



# Activities to Foster Public Engagement in Research and Innovation. Examples from the NewHoRRizon Project

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**Abstract.** In this chapter we take results from the Horizon 2020 project, NewHoRRizon to show that a variety of activities and approaches, addressing different levels and actors, are needed to spur public engagement in research and innovation. NewHoRRizon spanned over all areas of the 8th European Framework Programme (Horizon 2020) and created 19 ‘Social Labs’ to look into different research and innovation themes and their relation to the concept of Responsible Research and Innovation (RRI). This chapter highlights specific pilots stemming from this project which were designed by research and innovation stakeholders over the course of sequential labs, workshops, and meetings. The pilots featured here represent replicable activities and innovative ideas for researchers and research organizations to take up and use in their public engagement practices and policies.

**Keywords:** public engagement · Responsible Research and Innovation · RRI implementation · Social Labs · Stakeholder inclusion · Horizon 2020 · science in society

## 1 Introduction

Public engagement has been advocated for a very long time for democratic and scientific reasons [1–3]. Nevertheless, engaging with the public is still relatively uncommon in many disciplines [see for example, 4] and a disparity exists within Europe as to the quantity of public engagement activities [5]. Public engagement is still an ambiguous and multi-faceted buzzword [6] that carries different meanings for different stakeholders. It is based on different values [2] as well as concepts [7, 8], addresses different disciplines and takes many different forms that engage the public at different moments of research and innovation such as in science shops [9], events [10], consensus conferences [11], lay membership on scientific advisory committees, [12] experiments and demonstrations [13], to name a few.

In order to provide an overview on different formats of public engagement activities we present a number of activities that were developed in a bottom-up approach together with stakeholders from the research and innovation community. Thus, they are therefore

anchored in everyday needs, experiences, aspirations and institutional limitations of researchers and other stakeholders. In the NewHoRRIZon project, on which this chapter is based, we set out to implement the concept of Responsible Research and Innovation (RRI), which entails amongst other concepts public engagement, across all research funding programmes of the European Framework Programme H2020. For approximately two years, the project engaged with more than 720 stakeholders from research and innovation and developed, together with them, more than 50 pilot actions. Many of the pilot actions developed tried to foster public engagement as the participants in the project's 19 different so-called Social Labs felt the need to specifically address this issue. In this paper we will shortly explain the approach by which the public engagement pilots were created and will categorize and showcase some of them.

## 2 NewHoRRIZon and Social Labs

The NewHoRRIZon project tried to contribute to the implementation of the policy concept of Responsible Research and Innovation (RRI) within the 8<sup>th</sup> Framework Programme of the European Union, Horizon 2020 (H2020). Besides public engagement, the topic of this chapter, RRI entails other keys such as gender, ethics, science education and open access [14]. The RRI concept set out to implement these keys in research and innovation, thus making it more gender sensitive in research practice and topics, more considerate of ethical implications of, and conduct in research, and boosting science education, open scientific data, and results to the public.

The NewHoRRIZon project was an attempt to create, together with relevant stakeholders, measures and activities that would support RRI in research and innovation. To these aims, NewHoRRIZon modified the Social Lab concept developed by Zaid Hassan [15] as a process for solving complex societal problems with a bottom-up-approach of stakeholder engagement [16]. A Social Lab brings together diverse groups of stakeholders to focus on addressing complex societal challenges. The process involves a diverse group of stakeholders who are encouraged to contribute their unique perspectives to the challenge, the Social Lab Manager to own and manage the process and a facilitator to guide open ideation during a series of workshops [17, 18].

NewHoRRIZon started with mapping the stakeholders of H2020 and continued by analyzing the state of RRI in all Programme Lines of H2020 [19]. Thereafter, it created 19 Social Labs that covered all thematic Programme Lines of H2020.

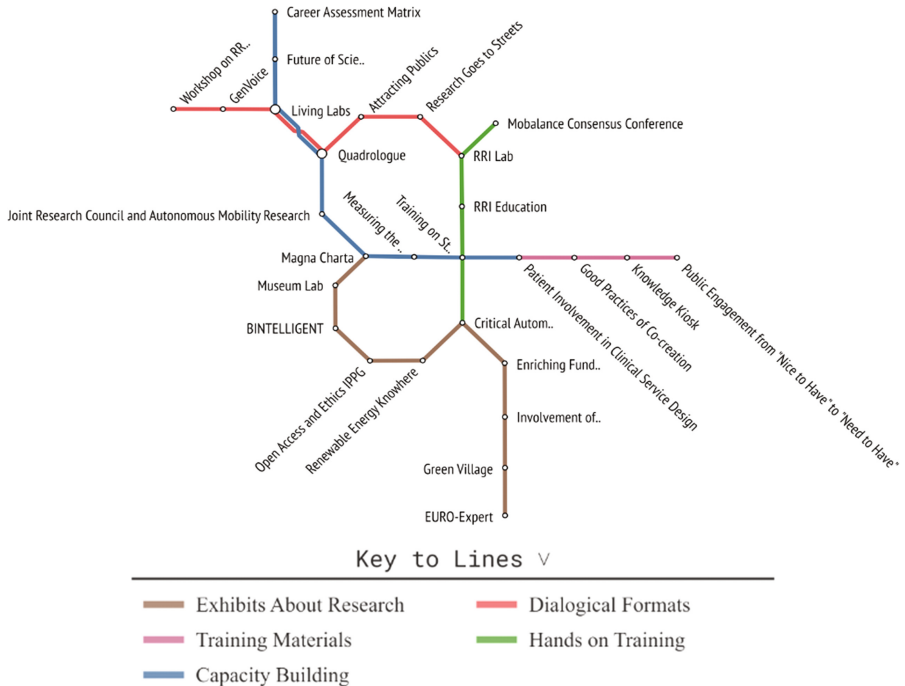
The NewHoRRIZon partners developed a common manual that guided the Social Labs. The pilot action process for each Social Lab is documented in individual reports [20–23] and a Guide to Good Practice [24].

Altogether the Social Labs attracted more than 720 stakeholders from across Europe. The stakeholders came from research, research funding, civil society, policy making and business and in each of the Social Labs, spanning over two years, developed so-called pilots that addressed RRI challenges as the stakeholders perceived them in their own working environment.

The altogether 59 NewHoRRIZon pilots covered all RRI keys and addressed researchers, research funders, policy makers, representatives from business and civil society as well as citizens [25].

## 2.1 NewHoRRIZon Public Engagement Activities

Within the NewHoRRIZon project Social Labs came up with many ideas and pilots that focused on public engagement. Figure 1 below shows a map outlining these pilots based on their type of approach to Public Engagement. We categorized public engagement activities in (a) Exhibits about research, (b) Dialogical Formats, (c) Training Materials, (d) hands-on formats and (e) capacity building. A comprehensive description of the NewHoRRIZon pilot actions is available in an online brochure [25].



**Fig. 1.** Map of the different Public Engagement Pilot Actions developed in NewHoRRIZon grouped by different approaches. (Map designed with web tool: <https://metrosets.ac.tuwien.ac.at/> [26])

As the map demonstrates, the approaches to public engagement overlap and diverge from each other in various ways. While some can be used in multiple settings, others were designed for more specific contexts and serve as inspiration for other organizations. A first group, Exhibits About Research, were meant to provide information about researchers' work and the work of their organizations to a broader public. Alternatively, Social Lab participants also created Dialogical Formats when they felt the need to engender and foster bidirectional exchange between researchers and the public/stakeholders. A third group of public engagement pilots concerned Training Materials that raise awareness about public engagement and enable researcher organizations to foster their own public engagement practices. Another category of pilots trained researchers in a 'hands

on' way in public engagement. The final group of activities addressed a perceived lack of organizational preconditions that hinder researchers from engaging with the public, an activity that is little credited in the assessment of organizations and individual careers.

In the following sections we will go into detail about some of the pilot actions shown in the map to illustrate the kinds of motivations, obstacles, lessons learned and transferrable practices that can be taken up from the NewHoRRIZon project.

## 2.2 Exhibits that Inform About Research

One category of pilots dedicated to public engagement includes exhibitions of information, or examples of researchers engaging with the public simply by sharing what they are doing in a way that considers the potential needs and uses of the stakeholders. In other words, these pilots represent an advanced level of research dissemination activity because their means of presentation are also meant to be practically relevant to stakeholders.

**Euro-Expert and RRI.** The pilot "Euro-Expert"<sup>1</sup> is a website and communicable output from legal scholarship and anthropology that works on making material accessible to people outside the scientific domain. Workshops during the NewHoRRIZon project showed that despite the relevance of legal research to civic life, researchers might lack expertise, time, or sense a general skepticism towards public engagement amongst their research community. This pilot tried to combat these obstacles to be more inclusive and adaptive to social changes within the subject and in the interface between researchers and legal practitioners.

The specific topic of the pilot is cultural expertise in legal theory and practice. In the development phase, it was important for the stakeholders to create a website to help engage people outside the scientific world, and specifically increase engagement between researchers and information users, such as legal professionals and people at court, in order to improve legal processes.

The website shares research results from legal and anthropological research about the role of cultural expertise in the context of legal decision-making and targets stakeholders such as cultural experts, judges, and prosecutors. These stakeholders as well as interested publics can easily get the latest relevant research results from a dedicated website and can even contribute insights through blogs. Such a pilot can be used as a model for other projects that want to engage with their wider stakeholder community to have their research taken up to improve the field of practice.

**Renewable Energy Knowhere.** The renewable energy field is constantly changing. Foundations, associations, small and big NGOs, organizations break up and suspend their operation, and more and more university departments and faculties take up the topic of sustainability and renewable energy. Accessibility of information is a crucial step when it comes to raising awareness of existing efforts in the field of renewable

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<sup>1</sup> <https://euro-resp.com> (Downloaded 11.02.2023) [27].

energy and more ambitiously, to tackling the energy and climate crises. The Renewable Energy Knowhere pilot action helps stakeholders make sense of all this renewable energy research and institutional activity by summarizing EU countries' various renewable energy statuses.

At its core, the pilot is a database<sup>2</sup> in the form of a zoomable online-map (see Image 1) focusing on the Hungarian renewable energy field (Fig. 2).

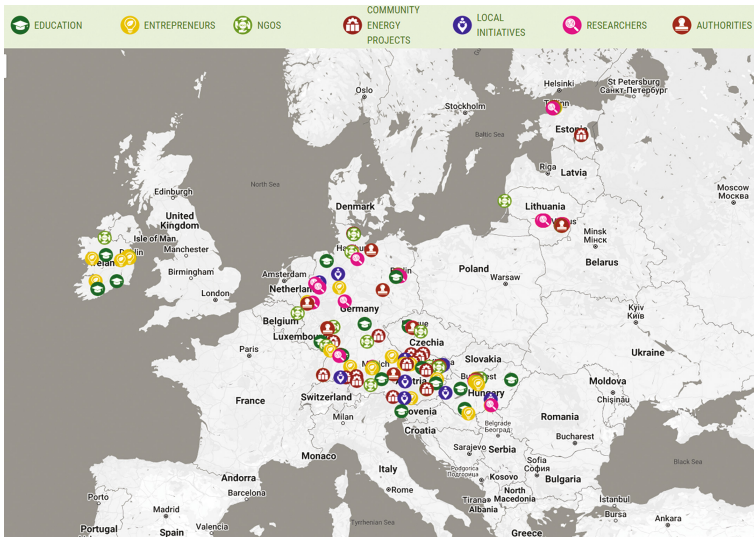


Fig. 2. Visual of map from the website “Renewable Energy Knowhere”.

Included there are specific categories of interest such as education, entrepreneurs, NGOs, community projects, local initiatives, researchers, and authorities. The map provides everyone who is interested in the field access to this information, offering the possibility for science education and public engagement. The website is fed updated data and has been shared with stakeholders working in the field to make the field of renewable energy in Central and Eastern Europe more accessible.

### 2.3 Dialogical Formats

Many Social Labs of the NewHoRRizon project came up with public engagement activities which in various ways provided spaces and methods to engage the public in dialogue research and innovation.

**Quadralogue.** The Quadralogue addresses barriers of communication and routine between individuals with different roles in research and innovation. By bringing together

<sup>2</sup> <https://reknowhere.eu/> (Downloaded 11.02.2023) [28].

these individuals, who are otherwise not typically incentivized to discuss the bigger picture aspects of science and research with each other, the Quadralogue seeks to overcome this barrier to discuss the social impact of research and innovation. The design of the Quadralogue is a structured and facilitated 45-min dialogue-game.

By providing a unique ‘gamified’ environment to foster these conversations, the pilot action is a low-threshold way to bring together to share their expertise, concerns, experiences, and assumptions taken for granted in their normal day to day routine. The barriers are removed by the protocol of the game, as each of the four participants are responsible for sharing their interpretations and first impressions of the experiences from another participant’s perspective. Another aspect is that the protocol encourages them to discuss with each other in plain, non-specialized language.<sup>3</sup> Both an instructional video<sup>3</sup> explaining how to implement the Qaudralogue and a video<sup>4</sup> of an on-campus experience using the format at Ben Gurion University in Beersheba, Israel, have been shared to the public on YouTube [29, 30].

**GenVoice.** The ambition of this pilot action was to experiment with integrating the “unheard voices” of future generations who typically are not engaged, or involved in research only as future beneficiaries, into transport R&I processes – also in context of the contemporary civil society movements. The main target group was young adults who were invited to participate in an experimental workshop.

The morning session of GenVoice involved a school class of 16–17-year-old participants; the afternoon session, students 20–25 years old. The event followed a three-step process. First, participants debated about their personal experiences with transport in the area in Zilina (Slovakia), talked about their expectations for this workshop and described the travel experiences they make in their everyday lives. Second, they created visions of a desirable future and an ideal present mobility system. Third, solutions were created on how to make these visions become reality.

The pilot action left a lasting impression on both the participants and the organizers, in this case transport researchers. Specifically, the school class clearly enjoyed the openness of the process and being asked their opinion about contemporary issues, while also being able to bring in their own everyday experiences. They found the workshop fun, inspiring and empowering – and enjoyed being creative.

The organizers were satisfied as well, having left an impression on the participants both in terms of content and inducing a feeling of agency through eye-level conversations. Furthermore, the organizers pressed to put the results of the event on the radar of local policymakers and city-planners.

**Research Goes to Streets** was developed to address the lack of intellectual and physical connection between the academic universe and civil society. The format manifested into a one-day walkshop in Madrid, Spain, where participants attended in various stages. Although the specific topic addressed in the piloting of Research Goes to Streets was mobility and transportation, the format can be adapted to any topic which addresses

<sup>3</sup> <https://www.youtube.com/watch?v=hXLWokWF7jU>.

<sup>4</sup> <https://www.youtube.com/watch?v=jqYcPmQvMRI>.

a variety of stakeholder groups that otherwise are disconnected in their day to day personal or professional lives. For example, the initial pilot case included researchers, city technicians, students, mobility consultants, and members of diverse grassroots and NGOs.

Practically, the event began with two hours of promenade with several (four - five) stops. This stage included presentations from scientific experts on their research about the shared context, in this case the local transport system in that community, followed by direct questions from the attendants who were encouraged to bring in their own points of view and experiences. A video of the pilot implementation in Madrid is available on YouTube [31].

By bringing such a format out into the street, this pilot demonstrates the possibilities of dialogue between stakeholders and researchers on an eye-level, in a neutral space, outside, where community members can easily access. To extend the event further, as was done in the case of the pilot, there is also the option to record and make the event into a short film available to a wider audience.

## 2.4 Training Materials

Another group of pilots worked on various training materials which were informed by experiences and lessons from experimenting with public engagement approaches.

**Knowledge Kiosk.** This pilot was made in a series of co-creation workshops with the aim of using Design Thinking methodologies to develop an original and effective dialogue system between citizens and researchers to be sustained over a longer period of time. The inspiration behind the pilot was the observation that researchers who would like to contribute to public engagement are often not sure how to bring it into practice and lack examples of effective practices. The Knowledge Kiosk serves like a training manual and facilitation process for designing a long-term dialogue format that is suitable to local circumstances and context, fostering two-way dialogue along the way.

The first step of the Knowledge Kiosk exclusively targeted citizens who provided their ideas for how a regular, sustained interaction between citizens and scientists might look like. The second round was for scientists to discuss and develop these ideas further. Lastly, the groups are brought together to develop a prototype to fit both their needs and desires.

**Good Practices of Co-creation.** This pilot action is an example of a public engagement training developed in the specific context of healthcare. In this sense, the 'public' addressed by the pilot is patients and the specific issue is the disconnect between them, healthcare providers, industry, researchers, and policy makers. One result of this is a growing sense that patients' healthcare needs and wishes are not always properly met.

Co-creation is seen as an approach that can help to reduce this disconnect and strengthen the role of patients and relatives in health care research.

Various positive examples of co-creation exist in healthcare policy making, research, product and service development as well as clinical decision making. The pilot action

identified suitable co-creation initiatives and interviewed a few of them. The pilot identified the need to spread knowledge about these positive examples through “Co-Creation examples” that show the benefits of co-creation in health. The training approach taken in this pilot involves starting by broadening the horizons of affected stakeholders and improving awareness of co-creation initiatives and their benefits. The results of this pilot action can help those interested in co-creating feasible, acceptable, and effective healthcare processes.

**Public Engagement from “Nice to Have” to “Need to Have”.** This pilot on public engagement was developed to increase the participation of citizens and stakeholders in social and technological innovations related to sustainable development. The growing public impatience around implementing sustainability contrasts with the simultaneous backlash from other parts of the public that do not feel represented by proponents of rapid societal transformations.

To help alleviate these tensions and obstacles to collective, inclusive, and sustainable innovation, the pilot action sought to collect and develop clear arguments for why public engagement is important in environmental research and innovation.

A survey was conducted amongst members of business, research, civil society, public officials and their networks. The questions used were designed to inform arguments that can be used to convince funding agencies and project partners about the necessity of public engagement and, in contrast, arguments against engagement. These arguments can be used in a variety of ways, one of which is to support organizations in their training efforts as the arguments represent the most common motivators and demotivators of public engagement activities. Some of these include (Table 1):

**Table 1.** Arguments for and against public engagement collected in “Public Engagement from ‘Nice to Have’ to ‘Need to Have’”.

Arguments for	Arguments against
<ul style="list-style-type: none"> <li>• For producing findings/solutions/policies that are, on the long-term, acknowledged by a broad variety of actors</li> <li>• Diversity of thoughts leads to better Research and Innovation outcomes</li> <li>• The public is going to be engaged anyway, do you want to be there? Or miss out?</li> <li>• Cultural entitlement, informed citizenry, young people and education and their empowerment</li> </ul>	<ul style="list-style-type: none"> <li>• Not necessary, confusing, expensive, time-consuming, would not deliver the right result</li> <li>• It is lengthy, people are inactive, it takes lots of additional resources</li> <li>• I don’t want to share my idea openly before I have finalized it</li> <li>• Difficulties with recruitment</li> </ul>

The result is a summary of arguments and experiences that can be used for a training incentive to reflect on the importance of public engagement in R&I calls and proposals.



## 2.5 Hands on Training

In addition to training materials, some of the pilot actions also worked on developing hands-on training that can be used, adapted to and realized in different contexts, with different topics and for different public engagement needs.

**Training on Stakeholder Integration.** This training pilot specifically addresses consortium lead partners and participants of research and innovation projects and incentivizes reflection on the value of stakeholder integration. The training includes hands-on, participatory exercises to engage stakeholders with supplemental case-studies highlighting the necessary skills for effective engagement.

During the development of the pilot, the team in charge provided a training opportunity and best practice example of public engagement for grant applicants and project leads. The training focused on the benefits of stakeholder integration to research especially as far as quality of outcomes and societal impact is concerned. The aim was to further this into regular training for specific target groups on the national and European level.

The design and piloting of the training was led by an expert in multi-stakeholder processes and took place in February 2020 as a 1-day workshop in Vienna. A diverse group participated including researchers and representatives from national and European level funding organizations. A theoretical and practical insight into multi-stakeholder processes followed by applying a case-study in several steps of intensity of integration. Barriers and opportunities became obvious and were reflected on in the last part of the training.

## 2.6 Capacity Building

A final category of pilots relates to assisting individuals and organizations in their capacity to conceptualize, plan and implement appropriate public engagement exercises for their unique needs. These pilot actions demonstrate different approaches to transforming structures and systems to support public engagement practices and can be transferred and adapted to new organisations.

**RRI Career Assessment Matrix.** This pilot addresses research careers and how, in many research contexts, they are evaluated based on narrow definitions of excellence. The problem that this pilot addresses is that by evaluating successful careers through narrow lenses and leaving out public engagement practices, career assessment ultimately restricts diversity in academia, hindering its labor force and its approaches for addressing societal challenges.

Thus, the Social Lab envisioned a matrix as a means of change in the current evaluation frameworks and practices. The development of the Matrix involved a plenary session and participatory workshop during the Marie Curie Alumni Association Conference in February 2019 in Vienna. Based on this input, a policy brief was developed titled, “Towards Responsible Research Career Assessment” [32]. In the brief are five recommendations including a call to MSCA policymakers to broaden current evaluation

criteria of MSCA calls in dialogue with all relevant stakeholders. Other recommendations include current developments in both indicator development and narrative evaluation. Some examples of the core elements of such a matrix as presented in the policy brief [32] are as follows in Table 2.

More broadly, the pilot helps encourage funding institutions and research performing organizations to rethink and adapt institutional assessment and reward structures from a responsibility perspective. This means including elements like public engagement, teaching, and community service as an equally legitimate and rewarding cause for a researcher. Other organizations could use the policy brief, its sources and the process underlying it as an inspiration for improving their career evaluation system. The high-level policy brief was embraced by the Marie Curie Alumni Association.

**Table 2.** Excerpt of recommendations from “Towards Responsible Research Career Assessment” policy brief.

Recommendations	Dimensions
Broaden current evaluation criteria of Marie Skłodowska-Curie Action (MSCA) calls in dialogue with all relevant stakeholders	Robustness: basing metrics on the best possible data in terms of accuracy and scope; -
Provide (online) training for evaluators on implicit bias	Reflexivity: recognising and anticipating the systemic and potential effects of indicators, and updating them in response.”
Offer training within the MSCA programme, such as via Innovative Training Networks, to prepare researchers and organizations for open and responsible, academic as well as non-academic careers	Humility: recognising that quantitative evaluation should support – but not supplant –qualitative, expert assessment;
Reward and showcase MSCA grantees who excel in multiple dimensions of research, teaching, and service	Diversity: accounting for variation by field, and using a range of indicators to reflect and support a plurality of research and researcher career paths across the system;
Support knowledge exchange and communities of practice around diverse and inclusive forms of excellence	Transparency: keeping data collection and analytical processes open and transparent, so that those being evaluated can test and verify the results;

**Measuring the Impact of RRI.** This pilot addressed the topic of measuring the impacts of RRI at project level. An important driver for the pilot was to be able to easily share the findings with non-academic and academic audiences. The outcome was an easy-to-use template that can support a wide range of stakeholders in their evaluation of RRI activities, including public engagement. The first version of the template includes a list of economic, democratic, and societal indicator descriptions based on pre-existing MoRRI indicators, some examples of which are shared in Table 3 below [33].

The potential users of the template are researchers, practitioners and particularly stakeholders who are involved in research projects and would like to demonstrate how their participation has had an impact outside of the research community. Thus, the pilot action helps support the development and emergence of good practices by monitoring and demonstrating how RRI activities such as public engagement can enrich research and innovation contexts.

The indicators can be elaborated on collaboratively with researchers and stakeholders in their own context with discipline-specific experiences and expertise. This pilot also increases awareness about the need for these types of monitoring and evaluation, utilities, and deepening work for future practical contexts.

**Table 3.** Example indicators taken from “The Impact of RRI Template”.

Indicators	Scientific impacts/benefits of RRI	Economic impacts/benefits of RRI	Societal and democratic impacts/benefits of RRI
Short-term impacts	Increased collaboration with other sectors (industry, public sector, civil society...)	Relationship building between previously siloed sectors	Evidence on the positive effects of science education
Medium-term impacts	Proactive outreach and engagement activities with previously siloed actors in society	Market rewards will favour institutions with leadership that promotes ethical and responsible relationship between science, society, and economy	Evidence on the positive effects of science education
Long-term impacts	Diversifying the pool of researchers (this will impact the diversity of knowledge)	Alignment of normative standpoint on impact goals and mitigation of negative impacts	Improved education system

**The Future of Science? Society.** This pilot action helped to address visions (or lack thereof) of a European research landscape that is societally engaged. At the core of these visions is the uncertainty about the future role of Responsible Research and Innovation (RRI) and the Science with and for Society (SwafS) programme, both which were promoted in Horizon 2020. Together, stakeholders and supporters of a new and advanced SwafS-like programme developed scenarios of multiple, plausible futures of science-society interactions.

The realization of these visions resulted in three different actions. First, 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. Second, 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 the 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 alter the course of science-society relations. The four scenarios can be found in full in a journal article [34] and can be used to discuss challenges and opportunities related to the different political and ideological paradigms predominating four radically different future relationships between science and society.

### 3 Discussion

Social Lab participants, starting from their needs and ideas, came up with very different pilot actions in the context of their situation.

Some pilot actions addressed the knowledge gap between experts and laypeople and the need to inform the public about research and innovation and RPOs in a one-way communication and thus increase interest and chances of transferability of what they are doing.

Others came up with dialogical formats which addressed the general public or specific segments of the public, e.g., young people and students. The sites they used transformed streets, neighborhoods, organizations and most importantly, dialogical norms between researchers, non-researchers, community members and administrators.

The experimentation with the Social Labs within the NewHoRRIZon project also showed that creating formats for public engagement is not sufficient; it needs actual training, training materials, exchange, and knowledge-transfer to show researchers how to engage with the public.

Formats, training materials and training are still not enough to promote public engagement. The public engagement pilots developed in NewHoRRIZon also highlight that institutional structures are needed so that public engagement activities add to researchers’ careers and are not a burdensome add on or even an obstacle to their career. To reduce these potential burdens, there is also the need to measure the output and outcome of public engagement activities. However, whether public engagement in research and innovation has a future also depends very strongly on how the relationship between science and society is perceived.

The pilot actions generated in the NewHoRRIZon project in a bottom up, experimental, and experiential approach showed that there is a strong call for public engagement activities from the stakeholders. They showed that such activities can address the general public and at the same time, very specific segments of society with very different formats and spaces. They showed that public engagement activities must be embedded in a nourishing research landscape that systematizes, exchanges, trains and provides the

institutional and procedural preconditions so that public engagement in research and innovation can flourish. The pilots also showed that a societal discourse about research, innovation and societal transformation is needed and that it is perceived that research and innovation are democratic endeavors in which the public has its active and rightful place.

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