Annex I. Methods and tools for citizens' engagement in water-oriented Living Labs
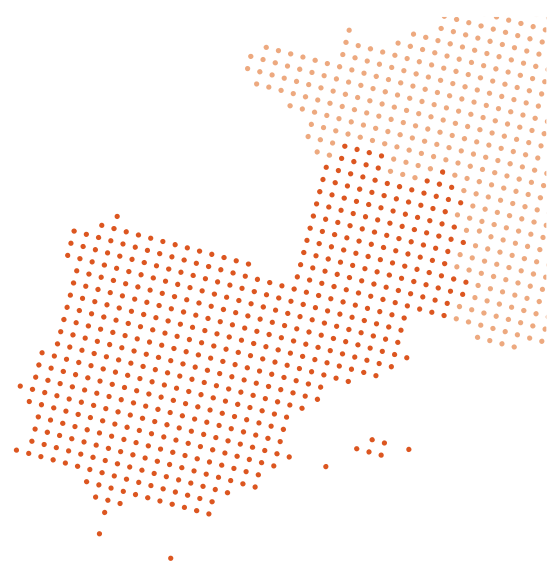
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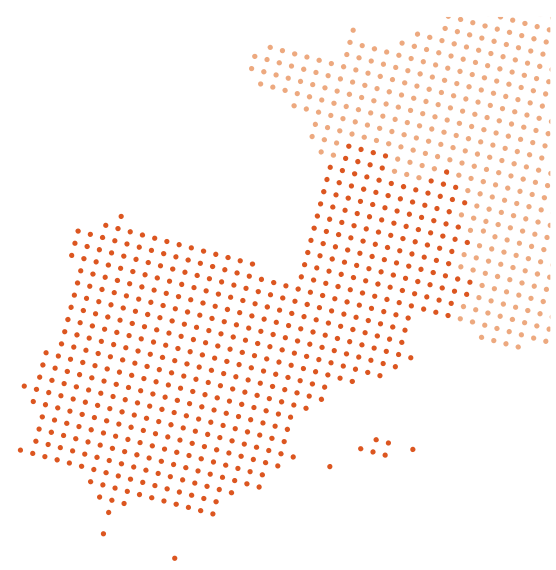## Table of contents

1   Objectives

Societal engagement is one of the pillars of the framework for Responsible Research and Innovation (RRI), developed by the European Commission. The idea behind RRI is to improve the relevance of science in the EU to the societal challenges lying ahead of the European societies by including all societal actors throughout the whole process of research and innovation. The identified by the Commission Grand Societal Challenges, or, key issues the societies in Europe need to deal with, are:

- Health, demographic change and wellbeing,
- Food security, sustainable agriculture, marine and maritime research and the bioeconomy,
- Secure, clean and efficient energy,
- Smart, green and integrated transport,
- Climate action, environment, resource efficiency and raw materials,
- Inclusive, innovative and reflective societies,
- Secure societies to protect freedom and security of Europe and its citizens.

On the other hand, the implementation of the three **TWIST Living Labs** requires the creation of the community of users, which has to include the four pillars of the quadruple helix. Living Labs in other sectors that are more focused on civil society can consider citizens as potential users of the Living Labs. But in the wastewater treatment sector it is more difficult to engage the civil society as users.

To meet the goals of Horizon 2020 about these challenges, the European Commission funded the **project Engage2020**, that looks into how members of society are involved today and how could they be involved in the future in science and science policy.

With these objectives in mind, the project mapped methods and tools currently used for societal engagement in research and innovation in Europe, that have been reflected in the document 'Public engagement methods and tools'.

In this document we present a selection of the methods included in the document elaborated by Engage2020 in order to **facilitate ideas for the engagement of citizens** in the community of users of the TWIST Living Labs. These

methods have been considered the more appropriated to achieve the engagement of citizens in the functioning of the Living labs on the water sector. Last section is devoted to a specific case, the Science Shops.

2 Criteria for the listing of methods

The methods and tools listed in the document are mapped against a set of four criteria. These are:

1. **the levels of application of the method/tool** (i.e. policy formulation, programme development, project definition, research activity),,
2. **the societal groups involved in the application of the method/tool** (i.e. CSOs, policymakers, researchers, citizens, affected citizens, consumers, employees, users, industry),
3. **the level of public involvement** of the societal groups listed above (i.e. dialogue, consulting, involving, collaborating, empowering, direct decision),
4. **the grand Societal Challenge addressed** (i.e. Health, demographic change and wellbeing; Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the bioeconomy; Climate action, environment, resource efficiency and raw materials; Inclusive, innovative and reflective societies; Secure, clean and efficient energy; Secure societies - protecting freedom and security of Europe and its citizens; Smart, green and integrated transport).

2.1 The levels of engagement

Mapping of existing engagement practices against the four levels of engagement aims at promoting the wider and more inclusive engagement at all levels, and thus to strengthen the collaborative governance and democratic elements of research and innovation. The four levels may involve different challenges and therefore, different methods and tools may be of relevance to them. The four levels of method's application cover the whole span of activities connected to science, research and innovation.

The **four levels of engagement** in more detail are defined as:

1. *Policy formulation:* is the praxis of defining the framework conditions for R&I activities. This includes making policies for distribution of funds between programmes, rules and instruments on responsible R&I, definition of financial instruments etc.
2. *Programme development:* is the process of defining the content and the calls in R&I research programmes. This is typically a process involving member state representatives, programme committees, the research community, different platforms and hearing processes.
3. *Project definition:* engaging society may be about inviting different groups of stakeholders to suggest focus for the specific research or innovation project, thereby increasing the chance of acceptance in society or the chance of innovations to be welcomed by the markets.
4. *Research activity:* Engaging society directly in the research and innovation activities may be aimed at, for example, increasing the amount of empirical data for research, allowing for clarification of normative issues in the scientific process, or improving the relevance and thereby the implementation of research and innovation results.

2.2 The societal groups

The participant types embraced by Engage2020 are those, who may have relevant knowledge, can contribute with normative clarifications or have special abilities to act or decide in specific domains. Special emphasis is put on those groups which are usually not embraced by research and innovation activities as collaborators, namely CSOs, citizens, affected citizens, consumers, employees and users.

- CSOs (civil society organization),
- policymakers,
- researchers,
- citizens,
- affected citizens,
- consumers,
- employees,
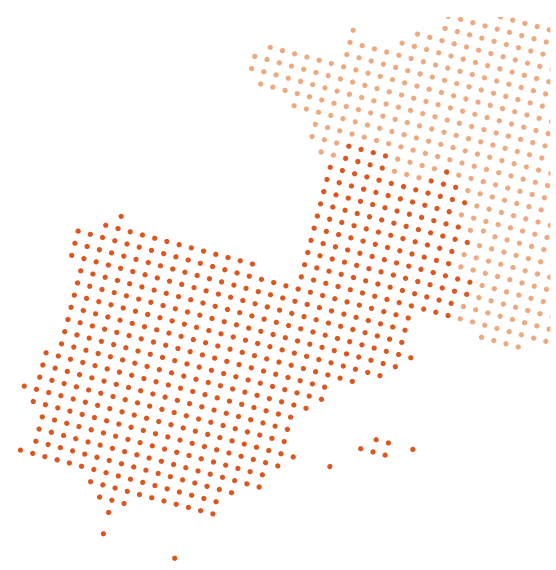
- users,
- industry.

2.3 The level of public involvement

In Engage 2020, they focus on genuine engagement forms which go beyond traditional one-way communication of scientific findings. Thus, engagement practices which cover the following levels of public engagement have been included in the current document:

- **Dialogue** aims to improve the "two-way" communication between scientists, policy makers and citizens to ensure a regular exchange of views.
- **Consulting** aims to obtain public feedback for decision-makers on analysis, alternatives and/or decisions.
- **Involving** aims to work directly with the public throughout the engagement process to ensure that public concerns and aspirations are consistently understood and considered in decision making processes.
- **Collaborating** implies partnering with the public in each aspect of the decision including the development of alternatives and the identification of the preferred solution.
- **Empowering** happens when the involved participants acquire certain skills/knowledge in the process of engagement.
- **Direct decision** takes place when final decision-making is in the hands of the public.

3 Methods that can be applied for citizens engagement in water-oriented TWIST Living Labs

The document 'Public engagement methods and tools' collects 57 methods, of which we have selected the next 24, that have been considered in some way appropriated to apply in TWIST Living Labs activities:

1. Action research (pp. 18-20)

3. Charrette (pp. 25-28)

5. Citizen Science (pp. 32-35)

6. Citizen Juries (pp. 36-39)

9. Citizens Hearing (pp. 47-50)

10. Citizens visions on Science, Technology and Innovation (CIVISTI) (pp. 51-54)

11. Civil dialogue (pp. 55-58)

12. Community-based (participatory) research (pp. 59-61)

13. Consensus conference (pp. 62-65)

14. Crowd wise (pp. 66-68)

15. Science week (pp. 69-71)

18. Deliberative (minipublics) Workshops (pp. 79-82)

34. Knowledge atelier (pp. 134-137)

35. Mass experiment (pp. 138-140)

40. Participatory design (pp. 155-158)

42. Participatory strategic planning (pp. 165-167)

47. Scenario Workshop (pp. 185-189)

48. Science shop (pp. 190-193)

49. From question of a CSO to a Research Question (pp. 194-196)

50. Integration of civil society driven research in university curricula (pp. 197-199)

51. Needs survey among CSOs (pp. 200-202)
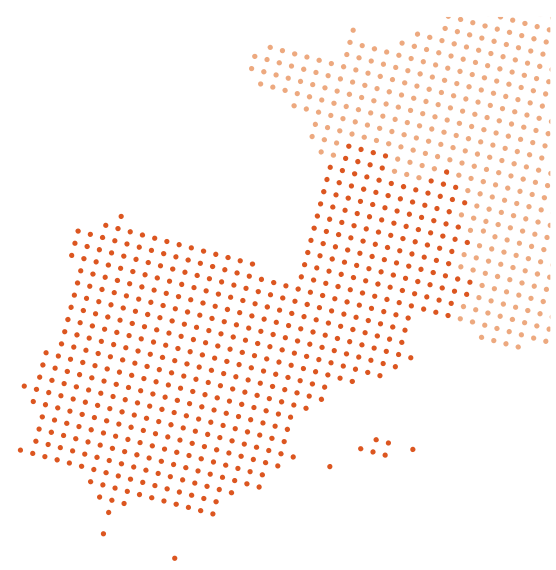
The information about the characteristics and applications of these methods can be consulted in the document 'Public engagement methods and tools'.

# 4 A specific case: the Science Shops

4.1 Living Knowledge Concept

'Living Knowledge' is the network of (persons or organisations involved in) Science Shops and similar organisations active in public engagement and involvement of Civil Society Organisations (CSOs) in Research & Innovation (R&I), and those who support those activities.

Science Shops are not "shops" in the traditional sense of the word. They are small entities that carry out scientific research in a wide range of disciplines – usually free of charge – on behalf of citizens and local civil society. The fact that Science Shops respond to civil society's needs for expertise and knowledge is a key element that distinguish them from other knowledge transfer mechanisms.

The Living Knowledge Network - with its persons or organisations involved - pursues the idea of public engagement with, and participation in, all levels of the research and innovation process: participation of citizens and/or CSOs in generating research ideas, questions, and agendas; participation in monitoring, steering, advising on or performing research; in data collection, data analysis or scenario development; and the co-creation of knowledge with the aim of contributing to social change.

Its objetives are:

- to promote the open debate of major societal challenges and knowledge exchange between civil society and research.
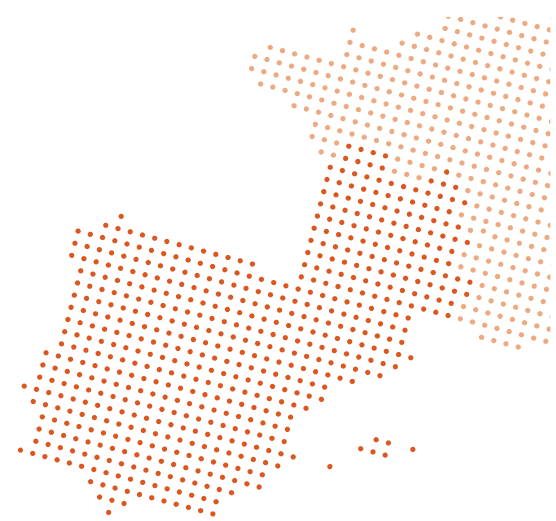
- to promote public understanding of science and technology and, likewise, promote the understanding of the public by those in research and innovation.
- to facilitate co-operation among Science Shops, universities, community-based research organisations and related institutions in Europe and worldwide, and civil society and its organisations.
- to promote co-operation between experts and to strengthen existing expertise and interest in developing participatory research activities.
- to promote responsible research and innovation among researchers and in institutions of higher education and research.
- to be the European contact for institutions and organisations that wish to act in the field of Public Engagement in Research, particularly by setting up international projects.

The purpose of the Living Knowledge Network is to be realized by:

a) Research

- Developing, implementing and communicating research and other scholarship, addressing current and emerging social problems and issues,
- Facilitating joint research or study projects by its members and/or other appropriate entities and engaging in such projects.
- Developing and promoting research approaches and methods that enable wide participation and aim at societal and community empowerment.

b) Education

- Acquiring, archiving, processing and communication of scientific information in understandable and accessible formats.
- Disseminating results of work produced by Living Knowledge through public events and open-access publications.
- Working with young people and multipliers for the purpose of a holistic educational formation, political emancipation, community empowerment and civil society engagement.
- Facilitating the inclusion of civil society's views, wishes, requests, and knowledge into the curricula at all levels of education.
- Supporting members by offering advice, mentoring and training.
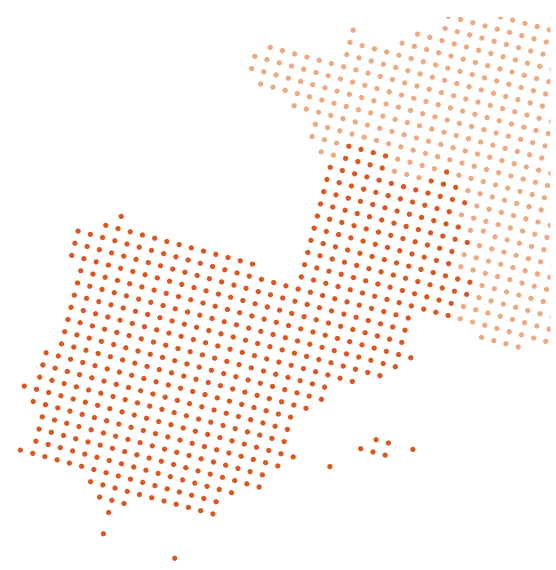
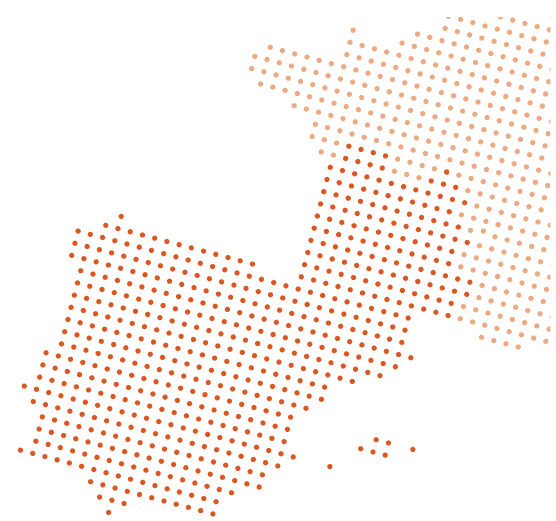**c) Collaboration, Participation and Networking**

- Collaboration with scientists, students and staff of universities and other academic or research institutions and organisations,
- Collaboration with Civil Society Organisations,
- Collaboration with local, national and international organizations that have similar goals,
- Moderation of processes to support the social commitment and the cooperation of various groups of actors in the sense of the Living Knowledge Network's purpose.
- Representing the network in appropriate advisory bodies, seminars, and other events.

The Living Knowledge Network has no formal membership. The Living Knowledge Network can be joined by subscribing to the Living Knowledge News and Discussion Group. Subscribers will be kept informed about developments related to "Building partnerships for public access to research" and the international network of Science Shops. Any person or organisation that joined the Living Knowledge Network has no claim on the Living Knowledge Network's assets upon leaving the network. https://www.livingknowledge.org/

4.2 A Science Shop provides independent, participatory research support in response to concerns experienced by civil society

In addition to the demands made on research and development by commerce and industry, 'civil society' organisations have their own research needs. Diffusion of knowledge often focuses on communication from researchers to society, but in times of facing the great societal challenges there is a demand for communication from society to researchers. This is the concept of 'social demand' for knowledge. The fact that Science Shops respond to civil society's needs for expertise and knowledge is a key element that distinguishes them from other mechanisms of knowledge transfer. Nowadays, a straightforward publication of scientific results and one-way science communication will not suffice.

Different types of interfaces exist between researchers and society, one of which are 'Science Shops', organisations created as mediators between citizen

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groups (trade unions, pressure groups, non-profit organisations, social groups, environmentalists, consumers, residents association etc.) and research institutions (universities, independent research facilities). Science Shops are important actors in community-based research (CBR). There are many differences in the way Science Shops are organised and operate, as well as some important parallels.

There is not one dominant organisational structure defining a Science Shop. How Science Shops are organised and operate is highly dependent on their context. The term 'science' is used in its broadest sense, incorporating social and human sciences, as well as natural, physical, engineering and technical sciences.

Science Shops are often, but not always, linked to or based in universities, where research is done by students as part of their curriculum – under the supervision of the Science Shop and other associated (university) staff. Over the last years international interest in the Science Shop model has developed, and similar organisations have been established in a wide range of countries.

However, many actors not linked to universities – such as community-based research centres – can be seen as similar to Science Shops as they do the same type of work. Despite their different names and differences in operation and organisation, basic principles and goals are comparable. Through this type of extension and support activity, Science Shops in their cooperation attempt to create more wide-spread possibilities of access to science, knowledge and technology for social groupings that would not or could not ordinarily interact with these disciplines.

In practice, contact between a civil society organisation and a Science Shop or CBR centre starts with a problem in which the civil society organisation is seeking research support. In the following collective search for a solution new knowledge is generated, or at least existing knowledge is combined and adapted – in a striven true partnership without 'science' prevailing in any way. Through their local, national and international contacts, Science Shops provide a unique antenna function for society's current and future demands on science.

As a mission statement, Science Shops seek to:

- provide civil society with knowledge and skills through research and education;
- provide their services on an affordable basis;

- promote and support public access to, and public influence on, science and technology;
- create equitable and supportive partnerships with civil society organisations;
- enhance understanding among policymakers and education and research institutions of the research and education needs of civil society;
- enhance the transferable skills and knowledge of students, community representatives and researchers.

A variety of other tasks are sometimes performed by Science Shops, such as regular university teaching and research, contract research, education and trainings for civil society, etcetera.

4.3 How does a Science Shop work?
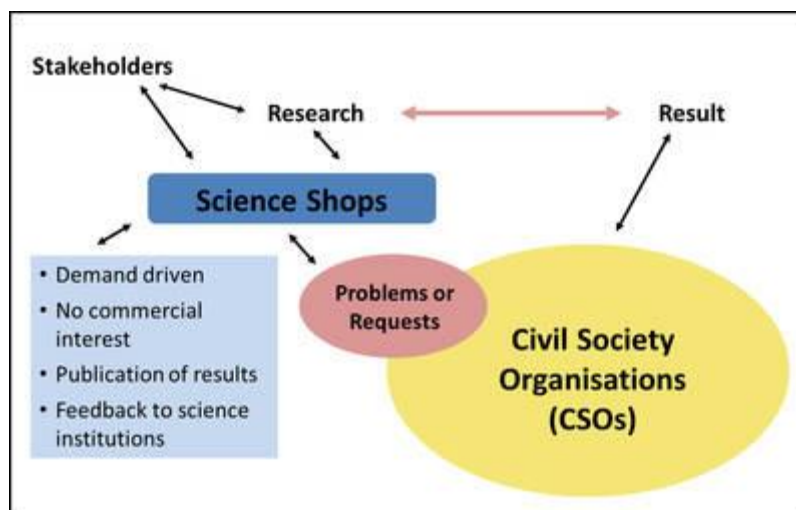
Science Shops are highly diverse in respect to organisational structure, focus and funding. Often, but not always, they are linked to or based in universities, where research is done by students as part of their curriculum – under the supervision of the Science Shop and other associated (university) staff. Science Shops are mediators between citizens or civil society organizations (CSOs) and research institutions. Physically they are access points for civil society in cases of problems and research requests (see graphic). These questions from CSOs are

rephrased to scientific research projects. Students, under supervision of a professor then perform the research, or a researcher does it. Students usually obtain credit points for their research. The research usually leads to a report (or another type of product) which is made to be of use to the client. The student will have gained valuable skills (joint problem definition, project based working, communicating, planning). The professor and/or the researcher will have case material for either future publication or further theoretical analysis. Moreover, for the professor involved this supervision is part of the teaching obligation. So, in fact all actors are doing what they are supposed to do: teaching, learning and researching. This is why a Science Shop can be implemented at relatively low additional costs and why Science Shops can also serve the non-profit sector.

Science Shop staff usually performs the following tasks:

1. Receive/solicit clients and (new) societally relevant questions
2. Map the problem (articulation)
3. Preliminary research: Refer, Refuse, Advice or Formulate (scientific) research question (and funds if required)
4. Find a (co-) supervisor
5. Find a student or researcher
6. Maintain communication and process, from start to finish of research
7. Facilitate useable presentation/publication of results
8. Support client in implementing results and recommendations
9. Make inventory of follow-up research or research-themes
10. Evaluation (with student, supervisor and client)

However, many Science Shops and initiatives – such as community-based research centres – not linked to universities are similar to university based Science Shops and do the same type of work. Despite their different names and differences in operation and organisation, basic principles and goals are comparable. Through this type of extension and support activity, Science Shops attempt to create access to science, knowledge and technology for social groupings that would not or could not ordinarily interact with these disciplines.