Deliverable D6.1

Report of the expert workshop: "Policies for reducing barriers to societal engagement in research and innovation"

Grant Agreement	665947
Project Acronym	PROSO
Project Title	Promoting Societal Engagement under the Terms of Responsible Research and Innovation (RRI)
Topic	GARRI-1-2014 Fostering RRI uptake in current research and innovations systems
Project website	http://www.proso-project.eu
Starting date	01 January 2016
Duration	26 months
Deliverable due date	31.10.2017
Date of submission	26.01.2018
Dissemination level	Public
Nature	Report
Document version	Final
Work package	WP6
Lead beneficiary	DIALOGIK non-profit institute for communication and cooperation research, Germany
Authors	Kosow, Hannah; Dreyer, Marion; Dratsdrummer, Frank; Koepff, Julian (all DIALOGIK)
Contributor(s) and internal review	Bauer, Anja (OeAW); Hofmaier, Christian (USTUTT); Morrison, Mark (OPTIMAT)

The project is financed by the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement no 665947 and runs from January 2016 to February 2018.

Content

Abbreviations

CPN	Community Partner Network
DIALOGIK	non-profit institute for communication and cooperation research, Germany
DIT	Dublin Institute of Technology
EnRRICH	Enhancing Responsible Research and Innovation through Curricula in Higher Education
HEI	Higher Education Institutions
MUPI	Museum University Partnership Initiative
PROSO	Promoting Societal Engagement under the Terms of Responsible Research and Innovation
R&I	Research and Innovation
REF	Research Evaluation Framework
RRI	Responsible Research and Innovation
TSA	Third Sector Actor
TSO	Third Sector Organization
WP	Work package

1. Introduction

This document reports on the expert workshop "Policies for reducing barriers to societal engagement in research and innovation" in Frankfurt am Main, Germany, 16th Nov 2017. The workshop was carried out by DIALOGIK within the project PROSO – "Promoting Societal Engagement under the Terms of Responsible Research and Innovation (RRI)".

Marion Dreyer, coordinator of the PROSO project, cordially welcomed the participants of the expert workshop, namely twelve experts from research funding organizations, third sector organizations and research (including two members of the PROSO advisory board), as well as eight members of the PROSO project. For details, please see the List of participants and the Agenda in the Annex.

Marion explained that the purpose of the workshop was to discuss a first draft of the PROSO policy guide with representatives of the guide's main target groups and with researchers in the field of RRI and societal engagement. The draft document had been sent to the participants prior to the workshop.
The following questions were in the centre of the discussion:

- Does the guide cover the main barriers to the engagement of citizens and third sector actors?
- What policy options to address barriers could be added?
- What further examples of inspiring policy and practice cases could be included?

This workshop report first summarizes the input presentations given by the invited experts; and second documents the main results from the discussion and feedback on the draft PROSO policy guide.

2. Promoting the engagement of citizens and third sector actors: Input statements

Six of the participants gave brief input statements (5 minutes, followed by 5 minutes of questions and answers) on promising ways to support societal engagement in research. This chapter provides a summary, central messages by the experts are highlighted in boxes.

2.1 R & I - from being a "unicell" to establishing links between science and society?

Eero Elenurm, from the Youth in Science and Business Foundation gave a brief presentation (PDF).

He introduced his organization which is since 2001 concerned with the engagement of young people to link business and TSA with research in national as well as EU projects.

His main question was how to convert isolated research (in a 'unicell') to become part of a more systemic approach. His argument was that due to resource constraints, researchers in groups and labs tend to cooperate with research units dealing with the same

We could use crowdfunding mechanisms to evaluate the societal relevance of research proposals.

issues. The same holds true for TSA, which mainly cooperate with other like-minded organizations.

To build bridges between the different actors and sectors, he proposed two approaches: First, *university students* could tie first bonds between research, TSA and business. They could be motivated by the education system to bring researchers closer to other actors, to allow research to learn about issues, questions and needs of organizations – and to match the required academic expertise with these societal needs. An additional value for the student to make this 'bridge-building-work' would consist in getting to know potential employers (TSA, businesses).

Second, approaches like *crowdfunding* could be used as a means to engage society with research. Products and research ideas could be evaluated regarding their relevance through contests following the crowdfunding principle. This could take the form that citizens assess different research ideas by distributing virtual money – and researchers thus learn how their research is seen by the citizens.

2.2 Collaboration starts early: lessons from The Museum University Partnership Initiative

Heather Lusardi, National Co-ordinating Centre for Public Engagement talked about supportive conditions for collaborations with TSOs (PDF).

Heather's main assumption was that collaboration with TSOs can be important engagement in itself, but also a means for engagement with broader publics.

She presented a pilot project from the Museum University Partnership Initiative, which facilitates (small and medium) museums to work with HEI (higher education institutions, like universities). It mainly works through facilitated networks and small pots of funding.

The project identified three key challenges for this form of cooperation:

- resourcing the partnerships: finances, time resources;
- dealing with differences between museums and universities;
- developing effective partnerships.

Building trust between museums and research requires personal contact and time.

Key findings were that *networks* are critically important. These need to be based on individual relations, as trust is of paramount importance ("people who know and trust each other"). They also need creative spaces without pressure or agendas. Self-organized network events are helpful, but need to be well-facilitated.

She deduced the following key implications:

- invest in networking events brokered by people with knowledge on both types of organizations;
- provide funding; and build change from bottom-up, i.e. nurture networks, create many opportunities to meet and create resource benefits;
- give equal value to the status of both sectors – and the same possibilities to develop initiatives and ideas for both sides.

Solutions could be a) *long-term regional match events*, where actors can meet, learn about each other and grow into networks; b) *two-step funding*: first, seed-funding for thinking and relationship building; second, funding for more traditional research projects, that means more traditional research funding. An important lesson learned was to develop a good approach to ensure accountability without requiring too much administrative burden.

A toolbox for scaling up has been developed, will be published soon, please visit their website.

The audience suggested that collaboration with Ecsite, a European network of science centers and museums could be fruitful.

2.3 Science Shops as a model to engage students and lecturers with CSOs on research

Catherine Bates, Dublin Institute of Technology (DIT)*,* reported about her experience with the function and limits of science shops.

As a part of the EnRRICH project, she deals with how to support TSO in research agenda setting, i.e. to stimulate research on topics that they identified as important. The focus is on science shops.

How do science shops work? They have the task to collect research ideas from community organizations (i.e. to find out, what would be interesting for them) and to bring partners from TSO and research together, to develop projects interesting and relevant to both sides. At DIT, students from the undergraduate to the PhD level are involved to learn with communities. The science shop staff meets with community organizations, to learn what research they would find interesting. By going through the different curricula of the various disciplines and schools, often a long list of project ideas is developed. This increases the chance that an idea might be picked up by a student. Then, the staff looks for a student to carry this research out within his or her curriculum. The research can be small and focused up to in-depth over several years in PhD projects. During the project runtime, the office acts as a trouble- shooter and later facilitates the evaluation and dissemination of outputs.

The science shop staff matches the project ideas they jointly develop with CSOs with the students' curricula.

Science shops are facing specific *barriers* and limits: They are confronted with academic timetables. This means students often are available from Sep-Dec and Feb-Apr only. Time critical projects often cannot be carried out. Also, science shops cannot guarantee that they will find students willing to do the research that is wanted by the TSO. Furthermore, the quality of the outputs depends on the capacity and level of the students. Finally, often no cohesive approach on an issue is possible but rather fragmented studies are carried out, i.e. only single aspects are dealt with, not the whole question can be answered. This is especially true with inter- and transdisciplinary issues that only badly fit into the curricula organized according to disciplines.

Examples for projects are:

- Chemistry students doing soil testing in community gardens;

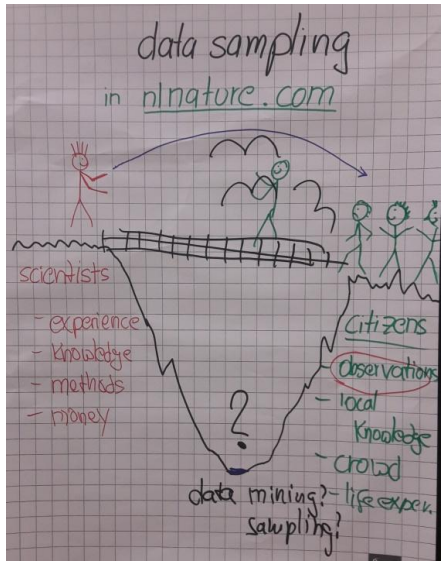
- Public health students studying the folic acid intake awareness of their peers, in cooperation with a Spina Bifida organization in Ireland;
- Enable Ireland project, a product design PHD project developing a method and interface for including physically handicapped end users in product development.

2.4 How to close the gap between natural scientists and citizens?

Gisela Wachinger, pro re – Partizipation und Mediation, a facilitator and mediator trained as a biologist, talked about citizen science.

She reported about the project Newfoundland Nature on the motivations of scientists and citizens to become involved in citizen science in biodiversity projects. Overall, citizens can be involved during six steps of the research process:

1) Research question
2) Co-design project
3) Data sampling
4) Data analysis
5) Discussion and interpretation of results
6) Implementation



Mostly, citizens are included during data sampling – which is not engagement in the strict sense. Their incentive often is to be part of a group and to get involved in discussion forums. Still, there are different ways to include citizens to collect data: First, citizens are provided a long list of variables (e.g. bird species). This often produces data of poor quality, because one has to be an expert and because tend to focus on rare phenomena – not common ones, which produces bias. The second approach is to ask citizens to take pictures (e.g. of sea mollusks). Third, citizens are asked to send observations on what they see, e. g. a "big black bird with red feet", without attributing e.g. bird species to their observations.

Citizens provide their observations and life-experience – natural scientists need methods to translate these into reliable data.

When the second or third way is chosen, researchers do not burden citizens to be too knowledgeable. But, methods are needed to translate citizens' observation into reliable data that can be used by the researchers. That means scientists get a lot of descriptive data that they need to interpret. This creates more effort for the scientist. These data are only used for peer reviewed publication, if the scientists have means to test their reliability.

Finding translation methods could make data more reliable and also gives citizens more trust in their own data. This could encourage citizens to engage with formulating research questions and co-design of projects, too.

For more information, please see the project website.

2.5 Guidelines for public engagement in RRI - can we learn from Urban Redevelopment?

Thomas Bausch, Project Management Jülich, first briefly introduced his organization, managing and designing funding programs for the federal and regional governments, with a staff of 1.100 people managing 18,000 projects and €1.5 billion per year.

Then he made the case that we need more self-commitment to societal engagement in R&I from the established actors of the research system, for example in form of co-developed guidelines.

We need self-commitment and guidelines for societal engagement on all levels: From parliaments to universities.

He argued that societal engagement in R&I was praised / promoted by politics, i.e. by parliaments and governments. Administrations, research funding organizations as well as research organizations have fewer incentives to follow this route. For them, societal engagement requires resources. It also increases the complexity of the already complex agenda-setting processes and the risk to fail. In addition, societal engagement goes beyond the usual practices and involves communication with the public.

There is already some progress, but to mainstream societal engagement, we need more effort. This could take the form of self-commitment, openly documented in guidelines or codes of conduct. These could be co-developed together with the different actors concerned. Inspiration to this could be found in the realm of urban and infrastructure planning. In this realm, societal engagement with the (potentially) affected is a condition to obtain funding. Similar mechanisms could be considered for R&I as well. Actors on all levels, from parliaments to universities, from European to local, research and funding organizations could think about a position paper or guidelines on societal engagement in R&I for their organization / on their level. This could cover issues of inclusiveness, legitimacy and transparency, and define TSOs as members of the advisory boards, e.g. of research organizations.

2.6 Selected experiences from transdisciplinary research for engagement strategies

Alexandra Lux, Institute for Social-Ecological Research gave a presentation on transdisciplinarity, a discourse related but little connected to RRI (PDF).

First, she defined characteristics of transdisciplinarity: a focus on complex situations; a problem-oriented and integrative approach; a focus on contextual research, and orientation towards solutions.

Transdisciplinarity research and societal engagement in research can learn a lot from each other.

Taking over a process oriented view shows, how societal engagement in research requires the same 'deviations' from the classical research process than other transdisciplinary approaches. This relates, for instance, to questions of team building (who should be engaged?) and of opening up the epistemic process (What are scientific results, what are resulting changes in social practices?).

She reports on the project TransImpact, which is a meta-project that analyzes the impact of (participatory) projects. It identified important framework conditions, as the projects' history, funding, context, as well as heterogeneous actor constellations. Regarding the last point, it found that differences *within* societal actor groups and scientist groups can sometimes be greater than *between* the two groups. This challenge was confirmed by the audience.

Furthermore, the TransImpact project asked, how we can develop agency. One lesson learned was to follow changes in the projects in terms of ideas and interests: The interests of those involved may change over time as may the dynamics and the roles that individuals play. Another lesson was to check the perceptions of roles, the understanding of the context of action, to review the participation context and to promote a culture of collaboration – on equal footing. Projects are marked by constant processes of closing down and opening up that need to be evaluated.

3. Discussion of the policy guide

The main part of the workshop consisted in the discussion of the draft policy guide. After lively discussions, further input was generated during a "milling around" session, allowing one-on-one discussions among the experts and additions to the discussion results so far.

This chapter presents the background information on the policy guide given during the workshop (3.1) and gives a summary of the main results of the discussions: This is sorted by general comments (3.2), an overview on the experts' input on barriers, ways to address these as well as inspiring examples in table form (3.3), and a more detailed description of the input regarding each category, namely the barriers (3.4), the ways to address barriers (3.5.) and inspiring examples (3.6).

3.1 Presentation of the draft policy guide

Hannah Kosow, DIALOGIK, introduced the draft policy guide (PDF).

Focus

The document focuses on *research* rather than on innovation, more specifically on *publicly* funded research (vs. privately or industry driven research). *Engagement* is understood as including two-way flows of communication. Informing only is not understood as a form of engagement.

It focuses on *invited* engagement rather than on self-organized forms of engagement, while understanding both as forms of societal engagement. It focuses on differences and similarities of *citizen* and *Third Sector Actor (TSA) engagement* – this is the specific added value of the PROSO project.

Target groups

The target groups are those, which can adapt or change their policies and practices of engaging societal actors with research activities. These are: policy makers, funding organizations, universities and TSA. The document is directed at those TSA who either wish to engage more deeply with research activities – and those who, from an RRI perspective, should engage more.

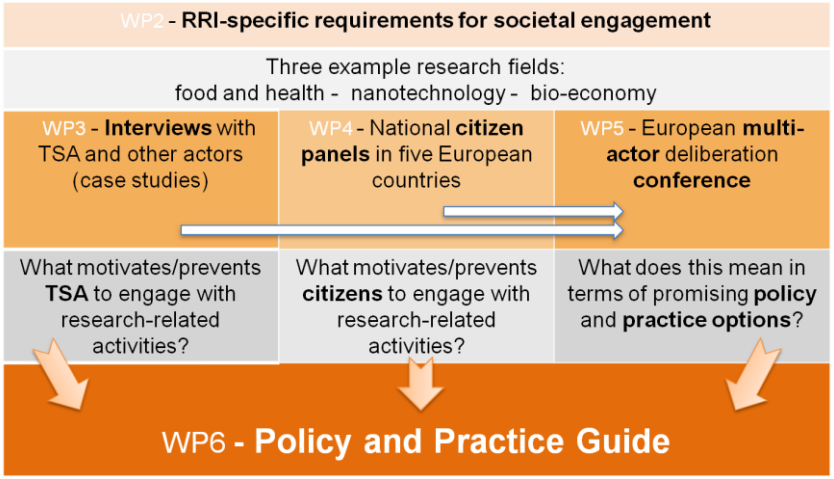
What it is – and what it is not

The aims and character of the policy guide are as follows:

- Information and inspiration for practitioners
- Linking projects results to existing research
- Focus on invited engagement aiming at aligning research with societal needs, values and expectations (not all forms of citizen activities related to science, as e.g. citizen science);
- As situations and contexts are diverse across Europe and in different research domains, the document presents *options*, which means possibilities and not "have tos" - and not best practice but inspiring examples.

Methods and empirical sources

The policy guide will be the final and joint product of the PROSO project, all project activities will flow into it.



The base consists in a *review of literature* and policy documents (see D2.2). The empirical core is an analysis of barriers from TSA and citizen perspectives: *case studies* with stakeholder interviews (9 cases, n= 60 interviews), resulting in a synthesis report on barriers from different actors' views (see D3.3); and *citizen panel meetings* in five European countries (overall n= 90 citizens, meeting twice), resulting in a synthesis report on barriers as well as policies and practices from the citizens' views (see D4.3). Developing policies and practice options was supported by a one-day *multi-actor deliberation conference*, with ca. 50 actors, documented in a conference report (see D5.2).

Structure of the policy guide

The document is structured in four parts:

I) Introduction, focus, basic assumptions, definitions;
II) Key barriers: lack of relevance, impact, trust, legitimacy, resources, knowledge
III) Practice and policy options for different actors, including example boxes
IV) Conclusion

3.2 General comments and remarks

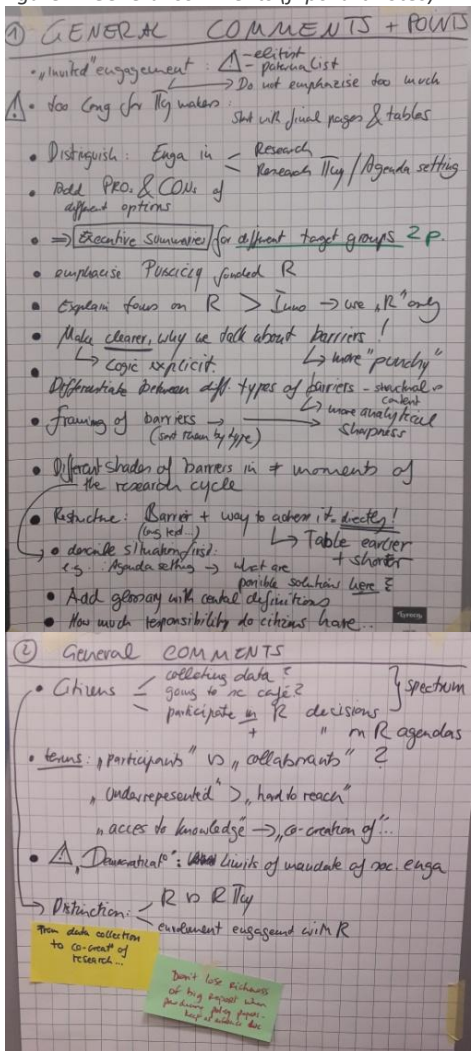
It was noted by several participants that the document was a very good draft – and very inspiring for discussion. At the same time, the participants made a couple of suggestions how to further elaborate the document.

Length

Experts agreed that the guide could be shorter to be easier to read for policy makers. They strongly recommended adding an executive summary (1-3 pages long). At the same time, it was recommended not to lose the richness of the current report.

Experts suggested putting the overview tables at the beginning of the document, to make them smaller and less dense, and to adapt their layout to allow for better readability.

Figure 1: General comments (flipchart notes)



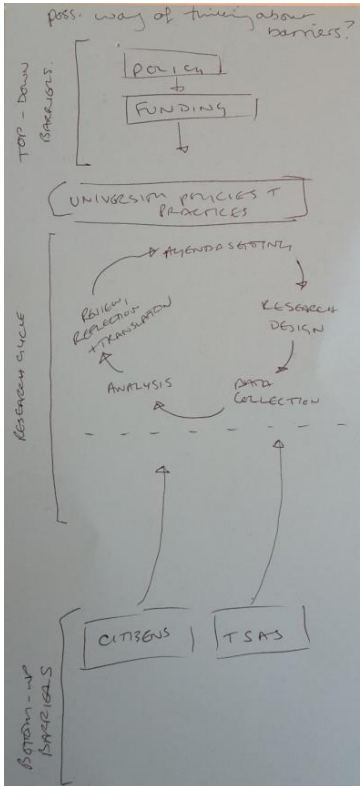
Structure

Several experts suggested that there could be also other ways to structure the document:

- The presentation of barriers could be even sharper and also based on a more explicit justification, why it is so important to consider these barriers.
- One proposal was to give up the separation of barriers presented in one block followed by the presentation of ways to address these in one block; but to deal with *each barrier and possible solutions together*, especially in the executive summary.
- Another idea was to re-structure the guide not around barriers as perceived by different actors, but rather to frame them around their origin. These situations could be structured along the different moments of the research cycle, especially by distinguishing *engagement with research policy and agenda setting* on the one hand vs. *engagement with research activities during the implementation of projects* on the other hand.

Yet another idea to sort barriers was sketched during the milling around session namely to distinguish rather system related barriers from rather actor related barriers and to situate their relevance for the different stages of the research cycle, see Figure 2.

Figure 2: Barriers, sorted differently



Focus on engagement policies and practices – not on methods

The question came up why engagement *methods* are in the background. The PROSO team replied that the policy guide would built on what we already know about engagement methods and gives links to existing toolkits – but that the focus of guide was not on methods but on policies and activities to create more favorable conditions to support the effective application of engagement methods.

Focus on engagement with research

It was emphasized that it is a spectrum from citizens engaging with research, when they co-shape decisions - to citizens participating in research, as it currently often is the case in citizen science, when citizens' main task is to collect data.

Focus on invited participation

Some discussion developed around the focus of the document on *invited* engagement (vs. non-invited forms like protest, e.g.). Asked why they had chosen this focus, the PROSO team answered that there had been two reasons, first, engagement under the terms of RRI mainly concentrates on invited forms – and experts agreed that it seems difficult to provide policy advice on non-invited forms. Second, research on non-invited forms would have required very different and additional forms of empirical analysis.

Still, some experts suggested not excluding non-invited forms, as one could get additional insights by learning from their motivations. For instance, protest can be an important factor for companies to pursue or not no to pursue certain lines of research, as it was the case of Novartis, a company producing pharmaceuticals facing societal protest to its research on organoids.

Another expert pointed out that the document might benefit from an early justification of why this focus was chosen, otherwise, the guide could be accused as being elitist, even patronizing and taking citizens as objects ('who is inviting, why are they in a position to do the 'inviting'?'). Again another expert rather argued that the document did not overstress the differences between these two types of societal engagement.

Responsibility and mandate of societal actors regarding R&I

Another issue that came up at several moments of the discussion was the normative position of the guide regarding the question what

responsibility and mandate citizens should be given. It was suggested to differentiate between participating in research projects vs. participating in the democratic process as an enlightened citizen. The PROSO team explained that the purpose of the document was not to look for ways to make citizens 'responsible' for R&I, as this could also be seen as patronizing them. This position was backed up by an expert's statement that societal engagement in research does not mean to take collective decisions. Instead, when engagement processes provide recommendations based on options, it remains the task - and the responsibility - of political actors (as e.g. the research agency) to finally take the decisions.

Terminology

Several suggestions were made related to the terminology of the guide, namely:

- The term 'participants' could sometimes be replaced by 'collaborators'.
- 'Hard-to-reach' groups has a negative connotation, 'under-represented and disadvantaged' groups may be the more suitable terms.
- 'Access to knowledge' is important; perhaps one could also name the 'co-creation' of knowledge, when it occurs.
- 'Innovation' usually covers more than innovation in research. An explanation might be needed.

In the further discussion, experts pointed at additional barriers, ways to address these and at inspiring examples. These are summarized in the following subsections.

Figure 3: impressions from the plenary and milling around sessions

3.3 Overview on expert input on barriers, ways to address these, and inspiring examples

A brief summary of the experts' inputs is given in the following table. For more detail, please see the text following this table, where the different aspects are further elaborated, this time grouped into barriers (3.4), ways to address barriers (3.5) and inspiring cases (3.6).

Table 1: Overview on additional barriers, ways to address these and inspiring examples (boxes in light grey and italic print added by the authors of this report – and not further elaborated below)

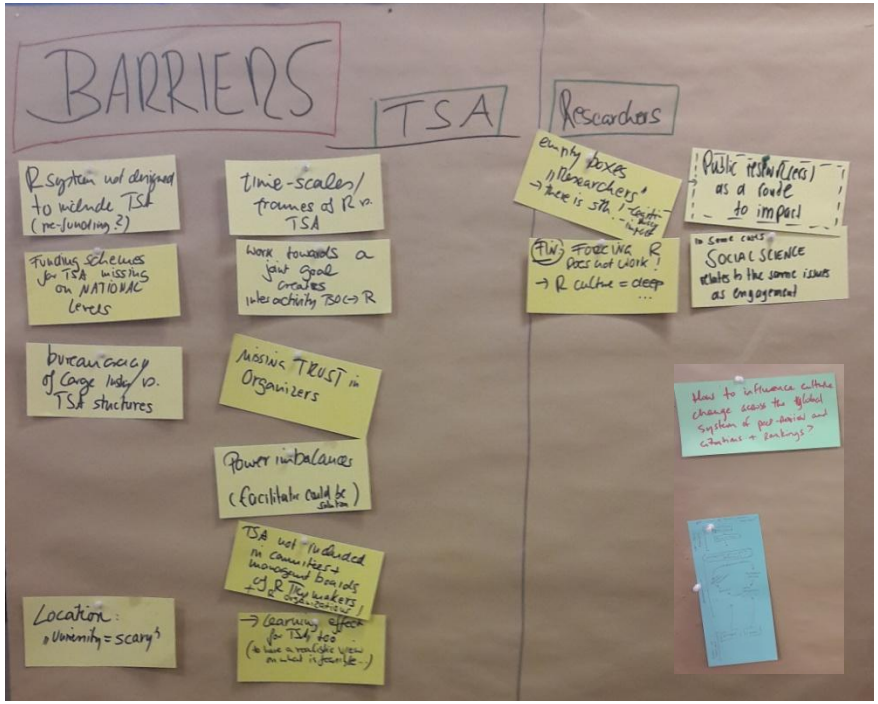
	Barrier	Way(s) to address these	Inspiring example(s)
Issue related	*Missing relevance*	Target the regional and local scale	• Climate change as an issue for citizen science
		Disaggregate "the public" and engage people where they are	• Ice-skater forum • Massive gaming communities • Science gallery Dublin visitors
		Asses relevance of issues through TSA	• Crowdfunding and petitions to assess relevance • Banks of societal challenges
	Collingridge dilemma regarding emerging technologies	Technology Assessment & fictitious cases to approach the potentially affected	• "Lab on a chip" - use cases to discuss dilemmas • Survey on gene editing using vignettes
Procedure related	Power imbalances	Independent facilitation Careful selection of places and organizers	
	Scientist-citizen interaction nothing automatic	Joint product	• Nano Risk Framework • Community Partner Network
	Lack of impact and lack of legitimacy from the researchers' perspective		

	Barrier	Way(s) to address these	Inspiring examples
System related	TSA underrepresented in committees and boards	Include TSA in research policy development (agenda setting and programming structures	
	Bureaucracy and long time frames hinder TSA		
	Limited access to funding for TSA	funding schemes on national levels *(cf. funding schemes below)*	
	Science culture	Self-commitment & guidelines	• The UK Concordat of engagement • UK Manifesto for public engagement
		Funding schemes	• Dutch RRI-funding method: NWO's co-creation funding • Swedish Challenge-Driven Innovation Programme
		Evaluation criteria	• UK research excellence framework • Impact matrix of University of Leiden • Repository of good practices • NWO-WOTRO impact-toolkit
		Bottom up reform through education	• Swedish InnovatePassion • Swedish mass experiments

3.4 Barriers

During the discussions, participants came up with a few barriers that they do not see sufficiently covered in the guide yet. They proposed to add or to put more emphasis on the following barriers, which are mainly barriers for TSA and for researchers.

Figure 4: Additional barriers seen by the experts (notes from the plenary discussion on yellow cards, additions from the milling around session on multi-coloured cards)



Limited access to funding for TSA, esp. on the national level

Research systems are not designed to include TSA. Often, these would need pre-funding to be able to participate. Currently, funding mechanisms, such as from the EU, sometimes keep back 10% until end of the work has been finalized. This makes it difficult for small TSA to participate. On the national level, funding schemes for TSA often are entirely missing. And, as one expert turned it: "Co-creation is not possible without co-funding."

Power imbalances

Power imbalances are another barrier perceived by the experts, especially those between research actors and societal actors. For instance, choosing the location for engagement can be decisive, as for instance a university location can be off-putting to TSA.

Scientist-citizen interaction is nothing automatic

One expert emphasised that when scientists and citizens are in the same room, interactivity does not happen automatically but is hindered through the (cultural) distance and differences between these two groups.

Lack of impact and lack of legitimacy from the researchers' perspective

By virtue of the current presentation of barriers, it becomes visible that several aspects might be missing, namely the issues of lack of impact and lack of legitimacy from the researchers' perspective. For

instance, there might be researchers who do not see public engagement as legitimate for their research or as a pathway to impact.

TSA underrepresented in committees and management boards

Currently, TSA are only rarely included into committees and management boards of both, research policy making organizations as well as of research organizations (as e.g. in the large public research structures in Germany the Helmholtz, Fraunhofer and Leibnitz associations) and universities. Thus, they are not included into the strategic decisions on the directions of research.

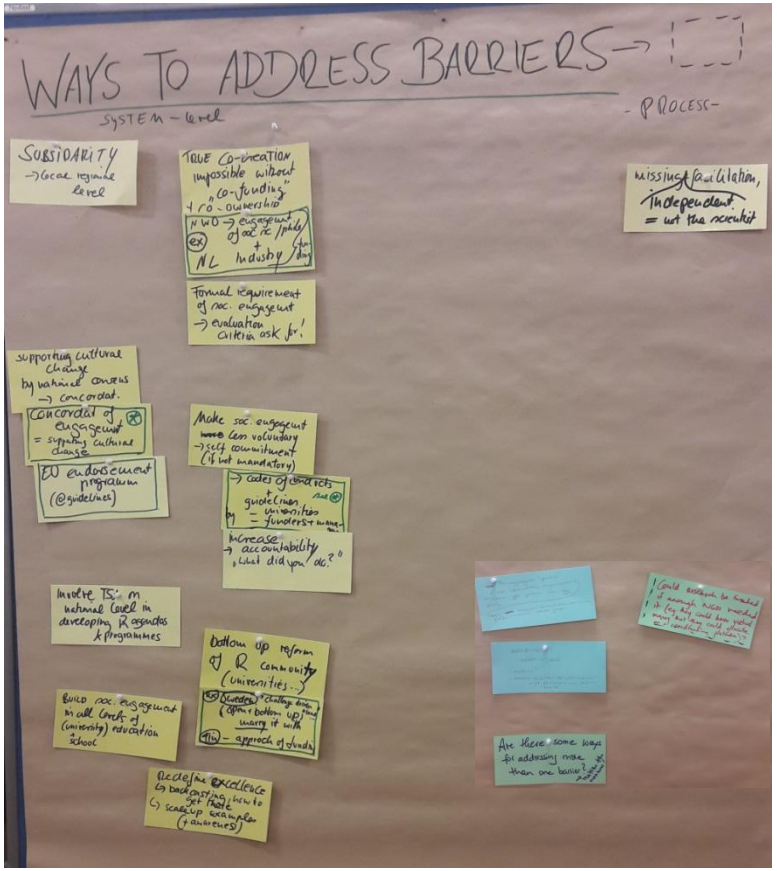
Bureaucracy and long time frames hinder TSA

The bureaucratic structures of large organizations often are not compatible with the small and at times rather non-hierarchical structures of TSA. For instance, the administrative burden related to engagement with EU projects is an important barrier to TSA. Also, the time frames of TSA (short term, focused on current societal debates, hot topics) are incompatible with the longer time frames of research and its administration.

3.5 Ways to address barriers

The experts contributed the following ideas on ways to address barriers. It was noted that those measures were particularly interesting which are suited to address more than one barrier at a time.

Figure 5: Policies added by the experts (notes from the plenary discussion on yellow cards, additions from the milling around session on multi-coloured cards)



Create relevance through addressing the regional and local scale

When reaching out to citizens, projects could refer to the closest relevant regional level. The local context is the key-connection and immediate environment to the citizens. This level could be used as a starting point, which can then be linked to national and EU aspects. ("Subsidiarity as an engagement principle").

Disaggregate "the public" and engage people where they are

Further it was noted that "the public" could be disaggregated. It could be an idea to access one's specific public, not *the* public, e.g. through intermediary organizations like religious communities, community groups, museums, interest groups etc. It was suggested to cooperate with people 'in their natural habitats' to make them engage with science.

How to deal with emerging technologies? Technology Assessment and fictitious cases to learn from the potentially affected

One approach suggested by the experts could be to work with intermediary persons, who bridge the gaps between laboratories and citizens. These could be people from, e.g., Technology Assessment (TA) organizations, social scientists or consultants. Their tasks could be to ask the researchers what they are currently working on and what could be technically possible soon. Then, they derive fictitious use-cases and scenarios to stimulate reactions by potentially affected groups, to stimulate a public debate as well as talk to politicians to learn, what policies are emerging on that matter.

Possible use-cases could also be developed jointly with the potentially affected, perhaps through 'pitching' sessions, where researchers present their work to citizens and invite them to brainstorm on potential applications.

It was also suggested to consider the PACITA 2015 conference report on the issue.

Independent facilitation and careful selection of places and organizers

To deal with power imbalances and distrust, experts recommended using skillful and independent facilitation - which also means that processes should not be facilitated by the researchers themselves. In addition, it is important to carefully choose a) the places, where the engagement takes place and b) the organizers of engagement.

A joint product to stimulate scientist-citizen interaction vs. room for diverging positions

Experts agreed that working towards a joint product (or joint goal) stimulates the interaction between scientists and citizens. At the same time, pressure to come up with a shared output can also hinder TSO engagement. Therefore, there should also be room for diverging positions. This needs time and carefully designed processes.

Include TSA in research policy development

Experts proposed to strengthen the involvement of TSA on the national level in developing research agendas and programmes, by including them in committees and boards from research agencies

down to research organizations. This would also have a learning effect for TSA, as they would gain insights into the procedures of policy making and provide them with a realistic view of what is feasible – and what not.

During the discussion, several ways to stimulate a cultural change of the research system have been proposed, which are summarized in the following paragraphs. Some of these proposals have been discussed in rather controversial ways.

Cultural change: Self-commitment & guidelines

Some experts argued that we need to make societal engagement less voluntary, if not even mandatory. Societal engagement could either become a formal requirement or a strong self-commitment. This could be based on a national consensus which is supported through codes of conduct or guidelines which document the commitment across different levels, from universities to research funding and management. These guidelines could also include "how to do- lists" for policy and decision makers.

Cultural change: Funding schemes

Several experts stated that this self-commitment would need to be translated into funding schemes requiring engagement. Others replied that nudging (or forcing) researchers does not work, as the research culture is too deeply and too strongly rooted in the autonomy of science. Facing this culture, engagement risks to become a buzzword dropping and tick boxing exercise. Instead, rewards could be a more promising approach.

Cultural change: evaluation criteria

A closely related proposal was to support changes of the research culture through new evaluation criteria, including societal engagement and societal impact to assess the performance of research organizations as well as of individual researches. "Public researchers" could be one route to impact. Others added that currently, the measuring of effective outcomes is difficult; and that it is questionable, if a metric for measuring impact and value of engagement is adequate at all. A redefinition of excellence could also be supported by a backcasting process (how do we get there?). Yet, it remains an open question how to influence the global system of peer-review, citations and rankings.

Cultural change: Bottom up reform through education

Instead of a top-down approach, it was also proposed to rather change research cultures by starting with the youth and with universities. One element would be to build societal engagement into all levels of (university and school) education and to highlight the importance and relevance of public engagement. Some experts objected that one also needs to reach those, who have already left the educational system- and that it is very difficult to change established mindsets.

3.6 Inspiring examples

In terms of inspiring practices, participants pointed at several existing examples and developed some ideas of new potential – but not yet established – practices.

Climate change as an issue for citizen science

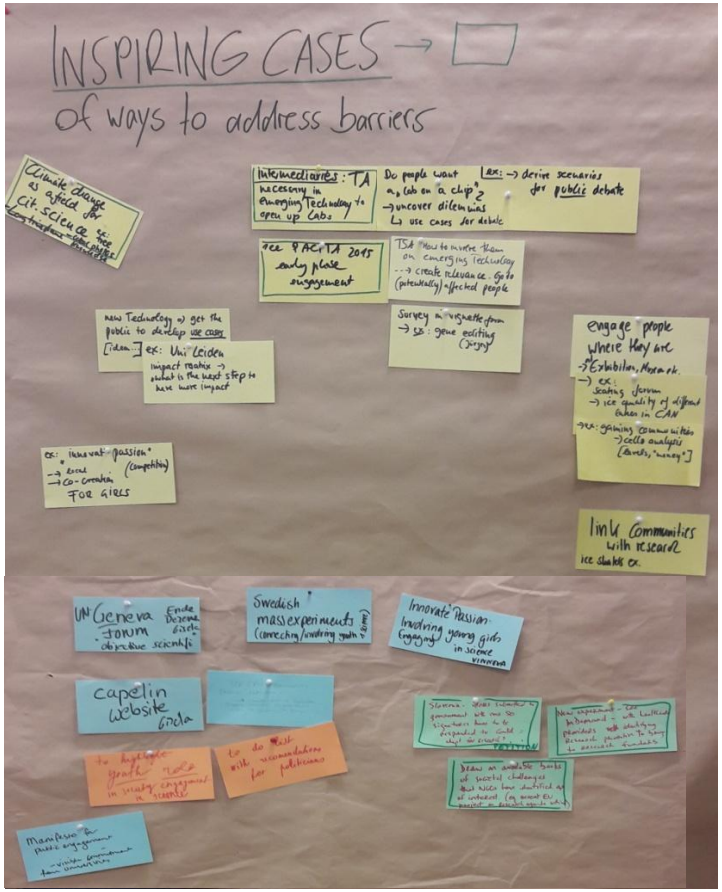
Climate change research might benefit from citizen science, as it is an issue that needs the long term view, requires a lot of data, and local knowledge could be very useful. People could, for instance, take pictures of trees over a number of years to show and document effects of climate change.

Examples of engaging people where they are

Several ideas were formulated, how to cooperate with people "in their habitats" or to make them engage with science:

- *Canadian ice-skaters* have a forum where they exchange information on the best lakes to skate. One could involve these people in climate change research, to learn about the development of ice quality of different lakes in Canada.
- *Massive online gaming community*: Scientists can introduce questions they are interested (e.g. analysis tasks) into online games.
- eCapelin, *a* WWF Canada citizen-science initiative to collect data on capelin spawning sites in the Gulf of St. Lawrence and Atlantic Canada.
- *Science gallery Dublin* has been hosting several exhibitions in their "Lab in the gallery" series, where data is collected from the visitors, like Love Lab, Memory Lab, Happy, Risk Lab, and Lifelogging Lab.

Figure 6: Inspiring examples added by the experts (notes from the plenary discussion on yellow cards, additions from the milling around session on multi-coloured cards)



New approaches to assess relevance

New approaches to assess the societal relevance of research issues could be developed based on existing mechanisms:

- *Crowdfunding* (see input talk “R & I - from being a "unicell" to establishing links between science and society?”)
- *Petitions*: When ideas reach a certain number of signatures of citizens or of TSA, the ministry of research (e.g.) has to re-spond.

Banks of societal challenges

Already available banks of societal challenges that TSO have identified as of interest, as in CIMULACT, a recent EU project on Research Agenda setting, could be an interesting resource for agenda setting processes.

Examples to deal with emerging technologies:

- *“Lab on a chip”:* potential use cases presented in form of scenarios.
- Survey on *gene editing*: As this is an issue of early developments, additional input was provided in vignette form.

Working towards a joint goal

DuPont and Environmental Defense (TSO) cooperated to jointly develop the Nano Risk Framework in a three year process.

Community partner network

The UK community partner network (CPN) creates shared agendas, offers support to societal aengagement and provides access to community groups.

Self-commitment & guidelines

In the UK, since 10 years, societal engagement has been fostered through the central government and research agencies driving forward this agenda. Visible but not mandatory commitment was supported by documents like the “Concordat of engagement” or the “Manifesto for public engagement”. Still, there was no a consensus among the experts, to what degree substantial change effectively has happened in the UK, as such change is slow, and hard to achieve and to measure.

Examples for funding schemes

- Dutch RRI-funding method: NWO’s assessment criteria for project proposals sometimes include ‘co-creation’ (examples here, here and here).
- Swedish ‘Challenge-Driven Innovation’ Programme, a bottom up approach, in which consortium members rather openly decide on what they will do to address societal issues across four societal challenges and which has multi-actor inclusion as a requirement.

Examples for evaluation criteria

- UK universities have been given incentives through the REF (Research Excellence Framework)
- *Impact matrix*: University of Leiden has developed an internal assessment standard (based on the general Dutch evaluation framework, the SEP, Standard Evaluation Protocol 2015-2021) that provides an impact matrix with several questions and indicators including impact and engagement with society.
- *Repository of good practices*: UK Research Excellence Framework impact (REF impact) case studies
- The *NWO-WOTRO* impact-toolkit gives concrete advice on how research can achieve more societal impact.

Emphasis on passion

Based on the assumption that girls have a different approach to technology and innovation than boys, namely rather focused on their passions, the VINNOVA project InnovatePassion had a local approach, focusing on co-creation through competitions for girls.

Swedish mass experiments

An approach to connecting and involving youth and science: As part of European Researchers' Night, each year VA (Public & Science) coordinates a mass experiment that involves schools across the whole of Sweden. Every autumn, thousands of Swedish pupils of all ages are involved in helping researchers gather huge amounts of data. These so-called mass experiments are of mutual benefit; the researchers get more data than they could otherwise easily collect, the pupils get the opportunity to participate in real research, and teachers get material and methods based upon state-of-the-art research to integrate in the curriculum.

4. Further steps and closure

Marion Dreyer on behalf of the PROSO team thanked the participants for their valuable input and announced the following steps: The workshop results will be condensed in a workshop report. A draft of the report will be circulated among the workshop participants in mid-December 2017. The revised and final report will be published on the PROSO website by the end of January 2018. The workshop results will inform the work on the final policy guide which will be published and disseminated through the PROSO website, a dissemination conference in February 2018 and through the PROSO networks. The final guide will be sent to the participants of the workshop, too.

5. Annex

5.1 List of participants

Dr Catherine Bates	Dublin Institute of Technology, Ireland
Dr Anja Bauer	Austrian Academy of Sciences, Austria, PROSO
Mr Thomas Bausch	Project Management Jülich, Germany, PROSO Advisory Panel
Mr Eero Elenurm	Youth in Science and Business Foundation, Estonia
Mr Frank Dratsdrummer	DIALOGIK non-profit institute for communication and cooperation research, Germany, PROSO
Dr Marion Dreyer	DIALOGIK, Germany, PROSO (coordinator)
Ms Maria Hagardt	VA – Public & Science, Sweden
Dr Juergen Hampel	University of Stuttgart, Germany, PROSO
Dr Attila Havas	Hungarian Academy of Sciences, Hungary, PROSO Advisory Panel
Mr Christian Hofmeier	University of Stuttgart, Germany, PROSO
Mr Julian Koepff	DIALOGIK, Germany, PROSO
Dr Hannah Kosow	DIALOGIK, Germany, PROSO
Dr Lotte Krabbenborg	Radboud Universiteit, The Netherlands
Dr Nina Linde	Latvian Academy of Sciences, Latvia
Ms Heather Lusardi	National Co-ordinating Centre for Public Engagement, UK
Dr Alexandra Lux	Institute for Social-Ecological Research, Germany
Dr Mark Morrison	OPTIMAT, UK, PROSO
Ms Anett Ruszanov	European Regions Research and Innovation Network, Belgium
Dr Jussi Vauhkonen	Academy of Finland, Finland
Dr Gisela Wachinger	pro re - Partizipation und Mediation, German

5.2 Agenda

Thursday, Nov 16th	
10:30	Welcome coffee and tea
11:00 – 11:15	**Welcome and Introduction** *Marion Dreyer, DIALOGIK*
11:15 – 12:15	**Promoting the engagement of citizens and third sector actors**: **Input statements** (5 min. input, 5 min. Q&A) R & I - from being a "unicell" to establishing links between science and society? *Eero Elenurm, Youth in Science and Business Foundation* Collaboration starts early: lessons from The Museum University Partnerships Initiative, *Heather Lusardi, National Co-ordinating Centre for Public Engagement* Science Shops as a model to engage students and lecturers with CSOs on research; *Catherine Bates, Dublin Institute of Technology* How to close the gap between natural scientists and citizens? *Gisela Wachinger, pro re - Partizipation und Mediation* Guidelines for public engagement in RRI - can we learn from Urban Redevelopment? *Thomas Bausch, Project Management Jülich* Selected experiences from transdisciplinary research for engagement strategies; *Alexandra Lux, Institute for Social-Ecological Research*
12:15 – 13:00	**Presentation of the policy guide** (and Q&A); *Hannah Kosow, DIALOGIK*
13:00 – 14:00	Lunch break
14:00 – 16:00	**Discussion of the policy guide focusing on these questions:** – Does the guide cover the main barriers? – Are the policy options well chosen and properly described ways for advancing the reduction of barriers? – Are the examples of inspiring practices and policies well chosen?
16:00 – 16:15	Refreshment break
16:15 – 16:45	**"Milling around": Additions to the discussion results so far (one on one exchanges)**
16:45 – 17:00	**Wrap-up**
17:00	Closure of the workshop