU, the institutional structure has been used very well by incorporating the Pilot Actions into the educational aims and program, making it part of students' courses, and hiring student assistants etc.

For the RRI Lab, the respective Social Lab participant has done the same by activating a network of projects and collaborators in ENoLL where the pilot driver works.

In both Pilot Actions, the institutional context of Horizon2020 (specifically the program line "Instruments of Horizon2020") is weak because both projects have used the framework/context of their own institutions but it has resulted in a positive view on Social Labs as a method. The participants expressed that they were happy to be part of the project where they were allowed to dream, think big, and experiment, which you often do not get to do in your job. This obviously hinted at the individual brainstorming, speed dating exercise, and Pilot Action group work on the first workshop, which worked particularly well. Our decision to allow considerable time for group work on workshop two, was also very beneficial and crucial in this regard. Further, the two expert talks and the visit at Munich's science museum sparked deeper reflections on RRI among the participants.

7.11 Group dynamics and diversity

There was generally a positive and very constructive atmosphere at the first workshop where people worked well together. We generally had a good impression of the group dynamic and cooperation and got predominantly positive feedback on the workshop. As mentioned earlier, some participants had more knowledge on RRI beforehand, which might have kept other participants with less knowledge more silent. This is something, which could be expected, though, we did not, in the management team, experience this as a major issue.

The second workshop had a good representation of different types of stakeholders including people from innovation-driven companies, innovation networks, universities, CSOs, and researchers from various EC-funded projects within the Cross-cutting Activities programme.

Diversity was also quite good in terms of nationality, gender and age. We did, however, not succeed in involving any policy-makers, representatives from funding agencies, or lay-persons this time. The group interactions went quite smooth. The participants were generally very positive and open-minded about the workshop focus and activities, and three of the four groups worked efficiently on furthering their Pilot Action ideas and planning future activities. We did not experience a lot of scepticism and questioning of RRI at this workshop. Most participants were keen on working actively on their pilot activities already after lunch on the first day of the workshop. It is our impression that they quite enjoyed the workshop; to generate new ideas and work together. One group faced some challenges due to disagreements on the purpose and execution of their Pilot Action because they had met some resistance to their Pilot Action in their network.

Even though we were only a few people present at the third workshop, the diversity of the group created a good discussion flow. The participants have experienced different challenges in their Pilot Actions but could recognize each other's problems in the discussion nonetheless. This resulted in a good group dynamic and a very pleasant environment.

8 Social Lab 19 - EURATOM

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8.1 State of RRI in EURATOM before NewHoRRizon

As all other 18 Social Labs of NewHoRRizon, the Social Lab team of SL19 (EURATOM) conducted a diagnosis on the status quo of RRI within EURATOM. This diagnosis relied on the analysis of the Work Programmes from 2014-2020 (and other supplementary documents) as well as a total of eleven interviews with relevant stakeholders were done.

Given its foundation in the basic Treaties of the European Union and its status as institution rather than a funding program, EURATOM has a special position within Horizon 2020 (H2020) compared to other pillars of the Framework Programme. Regarding RRI, there was awareness of some specific keys in the Work Programmes, but those were rather narrowly defined and little attention was paid to them. Traces of other concepts were found as well in the documents. The inclusion of more social scientists and scholars from the humanities into EURATOM was seen as a desirable contribution in the Work Programme 2016-2017 to a more open science. Being open to the world is seen important for two reasons. One is to establish European standards in the world, while the other is to increase global competition.

The six RRI keys were present in different dimensions.

For the Gender key, some awareness was present. Gender was addressed in documents and interviews in terms of Gender balance. The goal of reaching equal numbers of male and female researchers in research teams was considered important. Interviewees agreed that women should be encouraged to choose careers in nuclear physics and/or engineering.

Only limited awareness existed in interviews on Science Education. If mentioned, it was rather perceived to be vital for tackling the presumed knowledge deficits of the public. Interviewees made a number of suggestions for educating the public such as public events, info- tents on festivals for popular music or involving stakeholders. Still, interviewees imagined rather PhDs or potential recruits for a career in the field of nuclear as target groups than the general public. Many interviewees mentioned teaching activities as their contribution to Science Education. However, their teaching activity was not directed towards the public. It was hinted by interviewees that the general public is not seen as competent enough to deal with the complex challenges of the nuclear field so therefore one must focus on those who have the potential to enrich nuclear research like PhD students.

Issues of Open Access seemed to have a high level of awareness. Open Access appeared to be the most relevant of all RRI keys to stakeholders based on the findings in documents and interviews. Not only do all official documents mention the need/preference to publish Open Access; interviewees consider it important for the research community as well. Interviewees criticized that publishing Open Access is expensive and that dedicated funds are rather limited. Therefore, some interviewees were in favor of more money for that purpose within the funding. Most interviewees reported that publishing Open Access is nevertheless established routine.

Some awareness was also present for Ethics. All interviewees considered Ethics as integral part of proper research. They considered their work as ethical and were convinced of already applying the highest standards of research Ethics, so the need for taking further actions was not apparent. Here, Ethics seems to be an RRI key that was partly confused with research integrity. Research Ethics was

often described as being cautious and not causing any potential damage. Research Ethics in EURATOM is more about considering the spheres of safe research than emphasizing education and training, stakeholder involvement or integrity for society. For Governance, no awareness is present. It played a very limited role in official documents and was never mentioned by any of the interviewees.

The most controversial RRI key in the interviews was Public Engagement. Whether, how and to what extent to involve the general public into the research and innovation process in EURATOM was perceived as a tricky and controversial question. In the interviews, several arguments against or for a deep(er) involvement of lay people were stressed. First, the public was seen as potential opposition to nuclear energy. Second, it was argued that the general public lacks knowledge on nuclear energy. It was questioned whether the public will be able to form a rational opinion or rather stick to their preconceived ideas. In turn, one coordinator of an FP7 funded project reported good experiences of Public Engagement in terms of acceptance of nuclear research. Still, the assumption that there is lack of knowledge about the complex field of nuclear physics and that the public is potentially perceived as hostile towards nuclear physics were seen and described in interviews as major barriers in fostering Public Engagement.

In turn, interviewees didn't oppose the idea of RRI in general. One National Contact Point (NCP), e.g., was interested in the concept and its application while others became skeptical after taking a closer look at the concept, particularly when it came to Public Engagement in research and innovation. Another concern that interviewees frequently mentioned is that they don't want RRI to hinder the progress in R&I, which they fear could be the case if RRI is applied. In turn, many interviewees agreed on the necessity to inform the public and argued for more transparency where RRI could be helpful.

Based on this assessment, the Social Lab team identified several major challenges for RRI within EURATOM.

- First, the concept of RRI is little known. While there is clearly sensitivity for security issues of nuclear energy and therefore of responsibility for society, knowledge of RRI and its keys is limited.
- Second, Public Engagement poses a complex challenge. On the one hand interviewees stressed the public's right for information about nuclear research. Many interviewees were in favor of educating the public on this topic. However, they remained skeptical about involving the public in two-way communication about research for two reasons. They questioned whether lay people can fully grasp and assess the complex area of nuclear physics and its consequences. In addition, they pointed out that public perception of nuclear research is negative. Public discussion therefore would be futile. In other words, the interviewees' openness and readiness towards transparency is curtailed by their assumptions of the public's lack of knowledge and its skepticism. In this perspective deeper involvement of lay people into research does not make sense.

Based on the diagnosis, we identified three aspects important to foster the implementation of RRI in EURATOM. These include:

- 1) creating awareness for the importance of engaging the public beyond informing them about the research projects being done;
- 2) stimulating a discussion on the role of Ethics and Gender in research as well as Science Education that goes beyond the tick box exercises and narrow levels;

- 3) bringing together diverse stakeholders to find a shared understanding of what goals should be set up for future research in EURATOM and beyond.

8.2 Social Lab and Social Lab Participants

After getting first insights by doing an RRI Diagnosis for EURATOM, the Social Lab team agreed that it would be feasible to have the first workshop in Brussels, Belgium, as this is one of the major hubs for EURATOM by having many stakeholders present in this area. For the second Social Lab Workshop, the Social Lab team opted to host the event at its own premise in Vienna, Austria. During this second workshop, participants were asked to volunteer to organize the third edition of the Social Lab workshop. Here, the team of NCBJ agreed to invite the Social Lab to their premise close to Warsaw, Poland.

Table 35 - Workshop Dates (date and venue) EURATOM

	Date	Venue
1 st workshop	May 17 th -18 th , 2018	Brussels, Belgium
2 nd workshop	January 29 th -30 th , 2019	Vienna, Austria
3 rd workshop	November 19 th – 20 th , 2019	Warsaw, Poland

Recruitment for the Social Lab started once the interviews for the diagnosis were in progress. Through this channel only two out of eleven people interviewed agreed to join the first Social Lab workshop. As this way of recruitment proved difficult, as well as inviting randomly picked stakeholders via email, the Social Lab team agreed to change their strategy. The Social Lab team searched CORDIS¹⁸ to identify relevant research projects. Unlike in other parts of H2020, EURATOM has a strong connection with industry partners in these research projects, so the scope of stakeholders could be widened very easily.

Soon, the Social Lab attracted the attention of many stakeholders. In total, 16 candidates stated their intention to participate. The EURATOM Social Lab was initially planned together with the JRC Social Lab (SL17). The separation of the JRC/EURATOM Social Lab into two separate parts came after the diagnosis, which showed that there are interlinks between the two institutions, but covering them in only one Social Lab would not provide enough focus. This in turn meant that the budget needed to be shared, which limited the number of potential participants to ten. Therefore, six participants were put on a “waiting list” in case last minute cancelations arrive. This did not happen at the first workshop. Therefore, the EURATOM Social Lab started with ten participants from different areas and different expertise. The composition was almost balanced in terms of Gender (see Table 36), as well as covering the different stakeholder areas (see Table 37).

Table 36 - Participant numbers, Gender, drop out and new recruited participants (EURATOM)

	Number of male participants	Number of female participants	Total number of participants	Number of SL drop outs	Number of newly recruited participants
1 st workshop	6	4	10	2	-
2 nd workshop	5	2	7		2
3 rd workshop	5	1	6	1	1

¹⁸ <https://cordis.europa.eu/>

Table 37 - Participants by stakeholder group (EURATOM)

specification	Academia/research	Business/ Industry	Policy	other					
			EC	other	independ	CSO	funding	lay	education
1 st workshop	5	2	2			1			
2 nd workshop	5		2						
3 rd workshop	4		2						
Totals	14	2	6			1			

After the first workshop, a CSO representative stopped participating in the Social Lab, stating that no real change seems possible in the Social Lab setting. Another participant decided to stop his participation, but sent two colleagues from the education department to work on Pilot Actions, as he considered them to be better suited based on qualifications and expertise. No further adjustments have been made in the composition of the Social Lab, as all other participants were eager to join the second workshop as well. However, three participants of the first workshop did not join the second. The reason here was not to quit participation in the Social Lab per se, but in all three cases professional obligations hindered their participation in the second workshop.

At the third and final workshop, six stakeholders participated. This rather low number reflects the fact that all Pilot Actions were finalized and the pilot host of the abandoned Pilot Action did no longer participate. Therefore, the motivation of attending a concluding workshop just to exchange on experiences and discuss narratives of the Social Lab process seemed not convincing enough. In turn, one new participant joined the Social Lab after contacting the Social Lab Managers during the work on a Pilot Action.

Regarding the mix of countries present in the Social Lab, a common problem occurred. While the WIDENING area is a big player in Nuclear Energy, hardly any stakeholders from this area were eager to participate in the Social Lab. With the exception of Poland, only Northern – or Western European countries participated. Out of these, countries with a strong history in nuclear were present in the highest numbers, such as France and Germany (see Table 38).

Table 38 - Participants SL EURATOM per country

Country	1 st workshop	2 nd workshop	3 rd workshop
AUT	1		
BEL	1	1	
DEU	2	1	1
ESP	1	1	1
FRA	3	1	
NLD			1
POL	1	2	2
SWE	1	1	1
Total	10	7	6

8.3 Workshop objectives

The general aim of the Social Lab, as stated in the invitation letter was to “establish a creative space that allows [stakeholder] and other experts to share [their] experiences and to develop new approaches to accommodate and integrate aspects of responsibility into research and innovation.” The Social Labs would “consists of a series of three stakeholder workshops in which participants from science, research funding, intermediate organizations as well as civil society organisations will develop and test measures that address issues they consider relevant in the context of responsibility and basic research.” Within this general objective, each workshop had specific objectives.

- In the 1st Workshop, participants should work on a shared understanding of responsibility in the area of nuclear in general and EURATOM in particular and start to develop pilot activities to address responsibility/RRI issues in EURATOM (both as institution and area of research (nuclear energy)).
- The 2nd workshop was to promote a feeling in the group that the Social Lab works together on a shared project. New participants should be able to bring in their new perspectives and participants should increase their commitment, but can also take the decision to quit. Participants should work on, refine and further develop Pilot Actions, and draw up action plans of experimentation and refinement as well as engaging other people (not yet SL members) in the pilots.
- The objectives for the 3rd workshop was (1) to reflect and evaluate Pilot Actions; (2) to extract lessons learned to make it useful for the participants; (3) to develop lessons learned and Pilot Action uptake as well as potential heritage (e.g. joint project proposals).

8.4 Social Lab design

The design of the EURATOM Social Lab was an adaptation of the generic design that has been created by a group of Social Lab managers and facilitators to the requirements of the EURATOM community.

8.4.1 1st workshop

The journey of the Social Lab started with the arrival of participants and a welcome session over coffee and tea, where Social Lab participants checked-in and the Social Lab team (consisting of two Social Lab managers and one facilitator) got to know each other.

After the welcome address by the Social Lab managers, the facilitator asked participants to develop visions of the future of EURATOM. Participants were asked start from the current state and then explore how they believe EURATOM will and should evolve in the future. This exercise was given a timeframe of 120 minutes and was followed by a Lunch Break. This break was used to better get to know each other in a more informal atmosphere.

Returning to the Social Lab, the challenges of EURATOM elaborated by the participants were discussed. Building on the participants visions of the future ways to address the barriers EURATOM faces were elaborated. This session was also dedicated 120 minutes and followed up by a Coffee Break before the last session was introducing RRI to EURATOM. Here, the researchers, together with the participants, addressed how RRI is implemented within EURATOM and how it could be used to tackle the barriers identified in the previous session.

After this session a working dinner was used to discuss the impressions of Day 1 and to get to know each other better.

Day 2 started with a discussion on possible pilot ideas based on the identified challenges on Day 1. Again, participants were given 120 minutes to discuss.

After this, the first concretization of pilot ideas took place in a plenary session. After lunch, Social Lab participants were further working on co-creating pilot ideas and concretize them. The presentation of the four pilots that emerged ended the first Social Lab Workshop.

8.4.2 2nd workshop

The second workshop started with a wrap up of the first workshop. Participants were asked to discuss the visions, perspectives, and challenges related to RRI.

After lunch, the facilitator initiated a 90 minutes session on the status quo of the Pilot Actions. Participants discussed and updated each other about Pilot Action development. After coffee break, the Pilot Actions were further reflected on in terms of feasibility.

The rest of the day participants received updates on RRI in the upcoming Framework Programme. Day 1 concluded with a resume and discussion of the day ahead at a working dinner.

Day 2 started with a session in which participants were asked to think of next steps for their Pilot Actions. This process was supported by two sessions on institutional change. First participants were asked to think about what kind of change is desired and after the lunch break to discuss how to achieve this change. After informal discussion in a coffee break, participants provided feedback and talked about next steps in a final session.

8.4.3 3rd workshop

Workshop 3 again started with a welcome address by the Social Lab team. Thereafter, the purpose as well as a wrap up of workshop 1 and workshop 2 was given in order to recall the EURATOM diagnosis and social challenge defined by participants in workshop 1.

To support this, the facilitator used posters from (a) the photo protocol and (b) the diagnosis presentation. Participants were then asked to fill in what the social challenge was and to describe what barriers and obstacles were perceived to overcome it in the course of the Social Lab. This task concluded in a presentation and summary of the Pilot Actions. After lunch, a reflection on pilot activities combining the two exercises was done. Participants were asked to reflect EURATOM diagnosis, social challenges and institutional change.

In a next session, participants were asked to reflect whether the Pilot Actions addressed the barriers and how did RRI inform the Pilot Action. They were asked to elaborate if awareness of RRI helped to overcome barriers. Participants wrote their findings on flipcharts.

After coffee, participants were asked to paint a typical scene from their Pilot Action addressing the question, why it was characteristic and what it can tell us for possible policy recommendations. Thereafter, participants were requested to create a policy recommendation from that scene. The recommendation should include the most important finding of the Pilot Action and how it can be used by policy makers.

The first session of Day 2 included a wrap-up of Day 1 and was followed by generating narratives on RRI within EURATOM. After a Coffee Break, the facilitator initiated a learning history session.

In this exercise, the reflection on “What have we learned?” was central. It aimed at structuring learning based on the RRI keys.

After lunch, participants were asked to continue to develop policy recommendations how RRI (aspects) could and should be implemented in EURATOM. They were asked to create in pairs two recommendations, based on what has been previously discussed.

After this, the final session of the Social Lab started with a cheerful conclusion of the EURATOM Social Lab process where Social Lab Members were awarded for their achievements. The last activity of the final workshop was creating a slogan for the Social Lab based on the journey and experiences.

8.5 Pilot Action Development

In the 1st workshop, the Social Lab created altogether 12 Pilot Action ideas and decided to work on four. Three were followed up. While initially the four Pilot Actions after the 1st workshop were (1) the Teach the Teacher, (2) the RRI keys for EURATOM, (3) Nuclear Dating and (4) the trial event for EURATOM, the Pilot Actions pursued changed thereafter. Soon “Teach the Teacher” and “Nuclear Dating” were the pilots followed up on, while one other participant took ownership of the “Fessenheim” pilot idea that was among the 12 ideas created in workshop 1.

After the 2nd workshop, participants stopped working on one Pilot Action 3 (Fessenheim) and decided to resume work on a Pilot Action 4 (EURATOM Proposal) that addresses lack of resources for implementing RRI in EURATOM. Prior to the 3rd workshop the Social Lab had completed all but one Pilot Actions and was still waiting for evaluation result of Pilot Action 4. Table 39

Table 21 provides an overview on these four Pilot Actions of the Social Lab.

Table 39 - Overview on Pilot Actions worked on in EURATOM

Pilot Number	Action	Pilot Action Name	Created in	Status
1		Teach the Teacher	WS1	Completed
2		Nuclear Dating	WS1	Completed
3		Fessenheim	WS1	Abandoned
4		EURATOM Proposal	WS2	Completed

In the next section we present the development of these four Pilot Actions in more detail.

8.5.1 Pilot Action 1 – Teach the Teacher

The Pilot Action takes up Science Education. Participants of the first Social Lab workshop generated the idea to create a course that acquaints high school teachers with new teaching methods and materials to increase their students’ interest in and knowledge of science. The Pilot Action also wanted to change linear understanding of physics without reference to Ethics and (societal) responsibility. A first pilot module for this “teach the teacher” workshop should be developed and run after a review of physics curricula in several countries. Next, the idea should be lobbied for and discussed at EURATOM Committees. After an initial workshop in Poland, the Pilot Action should be rolled out in all Member States. It was also planned to include the Pilot Action in future EURATOM calls.

The “teach-the-teacher” course was designed as two-day residential workshop. It was held at the sponsors facilities in Warsaw on January 10th/11th, 2019 and organized together with teachers who

regularly visit the “Education and Training Divisions” at the sponsor’s facility as well as other partner schools in Poland. It involved physics teachers from Poland. Attendance was free of charge to make participation easy.

The course was led by teaching and learning coaches and provided a series of activities. Teachers from all over the country had the opportunity to share good teaching practices. They were able to increase by laboratory experiments their knowledge about the practical use of radiation and nuclear techniques. They also learned by example how to integrate aspects responsibility and Ethics in their teaching.

Another aim of the “teach the teacher” workshop was to develop teaching standards and methods for education in the importance of nuclear technology in our lives. After the training, the teachers, with a group of students, should come to the sponsors facility and supported by the trainers would conduct classes independently. Here devices were introduced in using cutting edge devices for didactic demonstrations and exercises in secondary schools.

Evaluation of the event proved that the design of the pilot is effective. However, so far, the first workshop remained the only one because of lack of resources. As a consequence, and also in order to fulfill the initial goal of rolling out the Pilot Action if successful, the activity was integrated to Pilot Action 4 (EURATOM Proposal) which includes a work package dedicated to introducing the course in the field of EURATOM. The proposal was evaluated above the required threshold but did not receive funding. Nevertheless, it is planned to continue the activity on further occasions. However, because of the current COVID19 pandemic, actions are on hold at the moment.

8.5.2 Pilot Action 2 – Nuclear Dating

During the first workshop Social Lab participants created the idea of bringing together students and early career researchers from nuclear research and social sciences in a speed dating format to overcome “silo thinking” in disciplines and to make participants aware of the possibility of inter- and transdisciplinary cooperation and its benefits. The Pilot Action promotes several RRI keys, in particular Science Education and Research Ethics. The first workshop should focus on students and early career researchers because the Pilot Action team assumed that this group would be more open to the unusual format than their elder colleagues. Furthermore, workshops should include more senior groups of researchers as well.

Developing the Pilot Action proved difficult, with many challenges ahead. At the end of the first workshop, there was much enthusiasm about idea and concept. The five participants interested in the Pilot Action organized a planning meeting and designed a first concept. However, efforts declined after the first wave of enthusiasm, because most participants were busy in their demanding daily work and could not contribute additional resources. The Pilot Action team was able to realize the Pilot Action because the pilot host and her team made huge efforts to make it happen and the pilot hosts’ organization saw a benefit in the concept for their own organization and was eager to try it out.

Recruitment of participants was another challenge: promotion for the event started early, registrations, however, remained low. Therefore, the pilot host decided to recruit participants from within her organization. This was appropriate for two reasons: first, the pilot host’s organization is transdisciplinary in itself and provides an affluent pool of potential participants.

Second, recruiting participants from within made sense given the pilot host's plan to implement the Pilot Action within the organization. In total eight researchers participated in speed dating; an equal share of social and nuclear researchers. In addition, one EC representative participated in the first day.

The one-and-a-half-day event was held in September 2019 at the Hard Rock Cafe in Brussels. This venue, which is rather unusual for an academic meeting, was selected because the Hard Rock Cafe is located at the very center and contrasts sharply with the typical setting of academic events. It should provide a relaxed atmosphere for exchange.

After an introduction to the agenda, the pilot host asked the participants to present their work in a short a Pecha Kucha format.¹⁹ These presentations provided first insights into participants' research. Thereafter, "speed dating" commenced. Participants had six-minutes time to talk in a series of conversations to their fellow colleagues and to deepen the impression of the presentations. This was also used as an opportunity to exchange about research interests and led direction into the next step of the workshop: setting up two research groups. The goal of this phase of the workshop was to create a research proposal. Participants formed two groups of four, composed of two social and two nuclear scientists. Before the ideation on potential research projects started, one of the Social Lab Managers introduced into the concept of RRI. Participants were asked to include one or more RRI key to their research proposal. In a working-dinner the participants had the chance for further exchange on their research ideas and RRI.

On Day 2 participants refined their ideas and presented their proposals at the end of the day. At the end of the workshop, participants were asked to evaluate the event in terms of content, knowledge transfer (especially RRI), organization, and personal experiences.

The participants of the workshop evaluated nuclear dating very favorably. They were ask to rate the event in five categories, e.g. the content, the event material, the lectures, the overall organization of the event and to provide general remarks. For the content participants rated the event either with "excellent" or "good" only the practical use of the workshop was questioned by one participant who gave a "poor" remark. The same applies to the event material and the lectures which were rated with either "excellent" or "good". Two participants noted here, that a deeper presentation of RRI would have been useful and recommended to dedicate more space to this in the future. The category organization did almost only receive "excellent" feedback, while the general feedback concluded that 8 out of 8 participants would recommend this event to other persons.

Despite the fact that the test run did not have many participants, people perceived the event as very interesting. They communicated that it was interesting to learn much from different perspectives. Participants also stated that they could imagine an event solely with nuclear PhDs as the field is very broad and would increase mutual understanding. Some participants said, that they joined the event mainly by recommendation from their supervisors. This raises the question if participation in such an event depends on recommendation by a known and trusted people. During the event it was clear that people were opening up.

¹⁹ <https://www.pechakucha.com/>

Nuclear dating had a number of ripple effects so far. Shortly before the event, the format was included as activity in Pilot Action 4 (EURATOM Proposal). Furthermore, the head of the pilot host organization voiced her interest in applying it internally.

Because of the participants' favorable feedback, the pilot sponsor decided to do a joint publication about the Pilot Action. First, it considered only involving the organizers in the publication, however, it was decided to invite also participants to join to add their experiences of the event. This way they could contribute to the publication and the refinement of the format. The paper was submitted and is currently under review.

Although the Pilot Action was taking place in September 2019, the Pilot Action host informed the Social Lab team recently that a short format of "Nuclear Dating" will take place in September 2021 at an event dedicated to transdisciplinarity organized by the Belgian Association for Radiation Protection. It will be interesting how the idea develops further in the coming months.

8.5.3 Pilot Action 3 – Fessenheim

This Pilot Action was developed in the first Social Lab workshop. It tried to implement RRI in the decommissioning process of nuclear power plants which will become increasingly important, since until the year 2050 an estimate of more than 200 reactors will expire. Yet, there is little experience worldwide in shutting down and decommissioning nuclear reactors and it was assumed that the area might benefit from RRI. The French nuclear power plant at Fessenheim was selected as case study for how the RRI keys could be implemented in such an exercise.

The pilot host wanted to start the Pilot Action by interviewing relevant stakeholders that are structured according to the RRI keys. It was planned to involve all key actors on all levels (such as the power plant management, stakeholders, and the population). Ideally, the pilot should have created a "practical application" of (most of) the six keys in the decommissioning process of a nuclear power plant. The pilot started with huge enthusiasm and the pilot host invested a lot of resources in making things happen. Even during the second workshop, when the feasibility was discussed, participants pointed at the relevance and importance of this pilot. However, after the second workshop it became clear that vital stakeholders would not respond to invitations for interviews. This lack of interest made it improbable that the pilot might happen as planned. In search for alternatives it became clear, that the scope of the Pilot Action maybe was too ambitious. It could easily have been a research project in itself, which could not be tackled with the limited resources of a Social Lab. Therefore, the pilot was abandoned in mutual agreement with the pilot host.

8.5.4 Pilot Action 4 –EURATOM Proposal

During the first Social Lab workshop, participants stressed that RRI cannot be implemented in EURATOM without dedicated funding. Thus, the idea of this Pilot Action was to integrate RRI into a EURATOM research proposal which should integrate and further develop existing Pilot Actions "Teach-the-Teacher" and "Nuclear Dating". The project would help to implement RRI in EURATOM by providing additional and dedicated funding. This would enable people involved in the project to promote RRI in EURATOM and to generate impact beyond the Social Lab by using the project consortium's vast network.

During workshops, participants explained two main challenges for RRI in the field of nuclear research. First, the discipline faces problems to attract young people, in particular young women. Only few young talents decide for a career in this field, which would soon lead to a shortage of qualified personnel.

Second, in order to implement RRI in EURATOM additional funding is necessary. Only dedicated funds would raise the chances to implement RRI in this research environment. Social Lab participants stressed that RRI cannot be implemented to EURATOM without having the necessary money and resources.

Over the course of the 1st and 2nd workshop, Social Lab participants developed the idea to tackle these problems by applying for a research project within the EURATOM funding scheme. This pilot, which was called “EURATOM” proposal built on the experiences gained the previous two actions “Nuclear Dating” and “Teach the Teacher” and integrated RRI aspects in dedicated workshops. Stakeholders identified in the first Social Lab Workshop that the negative picture especially of nuclear power in large parts of the general public was a major hinderance to attract young talent. Over the course of the Social Lab, especially in the 2nd Workshops solutions for this problem were debated. When asked about the feasibility of the Pilot Actions during the 2nd Workshop, one participant came up with the idea of writing a proposal to combine the two goals. In order to make nuclear education more attractive to young people, the proposal included several new and innovative teaching methods aiming at different target groups and involving all different kind of stakeholder groups. To support this, RRI and its benefits was introduced.

The proposal stated: *“Stakeholder involvement and Science Education are essential cornerstones of this concept. As numbers prove, there are still more men than women pursuing careers in nuclear sciences. Using RRI and its emphasis on Gender equality is an appropriate way to ensure that more female professionals will enter the field of nuclear and less potential is wasted. Guiding young researchers towards open access and applying research Ethics will be beneficial not only for the European Commission but for all stakeholders in the field of nuclear (open access made possible to publicly funded research, Science for and with the Society, thereby achieving wider acceptance of the research).”*

Target groups for the RRI measures included in the proposal were students on different levels ranging from high school to MSc students. The Pilot Action also targeted stakeholders from industry and education who are involved in the design and implementation of these nouvelle methods. These methods include processes of co-creation, more eye-level teaching methods, as well as using new technology to enhance the learning/teaching experience. The proposal sought impact on different timescales. In the mid-term perspective it should already provide a first shift towards increasing numbers of students opting for the nuclear field. RRI was used as the underlying framework to achieve this, by applying all keys as mentioned in the quote above. By doing so, RRI became an overarching umbrella and was not limited to a single Work Package.

The proposal was submitted on September 25th, 2019. Although it passed the threshold value, it did not receive funding. The evaluation report did not allude to RRI. Therefore, it is unclear whether the evaluators perceived the inclusion of RRI into the proposal as positive or negative. The consortium is still interested in applying for future calls. Also, during a meeting on March 5th, 2020 plans were discussed to revive the cooperation for future calls. However, this plan came to a rather abrupt ending because to the outbreak of the COVID19 pandemic.

8.6 Reflection

8.6.1 Challenges/critical moments

Over the course of the EURATOM Social Lab, different challenges occurred (see Table 40).

Table 40 - Challenges of the Social Lab EURATOM

Nr.	Challenges and critical moments	Workshops
1	Defining a Social Challenge	WS 1
2	Creating emotional commitment	WS 1
3	Feasibility of Pilot Actions	WS 1, WS 2
4	Moments of Frustration	WS 1, WS 2, WS3
5	Lack of Resources	WS1, WS 2
6	Defining Policy Recommendations	WS 3

8.6.2 Defining a Social Challenge

Challenges started with defining a social challenge relevant to all Social Lab participants. In the first workshop it was hard to create the space to define and focus on the social challenge reflective of the main problem of the specific program line. In EURATOM, the social challenge was defined in the vague terms of „raise[ing] awareness about the evolution of energy use” which was challenging to actually move to the next phase – coming up and engaging in pilots. The definition of a social challenge should have ideally offered enough emotional and intellectual energy for participants to engage in and take sponsorship of pilots which did not fully happen. In the case of EURATOM participants felt that while they came up with a „real challenge”, the concepts and problems behind the challenge would have required more discussion, such as addressing the questions of “why is there no awareness”; “by whom” and “what is meant by awareness etc.” – and therefore the frustration of the participants did not turn into creative energy.

Participants also talked about „negative awareness” that they experience in society and the getting out of there is hard to achieve. This negative awareness reflects the negative attitude of wider parts of society towards nuclear energy. The narrative of “us against them” - meaning the nuclear experts vs. the “guy from the woods” who is unaware of the benefits that nuclear brings -was very present at the first workshop. During the process of defining the social challenge most participants became more open towards the inclusion of RRI in EURATOM. The picture evolved that RRI is not seen as a change of their world but rather as an enhancement of certain parts that might need improvement. The shared understanding amongst participants is that in the future there will be an increased demand for energy and given the fact of climate change, this energy needs to be free of carbon and CO₂. In their vision nuclear power can provide this kind of energy needed. In order to overcome its partly negative reputation in the public, some RRI elements such as Public Engagement could be applied.

8.6.3 Creating commitment

Another challenge was posed by the limited time (1.5 days) and the diversity of actors as well as the specificities of the subject matter made it especially hard to address the commitment.

On the side of the NGO participant the lack of commitment probably came from „stakeholder fatigue“: she has seen many such events that led nowhere and no change is achieved; in the case of the JRC representative, again, his role definition (defending EC) came from past experience – the role of the facilitator here was to get them out of these established roles and create momentum for change also in them. However, status quo oriented organizational structures, a tendency to avoid risks and negative change experience of participants probably obstructed the participants to engage in a fully committed way. In turn, maybe the Social Lab team did not emphasize enough that these pilot activities should be very well connected to the daily working life of the participants as at the end, people claimed that they would not have resources for implementing the developed pilot ideas. This means that the pilot ideas were either not enough connected with one’s work or that they asked too much effort which would need a lot of (additional) time resources (which nobody has available). At the end, some participants took over responsibilities, others left it (more or less) open how they would contribute to the Pilot Actions. This was partly solved in the second workshop, where the aim was to create a setting in which participants could not only strip their professional roles but also to make them think beyond their known institutional boundaries. During the second workshop, increased efforts were taken to make participants aware that they are the change agents to create structural change that is needed in order to make RRI operational. Providing the stakeholders with a feeling of agency despite their institutional role was a crucial thing to achieve success here.

This phenomenon was also visible in workshop 2 when the scope of Pilot Actions was discussed. Participants voiced that pilots may be too big and wide to be realized. This, raised the question to what extent sponsors regard themselves as potential change agents. To encourage them, the Social Lab team focused on stressing the importance of their role in the nuclear world to achieve institutional change.

8.6.4 Feasibility of Pilot Actions

Another challenge that emerged was the question of feasibility of Pilot Actions. The process of co-creating Pilot Actions lasted from the first workshop until the second.

One goal of workshop 2 therefore was to further align the pilots with the social challenge of raising awareness for the energy future. During workshop 1 it was hard to focus the participants on the social challenge and create a somewhat shared understanding of it. Over the course of the Social Lab, this shared understanding of a societal challenge increased and cumulated in the participation of almost all participants (or their institutions) in the Pilot Action 4 (EURATOM Proposal).

8.6.5 Moments of Frustration

Being finally able to include almost all participants was a nice achievement, given another serious challenge the Social Lab faced, namely “moments of frustration”. As NewHoRRizon opted for an open workshop design, some participants had difficulties to work, what they perceived as „without structure“, as this situation conflicts with their daily practice. Also, the diversity of actors did not contribute towards cooperation, but rather to defaulting to their usual roles: JRC representatives defending existing EC policies and actions, NGO participants expressing frustration over lack of cooperation and eye-level discussions. At certain points during the first workshop there was a feeling

that the workshop is going nowhere and the participants won't be able to create pilots. At his moment the facilitator considered it important not to intervene, to allow participants to experience and to deal with this frustration and to use the sentiment to create energy for moving forward.

Some participants were able to do this, but in general the open design did not lead participants to „come out of their own bubble” and feel that the Social Lab was not another game/workshop, but they could create activities could change EURATOM action. While letting the moment of frustration pass without intervention did increase the commitment of the participants to come up with pilots, to get them out of their known environment and engage them in a more conflicts and deep process would have needed more time.

8.6.6 Lack of Resources

Another critical moment was the problem of resources. This challenge emerged first during the first workshop (e.g. 'do you want us to do your work?') and has been stressed several times. It was pointed out that financial and time resources were missing in order to carry out the Pilot Actions. It seemed further questionable if this Pilot Action will be further pursued if NewHoRRizon could not offer additional financial support. Therefore, discussion about resources popped up when it came to the point of implementation and responsibilities.

For Pilot Action 1 and 2, the Social Lab team tried to help the sponsors in creating a realistic budget to carry out the pilots and offered support, helping with social science expertise, as well as helping with project management tasks such as creating outlines for the pilots. But the more the Pilot Actions advanced, the less support was request from the Social Lab team and participants took more and more agency for their pilots. Between workshop 1 and 2 many virtual meetings took place where the Social Lab team supported the sponsors by taking over administrative work, establishing contacts and providing expertise on RRI and beyond.

During workshop 2 it became clear that participants ask for additional resources (especially money) to carry out the Pilot Actions. One participant explicitly said that they are ready for the second round of workshops but they wait for green light (in the sense of additional money) from the Social Lab Manager. Here the Social Lab Manager could not provide an immediate answer as there is the need to check the remaining budget for the Pilot Actions in EURATOM first. Other participants made clear (in a less explicit way) that without NewHoRRizon funding little or no action will happen in the pilot. As it became clear how much money can be dedicated to the different pilots (after they created their outlines), it was often stressed that the funds are not sufficient to generate lager impact. It was further mentioned during the second workshop that the ideal solution would be to have calls for EURATOM where implementing RRI to the programme line are the scope of It. Participants thought that this would ensure sufficient funding to do change. After the second workshop the challenge for the Social Lab team was to provide ways to tackle these issues. This was supported by one of the participants from workshop 1 who took over agency to create a consortium out of the EURATOM Social Lab participants and apply RRI for a EURATOM call.

8.6.7 Unfeasibility of Pilot Actions

The phase in between workshop 2 and 3 was most the most active on for the Pilot Actions of Social Lab 19. While Pilot Action 3 Fessenheim, due to the unfeasibility of it and the hesitation of important stakeholders to react to requests, was abandoned, Pilot Action 1 Teach the Teacher and 2 Nuclear Dating were finished. Furthermore, Pilot Action 4- EURATOM proposal emerged, and was submitted

on September 25th, 2019. All this happened prior to the third workshop. Therefore, there was decreased engagement in workshop 3. While Pilot Actions were given a prominent role in workshop 1 and 2, participants were somehow lost on what to do in the third workshop. Participants were engaging in the reflection exercises, still being lost about the cause and use of this process. The workshop itself was more of a final wrap- up than a start for a new mission on Implementing RRI to EURATOM. The facilitator tried to engage the participants to think beyond the lifetime of NewHoRRizon and how they could contribute to foster the implementation of RRI. Retrospectively, the learning from this challenge was quite simple: if you engage people in a concrete exercise such as the Pilot Action, you can create a momentum that people will follow.

8.6.8 Defining Policy Recommendations

Another critical moment of the third workshop was defining policy recommendations. When asked to generate actual policy recommendations, participants had a hard time to make concrete suggestions, but rather were lost in discussions, instead. Finally, the group came up with two policy recommendations. The Facilitator and the Social Lab Managers tried to move the discussion back to formulating concrete policy recommendations. Based on the developed Pilot Actions, the aim was to take them up to a more general level and reflect what went well and where improvements have to be done. At the end, recommendations were either too general or too specific and too closely connected to Pilot Actions. The facilitator had difficulties to find the right level of abstraction. Still, some of the developed recommendations can be translated into good policy recommendations. Participants' difficulties to define policy recommendations or goals might be connected with their institutional role and the feeling of lack of agency although all of them were well connected with the EC. The theories of change provided in the workshops by the Social Lab team might have been seen as too abstract or not easy to catch up with by the participants. Actually, the role of the intellectual tramp voiced critique on some aspects (like funding) but when it came to the actual composition of policy recommendations, participants were kind of overwhelmed by the task. They were addressing the Social Lab team for further clarification. After this was given, participants mostly came up with ideas that reflected their very own sphere (such as Nuclear education/training). This might also have been a question of comfort and/or experience as this exercise might have needed more preparation and information provided to the participants.

8.7 Achievement of objectives

The objective of presenting and promoting the concept of RRI was widely achieved. RRI is now a more familiar concept within EURATOM. Furthermore, there is hope that participant will spread the idea of RRI in their communities. Especially Pilot Action 4 EURATOM Proposal involved many relevant stakeholders.

The objective, to co-create tailor-made action together with stakeholder was achieved as well. We developed four Pilot Actions, completed three of them and stopped one when chances for feasibility turned out to be low because of little stakeholder interest and the large scope of the project. The pilots were completed because they were adapted to respective pilot sponsors' needs and their environment and because they received extra funding by NewHoRRizon.

The objectives of the first workshop were to get participants engaged, present the idea and "benefits" of RRI, connect different stakeholders and open space for discussions. These objectives were met; however, it was unclear whether all participants understood that the Social Lab (also) aims to show them ways to "improve"/enriching their (research) work by using RRI.

The second Social Lab centered around three main objectives: (1) the work on the Pilot Actions, (2) the future of RRI in Framework Programme 9 (Horizon Europe), and (3) how to achieve Institutional change.

Most objectives with regards to Pilot Actions were met. Participants were asked to critically reflect the rationale, aim and change potential as well as feasibility of the Pilot Actions. Participants found out that pilots might be too broad to have impact and adapted them in size and scope. As regards FP 9 no real results emerged because the development was still an ongoing process by then. Participants seemed eager to follow up on the discussion. It is not sure to what extent they were eager to step in for RRI.

The question of institutional change towards RRI might have been the most controversial part of the Social Lab. It was not only discussed how to achieve institutional change but also if it is possible at all. Participants were rather pessimistic, stressing their perceived lack of resources and influence in order to create change. To apply for additional research funding for projects including RRI aspects was the way the majority of participants considered most feasible for integrating RRI into EURATOM. Such dedicated projects could achieve change and enable transformation.

The objective for the third workshop was rather simple: (1) to finalize and reflect on the Social Lab, (2) to reflect with participants the preliminary storylines and narratives of the Social Lab (3) to develop policy recommendations that could lead to an implementation of RRI in EURATOM. Participants accomplished the goal to reflect on the Social Lab by exchanging their experiences and discussing Pilot Actions. Reflecting the narratives proved to be a rather challenging experience for participants where the facilitator and the Social Lab Team needed to make participants familiar with the concept of narratives. Generating policy recommendations was probably, as already mentioned, the most challenging aspect of the third workshop, as participants were rather confused about the task given. Finally, they came up with only a few recommendations mostly affecting their daily work. It is hard to tell, whether these recommendations might help to integrate RRI into EURATOM.

8.8 Potential impact

Since the diagnosis showed little to no knowledge about RRI or single keys in EURATOM, the bar was set rather low to make RRI more prominent among the key stakeholders of this H2020 pillar. Thus, the Social Lab was definitely successful in terms of familiarizing EURATOM with RRI.

The Pilot Action “EURATOM proposal” – which tried to continue the Pilot Actions “Teach the Teacher” and Nuclear Dating” is an example of raising awareness for RRI. The research proposal which included RRI elements involved 26 partners from different areas of the nuclear environment. Since the vast majority of partners was for the first time confronted with RRI, the concept became introduced in many institutions for whom RRI was new. Thus, the proposal made RRI highly visible in the field. However, since the proposal did not receive funding, no further anchoring of RRI in EURATOM could take place in this way.

Still, the Pilot Actions have a number of ripple effects: The Teach the Teacher idea became part of another winning proposal for the EURATOM call and plans to continue integration of RRI elements in future research proposals were resumed in consortium meeting a few months after the refusal of the first proposal.

The Pilot Action Nuclear Dating has the potential to familiarize a wider audience with RRI and to foster transdisciplinarity exchange across the field, especially with young researchers. This in turn, will promote deeper mutual understanding of different fields of research.

For most participants, the Social Lab itself proved to be an interesting experiment and journey, which provided a chance of inter- and transdisciplinary exchange hardly found in everyday work. However, it is hard to predict whether this experiment had long-lasting impacts on to their routines. Lessons for pilot development and implementation

To which extent the goal of embedding RRI into EURATOM succeeded will be on one hand a matter of time, as well as it remains uncertain as measuring the impact of the Social Lab's work is a hard if not Impossible. The Social Lab definitely helped to raise awareness for the need of RRI in EURATOM and managed to familiarize stakeholders with a previously unknown concept. Efforts to embed it were taken in the Joint proposal, but even if successful, it would have only been a first step towards a wider implementation. A constant follow-up would be recommended in order to achieve a deeper integration of RRI into EURATOM, otherwise the risk is high that the Social Lab only causes sparks that never burst into flames.

8.9 Lessons for pilot development and implementation

The following section summarizes main lessons learned in the Social Lab (Table 41)

Table 41 - Lessons learned (EURATOM)

Lessons	
1	Make stakeholders aware that they have agency
2	Don't overburden participants and be aware of limited resources
3	Hand over Pilot Actions
4	Be open to failure
5	Avoid unfinished business

8.9.1 Make stakeholders aware that they have agency

A challenging part at the first workshop was the question of participants' agency in doing Pilot Actions. The popular take on this question was that the Social Lab Management wanted participants to do their work. The Social Lab team was successful in pointing out that participants have agency towards RRI and can be change agents towards implementing RRI. Still, one lesson learned is that discussing the role of stakeholders as change agents in more depth is needed in order to reach this point where participants feel themselves as change agents.

8.9.2 Don't overburden participants and be aware about limited resources

Most participants who took over Pilot Action ownership struggled with a lack of resources. During the second Social Lab workshop, this cumulated in a discussion, in which participants questioned the feasibility of Pilot Actions given available resources. Most of them stressed that Pilot Actions need to be carried out next to their regular work. This way they would have to push things further in their free-time which was not appealing to the participants. In the second workshop, participants tackled the problem in two ways: first, they down- sized some Pilot Actions which eased implementation; second, a Pilot Action 4 (EURATOM Proposal) was created which tried to raise additional funds. The Social Lab team learned that providing sufficient space for discussion and guidance are essential for tackling the problem of limited resources.

8.9.3 Hand over Pilot Actions

Participants at the beginning of the Social Lab process were unfamiliar with the method and its objectives. Therefore, the Social Lab team supported participants in the beginning in co-creation of Pilot Actions. However, as the Social Lab progressed, Social Lab managers increasingly withdrew from operational work in Pilot Actions and passed agency and ownership of Pilot Actions to participants. It became clear that it is the participants who define a societal challenge that is relevant to them and that Pilot Actions are a way of address this challenges and initiate change. This was in sharp contrast to the earlier sentiment from the beginning of the Social Lab that in Social Labs, participants are doing the work of the Social Lab managers.

8.9.4 Be open to failure

Still, failure is always an option as it became visible with the Fessenheim Pilot Action. If relevant stakeholders are not open to participate, the Pilot Action will not stand a chance. In such cases, either adapt the design and if that's not feasible, stop working on the Pilot Action and look for other possibilities.

8.9.5 Avoid unfinished business

Being part of the Social Lab for the course of over 1 1/2 years, participants did not only learn about RRI, but also opened up to the idea of using it in a beneficial way for their own work. Still the Social Lab ended with the feeling that the barriers, that would need to be overcome, before enthusiasm for the implementation of RRI would be sparked, might have lowered but are still present. The wishes for further events (such as participating in the Cross-Sectional Workshop) were voiced by participants, Still, the status quo feels more like unfinished business and one learning might be to plan such transformative processes over a longer period of 1 1/2 years and/or to come back to the participants after 1 or 2 years after the social lab.

8.10 Workshop methodology

8.10.1 1st workshop

When participants were asked to develop visions of the future of EURATOM some struggled with the unfamiliar task ahead. With the guidance of the facilitator the exercise became clearer and participants discussed the barriers EURATOM faces in depth. Another challenging moment was given on Day 2 when participants were asked to elaborate on possible pilot ideas based on the identified challenges on Day 1.

The methodology of the first workshop was very much based on the results of the diagnosis. Participants should be guided towards a clear definition of the societal challenge(s) that their area is facing. This was only possible due to the strong guidance of the Social Lab facilitator. Participants here were partly lost given the as the task was not initially clear to them. When the Social Lab team provided further information on what is expected, participants came up with the challenges relevant to them. Here, the known practices of working varied so much between the Social Lab team and the participants that prior to the commencement of the problem definition, a common language was needed. Once this process was completed, participants engaged actively in a vivid discussion on the Societal challenges of EURATOM.

A similar experience was made with the co-creation of Pilot Actions solving the defined Societal Challenges. Again, a "common language" needed to be found first. At this stage it was also important to find a common and mutual understanding why the Pilot Actions are relevant and how participants

and their organization would benefit by the implementation of RRI. Although participants came up with many interesting ideas and started a total of four Pilot Actions after workshop 1, the discussing on ownership of and responsibility for the different pilots persisted until workshop 2.

Overall, the methodology applied in the first workshop worked well to introduce participants to RRI and to make them start actions to tackle the previously defined Societal Challenges. Still, more time could have been dedicated to create a shared understanding of where this journey should go at the beginning of the workshop. More emphasis should have been put on making the exercises more feasible to participants by trying to adapt to their known routines and processes of working on a specific problem.

8.10.2 2nd workshop

Workshop 2 was dedicated to the work and status quo of the Pilot Actions. Participants discussed and updated each other about Pilot Action development and did further reflection on them in terms of feasibility. Also, two sessions were dealing with institutional change to provide participants with a feeling of where Pilot Actions should go and what impact they can/will create. Much space was given to participants to freely engage and the facilitator operating much more in the background compared to workshop 1.

Compared to the previous workshop, participants had no problems in understanding the tasks given by the facilitator. In the evaluation round participants outlined that this meeting was very productive and provided them not only with clear(-er) guidance on how to move on with the pilots but also sparked some kind of enthusiasm to further working on them.

The methodology applied in workshop 2 was generally evaluated very well and it proved right to give participants the space to further elaborate on their ideas themselves, but also to be available to support whenever needed.

8.10.3 3rd workshop

The third and final workshop aimed at actually transforming the Pilot Actions into policy recommendations. To do so, participants were asked to recall the EURATOM diagnosis and social challenge defined in workshop 1.

The challenge of the concluding workshop was that all Pilot Actions have been completed and therefore the energy was different.

Participants struggled when they were asked to create policy recommendations. This was mainly because the scale of the Pilot Action or the own agency for institutional change was perceived as rather small. For the first time during the Social Lab participants could not move significantly ahead despite the Social Lab team's support. As a result, policy recommendations were rather generic. It might have been beneficial to further discuss the expectations of the Social Lab team towards this exercise in more depth beforehand, probably even in a previous workshop to give participants an outline on where the journey should end.

Furthermore, despite to a lot of interactive actions in workshop 3, a certain level of fatigue could not have been avoided. This was mainly due to the fact that participants were no longer actively working on their pilots and had a different approach towards the workshop itself in terms of engagement.

To avoid this, it might have been a good solution to have the final Social Lab workshop moved closer to the time when Pilot Actions are/ or are about to be finished.

The end of the Social Lab workshop was working out smooth again and things like the “award ceremony” were perceived well.

8.11 Group dynamics and diversity

Participants of the first workshop were diverse in terms of gender, professional background and academic seniority. Four of ten participants were female; six male, one person represented an NGO, one researcher from the JRC, one official from the EC/JRC, two Professors, three heads of unit, one senior advisor and one freelance researcher were in attendance.

In terms of group dynamics, participants emphasized in their feedback the open atmosphere. The group was cooperative and worked together well. However, there were also challenges. One voice dominated during the workshop and at first refused to participate in organized discussions. However, in the evaluation he was positive about the workshop and stated that he envisioned further participation in the Social Lab and to take responsibility of one Pilot Action.

The involvement of the NGO representative was challenging as well. In her feedback she stated, as already mentioned, that she didn't see a possibility for real change within the framework of the Social Lab. She refrained from further participation in the Social Lab.

In the second workshop, the gender mix was less balanced. Two women cancelled participation because of other commitments shortly before the workshop. The mix in terms of affiliation, stakeholder group and seniority stayed mostly the same because most participants of the first workshop returned to the second event. Group dynamics, however, were different as participants pointed out during the reflection round of workshop 2. It was mentioned that it became visible that a team building process was ongoing in the first workshop and finalized in the second. It was added, that it was nice to come back in this setting, to meet and work with the other participants. The dominant voice of the first workshop was not present. As a consequence, speaking time was more evenly distributed. People followed the programme and were very engaged. At a working dinner, participants further discussed the workshop, Pilot Actions and potential impact. On the second day some participants seemed exhausted because of the tight schedule. Coffee breaks and informal talks provided important spaces for recreation, trust-building and interaction amongst all participants, including the Social Lab Management.

The last workshop was least diverse in terms of gender. Gender composition changed completely with only one female participant present. Three women who remained as contributors to the Social Lab could not make it to the workshop because of busy schedules. Participants of the third workshop worked together very well. However, the atmosphere was different than before. At the first workshop, time was used to familiarize participants with RRI, the Social Lab process and one another. At the second workshop participants were very engaged in, and focused on, Pilot Action development. At the third workshop, Pilot Actions were already completed. Thus, the creative tension was missing. At the end of the workshop, during the policy recommendation session, participants showed stronger signs of fatigue which was accompanied by a general lack of creativity. Altogether, the third workshop concluded the Social Lab successfully. Social Lab participants and the Social Lab team were eager to stay in touch after the conclusion of the Social Lab.

9 Pilot Actions

This section provides information about the individual Pilot Actions of the Social Labs.

9.1 RRI Training 2.0 for NCPs

Social Lab 14 WIDENING

#Building RRI capacities

#RRI in general

#Education

#researchers #funders

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Several members of the of European network of NCPs of WIDENING ([NCP WIDE NET](#)) observed during the 1st Social Lab workshop that there was very little information material available about RRI for their programme line. In particular, information in languages other than English was missing. The Pilot Action team took initiative and created and translated information about RRI for WIDENING programme applicants in several languages and organized training workshops on RRI in several WIDENING countries. The Pilot Action is orchestrated by the NCP WIDE_NET network.

After the first Social Lab workshop the TECNALIA team travelled to different countries, to promote RRI in the WIDENING community. In this period, they were invited by NCP WIDE_NET network to help NCPs get more familiar with the topic of RRI. As a result, a training took place in summer 2018 on RRI for the entire NCP network. This training was held on July 3rd to 4th, 2018 in Innsbruck, Austria. Its aim was to provide an overall understanding of RRI and its different keys. This event was attended by 16 NCPs.

Thereafter, the Czech WIDENING NCP created a complete module on RRI in Czech language for applicants. After the 2nd Social Lab workshop, the Spanish WIDENING NCP translated this module into Spanish and other participants considered providing more translations as teaching material in their standard training activities for grant proposal writing. In addition, the Social Lab team supported training events on RRI in different EU member states and third countries, countries, such as in Lithuania and Armenia. The Social Lab management either participated in these events or supported the Social Lab team in other ways by providing them with RRI related content accompanying European Commission requirements. The following workshops have been conducted by the National NCPs:

- Workshop on proposal writing for TWINNING (70 participants) and ERA Chairs calls respectively in Prague, Czech Republic, June 19th, 2019 and October 14th 2019.
- Spanish WIDENING Info day that was held on the 24th of September of 2019 at Seville. The Tecnalia team was present with a dedicated talk about RRI. 33 potential applicants participated in the info day.
- SiS.Net SWAFS NCP Network project meeting in Yerevan, Armenia, February 2020.
- Lithuanian info day for H2020 thematic areas: Inclusive, innovative and reflective societies (SC6) and Science for and with Society (Swafs). February 18th 2020, Vilnius (Lithuania).

The Pilot Action introduced the idea of RRI into a variety of organizations and enabled researchers from several EU countries to include it in their WIDENING grant proposal. Several actions have benefited from this pilot focusing on the practical aspect and sharing existing knowledge and resources on RRI. The general training helped NCPs to relate RRI to their own context and operationalize it in their own practices and then led many WIDENING applicants to start to consider involving aspects of RRI in their research applications.

Tangible outputs

- A training module in Armenian, Czech, Lithuanian, Polish and Spanish language that introduces RRI to WIDENING applicants
- Five workshops for WIDENING applicants

Training with NCPs on July 3rd/4th 2018 in Innsbruck, Austria



NCPs Workshop in Prague, Czechia, 19 June 2019 and 14 October 2019: workshop on proposal writing for TWINNING²⁰ and Spanish Widenning info day that was held on the 24h of September of 2019 at Seville²¹

²⁰ <https://www.h2020.cz/cs/eit-jrc-horizontalni-aktivita-euratom/sireni-excelence-a-podpora-ucasti/akce/seminar-k-priprave-projektu-do-vyzvy-twinning>

²¹ Link to the Workshop: <https://eshorizonte2020.es/mas-europa/difundiendo-la-excelencia-y-ampliando-la-participacion/eventos/taller-responsible-research-and-innovation-rri-en-la-preparacion-de-propuestas-al-programa-spreading-excellence-and-widening-participation>



Responsible Research and Innovation (RRI) en la preparación de propuestas al programa "Spreading Excellence and Widening Participation"

24 de Septiembre 2019
Lugar: delegación del CSIC en Andalucía, Pabellón del Perú, Avda de M. Loba s/n. 41013 Sevilla

AGENDA

- 09:30 - 10:00 Registro
- Las acciones TWINNING, Casos de éxito**
Ana Hidalgo, Fondo Tecnológico de Gestión del programa, e I+D+i proyectos
- 10:00 - 10:30 Introducción, Convocatoria TWINNING 2019
- 10:30 - 10:45 Estadísticas de las primeras convocatorias [Laplog (2015 y 2017)]
- 10:45 - 11:00 Recomendaciones en la redacción de la propuesta
- 11:00 - 11:20 Caso práctico 1- Proyecto **de@viva**,
Elisa de los Santos, Responsable Asociada y Procesos Productivos de Corporación Tecnológica de Andalucía
- 11:20 - 11:40 Caso práctico 2- Ejemplo de proyecto 2
- 11:40 - 12:00 Descanso
- La Investigación e Innovación Responsables - RRI**
Dr. Paul Tabeart, *Capacidad asociada del proyecto de@viva@viva*
- 12:00 - 12:30 La RRI en Horizonte 2020 y en Horizonte Europa
- 12:30 - 13:00 ¿Cómo integrar la RRI en una propuesta de H2020?
- Visión de los evaluadores**
Prof. Miguel Ángel de la Pina, Universidad de Sevilla, evaluador SEP
- 13:15 - 13:30 Proceso de evaluación
- 13:30 - 14:00 Comentarios y otras preguntas
- 14:00 - 14:30 Debate

*Información e inscripciones en: internacionales.andalucia@csic.es



9.2 Attracting more public in Technical University of Cluj-Napoca (TUCN)

Social Lab 14 WIDENING

#building RRI capacities

#gender #public engagement #ethics

#education #interdisciplinarity #climate and energy

Contact: Anca Constantinescu, Professor of Marketing, Technical University of Cluj-Napoca, Romania (Anca.Constantinescu@enm.utcluj.ro)

Science and technology disciplines often lack attractiveness for young people – especially for young women. There are only few female role models in science and technology and current curricula in science and technology have difficulties to address socio-ethical issues.

The Pilot Action at the Technical University of Cluj-Napoca (Romania) addresses these problems. It tries to broaden the thematic scope of teaching materials used at the university and to include socio-ethical topics in STEAM curricula. It tries to enrich and to deepen the socio-ethical dimension of research as well as the dimension of sustainability in STEAM. In this way STEAM disciplines should become more attractive for young people, particularly young women.

The Pilot Action team sees RRI as an opportunity to introduce socio-ethical aspects in technology, as RRI is a way to meet some of the inequalities that occur at the educational system. In addition, they think that RRI could be a vehicle to work with students from different socio-economic backgrounds.

The actions tried to develop science education and public engagement activities to enrich teaching materials delivered at the university by adding sustainability and social aspects. Members of the Social Lab team see RRI as an opportunity to address these problems by introducing socio-ethical aspects in technology and using RRI as a vehicle to attract people to the technical research fields. They also see as RRI as a way to meet some of the inequalities that occur at the educational system. In addition, they think that RRI could be a vehicle to work with different pupils that come from different socio-economic backgrounds.

The team organized two science education activities to strengthen research dissemination and to attract young people, especially female students, to STEAM research fields. The workshops focused on the design of the future electric vehicle and the green city:

1. Co-working with the university students in order to disseminate the research activities of the Electrical Engineering Faculty of TUCN (April 30th to May 30th, 2019). University students were trained in the design, optimization and testing of electrical machines, including sustainability, equality and environmental aspects in the process. After the workshop they had the opportunity to build a model in a month in the research group laboratories under the supervision of the researchers. 60 students attended the course, 30 students-built prototypes, more than 60 students attended to final assessment, with high female participation.
2. „The green city in TUCN“ (October 31st 2019 to January, 2020) This workshop aimed to present the importance of the research in the field of Electrical Engineering and the socio-ethical impacts in the future. Several children at schools with different socio-economic status participated in 3 groups of 20 pupils from different environments (urban/rural).

The driving element of this Pilot Action is the research institution's need to attract young talent to their disciplines and research. They have mainly worked towards public engagement, science education and gender equality.

Co-working with students



9.3 Promotion of openness and ethics in science at the Institute for Plant Physiology and Genetics (IPPG)

Social Lab 14 WIDENING

#Doing RRI

#Public Engagement, #Ethics

#Openness

#Research Organization/Administrators

contact: Georgi Bonchev, Bulgarian Academy of Sciences, (bonchevg@mail.bg)

The pilot started with a presentation and a public discussion organised by Tecnalia on July 10th, 2018 in Sofia, Bulgaria about RRI at The Institute of Plant Physiology and Genetics (IPPG) of the Bulgarian Academy of Sciences (BAS). In Bulgaria current science and technology research often fails to address socio-ethical issues. The pilot was designed to address this gap and to promote ethical, transparent and accessible research though raising public awareness. The IPPG Institute organized several communication and outreach activities to support this aim, as for example a public forum in which people can learn about science, technology and innovation as well as ask scientists questions. The Pilot Action disseminates the concepts of RRI and Open Science at the IPPG in a dedicated Facebook group²² and seminars on Open Science and ethics²³.

1. Communication and Outreach activities

- IPGG organised an open-air exhibition in Sofia about the activities and history of the institute on October 14th, 2019 on the occasion of the 150th Anniversary of the Bulgarian Academy of Sciences (BAS)
- A round table on the collaboration between IPPG and the International Atomic Energy Agency (IAEA), about the past, present and future of the collaboration between the two institutions.
- The screening of a documentary movie about a patron of the former institute of Genetics Doncho Kostoff in December 2019.
- IPGG invited high school students from the American College and the National School for Ancient Languages and Cultures in Sofia to visit the institute, Autumn 2019.

2. Ethics in science

- In March 2019, the institute created an ethics committee to monitor and evaluate ethical problems in and between the different research units of the Bulgarian Academy of Science. It also developed an ethical code with ethical principles for biomedical research involving human subjects in the institute.

Especially the outreach activities greatly increased the visibility of the academy for the public and attracted young scientists to the institution and contributed to ethical and transparent science to:

1. Create research that is transparent and accessible
2. Raise public awareness and visibility of IPPG
3. Sustain and develop options for collaborations

²² <https://www.facebook.com/ippg.bas.1>

²³ http://www.bio21.bas.bg/ippg/bg/?page_id=1758

4. Engagement in global societal challenges

Open-air exhibition in Sofia about the activities and history of BAS and IPPG with posters presenting the history and work of BAS scientists



Documentary movie about Acad. Doncho Kostoff – patron of the former institute of Genetics



Round table – Collaboration between IPPG and International Atomic Energy Agency (IAEA) – past, present and future



9.4 “RRIzing” the University of Novi Sad

Social Lab 14 WIDENING

#Creating awareness for RRI #Contributing to formalizing RRI #Building RRI capacities

#RRI in General

#Education

#researchers, research organizations/administrators

contact: Prof. Petar Vrgovic, Department of Industrial Engineering and Engineering Management, University of Novi Sad. (vrgovic@uns.ac.rs)

Higher education institutions in Serbia are often little acquainted with RRI. The University of Novi Sad, although it already had promoted the concept of open innovation, had only scattered knowledge about, and experience with RRI.

In this Pilot Action, the university encourages its staff to start embracing RRI and to embed and sustain the concept in its own institution. The Faculty of Agriculture at the university decided to use a top-down approach in this matter and to take first steps to systematically introduce RRI principles into its activities as higher education institution. Other units of the university (Faculty of Technical Sciences and Institute of Food Technology) will observe these activities and integrate lessons learned in their context.

In order to start to “RRIze” its institution, an ad-hoc “RRI team” at university level was set up. The team focused on each individual RRI key and selected an additional topic, i.e. the generational gap. The team carried out an RRI diagnosis of the entire university. This exercise resulted in a detailed report that has been presented in the Social Lab and provided useful insights how to work with the individual keys at the university. The RRI team promoted keys such as gender equality or public engagement which they thought deserved particular attention. But the Pilot Action also provided a vehicle to work on other pressing issues such as the brain drain that affects Serbia. So far, a number of actions have been carried out: the RRI diagnosis, a dedicated webpage, a leaflet and a brochure were created, and a workshop was organized.

Currently eleven people are involved in the initiative at the University of Novi Sad, eight are allocated to the individual keys and three are working as managers and administrative staff. Each person oversees one RRI dimension. The university formed its own RRI team and delegated roles focused specifically on the keys plus one extra (generational gap). So far, the Pilot Action was successful in disseminating RRI. It is one of the few Pilot Actions that took an “institutional approach” towards RRI, trying to introduce RRI at the institution. The RRI diagnosis the university conducted was very helpful for this purpose. Currently, more activities have been proposed, but they demanded for funds from the Social Lab and are also pending because of COVID-19.

Next steps include deepening the knowledge on RRI and its dimensions through evaluation of this and other Pilot Actions, as well as by discussing the future of RRI. This is expected through a series of educational events for university members to exchange experiences about RRI and introduction of the RRIzing process between staff members of different faculties in order to “RRIze” their institution. Finally, the appointment of an RRI ambassador will support the sustainability of these activities.

In this Pilot Action the University of Novi Sad took first important steps to embed and sustain RRI in its activities. University staff was encouraged to build relationships and to generate diverse and effective interactions to introduce RRI into the university. The Pilot Action could become an example to be transferred to other Universities.

This is a great example on how you can change your own university to make it more responsible. This university has started a journey to implement RRI in a practical way that can have a lasting impact on institutional level promoting a structural organizational change.

Since March 2020 the University of Novi Sad cooperates with TECNALIA in a recently funded new RRI EU project called CO-CHANGE²⁴ and more resources will be allocated at the university to this topic as they are part of a change lab. However, there are also challenges ahead. Now they are engaged in CO-CHANGE will probably accelerate its engagement in the concept and serve as a showcase for improvement of all these aspects at country level. The University of Novi Sad has also been granted with another Horizon 2020 project, “Embedding RRI in Western Balkan Countries: Enhancement of Self-Sustaining R&I Ecosystems”, with acronym WBC-RRI.NET²⁵ that will start on March 2021.

Tangible outputs:

- RRI diagnosis (for internal use of the university only)
An initial RRI diagnosis was conducted into the UNS context, which resulted in a common understanding of current practices. Here, different and diverse perceptions were observed towards RRI but also different achievements in certain fields. Some conclusions are:
 - Open access is mostly achieved through the upload of academic papers to repositories (Green route). Gold open access is also used. No specific support for open data (not common).
 - Gender equality is regulated in national laws but in practice it is heavily influenced by gender imbalances of research fields. No legal complaints notified recently but no significant support to improve gender balance.
 - Ethics is mostly applied through codes of professional conduct. However, not many examples exist of academic behaviour (institutional level).
 - Science education is mostly under-represented (science fairs and exhibitions with limited and modest participation). No existence of alternative approaches for scientific education outside the institution or to promote scientific thinking.
 - Modest public engagement. Scarce communication with the public and usually through PR offices and due to project-related commitments. Only a few successful cases of continuous public engagement and public participation (Faculty of Agriculture).
- Educational flyer²⁶ for informing University staff about RRI.
 - RRI present state and future challenges a round table for the University staff to discuss this topic. Institutional activities, RRI education and promotion have been planned for January – April 2020, but unfortunately due to the pandemic situation, all events were postponed. However, in summer 2020, gender equality was presented as one of RRI keys and some dialogues on gender equality were opened, on several occasions in small groups at the Faculty of Agriculture.

²⁴ <https://cochangeproject.eu/labs?country=serbia>

²⁵ <http://www.wbc-rri.net/>

²⁶ <http://serbiaforexcell.com/wp-content/uploads/2019/02/Prague-2018.pdf>

- In 2020 summer there also was an online introductory Lecture & discussion about the RRI principles and implications held online for the BioSense institute employees

Pictures



Ideje koje čine osnovu RRI -ja je možda jednostavno razumeti, ali njihova implementacija može biti teška. Prema tome, izazov je u tome da naučna zajednica ne samo razume ciljeve RRI principa, već i da ih realizuje.

Pet zlatnih pravila za uvažavanje RRI principa u istraživanjima

1. Razmišljajte o tome šta društvo želi
2. Uključite različita zainteresovana lica i članove društvene zajednice u planiranje i usmeravanje istraživanja
3. Uzmite u obzir sve moguće uticaje vašeg istraživanja
4. Budite otvoreni i transparentni
5. Budite responsivni i prilagodljivi

RRI
Responsible Research and Innovation =
Odgovorno Istraživanje i Inovacije

Odgovornost u nauci i tehnologiji je goruća tema među kreterima politike, istraživačima i inovatorima širom Evrope.

RRI principi obezbeđuju osnovu za odgovoran, prihvatljiv i etički razvoj nauke i tehnologije u Evropi.

Odgovorno istraživanje i inovacije - dinamičan, učestao proces u kome sva zainteresovana lica u istraživanjima i inovacijama postaju uzajamno responsivni i dele odgovornost za oba – sam proces i njegove ishode.

RRI koncept se sastoji iz nekoliko osnovnih elemenata: ishodi, istraživački procesi, politički plan i zainteresovana lica.



Ishodi - veće učešće javnosti u istraživanjima, odgovornija lica, odgovornije institucije, etična, održiva i društveno korisna nauka i tehnologija, bolja rešenja za društvene izazove, ispadani veliki izazovi koje je definisala EC

Istraživački procesi - raznovrsni i inkluzivni (uključujući), otvoreni za sve aktere i transparentni, predvidljivi i reflektujući, responsivni i prilagodljivi promenama.

Politički plan - kako bi se RRI principi ugradili u procese istraživanja i inovacije EC je odredila šest ključeva kojima kreatori politike treba da se rukovode:

- Etika i istraživački integritet
- Jednakost polova
- Otvoren pristup
- Uključivanje javnosti
- Upravljanje
- Naučno obrazovanje

Zainteresovana lica - konstantan dijalog između svih lica: bilo ko ko donosi odluke o istraživanju i inovacijama (na lokalnom, nacionalnom ili međunarodnom nivou), obrazovna zajednica, istraživačka zajednica, biznis (od malih i srednjih preduzeća do međunarodnih kompanija) i industrija, civilno društvo.

9.5 Measuring the Impact of RRI

Social Lab 15 SwafS

#Doing RRI #communicating communicable output #contributing to formalizing RRI

#RRI in general

#Interdisciplinarity

#researchers #research organizations/administrators #policy makers #funders #citizen/general public

Contact: Social Lab Manager Susanne Buehrer (susanne.buehrer@isi.fraunhofer.de)

The Pilot Action addresses the need to measure the impacts of RRI at project level and share the findings with non-academic and academic audiences. For that purpose, the Pilot Action attempted to create an easy-to-use template that can support a wide range of stakeholders in their evaluation of RRI activities. For this purpose, the Pilot Action also promoted the connection and exchange between ongoing SwafS projects and existing RRI knowledge hubs, such as NewHoRRizon or [SUPER MoRRI](#) to create closer links as well as cross-project learning and synergies.

The first version of the template was created in an interactive, discourse-oriented meeting in July 2019 in Berlin, during which small groups further developed the pre-existing MoRRI indicators of economic, societal, democratic and scientific benefits (now further generalized to *impacts*) of RRI. The Pilot Action group is currently working on a refined version of the indicators as a basis for future use and stronger exchange across projects.

Target groups of this Pilot Action and potential users of the template are researchers, practitioners and particularly those stakeholders who are familiar with RRI, are involved in SwafS projects and who are interested in promoting cross-project synergies and measuring their project impacts with the help of [MoRRI indicators](#).

The specific value of this Pilot Actions is that it addresses the practical needs of H2020 projects to develop their impact measurement along the MoRRI indicator framework. The Pilot Action contributes to the development and emergence of good practice examples with the help of participating stakeholders who enrich the Pilot Action work and template design with their own field- and discipline-specific experiences and expertise. Working with their illustrative, contextualized practical examples and insights from their work is a meaningful way to deconstruct and concretize RRI impacts. The Pilot Action work is designed in a way that promotes cross-project synergies between SwafS projects which have been working in the past years to conceptually enrich the knowledge base. Beyond ensuring a closer exchange and alignment of past and present work on (impacts of) RRI, this work uncovers the observed need for a more nuanced and systematic approach on identifying and assessing the benefits and impacts of RRI (on project level). With an increased awareness for these needs and utilities, this pilot can also set the basis for the deepening of the work in future practical contexts

The results of this Pilot Action will feed into the ongoing discussion of the SUPER MoRRI project.

A document with a list of economic, democratic, societal and economic indicator descriptions (on the basis of MoRRI indicators) is going to be developed. The final version of the template is not yet available. It will be re-circulated within the Pilot Action team, redesigned and made ready for first pre-

tests and further application. The table below shows the current version of the suggested indicators for economic benefits:

Group 2: Economic impacts / benefits

Old version/ MoRRI basis	Short-term outputs <i>(Tangible results stemming from a project activity during the project, from 6 months onwards)</i>	Midterm outcomes <i>(During and directly after the project)</i>	Longterm impacts <i>(Broader effects beyond the beneficiaries (intended and unintended, positive and negative))</i>
Better solutions due to inclusiveness	Increased chances of leveraging multiple perspectives from onset of project	Synergies and superior performance through exploitation of best talent/human capital available	Inclusiveness leads to superior solutions, products and services, which challenge the status quo and set new market standards. Science and economy form a mutually reinforcing network
Increasing trust	Relationship building between previously siloed sectors	Enhanced process transparency and cross-sectoral sensitization through well-established networks, intense knowledge exchange and shared agendas	Shift towards an understanding of economy as an open and responsive system that acts as a catalyst for science and for societal wellbeing
Increasing anticipatory skills	Exposure to new challenges with support from relevant societal actors	Alignment of normative standpoint on impact goals and mitigation of negative impacts	Alignment of economic incentives towards resolving tensions between actors rather than vice versa
Better performance	<i>tbd</i>	<i>tbd</i>	<i>tbd</i>
More cost-efficient data collection	Finding, testing and contrasting alternative ways of data collection that are more cost-efficient	Development and increased usage of more intelligent methods and instruments of data collection	Traditional data collection methods are surpassed by more sustainable and cost-efficient methods
Changes in training, skills and culture of science	New promotional, reward, scholarship and grant giving processes that incorporate RRI principles into the evaluation and assessment process	Market rewards will favor institutions with leadership that promotes ethical and responsible relationship between science, society, and economy	Understanding of science and economy as mutually responsive, anticipative and intertwined systems for learning and development built around the principles of RRI
New business and funding opportunities	Proactive outreach and engagement activities with previously siloed actors in society	New business models and markets that reflect / align societal needs with economic possibilities/modalities.	Economy as an instrument to tackle grand societal challenges and development of sustainable mindset towards labor/resources

9.6 RRI Education

Social Lab 15 SwafS

#creating communicable output #buiding RRI capacities

#science education

#education

#researchers #piolicy makers #education sector

Contact:

- Alenka Komljanc, Trnovo Kindergarten [alenka.komljanc@vrtec-trnovo.si],
- Dafina Petrova, i-consent project [petrova_daf@gva.es],
- Agata Godzik, Edu-Arctic project [agata.gozdzik@igf.edu.pl]

The European Commission invested a lot within the SwafS programme in many different kinds of science education formats addressing different target groups starting at the age of teenagers, but focussing on higher education and young researchers. This Pilot Action addresses younger children at kindergarten age and the age primary education as well as teenagers.

In this Pilot Action, three project teams showcased their individual approaches on how science education can introduce the concept of responsibility or aspects of RRI:

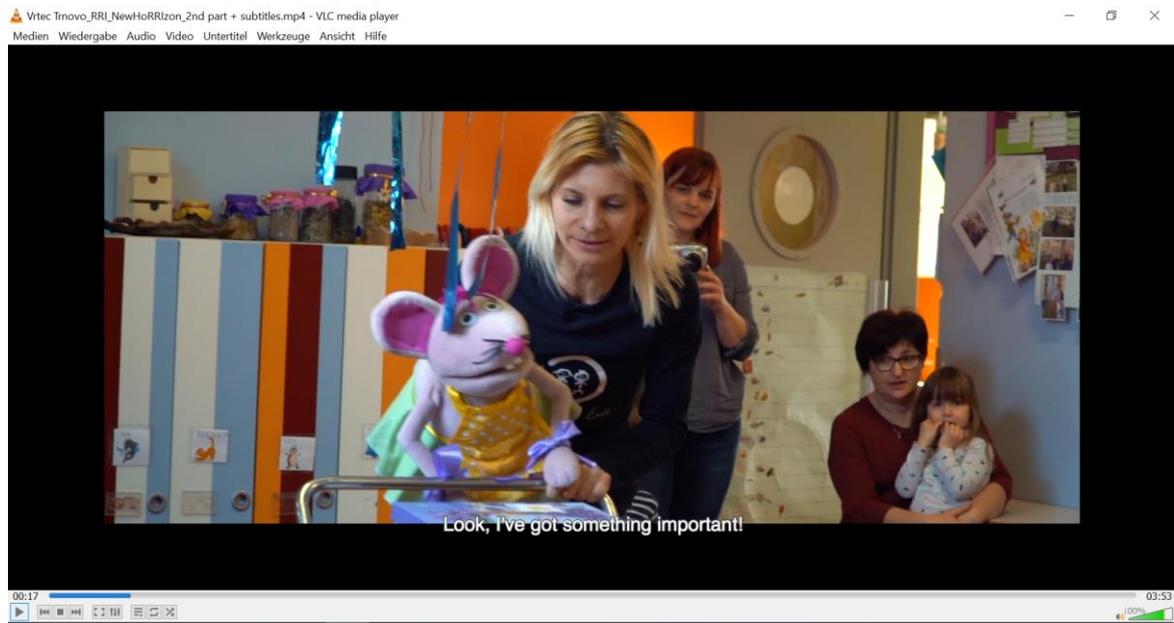
1. Kindergarten Pedagogy: Inquiry based learning involving a puppet. Featured outcomes: video and didactic comments on the approach (Trnovo kindergarten Ljubljana)
2. Citizen participation in research - Clinical studies: [i-consent project](#): information in clinical trials for children. Featured outcome: video for 12-13 year olds, (FISABIO, Valencia)
3. Cross-European STEM education for students: [Edu-Arctic project](#): Webinars and a "Polarpedia" on STEM education topics for 13-20 year olds (Polish Academy for Sciences)

The project teams have also explored opportunities for (cross-project) collaboration.

The target groups of "RRI Education" are primarily educators and those developing curricula for kindergartens and schools. In the case of the i-consent project (2), researchers and hospitals involved in clinical trials are the main target group. Teachers of STEM subjects in secondary schools and teenagers are the target groups of the Edu-Arctic project. All these groups can use the materials provided by the organisations and projects featured by this pilot. Ultimately, the target groups are children and teenagers. The different formats of education in this pilot building on experimentation, videos or webinars offer resources that can complement classical educational formats or even redefine them (in the case of inquiry-based learning in the kindergarten (1)).

The basic question is whether science education for children and teenagers today provides enough opportunities for reflections about aspects of responsibility, such as ethical standards (protection of life, resources and the environment in general) or diversity or inclusion. Moreover, as these aspects are rather abstract, they might need special formats to make them accessible. The examples featured in our Pilot Action offer different inroads in an illustrative way and contacts and sources for those who want to get to know more.

- There is a [Pilot Action website](#) on the NewHoRRizon - SwafS - website, which offers contacts and links to different materials.
- A [video](#) on inquiry-based learning and the didactic comments to the video have been produced in the course of the Pilot Action and can be found on the Pilot Action website.
- [Guidelines for tailoring the informed consent process](#) in clinical studies provided by the i-consent project
- More Information provided by the websites of the involved organisations and projects ([i-consent project](#) and [Edu-Arctic project](#)).



9.7 The future of science ? Society

Social Lab 15 SwafS

#creating awareness for RRI #creating communicable output

#public engagement #governance

#democracy

#researchers #research organizations/administrators #policy makers #funders
#innovators/entrepreneurs #CSOs #education

Contact: Social Lab Manager Stephanie Daimer (Stephanie.Daimer@isi.fraunhofer.de)

The vision of a European research landscape that is societally engaged is at risk. The Pilot Action “The future of Science ? Society” addressed this uncertainty about the future role of actions that have been promoted in Horizon 2020 under the umbrella of Responsible Research and Innovation (RRI) and in the Science with and for Society (SwafS) programme. It brought together committed stakeholders who lobbied for a new and advanced SwafS-like programme and developed scenarios of multiple, plausible futures of science-society interactions- a(s) pioneering achievement in its field.

The Pilot Action engaged in three joint support activities for RRI and SwafS:

- The Pilot Action contributed to the [Pathways declaration](#) to support RRI in the Horizon Europe and established links to further SwafS projects as signatories for the declaration.
- The Pilot Action engaged with others in the NewHoRRizon project to mobilize SwafS stakeholders to take part in the [public consultation process on Horizon Europe](#).
- Finally, the Pilot Action performed a highly interactive scenario workshop with stakeholders who, guided by a thorough methodology, created four different scenarios of the political, societal and research landscape in 2038 in the European Union. These novel scenarios represent the product of profound discussions and evaluations of a wide range of political, societal, economic, technological and ideological factors and variables that might evolve very differently and affect science-society relations in general and individual RRI elements to a different extent. The scenario work has also inspired a journal article ("Multiple futures for society, research, and innovation in the European Union: Jumping ahead to 2038") which presents the four scenarios and discusses challenges and opportunities related to the different political and ideological paradigms predominating in the four radically different futures (Status April 2021: submitted to the Journal of Responsible Innovation).

The Pilot Action feeds debates and influences the discourse about RRI and does hence affect and address all stakeholder groups and institutions that deal with RRI in their work. These can be, for example, researchers, policy makers, funding organisations, practitioners but also individuals from different disciplines. With its joint public actions and scenario work, it also aimed to sensitize less involved or informed groups about the importance of holding this debate if we have a genuine interest in research that is aligned with societal needs.

The scenario work is a very unique comprehensive work that provides material and ideas to feed the current and future debate on RRI and gave us a glimpse of how a probable future might look like - one that might bring technological advancement and social innovations, but also political ideologies that threaten the advancement of RRI. Seeing that our efforts for the Pathways declaration were visible

and that "our voice has been heard", when we mobilised participation in the public consultation, we are motivated to welcome interested stakeholders to join us on this path to make an impact for a future with RRI.

- Pathways Declaration, see <http://pathways2019.eu/declaration/>
- Take action for SwafS, see <https://newhorizon.eu/take-action-for-swafs/>
- Scenario Descriptions and Sketches: These are currently further developed for different dissemination purposes in form of a brochure and social media content. As from April 2021, they can be reached via our Pilot Action website <https://newhorizon.eu/want-to-engage-for-societally-engaged-research-and-innovation/>
- Scientific publication / article submitted to the Journal of Responsible Innovation (Daimer, Havas, Cuhls, Yorulmaz, Vrgovic, & Griessler, 2021).

Take action for SwafS

Your voice has been heard

Posted on November 20, 2019



Update on SwafS and RRI in the upcoming EC framework programme

A big thank you to everyone who came forward and supported SwafS and RRI in the public consultations on Horizon Europe launched by the European Commission!

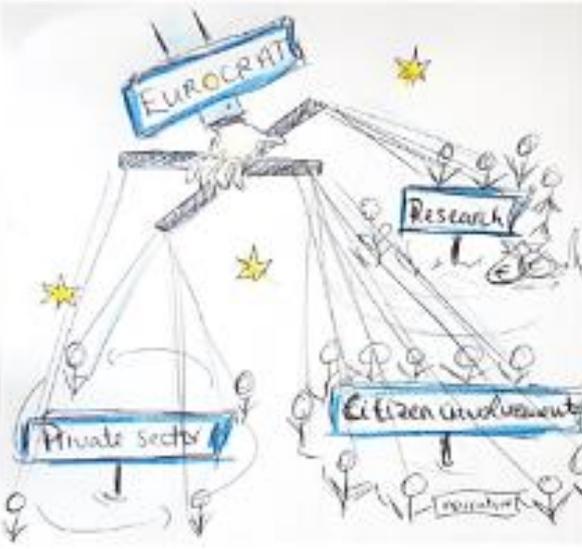
We are relieved that our requests for a stronger consideration of SwafS and RRI have made it into the report on the web-based consultations. Considering the fact that there was no mentioning of SwafS and RRI before the public consultations this is indeed a big win!

The following section has been included in the part 'Widening/European Research Area' under the heading 'on citizen science' as the central feedback from the public consultations:

On of four Scenario Sketches

BENEVOLENT GREEN EUROCRATS / GREEN NEW DEAL

Working Title: Enlightened Autocrat



- Benevolent Autocrat, strong private sector, regulated by the ideal and directions of the autocrat
- EU is a strong, coherent political actor within global governance
- Research is green: public investment
- Freedom of research is restricted, selected researchers gain status vs. antagonistic researchers
- Huge shift in education system, new collective values, context citizen capacities

Illustrations & Artworks: Heyko Stöber

Participants of the scenario building workshop in Karlsruhe, Germany, November 2019



9.8 RRI Show

SL 16 EIT

#creating awareness for RRI #creating communicable output

#gender #public engagement #ethics #science education #open access #governance

#democracy #education #climate and energy

#researchers #research organizations/administrators #policy makers #funders
#innovators/entrepreneurs #CSOs

contact: Mario Roccaro (mario.roccaro@eitfood.eu) and Krzysztof Klincewicz (kklincewicz@wz.uw.edu.pl)

The [European Institute of Innovation and Technology \(EIT\)](#) is an EU body established in 2008 to increase the innovation capacity in Europe. EIT connects innovators from private companies, academia, and teaching talents in Knowledge and Innovations Communities (KICs), in other words, they connect key stakeholder from the knowledge triangle between business, research and technology, and education. KICs aim to develop new products and services, establish start-up companies, and train future entrepreneurs through a variety of educational programmes. Each KIC is designed to address a specific societal challenge but in the eyes of the Social Labs participants, recently, other considerations, such as securing financial sustainability of the operations, has gained greater priority. The Social Lab participants mapped and collected RRI stories – case examples of how RRI keys have been addressed – across three KICs and will publish them online in relation to the NewHoRRizon project in RRI Ex. The aim is to elevate RRI on the research agenda in EIT, hopefully inspire new projects, and use it as a first step towards ultimately addressing RRI in future proposals and considering it in the evaluation criteria across KICs. This could boost the image of EIT as an organization whose primary aim it is to tackle societal challenges by considering the RRI dimensions as a supplementary mechanism to support the financial sustainability of the KICs.

RRI Show is a collection of eight RRI stories: examples of projects across EIT Food, Climate KIC, and EIT RawMaterials, that have successfully addressed or somehow included one or more aspects of RRI. They demonstrate that RRI is not only possible but indeed beneficial within the set-up of the KICs, e.g. presenting the added value of public engagement when developing new products or services. If the reader is inspired to work with RRI aspects in their own projects, they can either reach out to the contact person of each story to learn more and get advice just as some of the stories link to additional information and resources they can use. The stories are presented in a short and accessible format and will be published online.

The work with the RRI stories has created internal debate about RRI in EIT and a willingness to mainstream it further. This includes an internal discussion about establishing an RRI working group. Participation in the Social Lab has also inspired individual participants e.g. to develop RRI training for postdocs in EIT Food. The stories are not yet published and may create more awareness and debate in the future.

Searching for RRI examples within one's own context offers a great learning experience about RRI; reflecting on your practices and figuring out what RRI looks like in your particular field or institution and what is especially important in your context. Likewise, an analysis of existing work might pinpoint

gaps: aspects of RRI that are under-developed in projects for instance, which would benefit from a greater focus in the future.

The stories will be publish on the RRI Ex and the NewHoRRizon website.



9.9 JRC – RRI and autonomous mobility research

Social Lab JRC

#doing RRI #developing implementable designs for RRI #creating awareness on RRI #creating communicable output #building RRI capacities

#public engagement #ethics #science education #governance

#democracy #interdisciplinarity #transport

#researchers #research organizations #policy makers #citizens/general public

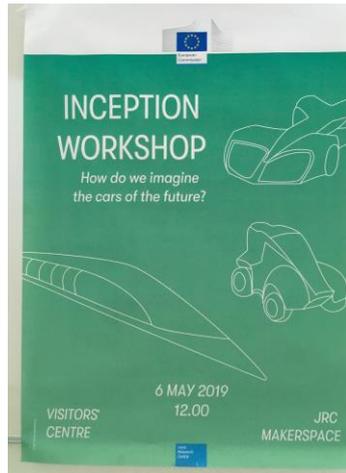
contact: Robert Braun (braun@ihs.ac.at) and Johannes Starkbaum (starkbaum@ihs.ac.at)

The Joint Research Centre (JRC) supports EU policies with scientific evidence throughout the whole policy cycle. Throughout the last decade, the JRC has increasingly opened its research infrastructures to external scientific use and followed an open access policy. It fostered transdisciplinary research, e.g., through the creation of a Community of Practice on Citizen Engagement and the construction of a Makerspace. However, while openness and citizen engagement have been embraced by some parts of the JRC, others do not incorporate these forms of research.

The Pilot Action emerged from challenges of the JRC identified during the first Social Lab workshop. These challenges were mainly entangled with the RRI keys governance, public engagement and ethics. The Pilot Action was tied with an ongoing JRC project on connected and automated vehicles (CAVs) and added aspects of RRI; mainly public engagement and education as well as ethics assessment. This brought together a number of JRC staff members from different units and of different backgrounds, that would otherwise not work together and thus also addresses matters of governance and multidisciplinary.

Throughout the Pilot Action, different narratives and opinions on CAVs were collected and critically reflected. This included a review on established expert discourses through a document analysis, a Eurobarometer survey with European citizens, as well as focus groups with engineers, researchers and citizens. Through a series of inception workshops, the narrative reflection was presented to wider audiences and participants were invited to experiment with automated vehicle mockups to stimulate further discussion.

Impressions from the Pilot Action activities



Inspired by the Pilot Action, citizen engagement has been further implemented at the JRC, for example in the Sustainable Transport unit's (C.4). JRC unit H.1 currently produces two reports titled 'Mobility Imaginaries: The Social & Ethical Issues of Connected and Automated Vehicles' and 'Alternative Imaginaries: Citizen Mobility Futures', which are grounded in the empirical work of the Pilot Action. These reports provide policy recommendations concerning the potential implementation of CAVs in Europe, and aim to go beyond traditional expert debates. A number of scientific publications, based on the empirical material, are currently developed as well.

Reflection on major learnings during the 3rd Social Lab workshop



The transdisciplinary collaboration of JRC units, that opened their research to citizens and other stakeholders, was considered a good practice example for other JRC activities and projects. A number of participants from the Social Lab thus decided to develop a Toolkit for Responsible Research and Innovation at the JRC based on the experiences from the Pilot Action that was linked with the Connected and Automated Vehicles Project. The Toolkit aims to give an understanding of how to account for diverse societal needs and to implement citizen engagement to JRC research activities. This Toolkit will be available in 2021.

To sum up, the Pilot Action challenged hegemonic concepts of how research and knowledge production for policy is conceptualized and done at the JRC, and experimented with transdisciplinary research across units and beyond the JRC. RRI provided a fruitful framework to embed the various activities of the Pilot Action. We see this Pilot Action as a good practice example on how to implement RRI in different research areas of the JRC.

9.10 BINTELLIGENT

Social Lab 18 INSTRUMENTS of RRI

#doing RRI #developing implementable designs for RRI #creating awareness on RRI #building capacities

#public engagement #science education #open access

#education #climate and energy

#researchers #research organizations #innovators/entrepreneurs #citizens

Contact: Vincent Maklawe (vine@env.dtu.dk)

BINTELLIGENT is an innovative, interactive waste bin, which tells us how well we sort our waste.

The ultimate goal of a waste sorting system is to obtain cleaner materials that can be recycled and substitute new raw materials. Source-sorted waste often contains impurities that hinder their direct integration in the resource loop. The main purpose has been to design and test innovative waste bins that encourage the user to sort their recyclable waste and help them to do it correctly to ultimately increase both the quantity and quality of recyclable materials. BINTELLIGENT thus primarily addresses issues of sustainability, though, it touches upon several other RRI aspects. First, public engagement. BINTELLIGENT was tested at the Roskilde Festival in 2019, where the Social Lab team engaged with the guests in discussions about waste management and got their views and input on the workings and usefulness of the bins. Secondly, science education has been an important key as the team working on it mainly consisted of students who used their skills to tackle a societal challenge. The work with BINTELLIGENT was integrated in their courses and have resulted in exam reports.

BINTELLIGENT is equipped with sensors that analyse our waste and tell us the reduced CO₂ emissions and energy generated from doing so. There is currently one bin for organic waste and another for non-organic waste (residual waste) but the concept can be extended to other categories. It creates awareness about waste management and sustainability in general and in practice helps obtain a cleaner residual resource from sorted waste that can be recycled. At first, the waste bin was intended for a private kitchen. However, during the first internal piloting at the Danish Technical University (DTU) it became clear that the demo model, which was “talking” to the user, was too distracting and found to be too disturbing by the test persons.

The project-group therefore decided to add a screen with written text instead and to test BINTELLIGENT in a more dynamic environment. In June 2019, the waste bins were tested at the food court of Roskilde Festival – the largest music festival in Scandinavia.

Beside the people who have been involved in developing the intelligent bins, BINTELLIGENT primarily targeted the festival guests visiting the food court. During the festival, the Pilot Action team carried out a survey, interviewed guests about their project, encouraged them to try out BINTELLIGENT, and gathered their feedback

The project is concrete and with the right knowledge it can be further developed and contribute to raising awareness about waste management and sustainability and contribute to better waste sorting in public spaces in Denmark or elsewhere. The debate on climate change and sustainability will certainly not decrease in the near future and a change in our behavior is necessary to reach climate

goals. BINTELLIGENT helps us in several ways: It increases awareness of the problem, provide concrete knowledge when sorting our waste, and encourages us to change behavior in a fun and innovative way.

Work on the bins



BINTELLIGENT at Roskilde Festival, June 2019



9.11 RRI Lab

Social Lab 18 Instruments of RRI

#developing implementable designs for RRI #creating awareness on RRI #creating communicable outputs #building capacities

#public engagement #RRI awareness in general

#democracy #education #interdisciplinarity #climate and energy

#researchers #research organizations #policy makers #innovators/entrepreneurs # CSOs #citizens

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Living Labs, as a user-centered open innovation method emphasizing co-creation between a multitude of stakeholders in a real-life setting, has much in common with principles of RRI. In fact, as one of the Social Lab participants expressed it “Living Labs are already doing RRI - though not all Living Labs are calling it RRI”.

The aim of the RRI Lab was thus to create a physical space for awareness-raising, knowledge-sharing, networking, and public engagement activities around RRI where all interested parties could discuss Living Labs, co-creation, and how RRI can potentially inspire and enrich it. This developed into the interactive conference booth format: RRI Lab.

The RRI Lab engaged the Living Lab community (at the OLLD conference) and the wider community of smart cities (Smart City Expo) in a space where public officials, companies, entrepreneurs, academics, Living Lab representatives, and innovators could join an open discussion on:

- What the biggest obstacles to taking up co-creation in research and innovation practice and policymaking are.
- How to promote real-context co-creation through Living Labs.
- How to promote co-creation and Responsible Research and Innovation in future EU projects and policy initiatives.

The RRI Lab is a format, which can be adapted to many settings and used by diverse stakeholders to create awareness on and discussion about RRI in their particular field.

The RRI Lab was present at the Open Living Lab Days (OLLD) in Thessaloniki, Greece in September 2019 and at the Smart City Expo World Congress in Barcelona, Spain in November 2019. It was realized through a collaboration between the European Network of Living Labs ([ENOLL](#)), their own projects; iSCAPE, SISCODE, and UNaLab and ENOLL members; Krakow Technology Park (KTP), Genevelab, Thess-Ahall, Bristol Living Lab and PA4ALL. At OLLD19, they invited relevant speakers, based on expertise and field of work, to share their knowledge and thoughts. GeneveLab spoke about public sector Living Labs, KTP about the Krakow air pollution policy plan as well as bottom-up and top-down co-creation initiatives ongoing locally, and SISCODE asked attendees to present their labs working on policy making on a map. At the Smart City Expo, UNaLab brought a game (The ULL playground) and iSCAPE together with Bristol Living Lab brought Tips&Tricks discussion cards about public engagement, which were all very helpful in engaging people at the booth and start discussions about RRI aspects.

The interactive formats: The ULL game workshop (UNaLab) and the Tips & Tricks card deck (KWMC+iSCAPE) continue to be utilized at events in the future.

The interactive tools are extremely useful to create discussion at conference, workshops and meetings. Based on the experience from the RRI Lab, the Social Lab team decided to develop Tips&Tricks cards specifically on RRI to continue to facilitate the discussion around RRI in an engaging format, this is described in a separate two-pager.



9.12 Tips & Tricks for RRI

Social Lab 18 (Instruments of RR)

#creating awareness on RRI #creating communicable output #building capacities

#gender #public engagement #ethics #science education #open access #governance

#democracy #education #interdisciplinarity

#researchers #research organizations #innovators/entrepreneurs #citizens

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A deck of 24 cards: 20 cards containing one thought provocation each, organized according to five main categories: **ethics**, **societal engagement**, **gender equality**, **openness**, **science education**. The cards can be used without paying attention to the background colours and groupings of the cards, or they can be played with these groupings in mind. The remaining 4 cards in the deck introduce the Tips & Tricks (what they are), provide three different methodologies to follow in their use (how to use) and link to an online padlet board facilitating virtual collaboration of the same.

The Tips & Tricks are not intended as a recipe or series of rules to follow: we encourage you to use them as prompts to spark discussion and reflection. The cards create a low-barrier, fun activity to follow with others to insight valuable discussion on RRI.

Living Labs, as a user-centered open innovation method emphasizing co-creation between a multitude of stakeholders in a real-life setting, has much in common with principles of RRI. In fact, as one of the Social Lab participants expressed it “Living Labs are already doing RRI - though not all Living Labs are calling it RRI”. The aim of the Tips & Tricks for Responsible Research & Innovation was thus to facilitate engaged, insightful and effortless discussion on topics surrounding RRI – such as ethics, societal engagement, gender equality, openness and science education. This has culminated in the creation of a deck of 20 cards with thought provocations to inspire and to challenge their users to reflect on what it means to practice Responsible Research & Innovation: from the theories that underpin it to the way you carry it out in your work.

The development process of these 20 cards has been a complex and collaborative one. First, ENOLL has gathered interested stakeholders from its community. Starting with KWMC (Bristol Living Lab) as the developer, the original brains behind the Tips & Tricks methodology to Thess-Ahall Living Lab as integral support and helping hand in running the overall development process together, dating back to the original RRI Lab initiative from where the Tips & Tricks originated from. Throwing in a mix of very motivated and engaged project partners from the SISCODE project, a wide base of knowledge, support, and networks were reached. KWMC led the desk research behind the cards, which in turn was based on desk research done by SISCODE and NewHoRRizon projects: having reviewed several deliverables and websites in the background, an initial idea for what the cards could become was developed. Simultaneously workshops held together with the SISCODE project gathered thoughts, ideas, and even concerns on the topics at hand – contributing to the development of the initial pack of 52 draft cards for the Tips & Tricks. Many workshops, several rounds of selection, iteration, and redesigns later, the final result - 20 Tips & Tricks for Responsible Research & Innovation – was reached

9.13 Nuclear Dating

Social Lab 19 EURATOM

#creating awareness on RRI #building RRI capacities

#public engagement #science education

#education #interdisciplinarity #future of jobs

#researchers #research organizations/administrators

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Academia is often confronted with critique of ‘silo thinking’ of experts in a specific research area. This pilot addresses the lack of interdisciplinary understanding in order to promote the uptakes of Science Education and reflexivity. In a creative format, academics should be encouraged to exchange knowledge with colleagues from other disciplines and in the best, come up with new, interdisciplinary ideas to tackle problems across the disciplines.

The Pilot Action was organized in September 2019 in a relaxed surrounding at the Hard Rock Cafe in Brussels at the city-centre. It tackled these problems by first providing input about the individual researcher’s work by presentations in a Pecha Kucha format to the audience. This ensured a common knowledge about the research of every researcher and should foster the curiosity amongst participants. Once each of the participants presented their work, they were given an input on the concept of Responsible Research and Innovation (RRI) along the six keys by an expert of the NewHoRRizon Consortium. After this, the participants were asked to meet in groups and brainstorm on possible projects highlighting the RRI keys being used. These ideas were followed up on the second day and cumulated in a conference like presentation of the research project.

The main target group of this pilot were early stage researchers. Most of them either recently finished their PhDs or are currently working on it. The aim was to foster transdisciplinary awareness and thinking among the participants. The rationale behind this is that more impact can be reached at early stage researchers and that those who participated will more likely engage in transdisciplinary research. Further on this event enables attendees to communicate about their research to a wider audience outside of their usual peer group.

The pilot provides many different benefits to early stage researchers. Besides having the opportunity to network with colleagues from other disciplines and overcome silo thinking, this event also provides a change to engage with a public outside the own world. Therefore, skills in presenting one’s own research to an audience that is not part of the own bubble can increase the ability to engage with regular citizens. During the workshop it turned out that the use this format in an institution can help getting to know the projects of colleagues and fostering mutual understanding.

Participants took with them insights about the concept of Responsible Research and Innovation (RRI), reflection on how their research can benefit from RRI and they have been efficiently exploring ways to collaborate with researchers outside their discipline. One of them published her experiences in the newsletter of her faculty.

The pilot sponsor SCK-CEN plans to pick up the method for use it in their institution. The method was also featured in the EURATOM proposal as a new, innovative teaching method. Furthermore, a publication on the method is submitted in Q4 2020.



9.14 Teach the Teacher

Social Lab 19 EURATOM

#creating awareness for RRI #creating communicable output #building RRI capacities

#science education

#education #future of jobs

#researchers #CSOs #citizens/general public

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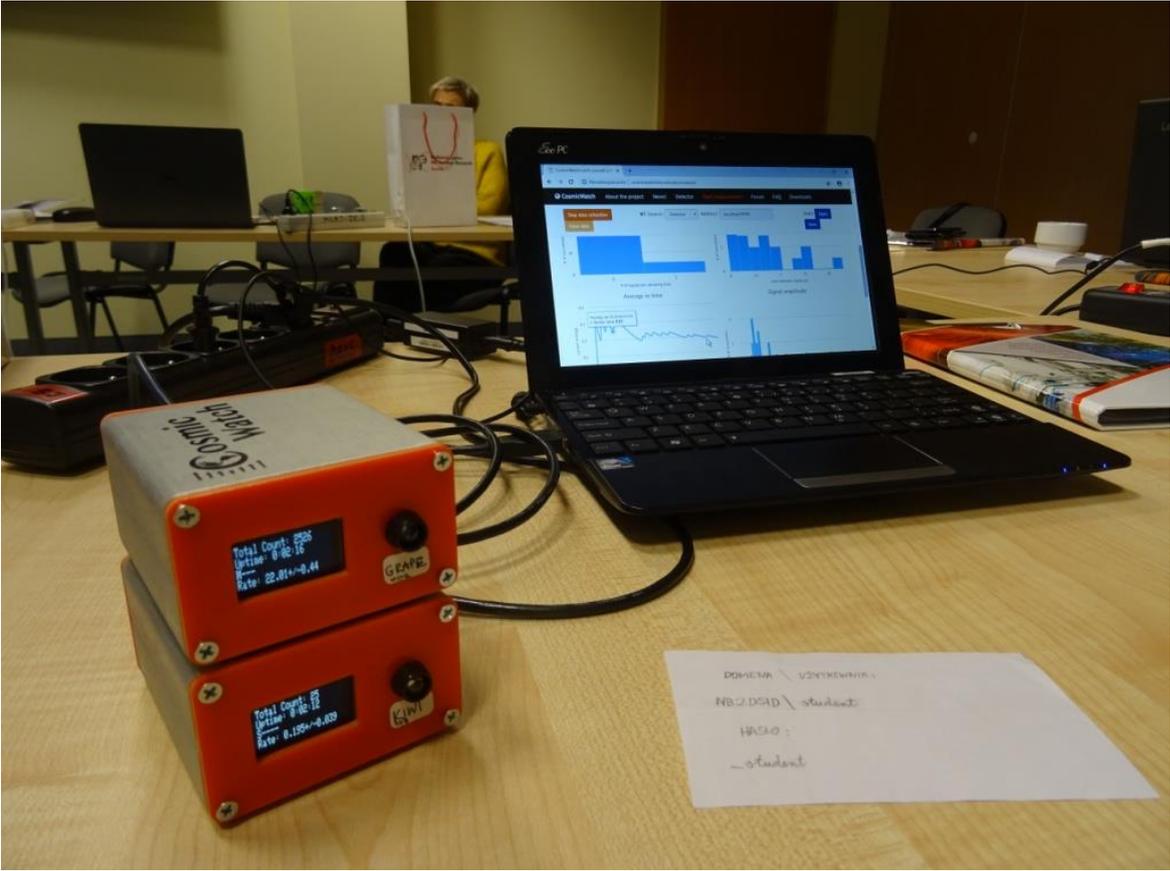
The aim of this pilot is an increase of and supplement physics teachers' qualifications and competences by bringing innovation to physics education, especially in the field of nuclear and atomic physics, by employing and developing new methods and tools. This includes hands-on exercises in order to make the teachers' work more creative and innovative. Moreover, these approaches aim at encouraging students to define research problems in physics. It can be assumed that this can result in an increase of students' interest in nuclear knowledge and can also deepen their interest in general science. The pilot aimed at the decrease of an inequality in an access to knowledge, and an increase of the public engagement in education.

The project addresses commonly encountered problems such as insufficient equipment for experiments in most of the schools that makes the lessons highly theoretical as well as pupils' low interest in physics (i.e. the low attractiveness of physics leads them to dislike physics). Also, the lack of training in physics & pedagogical content knowledge of teachers for teaching new reformed curricula, and difficulties in the interaction with young people were tackled by the pilot.

The pilot was aimed at physics teachers who want to raise their qualifications, working in high schools in the area of Poland, with preference for teachers working in small towns and in small villages.

Science teachers' learning needs are shaped by their preparation, the grades and content areas they teach. Through the action taken holistic picture of physics will be passed to the pupils in order to develop a comprehensive understanding and a meaningful picture of the physical world. Applied methodologies and actions should cause a future increase of the number of technically oriented students, the general scientific interest in science, and the public engagement in the understanding of physic processes.

Tangible outputs: Tangible outputs included a concept of the workshop to teach teachers in the field of nuclear sciences, a report by the pilot sponsors and the implementation of the method to the EURATOM proposal.



9.15 EURATOM Proposal

Social Lab 19 EURATOM

#creating awareness on RRI #contributing to formalizing RRI

#gender #public engagement #ethics #RRI in general

#education #climate and energy #future of jobs

#researchers #research organizations/administrators #funders #citizens/general public.

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During the EURATOM Social Lab, participants outlined several challenges for the nuclear world. First, they were stressing that less young talent is opting for a career in their field which would lead to a shortage of qualified personnel in the near future. Second, they stated that only dedicated funds raise the chance to implement RRI in their research environment. Over the course of the first two workshops the idea emerged to use RRI to support the uptake of innovative new teaching methods and to apply for a call at the EURATOM funding scheme.

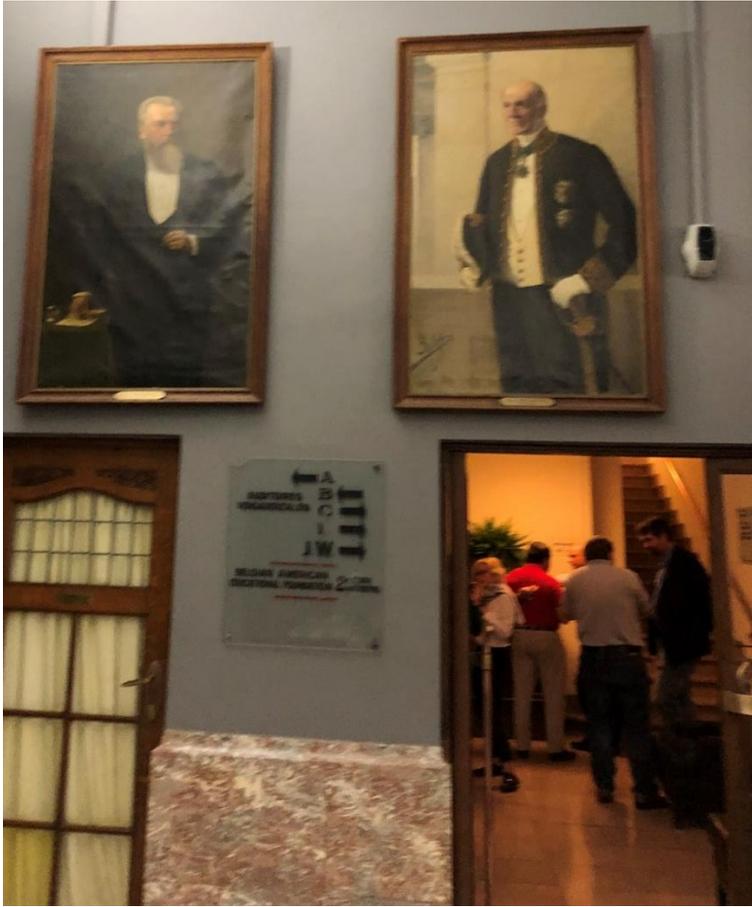
In order to make nuclear education more attractive to young people, the proposal included several new and innovative teaching methods aiming at different target groups and involving all different kind of stakeholder groups. To support this, RRI and its benefits was introduced. The proposal stated:

“Stakeholder involvement and Science Education are essential cornerstones of this concept. As numbers prove there are still more men than women pursuing careers in nuclear sciences. Using RRI and its emphasis on gender equality is an appropriate way to ensure that more female professionals will enter the field of nuclear and less potential is wasted. Guiding young researchers towards Open Access and applying Research Ethics will be beneficial not only for the European Commission but for all stakeholders in the field of nuclear (Open Access made possible to publicly funded research, Science for and with the Society, thereby achieving wider acceptance of the research).”

Target groups for the proposal were students on different levels ranging from high school students to MsC students. Also affected from this pilot are stakeholders from industry and education who are involved in the design and implementation of these nouvelle methods.

As the initial idea was to get funding for the implementation of RRI to EURATOM, still many of the large number of consortium partners (23) were not aware of the concept of RRI. Through the work on the proposal the partners did get familiar with the idea of RRI and its potential benefits. Although the proposal met the threshold, it did not receive funding.

The visible output is the proposal for the H2020 call NFRP – 2019-2020-11. One Work package was dedicated to outline the importance and benefits that the application of RRI could bring to the world of nuclear education.



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11 List of Abbreviations

Table 42 - List of Abbreviations

Abbreviation	Full text
CSA	Coordination and Support Action
CSO	Civil Society Organisation
DG RTD	Directorate-General for Research and Innovation
EC	European Commission
EU	European Union
FP	Framework Programme
CSO	Civil Society Organisation
CSR	Corporate Social Responsibility
NCP	National Contact Point
RFO	Research Funding Organization
RIA	Research and Innovation Action
RRI	Responsible Research and Innovation
RPO	Research Performing Organization
SEWP or WIDENING	Spreading Excellence and WIDENING Participation
SwafS	Science with and for society