
# Public Engagement Innovations for Horizon 2020

# Literature review on public engagement and participatory performance

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# The PE2020 Project

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# The PE2020 project

PE2020 aims at identifying, analysing and refine innovative public engagement (PE) tools and instruments for dynamic governance in the field of Science in Society (SiS). PE2020 analyses the PE tools and instruments through a systemic and contextual perspective, and contributes to the potential and transferability of new governance innovations. PE2020 will create new knowledge of the status quo and trends in the field of PE in science, refines innovative PE tools and instruments and propose new ones.

The project (1) develops a conceptual model that provides a systemic perspective of the dynamics of public and stakeholder engagement; (2) creates an updated inventory of current and prospective European PE innovations; (3) context-tailors and pilots best practice PE processes related to the grand challenges of the Horizon 2020 and (4) develops an accessible net-based PE design toolkit that helps identify, evaluates and successfully transfers innovative PE practices among European countries.

New tools and instruments for public and societal engagement are necessary to boost the quality, capacity and legitimacy of European STI governance and to solve the looming problems related to the grand societal challenges of the Horizon 2020. In order to ensure practical relevance, the project will work through intensive co-operation between researchers and science policy actors. PE2020 will expand the capacity of European and national science policy actors to integrate better societal engagement by providing an easy access to new PE tools and instruments, to be included in the requirements and implementation of research in Horizon 2020 and beyond.

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# Contents



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no [611826]

# 1. Introduction

Public engagement (PE) processes are too often thought as isolated initiatives. They are single events in the life of an institution and they rarely trigger a long-term participatory process. Integrating PE into the policy cycle means to take a step towards a structural embedment of participatory approaches in the daily life (mindset, culture, practices, institutional set-up, etc.) of the research institutions and their key actors (researchers, technicians, leaderships, even students); and that, not for ideological reasons, but for increasing the quality of the research and the quality of the working environment as well.

This report will provide an overview of academic discussions, displaying the most important interpretations on dynamic governance, innovative tools of public engagement, factors enhancing and hindering public engagement.

In this report we present policy cycle and make an expedient review of dynamic approach linking to participatory performance model. We focus on the "ordinary" research institutions, rather than on the most advanced ones. We aim to develop the conceptual model viewing it, among other things, as a way to structurally incorporate PE into research institutions, explain participatory performance model with respect to its function, extension of levels: policy, programme, project definition and project implementation and aspects: descriptive function (identify relevant policies), explanatory function (identify factors of success and barriers), impact function (the model might help understand/increase our awareness, etc.).

## 1.1. The aim of PE2020

The PE2020 project aims at supporting a shift toward more dynamic governance of the science and society relation by identifying and exploring recent cutting edge PE innovations within this composite and multifaceted field. The aim is furthermore to "develop a tool for science policy actors that helps them identify, evaluate and successfully transfer innovative PE practices among European countries" (PE proposal B 2013:3).

## 1.2. Objectives

The general aim of WP2, as stated in the PE2020 proposal, is to refine the conceptual model that will 1) inform and possibly reorient data collection (WP1), 2) provide conceptual categories that are relevant in identifying contextual factors related to the tailoring of best PE practices (WP3), and 3) help to draw generalizable lessons of PE case studies to be used in the development of the PE design toolkit (WP4).

This report is the additional report of the three-year research project and is both integral and summative report that consists of distilling the results of the literature review and the determination of participatory performance factors. Further, the report overviews existing PE models in relation to dynamic governance and policy cycle and provides the analysis of literature on barriers of PE (majority of high-level scientifically reviewed publications have been published during the last 5 years), and, following them all, leads to theoretically rich, but practicable conceptual model of PE across the dynamically governed research policy

cycle and related participatory performance factors – hindering and enhancing in linkage with findings of survey analysis.

In the synopsis of this report we provide a synthesis of what innovativeness of PE is, how PE is positioned in policy cycle, what propulsive and interfering factors cause the manifestation of PE and, finally, how PE might be integrated in.

In order to reflect on the developed conceptual model against scientific literature to test its validity this report has the following two objectives:

- The first aims to integrate research programmes and projects into policy cycle and dynamic governance into the dynamics of PE with regard to scientific debate;
- The second aims to define the hindering factors of PE in literature.

# 2. Dynamic Governance and Policy Cycle in Scientific Debate: Literature Review

## 2.1. Understanding Dynamic Governance

The recent developments in policy making around Europe revive the traditional forms of governance by promoting participatory democracy and changing the relations between the state and the public. Resulting from these changes in the context of techno-scientific development, new governance approaches are needed to harness the dynamic societal forces to sustainable decisions of future STI. By governance we refer to "the structure and processes for collective decision-making involving governmental and non-governmental actors", also including a 'cognitive dimension' or modes of thought as a relevant component of dynamic governance activity (Irwin, 2008, p. 584; Renn & Graham, 2005, p. 78).

It is due to the 'continuous turmoil' that neither static governance of the science and society relationship nor a stationary set of PE tools and instruments will suffice. The economic and societal evolution will not stop (Schumpeter, 2003). Therefore a dynamic governance of science and society relationship will be needed (Porter, 2007). We will base our conceptualization of dynamic governance on Neo and Chen's (2007) definition:

"Dynamic governance is the ability of a government to continually adjust its public policies and programs, as well as change the way they are formulated and implemented, so that the long-term interests of the nation are achieved. Dynamism in governance is essential for sustained economic and social development in an uncertain and fast changing environment, and in an increasingly demanding and sophisticated society where citizens are more educated and more exposed to globalization." (Porter, 2007, p. 8 in Neo & Chen, 2007).

For Dynamic Governance and adaptive policies (in the right) to be reality, there are several preconditions. The very foundation according to Neo and Chen is the country's institutional culture. On top of it, there need to be specific organizational capabilities and levers to those capabilities (Figure 1). Firstly, there needs to be the capacity to thinking ahead. While in the STI context that can often be extremely tricky – science is exploring the unexplored in terms of "blind variation and selective retention" (Campbell, 1960) – at the very least the policy should stay attuned. Secondly, the policy practitioners (or communities of policy

practitioners) need to be able to critically appraise the once established policies and procedures and keep on revising or even revolutionizing them. Thirdly, trans-boundary considerations or "thinking across" is essential. Constant and rapid learning is increasingly important especially in science, but increasingly also in other areas of society there is a great deal of thinking across.

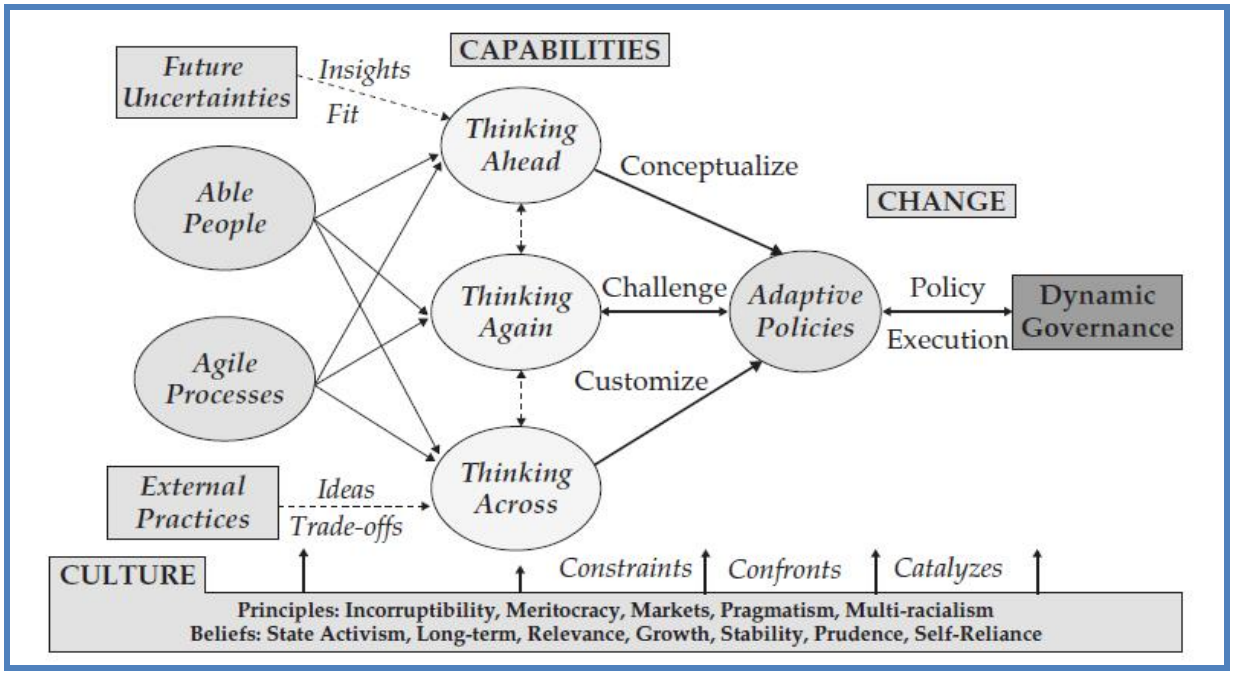


*Figure 1. A Framework for dynamic governance system*
*Source: Porter, 2007, p. 13 in Neo & Chen, 2007*

For dynamic governance to be reality, the three capabilities must be embedded into all aspects of the policy cycle – including policy choice, execution and evaluation. Two further elements – "levers" – must be recognized in the framework of Neo and Chen: able people and agile processes. When it comes to people, the traditional view has been that governance of STI sets extreme requirements upon people due to the complexity and rapid evolution of the field, and is therefore better left to the meritocratic scientific elites. In recent decades, however, a paradigmatic shift has emerged, driven largely by a citizenry that is more educated, aware and willing to have a say, and take an active role in various techno-scientific projects that either threaten or comply with their values, and thus provoke resisting or supportive actions. While this creates a basis for the development of real 'scientific citizenship', the path towards a more participatory culture of STI is not smooth. The public interest towards the future of scientific and technological research is extremely low; the social status of researchers is decreasing; science is often viewed as a threat and a risk by Europeans; the majority of CSOs ignore science and technology and many of them see science as a risk; scientific careers are not particularly attractive for youth and their families. A paradigmatic shift is required in the post-academic context but cannot be taken for granted. For these reasons, smart or 'agile' governance processes (in Neo and Chen's model) are needed to increase the capability of European STI governance. And focus attention to the core capacities of dynamic governance – anticipation, reflection and transdisciplinary communication – that can be boosted by developing context-wise PE tools and instruments. In addition, it is critical on research programme level to develop capacity to adapt – a programme or project executors should consider creating the conditions within which innovation and

adaptation can thrive, and enhance the capacity of leadership – researchers require a sophisticated understanding of society and its needs and talented research leaders lie at the heart of dynamic governance and drive transformation of R&I agenda (Towards Dynamic Governance 2014).

The identified capacities and capabilities include objectives to increase PE among stakeholders and to urge planning authorities to use a range of innovations in the context of dynamic governance. According to Brownill (2009) in theory the promotion of participatory democracy and restructuration of the relationship between the state and its citizens are designed to create re-invigorated, participatory and efficient planning systems built of networking and consensus building. In practice they can be seen as opening up new tensions and dynamics resulting in a contradictory potential for participation as opposed to the image of participatory planning promoted in policy discourses. However, Brownill and Carpenter (2007) argue whether increased participation is compatible with the core aspects of policy planning as speed and competitiveness. Contradictory views on governance reforms suggest an emerging understanding of new forms of planning rather than typifying them as a change from one mode of governance to another (Brownill, 2009). We assume that a strong, empowered and active community is able to make decisions for them and the state facilitates PE while enhancing the forth capacity of dynamic governance continuity. Such relations do not necessarily lead only to a dynamic, but also to a constantly changing situation in which different modes of governance interact with each other (Figure 2).

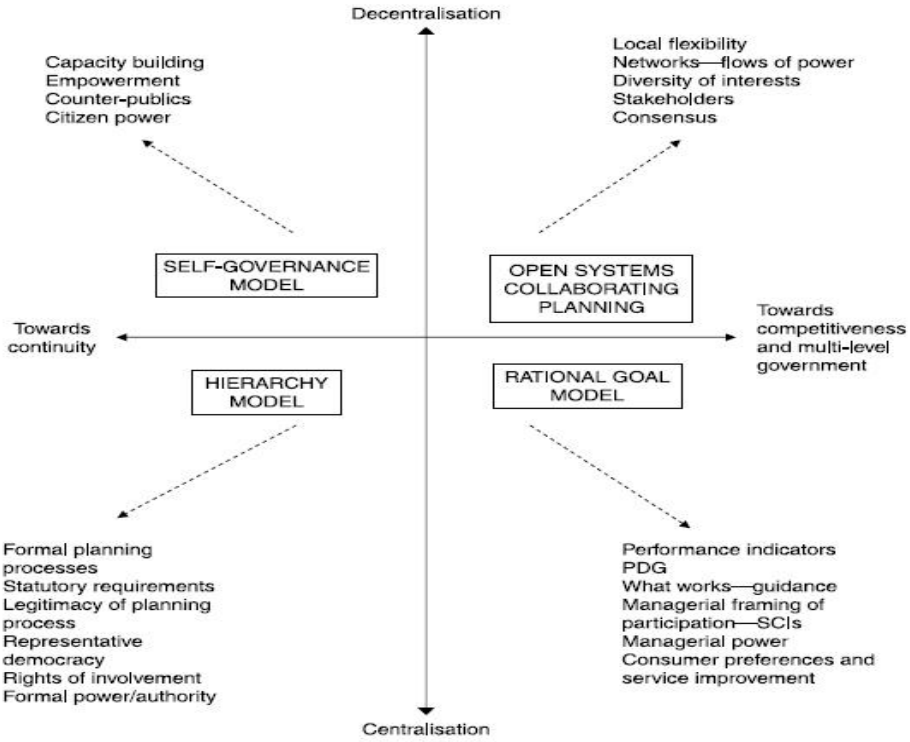


*Figure 2. The Dynamics of Participation in the Reformed Planning System*
*Source: Newman (2001), Brownill (2009)*

Brownill (2009) in his research concludes that all modes of governance seem to impact on the potential for participation, and calls for greater skills and capacity building. Burleson (2013) in her analysis on dynamic governance of climate change defines the need for coordinated information gathering and offers public

private partnership coordination. The dynamics of the relation between different levels of R&I policy making in time and the ways various levels influence each other in the course of time influence the dynamics of governance (Sotarauta & Kautonen, 2007) and bringing these two concepts on analytical leverage helps to understand the fundamentals of dynamics.

We acknowledge that understanding of core elements of governance and regulations should be required not only on macro-political level but also on meso-institutional level. The complexity of citizenship dynamics arises from the fact that different decisions, products may also *offer* benefits to citizens, for example rights to security in health (Davis & Abraham, 2012). While analysing different sources on governance and PE we noticed that there is a gap between theory and practice in understanding policy cycle, especially policy formulation and evaluation, and the role of stakeholders. Literature on policy dynamics reveals that different policy actors and conditional factors tend to shape the policymaking process and its implementation (Neumayer & Plümper, 2012). As far as policy formulation is concerned the most significant factors are technical assistance from donors and the political will of political executives, and in policy implementation - the continuity of institutional leadership, supportive rules, control and management of resources (Aminuzzaman, 2013), which lead to the efficiency of bottom up policy approach.

The PE in R&I is related to conflicts and sometimes even uncertainties. We raise a question whether PE and the changes which appear in this ecosystem might be identified as global phenomenon or at least European with different preferences among states. Could we consider that such collective actions require European collective action with regard to common communication plan or memorandum among stakeholders? Generally speaking the complexity of PE and interactions between different stakeholders ensure that it is impossible to predict how the types and processes of PE will change, and how it will reflect the societal needs, because it is not clear what the optimal approach is. The basic question is how much PE is desirable in research and innovation policy on programme or project level, because it is related not only to the dynamics but also to cost-effectiveness, political feasibility. There might be interactions that might be politically feasible but ineffective. For example, even if some individuals engage, a distributional conflict implies that other individuals continue doing little or nothing. We assume that bottom-up approach is unable to enforce the collective actions and policy makers may simply act on their own, without regard to the public.

Still we believe that minor intervention of public in research and innovation on programme level might create path dependence and increasing returns with regard to dynamic approach. From this view, in our further research in WP3 and WP4 we should focus on finding opportunities that hold the promise of incrementalism.

The nature of policy and governance changes rapidly. And the transformation and creation in the dynamic of governance are implied in interactions and collisions between policy sectors and institutional spheres on the other (Gornitzka, 2010). In addition, the dynamic governance responds quickly to changing circumstances in different sectors and one of its focus is on multiple channels for facilitating civic participation, emergence of a more diverse set of institutional actors and stakeholders leading to the model of network governance (Lee & Thynne, 2011; Murray & van Zimmeren, 2011).

The analysis of dynamic governance on research programme or project level indicates that there should be a broader set of questions asked. Whose interest does a programme serve? Researcher? Competitors? Society? Policy maker? Who is in the best position to address the perspective interests? The legislature?

The programme? The project? Is there a role for the public in this respect? And if so, how could the public optimally operate this role? Such discussion even leads to broader philosophical epistemologies. Are R&I regulations still fulfilling the most basic functions to serve for the society welfare? Are other models more appropriate in an ever-changing R&I policy?

## 2.2. Reviewing Research Policy Cycle

The PE in research policy reveals not only the responsiveness to demands, but it is critical to the acceptance of knowledge and technologies in marketable products. In this section we will shortly present policy cycle and identify interventions undertaken by public. One of the main purposes of this part is to develop an approach to research policy making which will serve as a guide in the analysis of more effective and successful PE and will lead to a better understanding of public influence on decisions. Rather than focus on the patterns of public influence, we will search for criteria employed by policy process in defining whether a PE is worthy of consideration in one or another stage of the policy cycle.

### 2.2.1. Framework of Policy Making

The notion of research policy planning, making research and innovation sector develop and function more effectively, implicitly suggests an organizational framework, clearly defined objectives, mutually agreed choices, rational politicians. In contrast to this, a research policy cycle in SiS context focuses on the content – "what" of societal challenges: issues, programmes, strategies, outcomes and is a serious of overlapping episodes in which a variety of society groups with diverse perspectives are directly or indirectly engaged. And the engagement might be technical and political. The purpose of this section is to suggest a scheme or series of engagement steps through which sound and workable research policy issues can be formulated, and then, through effective PE, put into effect through research programmes and later redesigned if needed.

The policy making models (Dror, 2003) combines majorly two dimension process (Hoekstra, 2014; Smith & Larimer, 2009; Weible, 2011) and actors of policy making (Mugwagwa et al., 2014; Ostrom, 2007; Petridu, 2014; Pieczka & Escobar, 2013), but neither of these dimensions used alone captures the dynamics of policy making. We would suggest combining them in regard with decentralization of policy making and restructure if needed into different configuration. Within the policy making process the combination appears through different models (Hahn, 1987; Newman, 2011): a) institutional model based on traditional organizational approach; b) system model which relies on the main principles of policy cycling; c) rational model refers to analytical approach within political and institutional context, but is technical; d) societal model is driven by dialogues and negotiations, and via e) organizational model decisions are made on institutional level; f) personal model is characterized by self-interest, values and multiple rationalities. We argue that research policy making falls in between different dimensions depending on subjective and objective context and they might be combined at different levels of policy cycle (Figure 3).

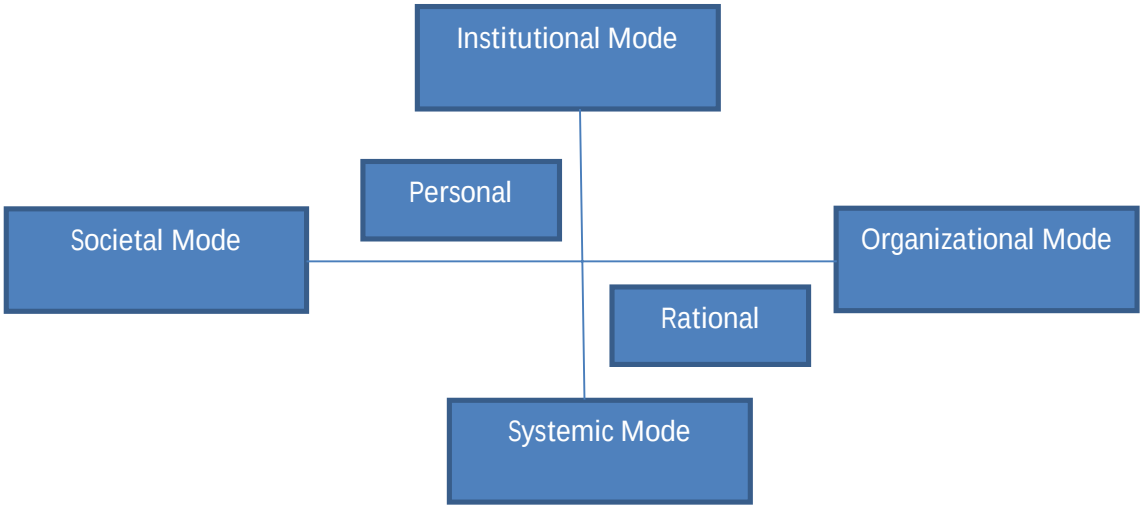


*Figure 3. Dimensions of Policy Making*
*Sources: Hahn, 1987; Newman, 2011*

The suggested framework of policy making is concerned with the human nature with regard to rational behaviour, which are presented in D2.1. In D.1.2 we identified the limitation of knowledge among individuals and ability of making choices among decision makers as the risks for successful PE. Simon (1985) in his analysis on human nature notes that "we must know the choosing organism's goals, the information and conceptualization it has of the situation and its abilities to draw inferences from the situation it possesses". In regard to rational approach we characterize political situation as it appears subjectively to the actors.

One of the important characteristics of research policy is in its linkage with socio-economic issues and research structures. Another set of linkages exists between research system and socio-economic sector, where research organization is seen as a solution to a range of socio-economic problems. Therefore any changes on programme level are not technical but have socio-economic dimensions as well.

Internally, the whole research system is a complicated multilevel network of institutions interlocking horizontally and vertically. A political decision in any component of this system can have repercussions in the system overall. Externally, research and innovation is in the interest of many stakeholders. Policy making, therefore, involves balancing a number of contradictory demands from business and researchers, and at the same time trying to meet societal needs.

### 2.2.2. Illustrating Policy Cycle

The changes in research policy are normally a response to a societal problem or set of problems in different sectors: energy, security, economy, culture, etc. starting with an appreciation of these sectors and their context. In addition, a number of aspects of research and innovation should be also considered. The societal issues of different political areas are likely to affect decision making and even implementation processes of research policy. The literature on public policy or policy process research is less descriptive

regarding the influence of policy process (Pieczka & Escobar, 2013; Protogerou et al., 2010; Weible et al., 2011).

The policy making process is more complicated with regard to traditional policy cycle, because it implies networking among different stakeholders. Such network governance structures do not simply appear, but are determined by decision makers, based on what form is most likely to be effective (Elson, 2014) at that level of policy cycle. With regard to research policy cycle we would call it a chaotic and confusing network (Figure 4).


*Figure 4. Engagement Networks in Policy Cycle*
*Source: Wellcome Trust*

In general, all policy making modes help to clarify understanding of politics and the input of PE might be used in different steps of policy cycle and different ways of knowledge transfer. Various public groups are concerned with the development of research and innovation policy, but the mayor group is policy group. We argue that assimilation of knowledge by policy makers is a major element impacting policy change (Teirlinck et al., 2013) and one of the main engagement channels of public into policy making is through scientific community (Figure 5). Such groups function as a learning and teaching network integrating public more effectively on research programme or project level in comparison to policy makers. The societal initiatives do not directly lead to definite impact to solve societal problems (Geritzen, 2013); however, it finds direct justification in science community, which has less engagement boundaries with bureaucrats and politicians.

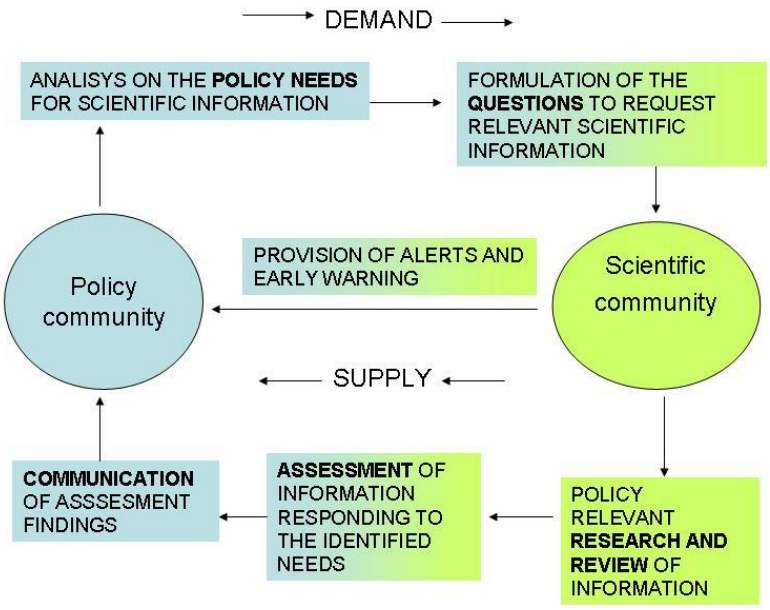


*Figure 5. The process of science-policy interface*
*Source: Intergovernmental Platform on Biodiversity and Ecosystem Services*

Policy making field fails to produce a single unifying process (Smith & Larimer, 2009) and the strength of research policy process lies in the multiple research programs (Weible, 2011), which encourages policy process scholars to meet multiple perspectives (Loehle, 1987). In the context of social construction we self-construct the common meanings through mutual interaction, using them in everyday life and interpreting elements of our social and cultural life (Berger et al., 1999; Brown et al., 2007). However, this does not suggest that individuals always have unanimous agreement on each element of life, i.e. there exists a myriad of subjective and controversial perceptions, based on certain validity and its competitiveness in social situations. Therefore, in the paradigm of social construction language has the important role, presented with the help of discourse: oral language, written texts, socially understandable signs which later show the behavioural sequence. They all help to achieve a concrete aim, oriented to change, and requiring that individuals have to agree on certain meanings. From the perspective of research policy cycle, it is assumed that socially constructed world, with society and policy within, is definitely interconnected.

If a societal problem or policy initiative is carried out systematically via research programmes or projects, the process of policy planning, implementation, impact assessment, etc. becomes infinite. However, research policy planning, implementation and re-design are not always carried in such a “tradition”. Often the results of PE via scientific community are not ploughed into policy. Instead societal needs and its verification are often needed to end up with the chapters of legal documents on a policy initiative. And later when a policy change is needed in the research and innovation area under discussion, a policy process often begins with new oral discussions and e-forums, may duplicate much of the analysis, derivation of public opinions and bureaucratic options, evaluation and even planning carried out previously. The conclusion, then, of policy cycle in SiS is never to conclude, and optimally, once implementation is

completed and policy outcomes are forthcoming, impact assessment of research programmes ensues, leading to a new policy cycle (UNESCO, 2008).

In the analysis of literature on governance the "open" modes has raised considerable attention with regard to the role of public in policy making (Benz, 2007; Gerritzen, 2013; Borras, 2011) defining principles of deliberation, competition, and reflexivity. On the one hand, public discussion may reinforce the incentives for governments to change their policy if this is supported by the public. On the other hand, it can turn deliberation into debates, i.e. shift the emphasis from searching best practices towards competitive bargaining among parties and organized interests (Rose, 1993). We believe that open dynamic policy cycle is induced to achieve best practices and optimal decisions related to societal needs through information, delegation and consultation (Figure 6).

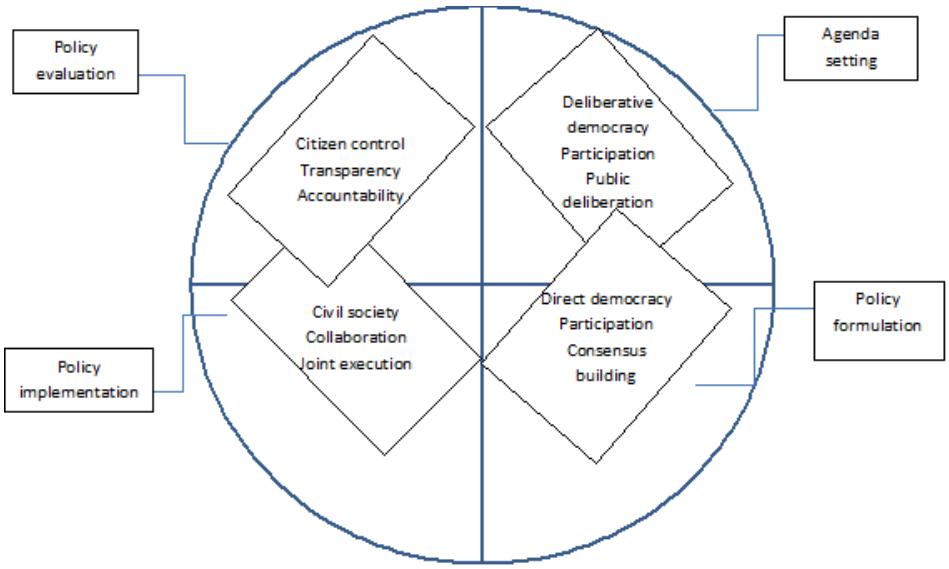


*Figure 6. Open Dynamic Policy Cycle*
*Source: Ortiz de Zarate, 2011; Gerritsen, 2013*

Typically various groups have different understanding and values about the role of research and innovation. As research and innovation is likely to represent access to economic and political power, different interests in research and innovation also mean different access into policy cycle or power. The political, economic or social context itself, namely called as Steiner's Threefold Social Order, is important as much as it influences the subjective representation (Steiner, 1919) We also found that a limited ability and willingness of public to commit themselves to engage in different levels of policy cycle is one of the barriers for the dynamic functioning of policy cycle in SiS context. It is crucial with regard to PE activities to engage different groups of public, which should be equipped with skills required for each level of policy cycle, in order to have impact. In addition, the successfulness of PE cannot be accepted on its own terms at conceptual level because it needs to be confronted with PE practices and also understanding of different audience needs (Pieczka & Escobar, 2013). It should be noted that different political actions at national or European level fostering science and innovation policies are oriented towards the stimulation of economic

growth and enhancing competitiveness. Under this assumption, Derrick and Pavone (2013) argue that not all positions and approaches of PE stand on equal epistemic and economic ground.

While interpreting theoretical and empirical insights of the policy process, it is worth distinguishing political elite relative to development of research policy, those representing business elite relative to business and research elite relative to research. It is not only that the political elite may have different plans, but in many European countries there is autonomy provided to research sector. Also there might be different sets of objectives or at least not tightly linked to each other and it is important that decision makers identify clear objectives and expectations (Haddad, 1994). We assume that the capacities of political institutions, the professional background of bureaucrats and politicians might affect the ideology of public engaged in policy making. In addition the institutional structure in policy cycle might also have implications on the development of research policy on programme level or even project level. In line with stakeholder theory we believe that the analysis of values and preferences of different stakeholders need to be calculated as part of the pilot cases in WP3. The policy develops and moves through the levels of policy cycle, and new actors or institutions are obliged to engage bringing different knowledge and having different motivations. (Figure 2).

While defining the capacities of public to be engaged in research policy making, we will need to understand the economic situation, to estimate the possible trends in the various sectors in the future, even the financial resources at national or European level, and in addition what economy and society require from the research and innovation sector. Our further research in WP3 with regard to PE and the influence of different society groups should also take into consideration the evolutionary nature: how PE in research have developed and changed over time? We assume that the meeting of one societal need or solution of a problem frequently creates another issue. For example, the provision of new research infrastructure leads to issues about the quality of research performed and the initiative of new research projects. An evolutionary perspective on the dynamics research policy allows understanding why a particular research programme or project is being advocated or implemented at the moment.

Once public is engaged in different levels of policy cycle, another dilemma on the choice of options appears. Ideally, in policy making every option is evaluated only if alternative options are developed to allow the estimations of implementation of the options considered. Though a certain option might be imported successfully if it meets the needs of particular interest groups, in many existing cases an option is evaluated in terms of desirability, affordability and even feasibility. The variety of public interests requires that the final decision *engineers'* different interests, but the resulting policy may not be optimal for any group engaged, however, it is necessary to have a broad base of political support in implementation phase (UNESCO, 2008). We believe that PE in research policy cycle should be especially supported in research policy implementation, evaluation. In addition, the principles of PE should be clearly structured through definition of goals and scope, targeted engagement, building the structure of an engaged group, convention and dissemination.

Despite rapid growth in PE worldwide, it is uncertain whether decision-makers possess sufficient information to fully evaluate the benefit of engagement. The analysis of literature reveals that though research policy moves towards more participatory approaches, PE at research programme level is less considered. Increasing cautiousness in policy and industry creates an imperative for improved PE, and the important role of public should be defined in the evaluation of research programmes (Jasanoff, 2004; Lengwiler, 2008; Saurugger, 2010). The evaluation of research programmes should become more transparent and participatory. This participation should not only promote scientific excellence within the

academic community but also improve accessibility for both the lay public and other members of the academic community (Dror, 2003). We believe that PE in the evaluation of research programmes opens new pathways for collective action and is especially suited for solving complex societal problems.

The literature analysis revealed the major component of dynamic governance – continuity, and also one the most important role in policy cycle in the SiS context for public- PE in evaluation stage. In our further research in WP3 the principles of engagement should be identified, because, the principles of engagement are important way of systematizing engagement practice, allowing for evaluation and improvement to practice (Chilver, 2008; Rowe & Frewer, 2000). In addition, these principles will be a central component of Toolkit, as well as qualitative data, engagement activities and the barriers for functioning of dynamic governance in research and innovation. The policy cycle perspective is closely connected to degree of policy changes and identification of factors which are responsible for the changes.

## 3. Barriers of Public Engagement in the Scientific Debate

In this section we will summarize the barriers of PE that we identified in the analysis of literature review performed for D.2.1 and 2.2. The main emphasis is put on the passivity of lay people to PE (Cook, 2014; Sturgis, 2014) which accordingly embodies diverse metaphors such as 'engagement fatigue' (Stilgoe et al., 2014), 'tyranny of participation' (Delgado et al., 2011). The unwillingness to get involved in PE is explained by the following factors:

- Distrust that has accidentally arisen due to failures in communication between science and society (Groves, 2011);
- Failure in choosing the methodological approach to connect views of different groups together (Mohr, 2011);
- Fulfilment of formalities, no sensitiveness to PE (Cook, 2014);
- Lack of legitimacy of their voices at the stage of designing a rule (Cook, 2014);
- Participation in PE is considered as an optional extra onus (Neresini & Bucchi, 2011);
- Wrong time chosen to organize PE initiatives (Delgado et al., 2011).

The identified factors hindering PE activities are connected to reasonable explanations: different attitudes in diverse cultures and contexts, scarce education before consultation on PE (Cook, 2014; Neresini & Bucchi, 2011), mistrust because of former experience, memories of generations (Simmonds, 2008), lack of networks (Klassen et al., 2011), uncertain impact of PE (it can be hard to lay people to understand the point of the PE exercise and the technology related), then democratic deficit that is related to procedures to channel public opinion into the national democratic procedures (Smith et al., 2011), national culture of public debate (Cormick, 2012; Talwar et al., 2011; van Est, 2011; Wilkinson et al., 2011; Wynne, 2011). Looking at such spectrum of reasons, it is necessary to shed light at how PE becomes a quandary because of one or other stakeholder's behaviour.

As Rowe et al. (2005) assert the involvement of all lay people is important because it addresses a range of functions that vary from financial, practical, ethical / moral to research-related. In general, PE concept is criticized of being subjective and limited. This criticism is addressed due to the following factors:

- Hierarchical relations among PE participants or 'elite voices' (Caputo, 2010; Cook, 2014).

- Selection of PE participants according to their educational levels and age groups (Smith, 2014).
- Minority views downplayed (Mohr, 2011).
- Attitude towards PE participants – 'users' or 'customers' (Mohr, 2011). This attitude may suggest ethical shadow.
- Not enough public debate on certain topic (Smith et al., 2011).

Particular challenges have been recognized in how PE operates in the context of policymaking, and policy makers are often accused of being imprecise, lacking of accountability and dialogue: manipulation of the final outcomes of the consultation (Cook, 2014), manipulation of public opinion (Mohr, 2011), limited legitimation of PE exercises (Shineha & Kato, 2009; Stilgoe et al., 2014), fail to incorporate the evaluation of PE activities into practices and organizational cultures and invest in the evaluation of PE activities (Neresini & Bucchi, 2011), people are unfamiliar with the policy issues (PytlikZillig et al., 2011). Hence, taking these risks and issues in consideration, it is obvious that making decisions without public support results in a myriad of practical difficulties, such as confrontation or public distrust (Rowe et al., 2005). Similarly, researchers are blamed of being isolated from lay people and not having any interest in interacting with lay people. Still, there are some that heavily take part in PE initiatives and projects (Neresini & Bucchi, 2011). The explanation for the lack of interest in PE activities is the lack of institutionalised recognition to PE activities as one of merits for their research or career. Till now, researchers (scientists) strive to evade PE because of limited resources and the pressure to publish (Mahony, 2015). Therefore, policy makers and researchers should find ways of engaging lay people in decision making and research programmes (Bickerstaff et al., 2010) in order to improve the dynamics of governance.

Ambiguously, the payment for PE participants is controversial. On the one hand, they participate in some PE initiative or project during their work hours, and it is self-evident that costs should be covered. On the other hand, the question is related to ethical dilemma – do we buy the voice of PE and do we manipulate these voices to get the desired result? (Guston, 2014) Also, ethical dilemma extends towards what the expert and public knowledge is. In scientific debate, distinctions between expert and non-expert knowledge collapse (Miah, 2005). Therefore, the question becomes more complicated – should researchers themselves participate in PE initiatives or projects or should there be certain 'translators'? Such discussions suggests that there is still a lack of clear and ordinary verbalisation (Cook, 2014).

# 4. Participatory Performance Factors in the Scientific Debate

## 4.1. Innovativeness of Public Engagement Factors

Taking in consideration a high number of different discussions and definitions of what innovativeness of PE is. It must be elaborated in relation with the time and context. We distinguished two types of drivers for the changing practice of PE (see also D2.1. and D2.2.):

- Necessity to find more effective responses to the societal challenges and other problems of governance, such as decreased trust toward decision makers or societal acceptance of technological solutions.
- Emerging opportunities provided by new information and communication technologies that provide new tools for the practice of governance, for example, crowd-sourcing for the formulation

of public policies, or citizen science for providing evidence of new phenomena and research issues that are important for the public at large or some local groups of citizens.

According to these highlights, innovativeness of PE refers to the following key points:

- Innovativeness is, in general, a concept receptive of multiple interpretations and therefore difficult to manage;
- Innovativeness of PE should be viewed as a context-sensitive concept, being innovation strongly related to the institutional, organisational and cultural context where PE activities are carried out;
- Innovativeness in PE practices can be appreciated only in historical or evolutionary terms, that is observing how they change over the time in line with changing contextual conditions;
- There is also a perceptual components of what is innovative and what is not to be taken into account;
- At least two main drivers of innovation can be identified: societal challenges and technological changes.

## 4.2. Making Public Engagement Successful

Providing a synthesis of literature review we identified hindering factors of PE (for enhancing factors see D2.2.). This information is necessary to understand how PE might be successful or to make PE successful, especially with the insight to use it in the policy cycle as enriching and evidence-based component of activity. The defined factors are related to the quality of governance and research, better interaction and communication:

- *Passivity of lay people* that, in general, comes from distrust, different failures, lack of legitimacy, formal approach, absence of public debating (Cook, 2014; Delgado et al., 2011; Groves, 2011; Mohr, 2011; Neresini & Bucchi, 2011).

- *Apathy of policymakers* that derives from being imprecise, lacking of accountability and dialogue, giving limited legitimation of PE activities (Cook, 2014; Mohr, 2011; Shineha & Kato, 2009; Stilgoe et al., 2014; Neresini & Bucchi, 2011).

- *Drift of researcher (scientist)* which refers to being isolated from and lacking of interaction with lay people (Neresini & Bucchi, 2011).
- *Imbalance of different character of obstacles of PE projects / initiatives* such as administrative (managerial), capacities-based, cultural, economic, environmental, ethical, legal, political, technical, *force majeure.* The prevailing hindrances for PE are of managerial and cultural characters.

In D2.2. we elaborated the participatory performance model (see D2.2.), however literature review helped us to identify additional dimensions:

- *organizational capabilities:* the capacity of thinking ahead, ability to react continuously to policy and procedures, trans-boundary considerations (Neo&Chen, 2007)
- *cultural dimensions:* power distance, individualism, masculinity, uncertainty avoidance, pragmatism, indulgence (Hofstede, 2015)

## 5. Summing up

We constructed conceptual model with regard to capacities of dynamic governance and with regard to time limit and bottom up approaches (see also D2.2.). Literature review had a limited influence while implementing the goals of PE2020, still in correlation with survey analysis it elaborated our understanding of dynamic governance, innovativeness of PE and factors, which enhance PE. While orienting our future research on cultural dimensions, level of PE, experience and knowledge of public and researchers and other capacities, we identified capacities of dynamic governance like anticipation, reflection, transdisciplinary communication, reputation of researchers and policy makers, continuity (see discussion in D2.2.) and also additional dimensions of participatory performance.

## References


Aminuzzaman, S. M. (2013). Dynamics of Public Policy: Determinants of Policymaking and Implementation in Bangladesh. *Public Organization Review*, Vol. 13, Iss. 4, pp. 443-458.

Bailer-Jones, D. M. (2003). When scientific models represent. *International Studies in the Philosophy of Science,* Vol. 17, Iss. 1, pp. 59-74.

Benz, A (2007). Accountable Multilevel Governance by the Open Method of Coordination. European Law Journal, Vol 13, pp. 505-522.

Berger, P. L., Luckman, T. (1999). *Socialinės tikrovės konstravimas: žinojimo sociologijos traktata*s. Vilnius: Pradai.Bickerstaff, K., Lorenzoni, I., Jones, M., Pidgeon, N. (2010). Locating Scientific Citizenship: The Institutional Contexts and Cultures of Public Engagement. *Science, Technology & Human Values*, Vol. 35, Iss. 4, pp. 474-500.

Börner, K., Boyack, K. W., Milojević, S., Morris, S. (2012). *An Introduction to Modeling Science: Basic Model Types, Key Definitions, and a General Framework for the Comparison of Process Models*. In: Models of Science Dynamics, eds. Andrea Scharnhorst, Katy Börner, Peter van den Besselaar. Berlin, Heidelberg: Springer, pp. 3-22.

Borras, S.(2011). The Politics of the Lisbon Agenda: Governance Architectures and Domestic Usages of Europe. Journal of European Public Policy. Volume 18, pp. 463-484.

Brown, B. J., Baker, S. (2007). *Philosophies of Research into Higher Education*. London, New York: Continuum International Publishing Group.

Brownill, S. (2009) The Dynamics of Participation: Modes of Governance and Increasing Participation in Planning. *Urban Policy and Research*, Vol. 27, Iss. 4, pp. 357-375.

Brownill, S., Carpenter, J. (2007). New improved participatory planning? The Planning Aid Experience. *Town and Country Planning*, Vol. 76, Iss. 1, pp. 26-29.

Burleson, E. (2013) Climate Change and Natural Gas Dynamic Governance. *Case Western Reserve Law Review*, Vol. 63, Iss. 4, pp. 1217-1277.

Campbell, D. T. (1960). Blind Variation and Selective Retention in Creative Thought as in Other Knowledge Processes. *Psychological Review*, Vol. 67, Iss. 6, pp. 380–400.

Caputo, R. K. (2010). Family Characteristics, Public Program Participation, & Civic Engagement. *Journal of Sociology & Social Welfare*, Vol. XXXVII, No. 2, pp. 35-61.

Cook, P. S. (2014). Institutional frameworks and terms of reference: The public discussion on clinical xenotransplantation in Australia. *Science and Public Policy*, Vol. 41, Iss. 5, pp. 673-684.

Cormick, C. (2012). The complexity of public engagement. *Nature Nanotechnology*, Vol. 7, pp. 77-78.

Cultural dimensions. Available at http://geert-hofstede.com/countries.html.

Davis, C., Abraham J. (2012). The political dynamics of citizenship, innovation, and regulation in pharmaceutical governance. *Innovation: The European Journal of Social Science Research*, Vol. 25, Iss. 4, pp. 478-496.

Delgado, A., Kjølberg, K. L., Wickson, F. (2011). Public engagement coming of age: From theory to practice in STS encounters with nanotechnology. *Public Understanding of Science*, Vol. 20, Iss. 6, pp. 826-845.

Derrick, G. E., Pavone, V. (2013). Democratising research evaluation: Achieving greater public engagement with bibliometrics-informed peer review. *Science and Public Policy*, Vol. 40, pp. 563-575.

Dynamic Governance. Available at: http://www.governancealive.com/dynamic-governance/.

Elson, R. (2014). Third wave, third sector: A Comparative provincial analysis of the governance of third sector relations. Canadian Public Administration. Volume 57, pp. 527-547.

Gornitzka, A. (2010). Bologna in Context: a horizontal perspective on the dynamics of governance sites for a Europe of Knowledge. *European Journal of Education*, Vol.45, Iss. 4, pp. 535-548.

Groves, Ch. (2011). Public engagement and nanotechnology in the UK: restoring trust or building robustness? *Science and Public Policy*, Vol. 38, Iss. 10, pp. 783-793.

Guston, D. H. (2014). Building the capacity for public engagement with science in the United States. *Public Understanding of Science*, Vol. 23, Iss. 1, pp. 53-59.

Haddad, W(1994). The Dynamics of Education Polcymaking: Case studies of Burkina, Faso, Jordan, Peru and Thailand. Available at: http://elibrary.worldbank.org/doi/abs/10.1596/0-8213-2660-0

Hahn, A. J. (1987). Policy making models and their role in policy education. *Increasing Understanding of Public Problems and Policies*, Policies, pp. 222-235.

Hoekstra, A., Kaptein M. (2014). Understanding Integrity Policy Formation. Public Integrity, Volume 16. pp. 243-264.

Irwin, A. (2008). STS Perspectives on Scientific Governance. In: *The Handbook of Science and Technology Studies*. Eds. Edward J. Hackett, Olga Amsterdamska, Michael Lynch, Judy Wajcman. London: MIT Press, pp. 583-607.

Jasanoff, S. (2004). Science and Citizenship: a New Synergy. *Science and Public Policy*, Iss. 31, pp. 90-95.

Klassen, J. A., Feldpausch-Parker, A. M. (2011). Oiling the gears of public participation: the value of organisations in establishing Trinity of Voice for communities impacted by the oil and gas industry. *Local Environment*, Vol. 16, No. 9, pp. 903-915.

Lee, E., Thynne, I. (2011). Symposium Introduction: Dynamics of Governance and Civic Engagement. *Public Administration and Development*, Vol. 31, pp.75-82.

Lengwiler, M. (2008). Participatory Approaches in Science and Technology. *Science, Technology and Human Values*. Vol 33, pp. 186-200.

Mahony, N. (2015). *Designing Public-Centric Forms of Public Engagement with Research*. The Open University, Milton Keynes. Available at: http://oro.open.ac.uk/42551/7/Holliman.pdf.

Miah, A. (2005). Genetics, cyberspace and bioethics: why not a public engagement with ethics? *Public Understanding of Science*, Vol. 14, pp. 409-421.

Mohr, A. (2011). Publics in the Making: Mediating Different Methods of Engagement and the Publics These Construct. Commentary on: "Technologies of Democracy: Experiments and Demonstrations". *Science and Engineering Ethics*, Vol. 17, Iss. 4, pp. 667-672.

Mugwagwa, J., Watkins, A., Papaioannou, T, Dinar, K. (2014). National Innovation Systems, developing Countries, and the Role of Intermediaries: A Critical Review of the Literature. 15th International Conference of the International Joseph A. Schumpeter Society. Available at: http://oro.open.ac.uk/40722/9/Watkins.pdf

Murray, K. N., van Zimmeren, E. (2011). Dynamic Patent Governance in Europe and the United States: The Myriad Example. *Cardozo Journal of International & Competitive Law*, Vol. 19, pp. 287-342.

Neo, B. S., Chen, G. (2007). *Dynamic Governance. Embedding Culture, Capabilities and Change in Singapore*. Singapore: World Scientific Publishing.

Neresini, F., Bucchi, M. (2011). Which indicators for the new public engagement activities? An exploratory study of European research institutions. *Public Understanding of Science*, Vol. 20, Iss. 1, pp. 64-79.

Neumayer, E., Plümper, T. (2012). Conditional spatial policy dependence: theory and model specification. *Comparative Political Studies*, Vol. 45, Iss. 7, pp. 819-849.

Newman, J. (2005). *Remaking Governance: Peoples, Politics and the Public Sphere*. Bristol: Policy Press.

Newman, J. (2001). *The dynamics of institutional change*. In: Modernizing Governance: New Labour, Policy and Society. London, Thousand Oaks, New Delhi: Sage publications. Chapter 2, pp. 26-39.

Ortiz de Zarate, A. (2011). Implementing the New Open Government Principles to the Public Policy Cycle. Available at: http://www.slideshare.net/alorza/implementing-the-open-government-principles-to-the-public-policy-cycle

Ostrom, E. (2007). Institutional Rational Choice: An Assessment of the Institutional Analysis and Development Framework. In Theories of the Policy Process, ed. P.A. Sabatier. Cambridge: Westview Press, pp. 21-64.

Petridu, E. (2014). Theories of the Policy Process: Contemporary Scholarship and Future Directions. Policy Studies Journal, Volume 42, pp. 12-32.

Pieczka, M., Escobar, A. (2013). Dialogue and science: Innovation in policy-making and the discourse of public engagement in the UK. *Science and Public Policy*, Vol. 40, pp. 113-126.

Porter, M. E. (2007). Foreword. In: Neo, B. S., Chen, G. *Dynamic Governance. Embedding Culture, Capabilities and Change in Singapore*. Singapore: World Scientific Publishing. Pp. vii-viii.

Protogerou, a., Caloghirou, Y., & Lioukas, S. (2011). *Dynamic capabilities and their indirect impact on firm performance. Industrial and Corporate Change*, 21(3), pp. 615–647.

PytlikZillig, L. M., Tomkins, A. J., Muhlberger, P., Pardy, R. L., Morris, T. J., Dzenis, Y. A., Turner, J. A., Collins, T. P. (2011). Using Public Engagements to Provide Input and Insights into Policy, Legal, Ethical, and Other Impacts of Science. *The International Journal of Science in Society*, Vol. 2, No. 3, pp. 273-290.

Renn, O., Graham, P. (2005). *White paper on risk governance. Towards an integrative approach*. Geneva: International Risk Governance Council.

*Reputation equity*. UK registered design No. 4019241. Available at: http://marlandsykes.com/reputation-equity.php.

Daron, A., Robinson J. (2011) Why Nations Fail: The Origins of Power, Prosperity, and Poverty. New York: Crown Business.

Rose, R. (1993). *Lesson Drawing in Public Policy. A Guide to Learning across Time and Space*. Chatham: Chatham House.

Rowe, G. L., Frewer, L. J. (2000). Public Participation Methods: A Framework for Evaluation. *Science, Technology, & Human Values*, Vol. 25, No. 1, pp. 3-29.

Rowe, G., Horlick-Jones, T., Walls, J., Pidgeon, N. (2005). Difficulties in evaluating public engagement initiatives: reflections on an evaluation of the UK *GM Nation?* public debate about transgenic crops. *Public Understanding of Science*, Vol. 14, pp. 331-352.

Saurugger, S. (2010). Transforming Instruments. Why and How do Instruments of Participation Change in the European Union? Available at: http://oxpo.politics.ox.ac.uk/ publications/working_papers/wp_10-11/ OXPO_10_11d_Saurugger.pdf

Schumpeter, J. A. (2003). *Capitalism, Socialism and Democracy*. London, New York: Routledge.

Shineha, R., Kato, K. (2009). Public engagement in Japanese policy-making: a history of the genetically modified organisms debate. *New Genetics and Society*, Vol. 28, No. 2, pp. 139-152.

Simmonds, G. (2008). African American Participation in Public Health Research. *The ABNF Journal*, Vol. 19, Iss. 2, pp. 69-72.

Simon, H. (1985). Human Nature in Politics: the Dialogue of Psychology with Political Science. American Political Science Review, Vol 79, pp.293-304.

Smith, C. (2014). Public Engagement in Prioritizing Research Proposals: A Case Study. *SAGE Open*, pp. 1-10.

Smith, K. B., Larimer, Ch. W. (2009). *The Public Policy Theory Primer*. ???: Westview Press.

Smith, K. L., McPhail, B., Ferenbok, J., Tichine, A., Clement, A. (2011). Playing with surveillance: The design of a mock RFID-based identification infrastructure for public engagement. *Surveillance & Society*, Vol. 9, Iss. 1/2, pp. 149-166.

Sotarauta, M., Kautonen, M. (2007). Co-evolution of the Finish National and Local Innovation and Science Arenas: Towards a Dynamic Understanding of Multi-level Governance. *Regional Studies*, Vol. 41, No. 8, pp. 1085-1098.

Steiner, R. (1919). The Threefold Social Order. Available at: http://www.rudolfsteineraudio.com/threefoldsocialorder/threefold.html.

Stilgoe, J., Lock, S. J., Wilsdon, J. (2014). Why should we promote public engagement with science? *Public Understanding of Science*, Vol. 23, No. 1, pp. 4-15.

Sturgis, P. (2014). On the limits of public engagement for the governance of emerging technologies. *Public Understanding of Science*, Vol. 23, No. 1, pp. 38-42.

Talwar, S., Wiek, A., Robinson, J. (2011). User engagement in sustainability research. *Science and Public Policy*, Vol. 38, No. 5, pp. 379-390.

Teirlinck, P, & Spithoven, A (2013). Research collaboration and R&D outsourcing: Different R&D personnel requirements in SMEs. Technovation, 33(4), 142–153.

*Towards Dynamic Governance 2014*. European Corporate Governance Report. Heidrick & Struggles International. Available at: http://www.heidrick.com/~/media/Publications%20and%20Reports/European-Corporate-Governance-Report-2014-Towards-Dynamic-Governance.pdf.

Policy guidelines on Inclusion in Education, UNESCO, 2008. Available at: http://unesdoc.unesco.org/images/0017/001778/177849e.pdf

Urpelainen, J. (2013). A model of dynamic climate governance: dream big, win small. *International Environmental Agreements*, Vol. 13, pp. 107-125.

Van Est, R. (2011). The Broad Challenge of Public Engagement in Science. Commentary on: "Constitutional Moments in Governing Science and Technology". *Science and Engineering Ethics*, Vol. 17, No. 4, pp. 639-648.

Weible, Ch. M., Sabatier, p. (2011) The Advocacy Coalition Framework:Innovations and Clarifications. Theories of the Policy Process. Available at: https://cursodeposgrado.files.wordpress.com/2011/08/libro-sabatier.pdf

Wilkinson, C., Bultitude, K., Dawson, E. (2011). "Oh Yes, Robots! People Like Robots; the Robot People Should do Something": Perspectives and Prospects in Public Engagement With Robotics. *Science Communication*, Vol. 33, Iss. 3, pp. 367-397.

Wynne, B. (2011). Lab Work Goes Social, and Vice Versa: Strategising Public Engagement Processes. Commentary on: "What Happens in the Lab Does Not Stay in the Lab: Applying Midstream Modulation to Enhance Critical Reflection in the Laboratory". *Science and Engineering Ethics*, Vol. 17, Iss. 4, pp. 791-800.