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# Sustainability Science and Citizens Participation: Building a Science-Citizens-Policy Interface to Address Grand Societal Challenges in Europe

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## 1. Introduction

The recent *Europe 2020 Strategy* adopted by the European Union formulated ambitious policy objectives in areas such as climate change, energy security, demographic ageing or resource efficiency. The Europe 2020 flagship initiative *Innovation Union* called for linking future EU funding programs more closely to these objectives by putting a stronger focus on tackling societal challenges. These will be addressed, amongst other things, by launching *European Innovation Partnerships* in areas in which government intervention is clearly justified and where is deemed necessary to combine the EU, national and regional efforts in Research and Development (R&D) and demand-side policies. Examples of such partnerships areas of great concern for the European citizens: active and healthy ageing; smart and livable cities; water-efficient Europe; smart mobility for Europe's citizens and business; agriculture productivity and sustainability.

The European Innovation Partnerships (EIPs) are new avenues for doing sustainability research combining scientists, policy makers, citizens and civil society organizations, and sectoral stakeholders in a shared process. This chapter presents a method for doing participatory research and evaluation with panels of randomly selected citizens, in sustainability domains related to the grand societal challenges addressed by the Europe 2020 strategy.

The method has been designed and applied in three pilot EU funded projects of knowledge brokerage and participatory assessment, related to sustainable cities (RAISE: [www.raise-eu.org](http://www.raise-eu.org)), sustainable urban transport (MOVE TOGETHER: [www.move-together-exhibition.net](http://www.move-together-exhibition.net)) and sustainable coastal water management (AWARE: [www.aware-eu.net](http://www.aware-eu.net)). Only in the latter project, however, the method has been fully tested at European and local levels, and subject to a fully-fledged evaluation activity.

The following sections will present the method and the results of the more recent and mature pilot experience – the AWARE project after which the method is named – and discuss theoretical foundations and future prospects for practical application.

## 2. The AWARE method and pilot applications

### 2.1 Methodology

Broadly speaking, the AWARE methodology engage panels of randomly selected citizens from all countries of Europe and all walks of life (*“European citizens’ juries”*) to make a critical assessment of research goals, outcomes and management options, focusing on their societal acceptance. The assessment is undertaken by means of brokerage activities among different forms of knowledge - i.e. between the different scientific disciplines needed to understand complex issues, the citizens’ everyday life (*“non expert”*) knowledge, the different stakeholders’ interests, and the way decision-makers tackle societal challenges. One of the key characteristics of the AWARE method is indeed linking together scientists and citizens early in the process in order to provide a common understanding of the issue at stake. Thus, lay citizens gain confidence to discuss the issues with other stakeholders and form independent opinions.

Bringing together scientists, citizens and decision-makers in knowledge brokerage activities – by means of structured citizens’ conference processes where citizens’ panels discuss and present their recommendations (*“Citizens’ declarations”*) to policy makers and society at large – is at the heart of the proposed approach. This is a new way of connecting citizens, experts, stakeholders and policy makers in order to:

- share a common understanding and awareness of the complexity of environmental and societal challenges;
- discuss how research and new innovative solutions may help to tackle those challenges – now and in the medium-to-long term future;
- deliberate about how various research outcomes (scientific advice, new innovative solutions etc.) could or should be taken up by governments or citizens themselves, e.g. by incorporating sustainability into planning or adopting more environmentally-friendly behaviors, respectively.

The pilot experiences conducted so far show that the method works, delivering important benefits for all the actors involved:

- the scientists learn to communicate results in a tailored manner to citizens, as well as policy makers and stakeholders. They also can broaden their research interests by accepting new inputs, and discovering a public interest in their results, beyond the academic fora;
- the citizens quickly learn key environmental concepts, change their mind becoming aware of the complexity of the challenges ahead, and reflect on how to tackle them with more systemic approaches. They may better assess which policies would be needed for solving complex problems, and choose to support their politicians in tackling challenging decisions and policies, thanks to the better understanding and greater commitment gained throughout the process;
- the various stakeholders benefit from the insights and opinions of the scientists, citizens and policy community usually assessed in the more neutral context – i.e. not heavily influenced by special interests – of *“citizens juries”*;
- the policy-makers – through meeting the citizens and hearing their proposals – can share common visions on societal challenges that could not be solved with simple

policies, would require systemic and long lasting actions to be implemented beyond electoral terms, and a deeper consensus and commitment of all actors involved. Policy makers also gain further confirmation that decisions successfully involving all actors affected, through increased awareness for instance, are more effective in their implementation and outcomes.

The specific issue addressed in the AWARE project was the deterioration of coastal waters in Europe, and how EU funded research and EU and local policies may help to reduce deterioration and achieve a good ecological status of waters by 2020. This environmental goal is a core objective of the EU Water Framework Directive (European Commission, 2000). This piece of EU legislation provides a coherent framework for the implementation of policies and the assessment of water quality across EU Member States, including river basins, transitional and coastal waters. The outcome expected from a consistent application of the EU water policy assessment process - illustrated in the figure below - is the achievement of good environmental (ecological and chemical) status and the related benefits at a proportionate cost **or** the maintenance of the water body in a moderate quality status with reduced benefits, due to the disproportionate costs of achieving a better quality status.

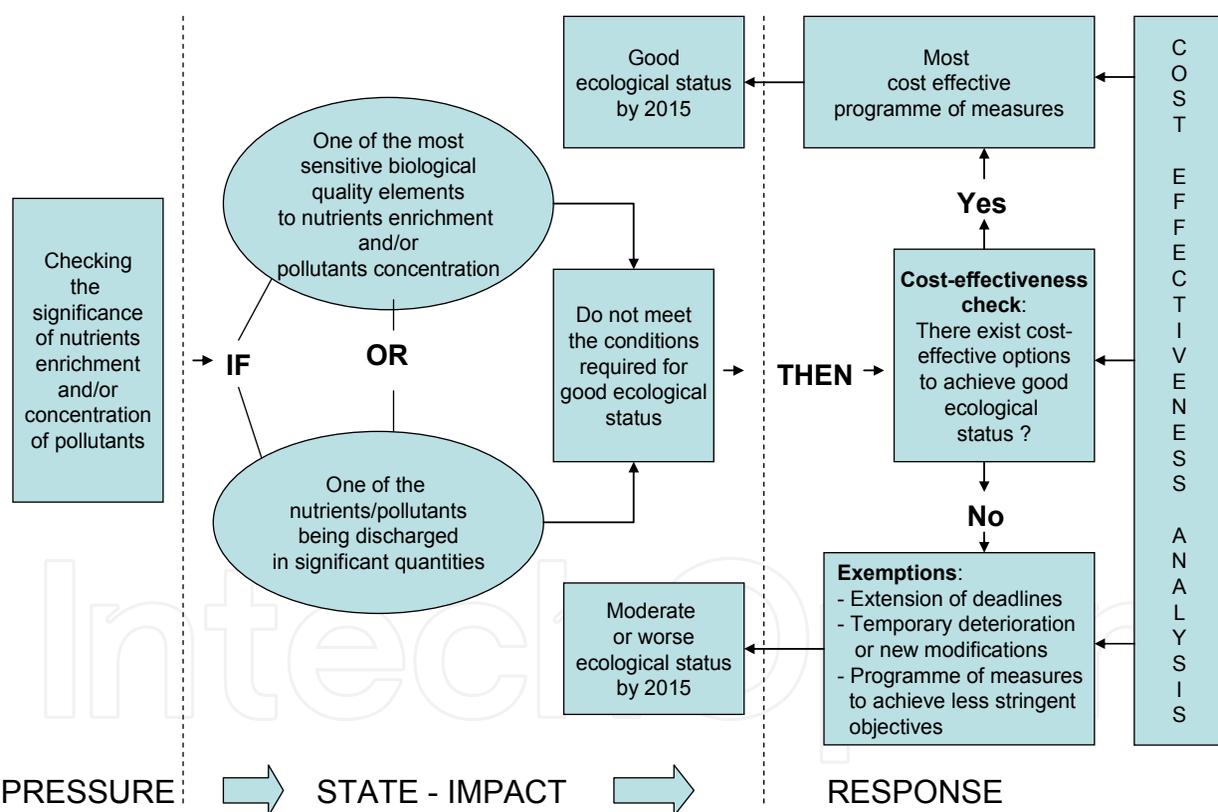


Fig. 1. Water policy assessment process

In this respect, the AWARE pilot experiments can supply a model for future implementation of participatory assessment of the water policies, whereby lay citizens and stakeholders are involved together with experts and policy makers in AWARE-like processes. These may be especially helpful to assess the “proportionality” of costs against benefits in specific case studies circumstances, because the criteria to be used in the assessment are not uniquely technical, requiring instead the explicit consideration of social norms and values. However,

the method is general and may be applied, as mentioned in the introduction, to different societal challenges.

To start with, the AWARE method recognizes that there are different ways to effect an interaction between scientists, policy (managers) and the public – whether citizens and/or stakeholders. These are portrayed in Figure 2.

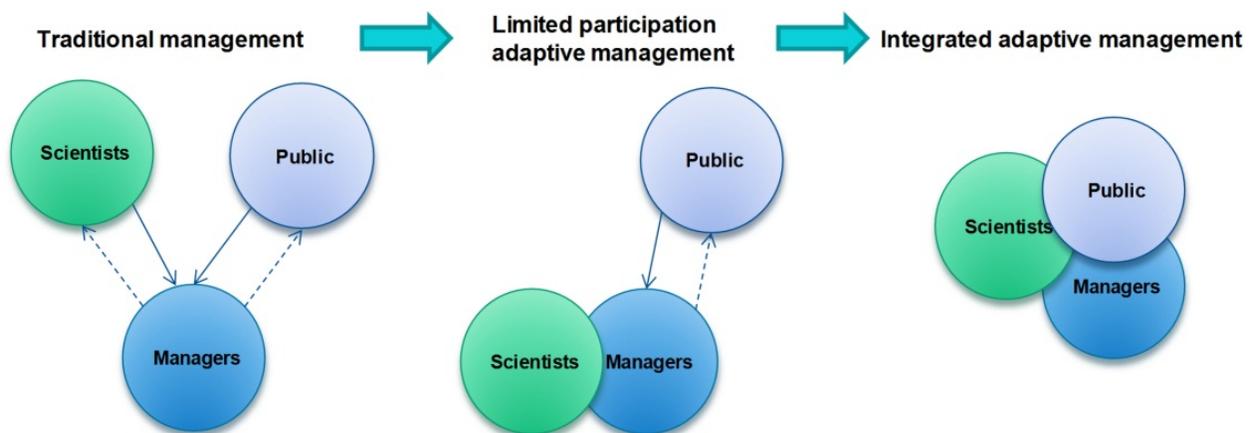


Fig. 2. From traditional to integrated adaptive management

The traditional way is to treat the three fields as entirely autonomous, interacting only within the established formal procedures of democratic societies, i.e. in the framework of public inquiries as prescribed by law or by delegation through elections. Today it is however more common to follow what has been called a ‘participation-limited’ adaptive management approach (Kusel et al., 1996) which supports the close interaction between scientists and policy but not with citizens or stakeholders. This is pretty much the approach that characterizes the EU Water Framework Directive, as the common framework built up to follow the implementation of the Directive is actively promoting a closer interaction between scientists and policy managers across EU Member States, through the setting up of several thematic working groups. But as the WFD strategists themselves admit, there are shortcomings in their approach, especially with respect to the use of research results from studies other than those commissioned by national governments; and with respect to inputs from stakeholders and civil society.

The integrated adaptive management approach takes a step further and tries to stage and learn from a closer interaction between science, policy, stakeholders and citizens. Such an approach is not necessarily always suitable, but if applicable it displays three main benefits: (a) it recognizes and uses the public as sources of information and knowledge, (b) it builds trust and broadens support and (c) it generates ideas and questions paradigms thus contributing to both learning and creativity in problem-solving. This is what the AWARE process is all about (AWARE, 2011a).

The AWARE process has been concretely performed by recruiting a transnational panel of final water users: 30 citizens randomly selected from three coastal areas of Europe: Gulf of Riga in Latvia and Estonia, Southern North Sea in France and Belgium, and the Goro lagoon in Italy. The citizens’ panel has been engaged in a number of workshops with scientific experts, stakeholders and decision makers to assess the best scientific knowledge available, the local water management practices and the EU water policy framework, and to formulate

their recommendations. The mandate to the citizens was to deliberate their assessment of and recommendations for interfacing experts, citizens and policy makers, to achieve a better management of coastal environments in Europe. This assessment has been presented and discussed in the AWARE European Conference “Linking research to policy in the water sector”, held on June 9, 2011 in Brussels, at the European Economic and Social Committee (AWARE, 2011b).

More in detail, the whole process entailed a sequence of activities at EU and local level in the pilot areas, focusing on the same issue – coastal waters’ deterioration – in the three different Science-Policy Interface contexts described in the box overleaf.

## 2.2 The AWARE citizens conference process

The panel of 30 randomly selected citizens was the catalyser of the overall process: they met with scientists in a first European workshop – to be acquainted on the topic, the process and their mandate – then split in sub-groups of 10 citizens for each pilot area and met again scientists, stakeholders and decision makers in local workshops and conferences, and finally they convened together all again at the EU level to prepare and discuss in a final conference their assessment of the coastal water management topic and the issue of connectivity between science, society and policy makers. The citizens’ assessment and recommendations are presented in the “AWARE Citizens Declaration”<sup>1</sup>.

The overall process, with the connection between the EU and local levels, is illustrated in figure 3 below.

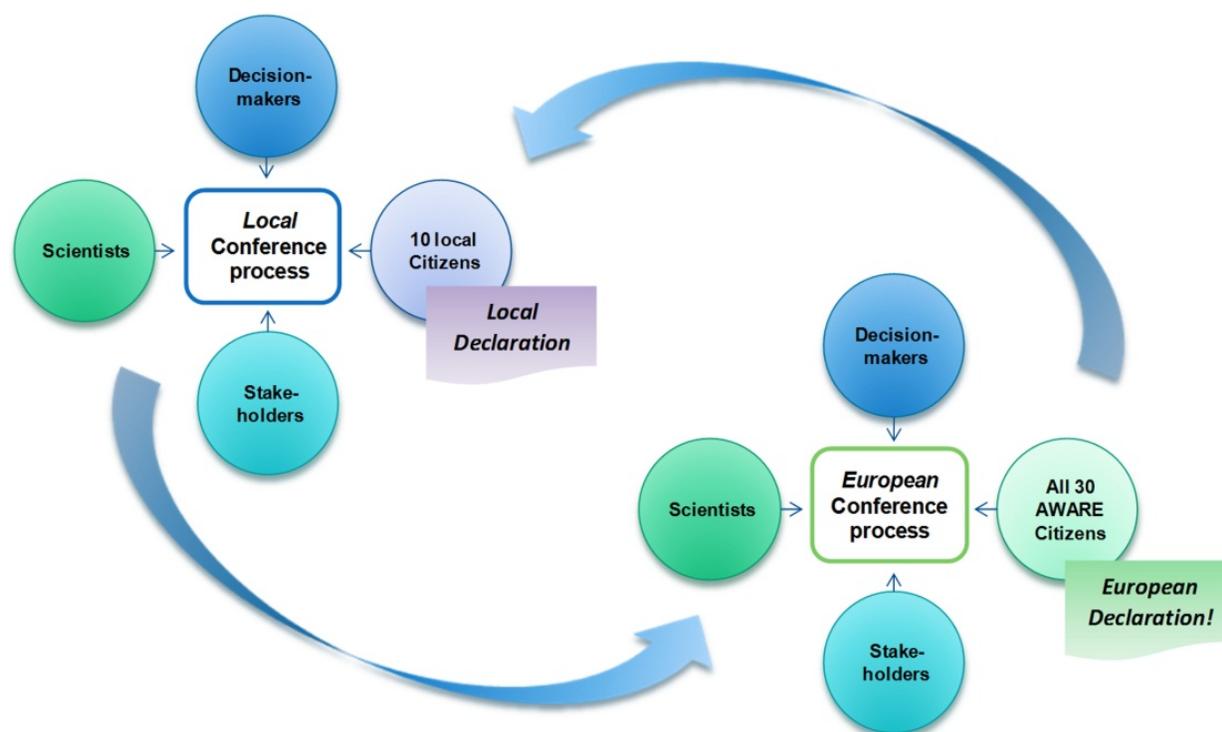


Fig. 3. The AWARE citizens' conference process

<sup>1</sup> Available on [www.aware-eu.net](http://www.aware-eu.net)

*The Science-Policy Interface focus of the AWARE case studies*

The **Southern North Sea case**, as delineated for AWARE purposes, includes the northern part of the French Atlantic coast and eastern Channel, as well the Belgian North Sea coast. The drainage basin covers the Seine, Somme, and Scheldt Rivers and an area of about 100,000 km<sup>2</sup>. Nutrient pollution of phosphates and nitrates from diffuse sources such as agriculture, are the main focus of this case study. The problem becomes visible to tourists and residents through algae and foam in the water and on the beaches; more subtle changes are also occurring in the changes potentially taking place in the food chain including fish production. Decreasing the pollution in the coastal waters of the case study – in order to achieve Good Ecological Status by 2015 – is a requirement under the EU Water Framework Directive. This case study is transboundary and trans-national. Thus, different authorities across national borders share responsibility for coastal water ecosystem health. The ‘hydrological districts’ set up under the Water Framework Directive are managed by regional water agencies, but national governments are responsible for marine and coastal waters under the OSPAR Commission (Oslo and Paris Conventions for the protection of the marine environment of the North-East Atlantic) and the EU Marine Strategy. Several parallel studies – such as the Liteau, Threshold, Timothy, and PIREN-Seine programmes – have allowed links to be developed between watershed data and events in the coastal area, but data after 2003 for modelling is lacking. Additionally, the science-policy interface, although following a good track record in the region given the collaboration within watersheds, lacks the connection across different watersheds. Scientists from the UMR Sisyphé at the University Pierre & Marie Curie in France, and the Laboratory Ecologie des Systemes Aquatiques at the Université Libre de Bruxelles in Belgium, used models such as MIRO and SENREQUE-RIVERSTRAHLER to describe various ecological processes in the three case study rivers. Based on consultations with the local AWARE citizens participating from France and Belgium, as well as other project partners and citizens from the two other case studies, the models were also used to test different ‘scenarios’ for measures to reduce nutrients affecting coastal water quality. It is important to note here that the models used in this case study allow for taking into account diffuse and targeted sources of nutrients – the modelling results in fact show that nitrogen pollution is the main challenge in the watershed, stemming from diffuse agricultural sources.

The **Gulf of Riga** is the shallow sub-basin of the Baltic Sea that is shared by Estonia and Latvia. The gulf is exposed to changes from the rest of the Baltic Sea, and the watershed affecting the gulf stretches across five EU and non-EU countries. However, the focus of the case study in the context of AWARE has been on the socio-ecological realities of the two countries mentioned. The Gulf of Riga is suffering from eutrophication due to excessive nutrients, which is common to the whole Baltic Sea. Due to the complex socio-political landscape of the watersheds affecting the Gulf of Riga, a complete assessment and regular monitoring of all contributing river basins is sometimes missing, especially monitoring data on transboundary pollution loads. This also creates difficulties for a continuous science-policy interface, given that transboundary aspects make it hard to establish common grounds for assessments. In terms of involving the public – both citizens and stakeholders – the Public Information Act includes participatory procedures in the decision-making processes. However, it became clear throughout the AWARE evaluation process that top-down approaches used so far can be improved significantly to involve citizens in public discussions, in addition to NGOs and stakeholders. At the European level, the EU Water Framework, Marine Strategy and the Urban Waste Water Treatment Directives provide the framework under which the Gulf of Riga is required to reach ‘good water quality’ by 2020. According to the *Economic Analysis of the Baltic Sea Action Plan with Focus on Eutrophication* measures to achieve this goal – bringing sewage treatment systems up to EU standards throughout the Baltic Sea watershed – are estimated to cost 408-975 million Euro a year, 10% of which would have to be invested in the Gulf of Riga basin (HELCOM and NEFCO 2007). Ministries of Environment in Latvia and Estonia state they are already working to attain EU standards, but more recently updated cost information is needed especially for the wastewater loads from Belarus and Russia. As far as implementation time it seems clear this process will go beyond 2020. However, one of the most controversial issues in the case study, which was discussed in all participatory activities of AWARE and described using models, is the potential conflict between good water quality and probable reduction in fisheries output. This is viewed as a major socio-economic and ecological challenge in the Gulf of Riga. An additional socio-economic challenge lies with the fact that the costs necessary to invest in sewage treatment improvement should be borne by countries with no access to, and direct benefits from, the Gulf of Riga. Scientists from the Uppsala University and Bioforsk have studied the conditions in the gulf, using the CoastMab model. This can be applied for the gulf, as it focuses on different sewage treatment scenarios, and other activities undertaken to decrease eutrophication. Additionally, CoastMab has been used to predict fish yield in the gulf. Although an additional model – the Nest model hosted by the Baltic Nest Institute – has been used for example in the Baltic Sea Action Plan, the AWARE process has focused on the results of the CoastMab model, and worked within that model to discuss citizen-led scenario modifications.

**Sacca di Goro** is the most geographically delimited case study within the AWARE project as it concerns mainly the Sacca di Goro Lagoon, Ferrara (Italy). The Sacca di Goro is located within the Po delta, which can be considered as the final ecosystem encountered by the Po river waters. This means that, virtually, even the whole Po river watershed could be considered within the geographical scope. The boundaries defined by the AWARE approach, though, include the lagoon, the inland activities bound to agriculture, and breeding and the Po river channels management systems. At present, the Sacca di Goro is one of the top European sites for clam rearing. About one third of the lagoon surface (8 km<sup>2</sup>) is exploited for clam farming with an annual production that reached a maximum of approximately 15,000 ton/year in recent years. The corresponding economic revenue has been oscillating between 50 and 100 millions of Euros each year. The main socioeconomic issues, therefore, regard the development of a sustainable clam farming activity, i.e. find a balance between natural ecosystem conservation, tourism, social and cultural needs, and the strong economic interests of clam farmers. Thanks to the ecological, biogeochemical and socioeconomic investigations made in the past years, the Sacca di Goro counts on a satisfactory level of scientific knowledge of the ecosystem: in the EU DITTY project a Decision Support System (DSS) and an extensive geo database have been developed. The DSS tool runs through the use of both mathematical models and multicriteria analysis model. Within the experience of the DITTY project, it was experienced that multicriteria models, applied over a lower layer of mathematical models, can support decision makers in dealing with complex systems decisions and in setting priorities.

The role of the AWARE citizens' panel was akin to that of a "citizens jury". *Citizens Juries* bring together a panel of randomly selected and demographically representative citizens for a period of a few days to discuss specific policy issues. They tend to have on average 25 members. The deliberations are conducted by a neutral facilitator and often involve experts on the given issue(s) to deepen the debate. What citizen juries aim to achieve is finding a "common ground solution" on the topic of discussion that is presented to the public (Jefferson Center, 2004). This also means that citizen juries aim to represent a great variety of views through different participants, diverse backgrounds and divided opinions. The term "jury" taken from the court case discourse is here intentionally selected. In a way analogous to a court jury, a citizen jury is usually called to weigh the pros and cons of a particular policy proposal in order to decide on its merits but also for identifying its failings. The information thus gained is subsequently used by policy-makers to revise the policy towards greater balance. This, in turn, can lead to greater acceptance.

A methodological challenge is the selection and recruitment of participants in a citizens jury. Obviously representativeness is a difficult and often unattainable goal for any small-group activity involving on average 25 citizens (30 in the AWARE case). However, a careful selection procedure can result in the representation of a good spectrum of opinions and relevant socio-demographic characteristics. Important in this respect is that the announcement for any citizen participation reaches a large number of citizens and that a significant higher number than the set target is mobilized to apply for participation in the consultation process. In some citizen juries the dissemination target is set as high as 1,000 persons. Such high numbers are easily achievable when the organizers have access to census or register address databases. Equally high dissemination targets can however also be achieved with less intrusive means through the distribution of information in local newspapers, at the city council, through religious or social institutions or the internet. A dissemination strategy targeting some 1,000 citizens and resulting in some 100 to 200 contacts can be considered a success. The final selection follows on the basis of short individual interviews (face-to-face or by telephone) to tap on basic socio-demographic and attitudinal characteristics.

Also in AWARE, the recruitment process of citizens was mostly dominated by the challenge of building a representative sample of the population concerned, and to find people with sufficient English proficiency as well as interest to the topic. The language condition had to be met to ensure that citizens could communicate, in some cases on the regional level already, at least on the European level. Besides this, the selection of citizens was based on their motivations and ideas about coastal water quality. The recruitment of citizens occurred differently among the three case studies. In Sacca di Goro and in the North Sea cases the response rate to the widely lead recruitment campaign was low. In the Gulf of Riga the response to the recruitment campaign was comparatively more positive, potentially due to the activities of the project partner that took on this task, a local NGO - Baltic Environmental Foundation - knowledgeable about the most appropriate dissemination sites that would reach the targeted public (AWARE 2011c).

As it concerns the living interaction throughout the AWARE process among all the participants, relevant knowledge has been provided and brokered in different formats and measures: expert knowledge was provided mainly by scientists, tacit and local knowledge mainly by stakeholders and local policy makers. Citizens also provided local knowledge, as

well as personal experiences of the state of the coastal water resources. The process was also complemented by two rounds of on-line surveys, targeting different stakeholders at local level and a wider scientific and stakeholder community at the European level, and interviews to keynote decision makers, again at local and European levels.

The following table illustrates for each step of the AWARE process the activity undertaken (workshop, conference, on-line survey, interview), the key questions on focus, and the role of the different actors involved: scientists, citizens, stakeholders and decision makers (water managers and/or elected politicians).

STEP	EVENTS/ACTIVITIES	KEY QUESTIONS	ROLE OF THE ACTORS			
			SCIENTISTS/EXPERTS	CITIZENS	STAKEHOLDERS	DECISION MAKERS
Understanding complexity	<ul style="list-style-type: none"> <li>1st European Workshop</li> </ul>	<ul style="list-style-type: none"> <li>What's the problem?</li> <li>How it works?</li> </ul>	Provide state-of-the-art scientific knowledge.	Share views and values.		
Local assessment	<ul style="list-style-type: none"> <li>Local workshops</li> <li>Local conferences</li> <li>On-line survey</li> <li>Policy makers' interviews</li> </ul>	<ul style="list-style-type: none"> <li>What's the situation here?</li> <li>What is being done?</li> <li>What can be done?</li> </ul>	Apply assessment and scenario tools to analyze the present and possible future states of the local system. Apply decision support tools to evaluate alternative options.	Share views and visions. Elaborate their recommendations at the local level.	Share views and visions (at the workshop and in the on-line survey).	Provide and adapt their perception of local problems and policy needs (at the conference and in the policy interviews). Commitment to enhance connectivity between local actors for a sustainable management of local coastal waters.
Linking EU research, policy making and public participation for a sustainable management of coastal waters	<ul style="list-style-type: none"> <li>2<sup>nd</sup> European Workshop</li> <li>European conference</li> <li>On-line survey</li> <li>Policy makers' interviews</li> </ul>	<ul style="list-style-type: none"> <li>How research and policy connections work now? (across EU and across sectors)</li> <li>How to better connect scientists, people and decision makers?</li> <li>What can we do to achieve a sustainable management of European coastal waters?</li> </ul>	Provide state-of-the-art policy knowledge.	Share views and experiences done at local level. Elaborate their recommendations at the EU level.	Share views (at the conference and in the on-line survey).	Share views (at the conference and in the policy interviews). Commitment to enhance connectivity between EU and local actors for a sustainable management of coastal waters across Europe.

Table 1. The AWARE knowledge brokerage and connectivity process.

As it concerns the scientific information delivered in the process, in the Sacca di Goro case, the Elinor Ostrom's general framework for analyzing sustainability of socio-ecological systems (Ostrom, 2009) was used in the knowledge exchange process. In addition, the Analytic Hierarchy Process (AHP) multi-criteria method (AWARE, 2011d) has been used in this case study to evaluate different management options, measuring: (1) the mutual distance of the groups of stakeholders from a common vision of the Goro socio-ecological system, and (2) the priority of actions to be implemented for improving the social, environmental and economic situation of the area.

In the Southern North Sea case integrated river basin-coastal water models have been used to test alternative scenarios with different measures to reduce nutrients from diffuse sources (agriculture) affecting coastal water quality, and the scenario assumptions and results have been discussed with the citizens and the stakeholders convened in a local conference held in Dunkerque, on 7 January 2011 (AWARE, 2011e).

In the Gulf of Riga case the local workshop, held along the gulf coast, was followed by the local conference after only one day. This was due to the more difficult logistics of arranging meetings with a citizens' panel from both Latvia and Estonia. However, the time in between proved sufficient for the scientists to adapt models and scenarios with the input from the citizens, and for these latter to finalize the Citizen Declaration started during the workshop

and prepare for the deliberations with the policy-makers and other participants at the conference (AWARE, 2011f).

In all the case studies, the moderators of the participatory project were carefully selected among the project consortium's experts, bearing the advantage that instead of being recruited solely for the matter of one event, they were involved in the process from the beginning on. Additionally, training was provided by consortium's scientists and invited experts, and prepared with intense exchange of knowledge of the AWARE purpose and context preceding the meetings. The sessions were carefully documented and transcriptions were made available. The evaluation of the project<sup>2</sup> indicates that the satisfaction with the moderators was relatively high (AWARE, 2011c).

Indeed, the role of the facilitator, experts and other supporting personnel cannot be underestimated, which makes the preparation and performance of citizen participation events rather costly. A key to the success of citizen participation events is the choice of the facilitator. He or she should not represent any of the organizations with a stake in the consultation process and should also not be a scientific expert. He or she is expected instead to have expertise in the moderation and psychology of discussion. The role of the moderator is not only to implement the agenda (thus also keeping to the latter's timing) but also, primarily, to make sure that all opinions are heard and that all participants get their fair share of the discussion. This is an especially sensitive issue to manage, considering that people vary quite significantly with regard to their verbosity but also their capability to articulate their views. Giving every participant his or her fair share of the discussion should however also not result in a situation where participants are "forced" to speak when they do not wish to. A careful balance must, in other words, be established and doing this is the role of the moderator. Moderators are also those in charge to set the rules of interaction such as who takes the floor when, how long one speaks, how does one intervene in the discussion etc. A methodology often used is to break the whole workshop event into single sessions dealing with a coherent sequence of topics, and to divide each session in three steps: 1) presentation of the topic (usually by one or more experts) with the formulation of key questions for the citizens; 2) the citizens discuss their views divided in small sub-groups of 5-6 people, and draw a list of answers, conclusions or suggestions; 3) a (citizen nominated) rapporteur present the feedback of each sub-group in a plenary session. Such procedural elements are especially important for the success of citizen participation as they ensure "civility" in debates.

As it concerns the role of the experts in citizen participation events, they are expected to intervene at specific times to provide expert knowledge not available to the citizens and to answer questions. They should be chosen according to the criteria of impartiality and the ability to communicate difficult or complex subjects. Finally, supporting personnel are necessary for assisting the moderator and or experts - thus for taking minutes, collecting or distributing documentation, moving boards, adjusting equipment and the like. Support personnel are not expected to actively participate in discussions.

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<sup>2</sup> An evaluation workpackage was built into the project structure, in order to draw lessons from the pilot case study performance and outcomes.

On a whole, the evaluation of the AWARE process has been positive (AWARE, 2011c), but with two distinct weaknesses. The first one concerns the interaction between the citizens and the scientific experts. All experts were asked to make their presentations as understandable for a lay audience as possible and with a few exceptions this part of the interaction was successful. However, problems arose from the lack of complete information that the experts were able to convey during the short period of time allocated to them. In some cases even small bits of incomplete information surfaced later in the process in the form of erroneous assumptions on the part of certain citizen groups. This weakness is difficult to overcome because it is impossible to predict which path the citizen deliberations will take and certainly not desirable to determine this path beforehand. One possible solution might be to involve all experts in the proceedings throughout the entire process as something like a “knowledge repertoire”.

The second weakness at the local level was the difficulty to involve policy makers. Indeed, even in those cases where it was possible to organise some form of participation of policy makers, the nature of the interaction was not very productive – it remained on the level of political statements rather than producing a truly exchange of ideas among the policy makers and the citizens. Unfortunately this appears to be at a systemic problem rather than an organisational weakness of the AWARE project. Unlike science, the realm of policy making is not concerned with understanding natural or social phenomena but rather with representing and/or weighting different interests. The active involvement of policy makers in the process immediately raises issues on the legitimacy of any eventual decision taken on the bases of the deliberations formulated by a random group of few citizens.

However, an alternative way to enable a more productive citizens-policy makers interaction is to trigger a continuous informal process of confrontation on key sustainability science-policy issues between the policy makers and the citizens involved in AWARE-like awareness raising process, to help bridging the gap between the citizens “street-level” information, perspective and understanding of the topic, and that of the elected representatives. In this process it may even happen that one or more citizens of the group are motivated to enter the policy arena: this was the case of two citizens of the Goro’s group that participated to the local elections, and were actually elected as Mayor and councillor of the Municipality in May 2011.

### **2.3 The AWARE citizens conference outcomes**

A concrete outcome of the AWARE process is the *Citizens Declaration*. However, besides the citizens’ assessment, the AWARE case studies showed that all participants gained new and significant understanding and insights on coastal water management through participating in a set of local workshops and conferences. They exchanged views on a broad range of issues relating to the short and long term health of coastal waters. The groups in all three case studies also addressed specific problems related to agricultural policy, water quality and pollution, and socio-economic trade-offs. The following are some lessons learned and the most significant comments from different participants: citizens’ panels, scientists, stakeholders and policy-makers attending the local and the European conference, interviewed or answering to the on-line surveys.

### 2.3.1 Highlights from the citizens

The AWARE citizens' panels are willing to convey their message at all levels – European and local - which includes sharing the experience they gained on this project, and taking home with them ideas that will foster change. In particular, school campaigns are thought to be the most effective action to educate children and their families in environmental-friendly behaviors and participatory approaches (this opinion is also shared by scientists). However, it was also claimed that action is needed right now, and that we cannot only rely on the ideas of better-educated future generations. In this respect, local events and festivals can be used to inform citizens. To involve actively citizens is indeed very difficult, but the institutions need citizens perhaps even more than citizens need the institutions.

“People want to know” and “people are able to think”. Citizens believe they have the rights to express their concerns and they want to be considered on the same level as scientists and other stakeholders. Citizens are willing to be informed and take part on the kind of assessments used in AWARE, but appropriate information channels must be used. An example may be creating a new role for *scientific ambassadors* acting as public communicators. In fact, this role has existed for instance in the French National Agency for Water and Aquatic Environments (ONEMA), but only targeted towards policy-makers; the EU Water Framework Directive focus on public participation however should ideally create further opportunities for such a role, especially in the new rounds of consultations for the river basin management plans.

A balance between socio-economic and environmental aspects and priorities is needed when building scenarios for improving environmental challenges. Indeed, decisions taken in consultation with all affected actors around the table are more likely to be sustained and supported in the long term. Establishing links between stakeholders and bringing them together to discuss in the same room at the same level is a key requirement.

### 2.3.2 Highlights from the scientists

The scientific award system - the one that values the achievements of a scientific career - should recognize and promote the participation of scientists in this kind of participatory initiatives: spreading the word, tailoring scientific results to various target audiences, participating in public and decision-making processes and stakeholder dialogues, etc.

Including the opinions of stakeholders and citizens enrich scientific models, scenarios and help develop more robust results. Systematic approaches should be developed to promote this type of involvement. In addition, the citizens' input helps the scientists to focus on a really comprehensive view of the problem at stake, avoiding the typical scientific compartmentalization.

An important outcome of the project is that throughout the process the citizens became more like scientists and scientists more like citizens: AWARE started building a common language between communities, based on common understanding of complex issues and on increased awareness gained in a common, neutral forum.

A larger inclusion of socio-economic factors would be advisable for future experiments, not only due to the requirements of European legislation but also because is directly called in by

the citizens. There is a need to move into broader frameworks that give more relevance to such socio-economic aspects, like the Integrated Coastal Zone Management.

The AWARE Citizens' Declaration and the final conference where it was presented raised the question of environmental democracy. Science launched the AWARE project (amongst other Science-Policy Interface initiatives), but now the initiative and decision should be social. This claims for more action research focusing on sustainability challenges and aimed to deliver environmental and social change.

### **2.3.3 Highlights from the water manager and policy makers**

From the AWARE experience, it seems that policy-makers and water managers form the most difficult group to engage in public participation processes, unless such activities are part of their agendas. The policy and water managers community would find a summary of guidelines or best practices based on the AWARE experiment a very useful resource for future initiatives and activities. In addition, an overview of the current status of implementation of the EU Water Framework Directive Article 14 on public participation would be very useful, covering all Member States. While the scope of the public consultations run under the Water framework Directive vary a lot between countries, they usually failed to involve individual lay citizens, which is where the AWARE project has demonstrated a new and effective approach. Additionally, a policy agenda that focuses on each step of education - from early stage to long life learning, in formal and informal settings - should promote a larger up-taking of scientific results by the public.

It is clear that only by reaching the majority of the society - not just a small elite of concerned people as the AWARE citizens panel - can societal challenges effectively be addressed. For this purpose, social networks and mass media are becoming essential tools. Despite the number of persons who agree with this statement, many have already tried - unsuccessfully - to apply social networks in similar initiatives. Very good skills on modern communication, dedicated time and resources, and a very specific target group seem indispensable for such tools to be truly successful. The AWARE citizens' panel, for instance, rejects that kind of approach and communication experts confirm that face-to-face methods are required when dealing with challenging and complex issues.

The Science-Citizens-Policy projects must deal with - and fight against - an excessive fragmentation of institutional roles and competences, both within the water sector and between the water sector and other related sectors such as agriculture and tourism. Coordination of main decision-makers, better and more efficient use of funds, and more efficient circulation of best practices are perhaps more important than further funding. The main problem with multi-level governance is however that the lower levels (e.g. municipalities) that can work close to the citizens and organize local participation processes usually do not have the financial resources for implementing what the citizens propose. Often the funds are available only at higher levels of government and not easily/immediately accessible for local decision makers, with the result that the expectations of the citizens are eventually not met.

Strengthening the connectivity between researchers, policy-makers, key stakeholders, and civil society can certainly improve the water quality and ease the water management in Europe. This kind of participatory approaches can be more easily implemented in water

management at the local level. The same process at the national or European level is not considered so simple. Enlarging the scale leads to greater expenses to let citizens from different countries of Europe to meet and work together, language barriers and perhaps a more difficult focus on tangible problems – as compared with the local scale – but it also increases the understanding of the whole complex issue, and the perceived relevance by the participants and, thus, their commitment. Besides promoting AWARE-similar science-policy interface projects, citizens should also be encouraged to build stronger and more active communities and to exercise pressure on their parliamentarians and politicians to take action. Citizens should also use existing consultation channels in public institutions, such as public hearings.

### 3. Theoretical foundations

The nature and scope of democratic politics in modern societies has been a subject of academic and political debate since the early days. A key issue has always been the extent to which it is possible to sustain active and dynamic democratic practices in a large and complex polity. Already in the Federalist Papers, the founding fathers of American democracy Madison, Hamilton and Jay writing under the pseudonym “Publius” debated the importance of federalism for a large, multi-lingual, heterogeneous and divided country like the United States at the time. One of their main arguments was that within a large polity federalism was a facilitator – and not an inhibitor – of democracy because only federalism with its many levels of government could ensure that there were enough checks and balances on central government but also on powerful interest lobbies. A few centuries later, the European Union finds itself facing similar, even if more complex, challenges as it seeks to advance beyond economic integration towards political integration within a multi-level governance framework.

Whether the European Union will evolve into a full federal state remains an open question (as this could imply a significant loss of national sovereignty it is evidently not favoured by either citizens or political elites). But even if the future of the European Union lies rather in inter-governmentalism, which delineates a regulatory model of loose coordination (Majone 1996) rather than a political model of institutional convergence, one thing is certain: that in a multi-level government polity it is no longer possible to rely alone on representative democratic institutions (such as the parliament) and procedures (such as voting) to obtain citizen input into decision-making. A complex democratic polity requires a multi-faceted *public sphere* (Habermas 1991, 1998) and this, in turn, calls for more stakeholder involvement in decision-making (hence governance rather than government – see EC 2002) as well as more latitude for deliberative processes (Schmitter 2000, Giorgi et al. 2006).

Unlike representative democracy which is conceptually based on the model of delegation, deliberative democracy calls for “active” citizenship (Barber 1984, Held 1996). Active citizens are those who mobilize within communities or social movements and who thus endeavour to impact on policy-making. “Activated” citizens are those who take part in citizen deliberative forums organized by national or, principally, local governments for tapping on citizen views on specific policy proposals. Policy forums, insofar as they are organized by public authorities, are a form of top-down citizens participation, different from bottom-up active citizenship (as in community or social movements).

Both forms of participation, but especially bottom-up community or social movements, are often criticized for the single-issue orientation: their objective is to bring change in one policy area – and often within a strictly delineated sub-component – and this goal is pursued without due consideration to other effects or other groups of users. Top-down citizen participation is further criticized for being more prone to manipulation given its dependency on public authorities or “the policy-maker” for infrastructure and funding. Even though these are dangers that must be borne in mind, it is equally important not to fall into the trap of magnifying them beyond proportion. The conception that democratic politics can ever be “free” or “pure” in the sense that they involve no strategic considerations – hence the possibility of manipulation – is misplaced as is well-known from studies about strategic voting, lobbying or populism in representative politics or studies of the civil society in deliberative politics (Giorgi et al. 2006).

Within the realm of top-down deliberative politics much, in fact, depends on the organizational format and procedures followed. The form of deliberative processes is thought to influence the content – and indeed, like in democracy more generally, this is known to be the case (Move Together, 2009). Citizen participation differs in terms of its objective (why is citizen participation being sought? What will the final output be?), design/methodology (who will participate and how will participants be selected? What instrument will be implemented to achieve the objective?), as well as scope (how many citizens should participate? How long and how often will meetings take place? What resources are available?). Despite the various forms citizen participation can take, the underlying purpose should be the intensification of effective participation in and influence of ordinary citizens on policy development and formulation, particularly when their lives and communities are impacted by these policies. Ideally citizen participation should also be experienced as “empowering”, meaning that citizens emerge out of the participatory experience with greater knowledge and the feeling that they wish to continue to actively contribute to policy-making in their role as citizens (Fung et al., 2003).

Despite the enthusiasm for promoting democracy, most of the calls for more democracy and citizens participation occur at the same time that we witness the disturbing decline of democratic practices in the Western democracies. Many factors explain the wane of the citizen’s role. Among the most important is the social and technical complexity of modern societies (Fisher, 2005). What are the possibilities, many ask, of the ordinary (that is, non expert) citizen deliberating intelligently on the policy issues confronting the decision makers of such societies? Are not these issues better addressed by the professional experts? What evidence supports any contention that citizens can effectively participate in helping to make the complex decisions facing contemporary policy makers?

Hard evidence demonstrates indeed that the ordinary citizen is capable of a great deal more participation than generally recognized or acknowledged (Fisher, 2005). Citizens participation is not to be seen as a magic cure-all for economic, social and environmental problems, nor is deliberation meant to direct attention away from questions of interest and power. But it does hold out the possibility of bringing forth new knowledge and ideas capable of creating and legitimating new interests, reshaping our understanding of existing interests, and, in the process, influencing the political pathways along which power and interest travel. Deliberations of ordinary citizens, if appropriately framed, can help not only in searching solutions to pressing environmental and social problems, but they can also

contribute a kind of knowledge – in particular, local knowledge – that the professional expert requires. Challenging the scientific expert’s methodological emphasis on “generalizable knowledge”, post-positivist theory underscore the importance of bringing in the local contextual knowledge of the ordinary citizen. To be usable, knowledge has to be applied to a particular situation or context. In this sense, the case for participation is seen to be as much grounded in epistemology as in democratic politics. Appropriately framed citizens participation might best thought as a way to solve a translation problem: how do we translate abstract propositions into particular contexts?

Broadly speaking, therefore, participation contributes to three important goals. First of all, citizen participation and its normative rationale, deliberation, give meaning to democracy. If we are to take seriously a “strong” form of democracy, all citizens need to deliberate at least some of the time on the decisions that affect their lives (Barber, 1984). Second, citizen participation contributes normatively to the legitimization of policy development and implementation. And third, but not least important, citizens participation can contribute to professional inquiry. Participatory forms of inquiry have the potential to provide new knowledge – in particular local knowledge – that is inaccessible to more abstract empirical methods (Fisher, 2005).

These three goals are the core objectives of the Science-Citizens-Policy Interface and the integrated adaptive management at the core of the AWARE method and pilot applications presented above. However, the issue is scarcely new. Eighty years ago John Dewey (Dewey, 1927) asked how citizens could participate in political decision making dependent on knowledge experts. Indeed, Dewey identified a paradox. As the importance of the citizen grew in the political realm - thanks to the expansion of basic rights in the nineteenth and twentieth centuries - the phenomenon was paralleled by the growth in power of large corporate and governmental organizations directed by managerial and technical expertise. Thus just in the period in which the political influence of the citizenry was taking shape, it was undercut by the rise of bureaucratic organization and technical expertise. For Dewey, the answer to the challenge posed by an unprecedented level of social and technical complexity was a division of labour between the citizens and the experts. On the technical front, experts would analytically identify basic social needs and problems. On the political front, citizens could set a democratic agenda for pursuing these needs and troubles. To integrate the two processes, Dewey called for an improvement of the methods and conditions of debate, discussion, and persuasion. Debate would require the participation of experts, but they would act in a special way: instead of rendering judgements they would analyze and interpret. If experts, acting as teachers and interpreters, could decipher the technological world for citizens and enable them to make sensible political judgements, the constitutional processes designed to advance public over selfish interests could function as originally intended in Western democracies.

Since Dewey’s time, the question has only grown in importance. What was then a forward-looking philosophical polemic has emerged today as one of the most pressing questions of contemporary democracy theory. The progress of democracy has been disappointing. Although Western democracies exhibit high degrees of interest group involvement, levels of individual citizen participation have declined rather than expanded. Over the same period, moreover, professional experts have failed to ease the problem. Rather than adopting the role of teacher or educator, as Dewey had hoped they would, experts have largely set

themselves off from the mass citizenry (Fisher, 2005). Instead of facilitating democracy, they have mainly given shape to a more technocratic form of decision making, far more elitist than democratic. To make the matter worse, over the past decades against the increasing complexity of social and environmental problems the experts themselves became increasingly incapable to provide answers and solutions to those problems. In recent years, this concern with both complexity and uncertainty of our problems has lead influential political theorists to rethink their positions on the prospects of democracy. For instance, complexity is one of the main issues that troubles Habermas in his ongoing effort to spell out a theory of deliberative democracy. In his view, “unavoidable complexity” imposes the need for important qualifications in the elaboration of participatory democracy.

Indeed, in this age of complexity, the need of specialized expertise to formulate policies and take decisions bears directly on how much citizens can know about the choices they confront. It becomes increasingly clear that in many policy domains, politics more and more becomes a struggle between those who have expertise and those who do not. Indeed, access to technical knowledge and skill has allowed those with the power to legitimate their political decisions. Conversely, the lack of access to such knowledge hinders the possibility of an active and meaningful involvement on the part of the large majority of the public. For instance, technical languages used by the experts provide an intimidating barrier for lay citizens seeking to express their disagreements in the language of everyday life. Speaking the language of science, as well as the jargon of particular policy communities, becomes an essential credential for participation. Not only does this directly involve the technical dimensions of policy questions, but it concerns the value trade-off and other consequences that follow from the implementation of such policies (Hill, 1992).

The point to be made here is that complexity will continue to ensure the need for professional expertise, but this only brings us to the other side of the problem; namely that the experts themselves are not without their own difficulties. Not only do the experts have their own professional ideological commitments, often conflicting with the public interest, but they possess no analytical wizardry capable of resolving most of the pressing societal problems. Expert judgement, at least in the field of social science, provides few uncontested solutions or answers. So, while we still need experts, expertise cannot stand alone. Especially in social matters, normative assumptions and values are as important as technical analysis. No demonstration of efficiency can ever suffice to convince citizens to accept a social program that they don't believe to be *good*, *right*, or *fair*. When it comes to the basic normative assumptions and social understanding that underlay social and policy research itself, the expert can have no privileged status. Rather than providing technical answers designed to bring political discussions to an end, the task for them is to assist citizens in their efforts to examine their own interest and to make their own better informed decisions (Hirschhorn, 1979). Beyond merely providing analytical research and empirical data, the expert should act as a “facilitator” of public learning and empowerment. As a facilitator, he or she becomes an expert in how people learn, clarify and decide for themselves. In choices about how we want to live together – or how to solve the conflicts that arise in the struggle to do so – the experts are indeed only fellow citizens. And it is here that the case for citizens involvement start to become apparent.

More precisely, what does it mean to say that citizens (should) have a role here? Missing from Western political systems are well-developed political arrangements that provide

citizens with multiple and varied participatory opportunities to deliberate basic political issues. Against this state of affairs, there is the need of a more “collaborative” or “participatory” model of expertise and policy making. Decision making procedures, in this respect, must take into consideration the authority and influence that different actors have on the final choices. Should such decisions be left to the experts? What level of influence, for example, should the views of the general public carry when compared, for example, to those of scientists, administrators, elected officials, engaged community leaders, and activists? Who is more capable of judging – for instance – whether a power plant or a new regulatory program serves the interests of the public?

How we devise solutions to these questions is structured by our assumptions about citizens’ cognitive abilities to participate in discussions about complex issues, including their methods of assessment (Fisher, 2005). And here we come to the last, and more basic, theoretical foundation of the citizens conference method and the AWARE experience, which can be found in the John Rawls Theory of Justice and its concept of “Original Position” (Freeman, 2008; Rawls, 1999, 2005).

We contend that citizens juries, if their members are appropriately selected, and the citizens conferences, if appropriately conducted, are the best real life approximation of the original position, the core concept of the Rawls’ theory of justice as fairness. A popular summary of this theory is provided in the box overleaf. In the following we will discuss more in detail the rationale and features of the original position, while its relationship with the sustainability topics and the AWARE experience will be discussed in the next section.

The Original Position has often been compared to the “state of nature” or the pre-political condition of humanity, which was important in the philosophies of early modern social contract theorists. According to philosophers such as Thomas Hobbes and John Locke, in order to understand political obligation, we should 1) first conceive what human beings were like (or would have been like) before the creation of organized societies under government and laws, and then 2) ask a) what reasons would have motivated people to form an organized society and b) what principles human beings in this pre-political condition would have chosen to guide their interaction in a society under an established government. Hobbes argues that in a pre-social state of nature it would be rational for all to agree to authorize one person to exercise the absolute political power needed to enforce norms necessary for social cooperation. Contrariwise, Locke argued against absolute monarchy by contending that no existing political constitution is legitimate unless it could be contracted into without violating any natural rights or duties from a position of equal rights and equal political jurisdiction within a (relatively peaceful) state of nature.

Rawls follows the social contract tradition, whereby there are three items to keep distinct: (1) the pre-political condition, (2) the political order established just as people were coming out of the pre-political conditions, and (3) the actual – and possibly flawed – order under which we all live. Stage (2) of this sequence is thought to reveal what arrangements are just or fair, and it could then be used as a basis for critically evaluating to what extent the actual society (stage 3) is fair. Rawls’ idea of the original position is similar to that of social contract philosophers, except that he is under no illusions that the original position was ever a reality or a “state of nature”. It is a model, a thought experiment, i.e. an abstract mental device to help us understand the principles of justice that would govern the basic structure of a just

*Rawls' Mature Theory of Social Justice (Garrett, 2005)*

John Rawls is widely regarded as one of the most important political philosophers of the second half of the twentieth century. Rawls' theory provides a framework that explains the significance, in a society assumed to consist of free and equal persons, of political and personal liberties, of equal opportunity, and cooperative arrangements that benefit the more and the less advantaged members of society. Rawls' initial concerns with justice is related to relationships between persons within an association. Rawls' theory urges us to conceive a society as a fair system of cooperation over time, from one generation to the next. He says that the relationship of citizenship is a relation of citizens within a basic structure of society, a structure we enter only by birth and exit only by death. The "basic structure of society" includes the basic social institutions, such as the political constitution and framework for the legal system; the system of trials for adjudicating disputes; the norms of property, its transfer, contractual relations, etc. which are necessary for economic production, exchange and consumption; and finally norms that define and regulate permissible forms of the family. No society could exist without certain rules of property, contract, and transfer of goods and resources, for they make economic production, trade and consumption possible. Nor could a society long endure without some political mechanism for resolving disputes and making, revising, interpreting, and enforcing its economic and other cooperative norms; or without some form of the family, to reproduce, sustain, and nurture members of its future generations. This is what distinguishes the social institutions constituting the basic structure from other profoundly influential social institutions, such as religion; religion and other social institutions are not basic because they are not generally necessary to society and social cooperation (even if they may be ideologically necessary to sustain particular societies and to maintain their status quo). The "first subject of justice", Rawls says, is principles that regulate the basic social institutions that constitute the basic structure of society. What makes basic institutions and their arrangement the first subject for principle of social justice is that they are all necessary to social cooperation and moreover have such profound influences on our situations, aims, characters, and future prospects.

John Rawls develops a conception of justice from the perspective that persons are free and equal. Their freedom consists in their possession of the two moral powers: a capacity for a *sense of justice* and for a *conception of the good*. Insofar as they have these to the degree necessary to be fully cooperating members of society, they are equal. A "sense of justice" is the capacity to understand, to apply, and to act from the public conception of justice which characterizes the fair terms of cooperation. This sense express a willingness to act in relation to others on terms that they can also publicly endorse. A "conception of the good" includes a conception of what is valuable in human life. Normally it consists of a more or less determinate scheme of final ends, that is, goals that we want to realize for their own sake, as well as attachments to other persons and loyalties to various groups and associations. A political conception conceives of persons as having the two moral powers mentioned above, as being responsible for their actions, etc., but does not address whether persons have more comprehensive moral conceptions, including non political values, virtues and beliefs, e.g. whether persons are immortal souls or immaterial substances as, say, Plato and most medieval Christian theologians held. A political conception of justice, says Rawls, has three basic features: 1) it is a moral conception worked out for a specific kind of subject, namely, for political, social and economic institutions (the basic structure of society); 2) it is presented as a freestanding view, and neither as a comprehensive doctrine, nor as derived from a comprehensive doctrine applied to the basic structure of society; 3) its content is expressed in terms of certain fundamental ideas seen as implicit in the public political culture of a democratic society.

The political conception of justice points to a notion of *reasonable citizens*. Citizens are reasonable when, viewing one another as free and equal in a system of cooperation over generations, they are prepared to offer one another fair terms of social cooperation, and they agree to act on those terms, even at the cost of their own interests in particular situations, provided that others also accept those terms. For those terms to be fair, citizens offering them must reasonably think that those citizens to whom they are offered might also reasonably accept them. They must be able to do this as free and equal, and not as dominated or manipulated, or under the pressure of an inferior political or social position. Rawls call this the "criterion of reciprocity". The second aspect of "being reasonable" is recognizing and being willing to bear the consequences of the *burdens of judgement*. The latter imply that regardless how impartial and altruistic people are, they still will disagree in their religious, philosophical and moral judgments. Disagreements in these matters are inevitable, but reasonable persons can disagree without being prejudiced or biased or excessively self- or group interested or wilful. This is "the fact of reasonable pluralism", which recognises different sources of disagreement – conflicting nature and complexity of evidence, differences about weighting of considerations, vagueness of concepts and borderline cases, disparate experiences of diverse people – as well as the potential conflicts of human interests, due to the "limited altruism" of human beings (whereby we are naturally more concerned with our aims and interests - including our interests in the interests of those nearer and dearer to us - than we are with the interests of strangers with whom we have few if any interactions). Reasonable persons think it is unreasonable to use political power, should they possess it, to repress comprehensive views that are not unreasonable, though different from their own, and so they endorse some form of liberty of conscience and freedom of thought.

The Rawls' political conception of justice holds under some objective *circumstances of justice*, including physical facts about human beings, such as their rough similarity in mental and physical faculties, and vulnerability to attack, as well as conditions of moderate scarcity of resources. The latter means that the political conception of justice is applicable in social contexts where there are not enough resources to satisfy everyone's demands, but there are enough to provide all with adequate satisfaction of their basic needs; unlike conditions of extreme scarcity (e.g. famine) cooperation then seems productive and worthwhile for people. Under such circumstances, the John Rawls account of justice, "justice as fairness", affirm the following principles: I) Each person has an equal right to a fully adequate scheme of equal liberties which is compatible with a similar scheme of liberties for all, and II) Social and economic inequalities are to satisfy two conditions: a) first, they must be attached to offices and positions open to all under conditions of fair equality of opportunity; b) second, they must be to the greatest benefit of the least advantaged members of society. Principle I is named "equal liberty principle", whereas principles IIa and IIb are respectively called "equal opportunity principle" and "difference principle". The equal basic liberties include: the freedom of thought and liberty of conscience; the political liberties and freedom of association, as well as the freedoms specified by the liberty and integrity of the person; and the rights and liberties covered by the rule of law. The equal basic liberties have a priority, as they cannot be denied to certain social groups on the grounds that their having these liberties may enable them to block policies needed for economic efficiency and growth. For instance, a desire to increase the Gross National Product or make airlines run on an efficient schedules cannot alone justify the limitation of basic liberties. The Rawls' second principle means that society may undertake projects that require giving some persons more power, income, status etc. than others – e.g. paying accountants and upper-level managers more than assembly-line operatives – provided that: a) access to the privileged positions is not blocked by discrimination according to irrelevant criteria (e.g. race or gender) and b) the project will make life better off for the people who are now worse off, for example by raising the living standards of everyone in the community and empowering the least advantaged persons (difference principle). What the difference principle does not permit is a change in social and economic institutions that makes life better for those who are already well off but does nothing for those who are already disadvantaged, or make their life worse.

and fair society. Representative (of all adult) persons in the original position are to choose principles of justice. These representatives represent every human being that belongs to the political association of free and equal persons. Due to the profoundly social nature of human relationships, Rawls sees political and economic justice as grounded in social cooperation and reciprocity. For this reason he eschews the idea of a state of nature wherein pre-social but fully rational individuals agree on cooperative norms (as in Hobbesian views), or where pre-political persons with antecedent natural rights agree on the form of political constitution (as in Locke). According to Rawls, we are all “social beings” in the sense that in the absence of society and social development we have but inchoate and unrealized capacities, including our capacities for rationality, morality, even language itself. However, this does not mean that people do not have “natural” moral rights and duties outside society or in non-cooperative circumstances – Rawls clearly think that there are certain human rights and natural duties that apply to all human beings as such – but that they do not provide an adequate basis for ascertaining the rights and duties of justice that we owe one another as members of the same ongoing political society.

The Original Position perspective of justice is that, rather than representing the judgement of one person (as in the Hume’s account of the “judicious spectator”), it is conceived socially, as a general agreement by representatives of all adult members of an ongoing society. There are three fundamental features of the representatives in the original position that need to be qualified to ensure that justice is represented as a general social contract or agreement.

First, the representatives in the original position are *rational* in the sense that they wish to secure for those they represent the kind of goods that would enable them to work out (including to revise if necessary) their own conceptions of the good and then try to realize this good. This feature recognizes that each person has a set of interests which are of his or her own. These interests are linked to the person’s moral power to form, revise, and pursue a conception of the good.

Second, they stand behind a *veil of ignorance*. That is to say, they do not know the following about the persons they represent: their sex, race, physical handicaps, social class, or conception of the good. They rightly assume that the persons represented have these features but they do not know what it is. This veil of ignorance deprives the parties of all the knowledge of particular facts about themselves, about one another, and even about their society and its history. The parties are not however completely ignorant of facts. They know all kind of general facts about persons and societies, including knowledge of the relatively uncontroversial laws and generalizations derivable from economics, psychology, political science, and biology and other natural sciences. They know then about the general tendencies of human behaviour and psychological development, about biological evolution, and about how economic markets work. As discussed in the box below, they also know about the circumstances of justice – moderate scarcity and limited altruism – as well as the desirability of the primary social goods that are needed to live a good life and to develop their moral powers. What they lack however is the specific knowledge of any particular facts about their own lives or other persons’ lives, as well as other specific facts about their society and its population, level of wealth and resources, etc. Rawls think that since the parties are required to come to an agreement on objective principles that supply universal standards of justice applying across all societies, knowledge of particular facts about any

person or society is morally irrelevant and potentially prejudicial of their decision. Indeed, a primary reason for a thick veil of ignorance is to enable an unbiased assessment of the justice of existing social and political institutions and of existing preferences and conceptions of the good. If the parties to Rawls' original position had knowledge of people's belief and desires, as well as knowledge of the laws, institutions and circumstances of their society, then this knowledge would influence their decisions on principles of justice. The principles agreed to would then not be sufficiently detached from the very desires, circumstances and institutions these principles are to be used to critically assess. Summing up, our capacity for a sense of justice is reflected in the operation of the veil of ignorance, as this is what makes the imaginary choices of the representatives in the original position on our behalf fair.

A third feature of the representative in the original position – partially anticipated while discussing the veil of ignorance above – is that they possess a great deal of *common sense* general knowledge about human psychology and sociology. They know, for instance, that humans remember the past, anticipate the future, and interact with things and people in the present. They know that people have diverse interests and talents. They are aware of the general types of situations in which humans can find themselves (they hold what can be called the "everyday life" or "lay street" knowledge, something different and more general than the citizens' detailed knowledge of local circumstances which is mostly valued in participatory processes at local level).

Besides the above features, there are five formal constraints required by the concept of right, and the parties in the original position must take them into account in making their decisions. These constraints are: generality, universality in application, ordering of conflicting claims, publicity, and finality. *Generality* means that, while deciding about principles of justice, these cannot include specific facts or features, as they should be valuable across all societies. The *ordering condition* says that a conception of justice should be able to resolve conflicting claims and order their priority. The *publicity condition* says that the parties are to assume that the principles of justice they choose will be publicly known and recognised as the basis for social cooperation among the people whose relations they regulate. Publicity of principles of justice is required to respect persons as free and equal citizens, and enable them to cooperate and live together on fair terms. Related to publicity is that principles should be *universal in application*. This implies not simply that they hold for everyone in virtue of their being moral persons. It also means that everyone can understand the principle of justice and use them in deliberations. Universality in application then imposes a limit on how complex principles of justice can be – they must be understandable to common moral sense, and not so complicated that only experts can use them in deliberations. *Finality* is related to the requirement of stability of the conception of justice and the commitment of all reasonable citizens towards it. According to Rawls, an important feature of a conception of justice is that it should generate its own support. Its principles should be such that when they are embodied in the basic structure of society people tend to acquire the corresponding sense of justice and develop a desire to act in accordance with its principles. In this case a conception of justice is stable. To be stable, principles of justice should be realizable in a feasible and enduring social world. They need to be practically possible given the limitations of the human conditions. And people should knowingly want to uphold and maintain society's just institutions not just because they benefit from them,

but on the grounds of their sense of justice. A just society should be therefore be able to endure not simply as a *modus vivendi*, by coercive enforcement of its provisions and its promoting the majority of peoples' interests - as when democracy degrades into populism - but for moral reasons of justice shared by its citizens.

Whenever the features and the formal constraints are satisfied, the parties in the original position are motivated only by their own rational interests in making their decisions. Their interests are defined in terms of their each acquiring an adequate share of primary social goods - rights and liberties, powers and opportunities, income and wealth, etc. - and achieving the background social conditions enabling them to effectively pursue their conception of the good. However, since under the veil of ignorance the parties do not know their particular conceptions of the good and all other particular facts about their society, they are not in a position to engage in bargaining, and this represent a radical difference from any procedure of consultation and negotiation with stakeholders whatsoever. In effect, the representatives in the original position all have the same general information and are motivated by the same *general interests*.

Finally, it is important to note that the circumstances of the original position are not suitable for any kind of decision, but mostly for situations of ignorance and uncertainty about future developments which may affect the social position and well-being of the parties (whenever certainty and exact knowledge of the consequences prevail, scientific analysis and expert judgement would be sufficient). The decision at stake in the original position is not an ordinary choice. It is rather a unique and irrevocable choice where the parties decide the basic structure of their society, or the kind of social world they should live in and the background conditions against which they will develop and pursue their aims. It is then *sui generis*, a choice of the conditions for all future choices, and taken under ignorance and uncertainty about the future state of the world where meaningful choices will have to be made. Under the highly exceptional circumstances of the original position - including the gravity of the choice, the fact that it is not renegotiable or repeatable, and the fact that it determines all one's future prospects - it is rational to choose conservatively to protect certain fundamental interests against loss or compromise. Once the rules of justice are decided they apply in perpetuity, and there is no opportunity to renegotiate or escape the situation, whatever a presently uncertain future will be. In this situation, it is entirely rational for the representatives in the original position to be unwilling to gamble with the basic liberties, opportunities and resources needed to pursue one's most cherished ends and commitments. The decisions that emerge from this procedure are fair and at the same time truly precautionary.

#### **4. Mainstreaming the method to build a science-citizens-policy interface in Europe**

As anticipated in the previous section, citizens juries, if their members are appropriately selected, and the citizens conferences, if appropriately conducted, are the best real life approximation of the Rawls' Original Position. Indeed, the real life experience of citizens conferences - and in particular of the European citizens conferences organised in the three pilot projects RAISE, MOVE TOGETHER and AWARE - is a practice fitting to the original position concept in three respects.

First, the procedure applied for the selection and recruitment of the citizens jury ensure the impartiality and representativeness of its members. The actual selection of the citizens is carried out using a specific software for random selection of the participants from a pool of candidates collected through a call for applications. The call is open on Internet to all the citizens of the area of concern – the EU Member States in case of full-fledged European conferences, or the districts of a city in case of local citizens conferences – with few requirements: 1) do not hold any specific expertise of or stake in the topic of concern to avoid any conflict of interest (so scientists, stakeholders and decision makers are excluded); 2) to be available to attend a number of events (usually three workshops and a final conference scheduled over one year time, with a commitment of about 8 days of their time); 3) to be sufficiently proficient in a common language, namely English (this applies of course only for the European conferences, not those at local level). In the applications, candidate citizens are required to describe their statistical profile – age, sex, activity (employed, unemployed, retired, student), and usually one criteria related to the topic of concern (for instance, in AWARE what use the citizens more frequently do of the coastal waters, e.g. tourism, fishing, etc.). They are required also to answer to two questions about: 1) how they see the topic of concern; 2) what motivates their participation. These questions aim to understand the moral standing of the participants, eliciting their own views and “conception of the good” in relation to the topic of concern. The random selection ensure statistical representativeness of the jury’s members in relation to the population of candidates, including geographic criteria (e.g. one member of the jury for each EU Member State in the European conferences, or for each district of the city in local conferences), demographic and socio-economic distinctions, and possibly one criteria related to the specific topic of concern. An additional criteria is used during selection, ranking the answers of the citizens to the questions about their views of the topic and their motivations – with the help of a panel of independent evaluators – and allocating different probabilities of being selected for the citizens in the high, medium or low rank (the aim is not to exclude those of medium or low rank, but to gather a jury with a desired mix of the three categories). In this way, each selected member of the jury represents a different segment of the population of candidates. Of course, he or she does not represent in any statistically meaningful way the total population of the area of concern, but only that of candidates. Any bias in the composition of the latter – for instance due to different access to Internet, English skills etc. – will be reflected in the composition of the jury. To enhance the representativeness of the citizens jury against the total population is important however to disseminate the citizens participation process as widely as possible, in order to gather a population of candidates (usually at least 10 times the target number of jury’s members) which is sufficiently representative of the total.

Second, the procedures applied throughout the whole citizens conference process ensure equal opportunity to participate and other circumstances of the original position, namely standing behind a veil of ignorance, publicity and commitment. The members of the citizens’ jury bring with themselves their common sense knowledge and moral attitudes, nothing more. They participate to the workshops and the conference as a kind of “second life” experience, far from their daily activities, cares and interests. Since the beginning of the process they are made aware of their mandate, how the process will be ruled out, and the information they will receive from the experts on the topic of concern. The whole process will be carried out following a structured agenda – which may be flexible and adapted to

specific needs emerging in the process, but maintains a roadmap of basic steps to be accomplished to reach the citizens conference goal. Several practical organization requirements will facilitate the process, including a suitable location, hiring a professional moderator and providing training and information as to the subject of the participation exercise in a language accessible to the citizens, arranging for lunches, dinners and coffee breaks during the meetings, and, last but not the least, ensuring the individual commitment of the citizens to participate to all the meetings – continuity is a must – by signing with them letters of commitment to which are associated reasonable fees to compensate for the citizens' time use.

Third, the topic of concern should be relevant, general and serious enough to require a citizens conference process. In general, citizens participation is not always an appropriate instrument for obtaining input into policy. It is appropriate in those cases where the policy issue at stake is clearly delineated – for instance, in the AWARE project the issue was the deterioration of coastal water quality across Europe and policy was clearly framed in the EU Water Framework Directive – and can be expected to engage citizens' interests because it relates to their lives. In addition, to resemble to the circumstances of the original position, the citizens should be engaged on topics and situations in which there is a substantial ignorance and uncertainty about future developments which may affect their social position and well-being, and that of future generations. Sustainability topics, and in particular the management of common pool resources, are such issues. The term “common pool resources” (CPR) refers to a natural or man-made resource system - fishing grounds, groundwater basins, grazing areas, irrigation canals, bridge and road infrastructure, urban roads and spaces, mainframe computers, streams, lakes, oceans and other bodies of water, to name a few - that is sufficiently large as to make it costly to exclude potentially beneficiaries from obtaining benefits from its use. Resource systems provide “resource units” - fish, water, land for grazing, use of a road infrastructure, etc. - which are appropriated by multiple users simultaneously or sequentially, according to open access or some other socially established rule. The resource units themselves are not subject to joint use or appropriation – they are consumed individually - but the resource system is subject to joint use. In this situation the emergence of “crowding effects” and “overuse” problems is chronic, as we approach an upper threshold in the number of resource units that are simultaneously consumed in the unit of time. When the CPR is a man-made structure, such as a bridge, approaching the threshold of crossing units leads to congestion. When the CPR is a biological resource, such as a fishery or a forest, approaching the threshold may even destroy the capability of the resource itself to continue producing resource units (i.e. the ecosystem service). Decisions at stake in the management of CPR are therefore not ordinary choices. They are *sui generis* as the unique and irrevocable choice where the parties in the original position decide the basic structure of their society, insofar as an agreement is vital to ensure the durability of a common good. The highly exceptional circumstances of the original position - i.e. the gravity of the choice, the fact that it is not renegotiable or repeatable (whenever an ecosystem is destroyed, it will never return back as it was), and the fact that it determines all one's future prospects – are underlying decisions concerning the access and sustainable use of environmental and social resources as well. Moreover, as long as the users of a common pool of resources stay “unorganized”, they cannot achieve a joint return as high as they could have received if they had organized in some way to undertake collective action. As a matter of facts, there is a range of empirical solutions of “self-

government” that can be found in the real world for regulating the access to a limited pool of common resources, alternative to and often more effective than both the privatization of the commons (market ruling) or their central regulation from a state authority (state ruling). These solutions engage groups of actors - e.g. citizens, fishers, farmers, etc. - who are in an interdependent situation, in organizing and governing themselves, and building “bottom-up” institutions and rules of cooperation, sometime with the support of local authorities and, less frequently, fitting in a formal multi-governance framework (Ostrom, 1991). To create such self-government solutions - or revise them under new threatening circumstances such as climate change - may be the subject and mandate of citizen conference processes, which eventually may evolve towards building up constitutional conventions to establish the basic rules for governing the commons. The latter should contribute to institutionalise integrated adaptive management of common resources, including in particular rules for citizens participation and empowerment, and adequate schemes for Science-Citizens-Policy Interface.

The ultimate success of a citizen participation process is when it can be shown that the proposals advanced by citizens are translated - even if only in part - into policy. Indeed, one of the first things citizens invited to participate in consultation processes want to know is how the outputs of their discussions will be used and by whom. However, this type of follow-through is often the greatest weakness of citizen participation processes and the reason why such processes are often viewed with mistrust. It is therefore important to not only ensure that citizen deliberative panels produce outputs but also to document how these outputs are disseminated and, subsequently, used by policy-makers (Move Together, 2009).

The main avenue to achieve this would be to institutionalize the citizens conference processes at EU and local level, by embedding the citizens’ jury methodology in a framework of citizens’ participation rules to be adopted at the different institutional levels, in relation to sustainability topics which are relevant for citizens’ assessment. For instance, at local level, there are a number of permanent participatory forums set out in the context of Local Agenda 21 processes, which are mostly open to and used by stakeholders and civil society organisations, but poorly known or used by lay citizens. These forums usually connect the local administrations with organizations from the local economy and society: they could include also - as a new stream of participation - citizens conferences convened on topics of interest, such as for example the formulation, implementation and monitoring of Sustainable Energy Action Plans in the context of the EU Covenant of Mayors ([www.eumayors.eu](http://www.eumayors.eu)).

Another avenue would be to mainstream the AWARE experience and approach in the context of EU funded research, with the aim to build up and maintain an effective Science-Citizens-Policy Interface in the whole European Research Area.

This claims for continuing to disseminate the AWARE approach, with the aim to achieve a “snowball effect”. This could be done in the context of the European Union polity by means of a growing number of “European citizens-science projects”, engaging together scientists, decision makers and permanently renovated (through random selection) panels of citizens. These European citizens-science projects will bring researchers **and** citizens from across Europe together in collaborative research experiences, that today are open only to researchers, and this can also contribute to enhance the participants’ feeling of being truly

“European citizens” – a very significant side-effect for the building of the European citizenship and social capital.

One option to scale-up the experience of citizens’ workshops and conferences may be, therefore, creating with the support of the European Commission “*public spaces*” that citizens can access through calls for application to random selections open on Internet – as it was done in the AWARE citizens’ recruitment process. In these public spaces small groups of people (the selected panels) are engaged in European citizens-science projects as a kind of voluntary job.<sup>3</sup> While on the job, they stay disconnected from Internet all along the process – even cell phones are forbidden during the workshops and conference sessions – and are involved in an intense knowledge brokerage process with experts, stakeholders and policy makers. At the end of the process, the citizens’ panel co-produce an assessment document (“Citizen Declarations”) which can be disseminated and used again on Internet, developing WIKI-like User-Created Content applications (OECD, 2007) and triggering a continuous dynamic in the blog-sphere. This approach would equate to create as downstream result of the citizens conference process truly “collective awareness platforms” on topics of interest for scientists, citizens and the policy makers, enlarging the arena of participants to spontaneously interested people.

This transition from the “old” to the “new way” of connecting scientists, citizens and policy and market developments is envisioned in fig. 3.

The figure shows the main connections. In the conventional way, EU research funding contributes to the development of Science & Technology (S&T) in Europe (broadly, total Research & Innovation funding in Europe reaches about 200 billion euro per year, and EU funding contributes with about 15 billion euro to this total<sup>4</sup>). In turn, S&T supports policy making by helping decision-makers to deliver better government decisions. S&T may also eventually improve or produce new commercial technologies, products and services sold on the market. Citizens in this traditional picture are mainly seen as “customers” of private companies or “end users” of public services; they do not have enough opportunity to **interact and contribute early in the process** and **shape** the way public government and the private sector tackle societal challenges.

The new way adds a new opportunity for the citizens, that of being randomly recruited in citizens panels – with a commitment that may be framed as a kind of “European civic service” - to make a critical review and assess the societal acceptance of the research being funded by the European Union, in particular to face the grand societal challenges.

These are Europe-wide challenges such as the ageing population, the effects of climate change, and reduced availability of resources (energy, water, land, raw materials).

The Europe 2020 flagship initiative “Innovation Union” (European Commission, 2010) called for focusing future EU funding programs more closely to cope with grand societal challenges, which will clearly affect future European citizens health, well-being and quality

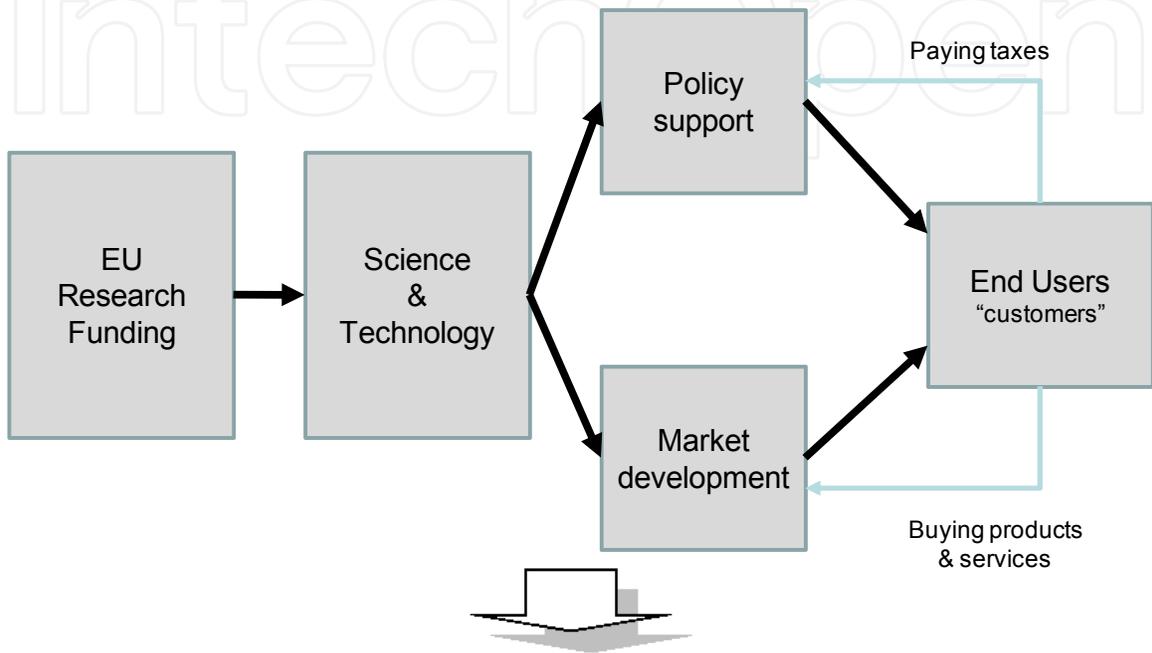
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<sup>3</sup> Time compensation fees may be distributed to the participants, as it was done in AWARE, in order to balance for the citizens commitment that ordinarily may keep from 6 to 10 days of equivalent working days.

<sup>4</sup> Sources: STC key figures report 2009/2010 and European Commission.

of life. Breakthroughs must be found, for instance, in new treatments for life-threatening diseases, new solutions to improve the lives of elder people, ways to radically cut CO2 emissions and other sources of pollution in particular in cities, alternative sources of energy

***The “old” way to connect science and society***



***The "new" way to connect science and society***

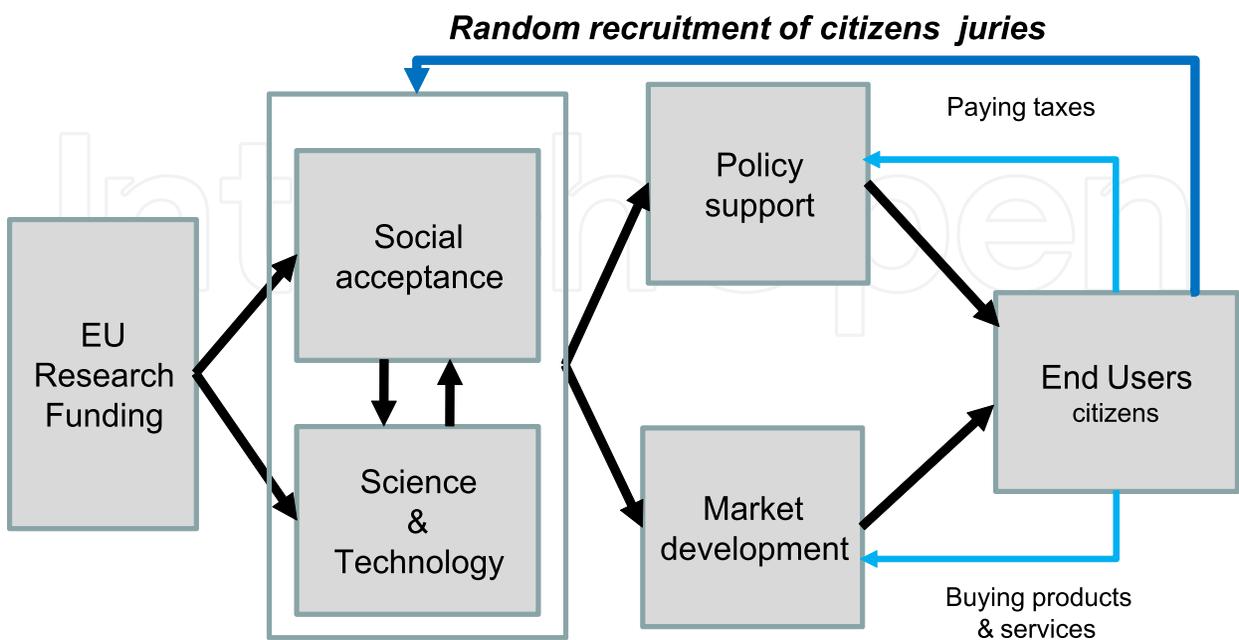


Fig. 4.

and substitutes for increasingly scarce raw materials, reducing and recycling waste and ending landfill, improvements in the quality of our water supply, smart transport with less congestion, healthy or high-quality food stuffs using sustainable production methods, and technologies for fast and secure information handling and sharing, communication and interfacing. The main instruments to connect EU funded Research & Innovation, the business world and civil society are the “European Innovation Partnerships” launched as part of the Innovation Union flagship initiative.

These are going to be launched only in areas – and consist only of activities – in which government intervention is clearly justified and where combining the EU, national and regional efforts in Research & Innovation and demand-side policies will achieve the target quicker and more efficiently. Examples of partnerships being considered first address areas of great concern for the European citizens:

- *Active and healthy ageing*: by 2020, to enable European citizens to live longer in good health by increasing the average number of healthy life years by 2, and, in achieving this target, to improve the sustainability and efficiency of our social and healthcare systems.
- *Smart and livable cities*: by 2020 the aim is to support a number of pioneering European cities in reducing their carbon emissions by more than 20%, increasing the share of renewable energy by 20% and increasing end-use energy efficiency by 20%. The partnership aims to demonstrate that sustainable development of local economies, with a smarter use of scarce energy and natural resources while continuing to improve the citizens’ quality of life, is possible.
- *Water-Efficient Europe*: To promote actions that can speed-up innovation in the water sector and remove barriers to innovation, ensuring higher quality of water and a more efficient use.
- *Smart mobility for Europe’s citizens and business*: To equip Europe with seamless door-to-door travel and effective logistics by promoting the broad and coordinated development of Intelligent Transport Systems (ITS), and building upon available results from research and development to take them further to innovation and concrete operational deployment. Together with needed behavioral changes, this will contribute to achieve a better mobility and transport in Europe, reducing congestion, energy consumption and greenhouse gases emissions from transport.
- *Agriculture productivity and sustainability*: World food demand will increase massively over the next two decades. The aim of this partnership is to promote a resource-efficient, productive and low-emission agricultural sector – which works in harmony with the essential natural resources on which farming depends, such as oil and water.

The European Innovation Partnerships (EIPs) are the new avenues indicated for future research to tackle societal challenges. Bringing researchers and stakeholders from across Europe together in collaborative networks is at the heart of this new approach and will continue to be vital in sustaining a European research fabric. Experience so far has shown, however, the limitations in achieving the necessary flexibility, creativity and cross-disciplinary research needed. Moreover, there is now really the need to get Europe and the European research – as least to the extent that this is going to change the citizens’ life in a foreseeable future – into the minds and lives of ordinary citizens.

But how? One suggestion would be to fix for the next EU Common Research Framework “Horizon 2020” a target of 10% of Research & Innovation funding allocated for European citizens-science activities, mainly in the context of the new European Innovation Partnerships. This would mean an order of magnitude of 1,5 billion Euros yearly (about 3 Euros per citizen) for European citizens-science activities in the new Financial Framework 2014-2020.

The European citizens science projects will include as a participation standard *transnational panels of citizens*, whose members will have to be randomly selected from at least 3 different countries of Europe, applying here the same rule holding today for forming European consortia. Citizens involved in the European science-citizens projects will have the opportunity to meet in several workshops around Europe, and work together with the experts and other citizens from other countries to the same evaluation tasks, writing down their common deliberations.

While doing this, they will have the opportunity to learn and/or exercise English as common language, and to appreciate the different national cultures, exploring commonalities and differences. This process will be open to people from all ages, social status and walks of life, helping to build an European “social capital” of new cross-country relationships and friendship networks. In addition, as the citizens will acquire in the process adequate scientific information on the sustainability topics of concern, they will have through these European projects a concrete opportunity for long-life learning and enjoying new communication skill (not only English, but also from experiencing team work), achieving a better understanding and awareness of how complex societal challenges are.

The engagement of citizens in EU funded projects should be based on a rigorous random selection of the panel members, amongst pools of candidatures submitted to open “calls for citizens” on Internet. Other supporting actions that could be funded from the EU are long-life learning and training activities aiming to enhance the citizens common language and other civic skills, for instance by means of “*European citizens’ summer schools*”, as well as the skills of facilitators of participatory projects. Citizens’ summer schools can be organized by networks of universities and training institutes around Europe, with the support of other regional or local institutions. Applicant European citizens would be trained on EU sustainability policy frameworks and related science issues, and citizens’ participation methods and tools. They will have the opportunity to share an international “classroom” environment, and learn English by working together with experts, for instance to assess the societal acceptance of science topics related to their everyday life concerns.

The final aim of the proposed 10% target of EU research funding for European citizens-science activities is to build up an “*European Public Sphere*” for publicly funded and transparent brokerage activities between scientists, citizens, stakeholders and decision makers. This public sphere should be framed around the main societal challenges, providing an institutional framework to connect public and private research, market and social innovation across Europe. The interplay of the public and private knowledge spheres of research and innovation, aiming to achieve the common goal of sustainable development, is envisioned in figure 5 below.

The figure shows again the main connections between a “public sphere”, where any knowledge production is in principle free (open source), and a “private sphere” where knowledge is privately owned, i.e. protected by intellectual property rights. The private sphere is the place where IPR-based technological innovation, based on the most advanced research achievements, is exploited by business actors to produce and offer to “consumers” on the market new sustainable products and services (e.g. green technologies).

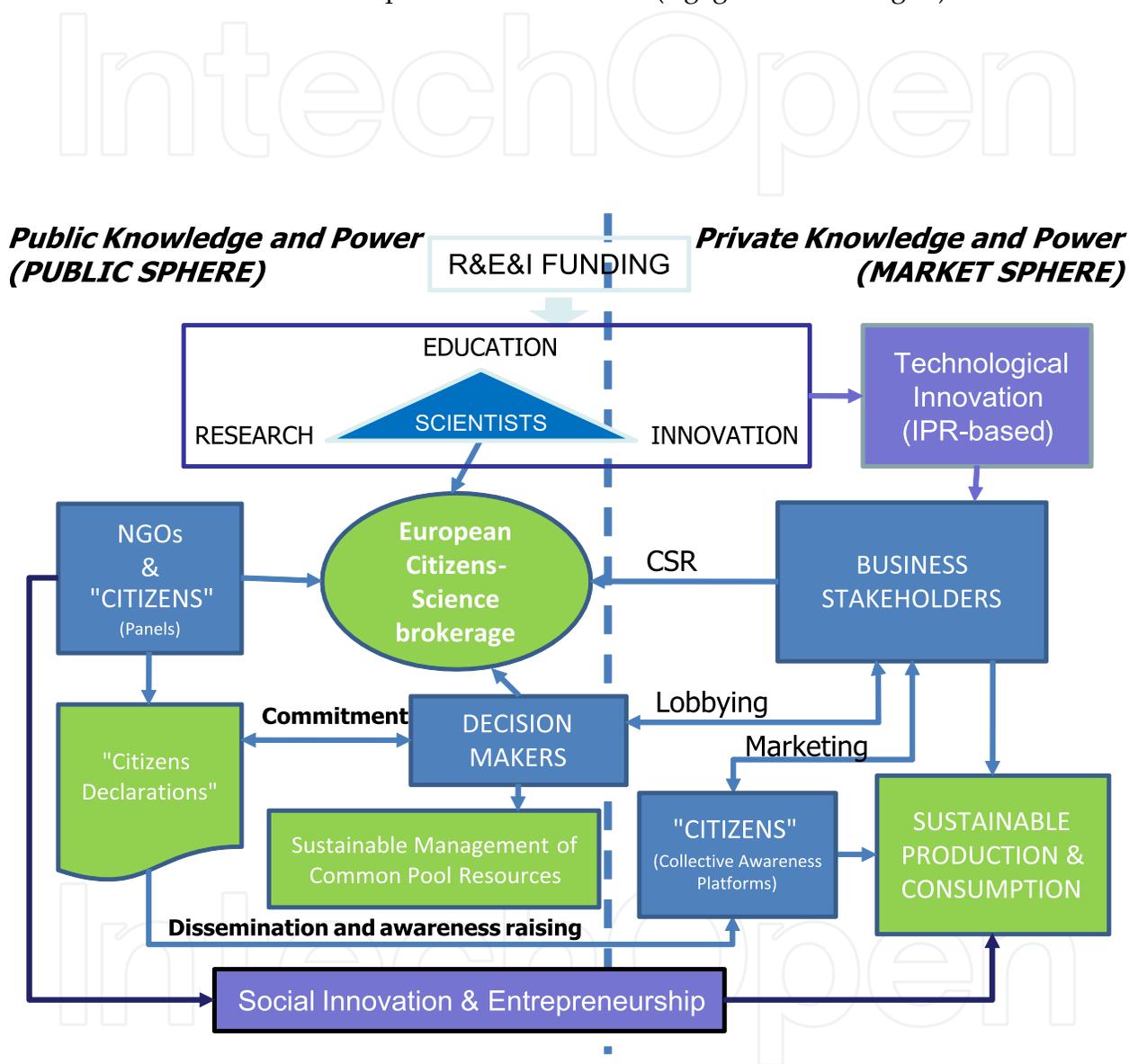


Fig. 5. European Public Sphere for Science and Society

The public sphere is not as neatly delineated in reality as it is in this scheme: currently there are not publicly funded knowledge brokerage programs – besides some sporadic pilot experiments, as those mentioned above and few others.

The systematic and continuous funding of knowledge brokerage processes can change, however, this situation, making the public sphere concretely populated with an increasing number of opportunities (workshops, conferences, summer schools, etc.) for face-to-face

meetings and free exchange of knowledge, team working and democratic deliberation about **common** sustainable development issues. This being the case, scientists, representatives of NGOs, groups of randomly selected citizens and decision makers (either civil servants and elected politicians) will have the opportunity to share their knowledge in the public sphere, being provided with the same state of the art scientific information and with equal opportunities to contribute in the dialogue. They will discuss why and how to tackle the common challenges.

In this picture, also the business stakeholders, following Corporate Social Responsibility (CSR) commitments, may support and participate to the knowledge brokerage process, providing relevant information about their potential contribution to problems and solutions. The citizens panels will help to catalyze the brokerage process producing their recommendations in the form of citizens declarations. These will include commitments towards sustainable management of the issue of concern, be forwarded to the politicians and disseminated to the general public.

Finally, the process initiated in the public sphere can trigger new action plans, with initiatives taken by governments - namely new forms of *public sector innovation*, e.g. policies for the sustainable management of common pools of resources and infrastructures (in key sectors such as energy, transport, water, urban and rural development, etc.) - or directly by civil society actors, with new forms of *social innovation and entrepreneurship* providing sustainable products and services (i.e. non-profit activities on the market).

Summing up, by mainstreaming the application of the innovative method experimented in the AWARE project, the citizens in Europe may have a new opportunity: that of being randomly recruited in citizens panels. Should they choose to participate, they may build up a sort of “European civic service” and undertake, together with scientists and policy-makers, a critical review of legislation, management and research being funded by the European Union to address overarching societal challenges. Active citizens - and those citizens “activated” by means of their involvement in such European citizens-science projects - may contribute in this way to a timely and adaptive governance of sustainability challenges.

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