Inclusive Risk Governance: Concepts and Application to Environmental Policy Making

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ABSTRACT
The concept of inclusive risk governance is based on a normative belief that the integration of knowledge and values can best be accomplished by involving those actors in the decision-making process that are able to contribute all the respective knowledge as well as the variability of values necessary to make effective, efficient, fair and morally acceptable decisions about risk. In the risk arena the major actors are governments, the economic sector, scientific communities and representatives of civil society. The paper addresses the conceptual issues of how to integrate the contributions of the different actor groups in risk governance. Who and what is or should be included in the deliberations, and how is closure accomplished or reached in such settings? The main thesis in the paper is that these two questions can only be answered in the context of six underlying concepts of deliberation in democratic societies. Copyright © 2009 John Wiley & Sons, Ltd and ERP Environment.

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Introduction

DECIDING ABOUT THE LOCATION OF HAZARDOUS FACILITIES, SETTING STANDARDS FOR CHEMICALS, MAKING decisions about clean-ups of contaminated land, regulating food and drugs and designing and enforcing safety limits have one element in common: these activities are collective endeavours to understand, assess and handle risks to human health and the environment. These attempts are based on two requirements. On the one hand, risk managers need sufficient knowledge about the potential impacts of the risk sources under investigation and the likely consequences of the different decision options to control these risks. On the other hand, they need criteria to judge the desirability or undesirability of these consequences for the people affected and the public at large (Rowe and Frewer, 2000; Horlick-Jones et al., 2007). Criteria on desirability are reflections of social values such as good health, equity or efficient use of scarce resources. Both components—knowledge and values—are necessary for any decision-making process independent of the issue and the problem context.

The main focus of this paper is on inclusive risk governance and its application to environmental policy making. This concept is based on a normative belief that the integration of knowledge and values can best be accomplished by involving those actors in the decision-making process that are able to contribute all the respective knowledge as well as the variability of values necessary to make effective, efficient, fair and morally acceptable decisions about risk (Tuler and Webler, 1995; Webler, 1995; IRGC, 2005).
The following section of the paper will explain the concept of inclusive governance using the key terms inclusion and closure. Different concepts of inclusive governance are described in the next section. The distinction is made between functional, (neo)liberal, deliberative, anthropological, emancipatory and postmodern concepts. In the fourth section we shall focus on a combination of deliberative and functional approaches called the analytic–deliberative process (Stern and Fineberg, 1996; US National Research Council, 2008). Such a process is designed to provide a synthesis of scientific expertise, a common interpretation of the analysed relationships and a balancing of pros and cons for regulatory actions based on insights and values. The fifth section summarizes the results and points out various policy implications of the paper. The paper is focused on the conceptual aspects of participation and does not address the institutional means and processes needed to implement these concepts.

Inclusion and Closure

Each decision-making process has two major aspects: what and whom to include, on the one hand, and what and how to select (closure), on the other (Hajer and Wagenaar, 2003; Stirling, 2004). Inclusion and closure are therefore the two essential parts of any decision- or policy-making activity. Classic decision analysis has been offering formal methods for generating options and evaluating these options against a set of predefined criteria. With the advent of new participatory methods, the two issues of inclusion and selection have become more complex and sophisticated than purported in these conventional methods.

Inclusive governance is based on the assumption that all stakeholders have something to contribute to the process of risk governance and that mutual communication and exchange of ideas, assessments and evaluations improve the final decisions rather than impeding the decision-making process or compromising the quality of scientific input and the legitimacy of legal requirements (see similar arguments in the work of Webler, 1999; Renn, 2004). As the term governance implies, collectively binding decisions cannot be confined to governments. Rather it involves the four central actors in modern plural societies: governments, economic players, scientists and civil society organizations.

The interplay of these four major players can result in a more adequate representation of pluralism of perspectives, knowledge claims and values (see Engelen et al., 2008, p. 3; Rauschmayer et al., 2009). Inclusive governance, as it relates to the inclusion part of decision making, requires that there has been a major or clear attempt to (Trustnet, 1999; Webler, 1999; Wynne, 2002; Renn, 2008, p. 274)

- involve representatives of all relevant actor groups (if appropriate),
- empower all actors to participate actively and constructively in the discourse,
- co-design the framing of the (risk) problem or the issue in a dialogue with these different groups,
- generate a common understanding about the framing of the problem, potential solutions and their likely consequences (based on the expertise of all participants),
- conduct a forum for decision making that provides equal and fair opportunities for all parties to voice their opinion and to express their preferences and
- establish a connection between the participatory bodies of decision making and the political implementation level.

If these conditions are met, evidence shows that actors, along with developing faith in their own competence, start to place trust in each other and have confidence in the process of risk management (Kasperson, 1986; Beierle and Cayford, 2002, pp. 30f; Viklund, 2003). This is particularly true for the local level, where the participants are familiar with each other and have more immediate access to the issue (Petts, 1997). Reaching consensus and building up trust on highly complex and transgressional subjects such as biodiversity management is, however, much more difficult. Being inclusive and open to social groups does not, therefore, guarantee constructive cooperation by those who are invited to participate. Some actors may reject the framing of the issue and choose to withdraw. Others may benefit from the collapse of an inclusive governance process. It is essential to monitor these processes and make sure that particular interests do not dominate the deliberations and that rules can be established and jointly approved in order to prevent destructive strategizing.
Inclusive governance also needs to address the second part of the decision-making process as well (i.e. reaching closure on a set of options that are selected for further consideration, while others are rejected). Closure does not mean to have the final word on a development, a risk reduction plan or a regulation. Rather, it represents a process that enables participants to reach a product, joint statement or agreement. The problem is that the more actors, viewpoints, interests and values are included and, thus, represented in an arena, the more difficult it is to reach either a consensus or some other kind of joint agreement.

The potential benefits resulting from inclusive governance depend upon the quality of the participation process. It is not sufficient to gather all interested parties around a table and merely hope for the catharsis effect to emerge spontaneously. In particular, it is essential to treat the time and effort of the participating actors as spare resources that need to be handled with care and respect (Chess et al., 1998; US EPA/SAB, 2001, p. 12). The participation process should be designed so that the various actors are encouraged to contribute to the process in those areas in which they feel they are competent and can offer something to improve the quality of the final product. The quality of the closure process can be subdivided into the following dimensions.

- Have all arguments been properly treated? Have all truth claims been fairly and accurately tested against commonly agreed standards of validation?
- Has all the relevant evidence in accordance with the actual state of the art in knowledge been collected and processed?
- Was systematic, experiential and practical knowledge and expertise adequately included and processed?
- Were all interests and values considered and was there a major effort to come up with fair and balanced solutions?
- Were all normative judgments made explicit and thoroughly explained? Were normative statements deducted from accepted ethical principles or legally prescribed norms?
- Were all efforts undertaken to preserve plurality of lifestyles and individual freedom and to restrict the realm of collectively binding decisions to those areas in which binding rules and norms are essential and necessary to produce the wanted outcome?

These questions are difficult to answer without a conceptual framework that provides a rationale and a normative alignment to one of the relevant perspectives of what democracy and participation mean. The following section will address this issue.

**Six Concepts of Inclusive Governance**

When designing procedures that represent the goals of inclusive governance one needs to answer the question of whom and what should be included and by which means and procedural rules a final product is reached. Furthermore, one needs to specify what outcome to expect from a participatory exercise. Is the goal to reach a consensus or just a snap shot of diverse opinions? Should participants be educated before reaching a conclusion or should they rely on their given preferences to make public choices? Should everybody have an opportunity to shape the final product or only those with special knowledge about the subject or those who are most affected by the decision?

These questions cannot be answered without referring to the concepts or even philosophies of participation and collective decision making. It all depends on which school of thought one implicitly or explicitly belongs to. One can differentiate between six distinct prototypes of structuring processes that channel public input into public policy making. These prototypes can be labelled as functionalist, neo-liberal, deliberative, anthropological, emancipatory and post-modern (Renn, 2008, pp. 294ff; Renn and Schweizer, in press). These six prototypes have to be looked upon as abstractions from real world interaction to the extent that no participation process would be considered as belonging exclusively to one of these categories. Rather, they are ideal types in the Weberian sense (Weber, 1972). Originally, the perspectives on participation were derived from philosophical traditions. Today they serve as mental constructs of social reality, thus empowering research into a variety of participation methods that can be linked to the concept from which they were inspired.
Functionalist Concept

This approach to citizen participation draws on the functional school of social sciences and evolutionary concepts of social change. Functionalism is originally based on the works of Bronislaw Malinowski and Alfred R. Radcliffe-Brown, the founding fathers of British and US functionalism (Radcliffe-Brown, 1935; Malinowski, 1944; reviews in Coser, 1977, pp. 140ff; Lenski, 2005). Functionalism conceptualizes society as a complex structure, recognizing essential functions for social survival either from an individual actor’s perspective (Malinowski) or from society’s point of view (Radcliffe-Brown). Each social action is assumed to be functional in assisting society’s survival (Hillmann, 1994, p. 252). As a later development primarily associated with Talcott Parsons and Robert K. Merton, structural functionalism presumes that a system has to meet functional imperatives (adaptation, goal attainment, integration and latent pattern maintenance).

In the functionalist perspective, participatory exercises are necessary in order to meet complex functions of society that need input (knowledge and values) from different constituencies. The main objective is to avoid missing important information and perspectives, and to ensure that all knowledge camps are represented. Participation is, therefore, seen as a process of getting all the problem-relevant knowledge and values incorporated within the decision-making process. The functionalist approach can be subdivided into three major functional goals: first to collect all the necessary knowledge to solve a problem, second to avoid political paralysis by demonstrating openness to all stakeholders and third to secure smooth implementation of the decision-making process. Functionalist decision making is clearly oriented towards goal achievement and synthesizing knowledge and values with respect to a pre-defined goal. In terms of the basic functions of society as outlined above, the model is designed to improve and enhance the effectiveness as well as the legitimacy of decision making. It assumes that representation and inclusion of diversity will result in the improvement of environmental policy making with respect to the quality of the decisions made. Methods of participation suitable for this approach are expert Delphi methods, negotiated rule making, hearings and citizen advisory committees (Coglianese, 1997; Weblcr et al., 1991; Hadden, 1995; Gregory et al., 2001). These methods of participation are especially suited for the functional perspective because they emphasize the inclusion of various kinds of information for strategic planning.

Neo-Liberal Concept

This approach to citizen participation draws on the philosophical heritage of liberalism and Scottish moral philosophy (Jaeger et al., 2001, pp. 20ff). Neo-liberalism conceptualizes social interaction as an exchange of resources. In this concept, deliberation is framed as a process of finding one or more decision option(s) that optimizes the payoffs to each participating stakeholder. In order to reach this objective, positions need to be transformed into statements of underlying interests (for a general overview, see Fisher and Ury, 1981; Raiffa, 1994; critical review in Nicholson, 1991: review of pros and cons in Jaeger et al., 2001, pp. 243ff; Schweizer, 2008). Neo-liberal decision-making consequently focuses on individual interests and preferences (Schweizer, 2008).

The market is the place where these preferences can be converted into the appropriate actions under the condition that choices between different options are open to all individuals and that the selection of options by each individual does not lead to negative impacts upon another individual’s resources (absence of external effects). If, however, the aspired good requires collective action by many individuals, or if an individual good leads to external costs and benefits, the market mechanism will fail and public policies, including collectively binding norms and rules, are needed. These policies should reflect the preferences of all the individuals who are affected by the decision (Fisher and Ury, 1981). Since not all preferences are likely to represent identical goals and the means of achieving them, a negotiation process must be initiated that aims at reconciling conflicts between actors with divergent preferences. Within neo-liberal theory, individual preferences are given so that conflicts can only be reconciled if, first, all of the preferences are known in the proportional distribution among all affected parties and, second, compensation strategies are available to recompense those who might risk utility losses when the most preferred option is taken (O’Hare, 1990). The two ideal outcomes of negotiation are, hence, to find a new win–win option that is in the interest of all or at least does not violate anybody’s interest (Pareto superior solution), or to find a compensation that the winner could pay to the losers to the effect that both sides are at least equally satisfied with respect to the two choices: the situation before and after the compensation (Kaldor-Hicks solution, which does not
demand that the payment is actually made but would in theory lead to a higher amount of overall utility regardless of whether the actual payment is conducted.

Deliberation helps to find either one of the two solutions and provides acceptable trade-offs between overprotection and underprotection with respect to human health and the environment. Under these conditions, participation is required to generate a most truthful representation of public preferences within the affected population (Amy, 1983). The measurement of preferences is, however, linked to the idea that individuals should have the opportunity to obtain the best knowledge about the likely consequences of each decision option (concept of informed consent). Therefore, public opinion polls are not sufficient to represent the public view on a specific public good or norm. Appropriate methods for revealing informed public preferences are referenda, focus groups, (internet) forums, roundtables and multiple discussion circles (Ethridge, 1987; Dürrenberger et al., 1999). For the objective to generate win-win solutions or acceptable compensation packages, negotiation, arbitration and, especially, mediation are seen as the best instrumental choices (Amy, 1983; Bingham, 1984; Baughman, 1995). These methods correspond with the neo-liberal emphasis on bargaining power and balancing individual interests. The main contribution of neo-liberal participation models is to be more efficient and, to a lesser degree, to be more reflective of social values and concerns.

Deliberative Concept

Deliberative citizen participation is mainly influenced by Habermasian discourse theory (Habermas, 1984, 1987; Weiber, 1995; Cohen, 1997; Renn and Weiber, 1998, pp. 8–57). Discourse theory and discourse ethics advocate more inclusiveness for legitimate and sustainable political decision making. Modern societies are characterized by a plurality of values and world views. According to Habermas, conventional politics and political decision making cannot deal with this heterogeneity adequately (Habermas, 1996, p. 20). Modern societies lack moral cohesion which could guide political decision making. Although mutually binding norms and values are non-existent at the surface, people can allude to their shared reason and experience as human beings. Here, the joined heritage of Habermasian deliberation and ‘communitarianism’ becomes obvious (Bohman, 1997). Consequently, political decision making has to find mechanisms that could serve as guidance instruments by enabling citizens to engage in joint rational decision making.

Discursive decision making is oriented towards the common good and seeks the rational competition of arguments. It looks for diversity in participants and perspectives in the sense that all potentially affected parties should be able to agree with its outcome. All relevant arguments need to be included in the deliberation regardless of the extent of their representation within the population. The objective here is to find the best possible consensus among moral agents about shared meaning of actions based on the knowledge about consequences and an agreement on basic human values and moral standards (Webier, 1995, 1999). The results of discursive decision making then draw their legitimation from the procedural arrangements of the discourse. Participation methods aim at facilitating mutual understanding and transparent decision making, thus adding legitimacy to the whole process of policy making. The best-suited instruments refer to citizen forums, multiple stakeholder conferences and consensus-oriented meetings (Dienel, 1989; Kathlene and Martin, 1991; Stewart et al., 1994; Crosby, 1995; Rowe and Frewer; 2000; Rowe et al., 2004). The main contribution of deliberative models to society is to enhance moral legitimacy and to reflect social and cultural values in collective decision making.

Anthropological Concept

Anthropological citizen participation is mainly influenced by pragmatic Anglo-Saxon philosophy. It is based on the belief that common sense is the best judge for reconciling competing knowledge and value claims. Pragmatism was mainly influenced by the works of Charles S. Pierce and John Dewey (Pierce, 1867; Dewey, 1946; review by Hammer, 2003). Pragmatism postulates that ideas are to be judged against their consequences in the social world. Pierce states that ideas, theories and hypotheses can be experimentally tested and inter-subjectively evaluated according to their consequences (Riemer, 1999, p. 403). According to Dewey, the thinking process develops over a series of stages from ‘defining objects in the social world, outlining possible modes of conduct, imaging the consequences of alternative courses of action, eliminating unlikely possibilities, and, finally, selecting the optimal mode of action’ (quoted after Stryker, 1980; Ritzer, 1996, p. 328).
For participatory decision making, this approach has far-reaching consequences. The moral value of policy options can be judged according to their consequences. Furthermore, each citizen is capable of moral judgement without relying on more than their mind and experience. When organizing discourses of this kind, however, there is a need for independence, meaning that the jury has to be disinterested in the topic and there should be some consideration of basic diversity in participants (such as gender, age and class). The goals of decision making inspired by the anthropological perspective are the involvement of the ‘model’ citizen and the implementation of an independent jury system consisting of non-interested laypersons, who are capable of employing their common sense for deciding on conflicting interests (Stewart et al., 1994; Sclove, 1995). Participatory methods granting this kind of commonsense judgement are consensus conferencing, citizen juries and planning cells (Dienel, 1989; Andersen and Jaeger 1999; Joss, 1998; Einsiedel and Eastlick, 2000; Abels, 2007). The group of selected individuals can be small in size. Most methods do not require more than 12–25 participants to accomplish valid results (Stewart et al., 1994). Within this small number, there should be a quota representation of the entire population, thus including the general perspectives of all citizens. The main focus of the anthropological model is to reflect social values and concerns in public policy making.

Emancipatory Concept

The basic ideas of emancipatory participation are derived from a Marxist or neo-Marxist social perspective (Ethridge, 1987; Jaeger et al., 2001, pp. 232ff). The goal of inclusion is to ensure that the less privileged groups of society are given the opportunity to have their voices heard and that participation provides the means to empower them to help them develop more personal and collective agency (Fischer, 2005). In the long run, participation is seen as a catalyst for an evolutionary, or even revolutionary, change of power structures in capitalist societies (Forester and Stitzel, 1989; Fung and Wright, 2001). The main motive for participation is to challenge or overcome traditional power structures in society.

Methods within the emancipatory concept include activist-driven public meetings, tribunals, science shops, community solidarity committees and others (Koopmans, 1996; Wachelder, 2003; McCormick, 2007). The main emphasis is on making sure that the powerless in society are heard and then empowered to represent their own interests and values. Although the focus of this concept is on transforming society, it does also add to a more balanced reflection of social and cultural values of those who tend to be under-represented in society and in the policy-making process.

Post-Modern Concept

This approach to citizen participation is based on Michel Foucault’s theory of discourse analysis. Discourse analysis rests on the three basic concepts of knowledge, power and ethics. Foucault is interested in the constitution of knowledge. He assumes that knowledge formation is a result of social interaction and cultural settings. Truth then depends upon historically and socially contingent conditions (Foucault, 2003). Knowledge is constituted and legitimized through power (Foucault, 1979, p. 39). Power is ubiquitous and permeates society. Power and knowledge are interlinked to the extent that power supports the creation of knowledge, whereas knowledge legitimizes power structures and their social manifestations. Individuals are therefore faced with the complex social structures of interlinked knowledge and power formation. Insight into the restraints and possibilities of knowledge and power, and how they relate to him or her, transform a person into an individual (Foucault, 1986). However, individuals do not need to accept the conditions of society once and for all. Rather, they have the power to shape the social structures surrounding them.

Thus, ethics and individual ‘self-constitution’ form the backbone of discourse analysis (Schweizer, 2008). In this respect, discourse analysis informs citizen participation with an analytical focus on social power and knowledge formation. In this sense, post-modern decision making aims at revealing the hidden power and knowledge structures of society, thus demonstrating the relativity of knowledge and values (Fischer, 2005, p. 25). Far from resolving or even reconciling conflicts, deliberation, according to this viewpoint, has the potential to decrease the pressure of conflict, to provide a platform for making and challenging claims and to assist policy makers (Luhmann, 1989). Deliberations help reframe the decision context, make policy makers aware of public demands and enhance
legitimacy of collective decisions through reliance on formal procedures (Freudenburg, 1983; Skillington, 1997). Participatory decision making seeks especially to include dissenting views and social minorities, thus illustrating the relativity of knowledge and power. Appropriate participatory methods include framing workshops, discussion groups, internet chat rooms and open forums because they do not set rigid frames for decision making (Stirling, 2004). Rather, they provide insight into stakeholder interests, knowledge bases and power structures. Accordingly, the main function of post-modern discourse is to enlighten the policy process by illustrating the diversity of factual claims, opinions and values.

Implications of the Different Concepts for Practical Discourse

This review of different background concepts for public participation in environmental decision making is more than an academic exercise. Organizers, participants, observers and the addressees of public participation are implicitly or explicitly guided by these concepts. Often, conflicts about the best structure of a participatory process arise from overt or latent adherence to one or another concept. Advocates of neo-liberal concepts stress the need for proportional representation (i.e. representativeness) of participatory bodies, while advocates of deliberative concepts are satisfied with a diversity of viewpoints.

For advocates of the anthropological model, representativeness plays hardly any role as long as common sense is ensured. Models driven by emancipatory concepts will judge the quality of participation by the degree to which underprivileged groups have gained more access to power, whereas functionalist models will judge the quality of the process by the quality of the outputs compared to either technocratic or decisionistic (synthesis of knowledge from experts and values from politicians) decision-making models. While neo-liberal concepts will take public preferences as a given prerogative to participatory decision making, deliberative models are meant to influence preferences and change them through the process. Table 1 provides an overview of the six models, their main rationale and some of the instruments that can be associated with them.

<table>
<thead>
<tr>
<th>Concept</th>
<th>Main objective</th>
<th>Rationale</th>
<th>Models and instruments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functionalist</td>
<td>To improve quality of decision output</td>
<td>Representation of all knowledge carriers; integration of systematic, experiential and local knowledge</td>
<td>Delphi method, workshops, hearings, inquiries, citizen advisory committees</td>
</tr>
<tr>
<td>Neo-liberal</td>
<td>To represent all values and preferences in proportion to their share in the affected population</td>
<td>Informed consent of the affected population; Pareto-rationality plus Kaldor–Hicks methods (win–win solutions)</td>
<td>Referendum, focus groups, internet-participation, negotiated rule making, mediation etc.</td>
</tr>
<tr>
<td>Deliberative</td>
<td>To debate the criteria of truth, normative validity and truthfulness</td>
<td>Inclusion of relevant arguments, reaching consensus through argumentation</td>
<td>Discourse-oriented models, citizen forums, deliberative juries</td>
</tr>
<tr>
<td>Anthropological</td>
<td>To engage in common sense as the ultimate arbiter in disputes (jury model)</td>
<td>Inclusion of non-interested laypersons representing basic social categories such as gender, income and locality</td>
<td>Consensus conference, citizen juries, planning cells</td>
</tr>
<tr>
<td>Emancipatory</td>
<td>To empower less privileged groups and individuals</td>
<td>Strengthening the resources of those who suffer most from environmental degradation</td>
<td>Action group initiatives, town meetings, community development groups, tribunals, science shops</td>
</tr>
<tr>
<td>Post-modern</td>
<td>To demonstrate variability, plurality and legitimacy of dissent</td>
<td>Acknowledgment of plural rationalities; no closure necessary; mutually acceptable arrangements are sufficient</td>
<td>Open forums, open space conferences, panel discussions</td>
</tr>
</tbody>
</table>

Table 1. The six concepts of stakeholder and public involvement and their salient features
The diversity of concepts and background philosophies is one of the reasons why participatory processes are so difficult to evaluate in terms of overarching evaluative criteria (Rowe et al., 2004; Renn 2008, pp. 320ff; Rauschmayer et al., 2009). Although some of these models can be combined and integrated, there are at least differences in priorities. It is obvious that within the functionalist school the main evaluation criterion is the quality of the output, whereas the models inspired by post-modernism and emancipatory schools are not interested in output, but rather in the changes that were induced in the minds of the people participating (raising awareness and emancipation).

Given this mix of models driven by different concepts, many participation analysts and practitioners have advocated hybrid models that combine elements of different models. One of these models is the analytic–deliberative approach (Stern and Fineberg, 1996). However, there are many other attempts at combining different concepts with new models. Endeavours to combine the neo-liberal with the deliberative concept include the deliberative polling method, which has been widely used in several areas of environmental policy making (Ackerman and Fishkin, 2004). More complex hybrid models try to include even more than two concepts, such as the cooperative discourse model (Renn, 1999).

The Need for an Analytic–Deliberative Process of Participation

Within the field of environmental policy making, all concepts that are listed above can be found in different formats and combinations (US National Research Council, 2008). However, there seems to be a focus on functional and neoliberal approaches. Many environmental risk management agencies have been, and still are, primarily interested in input from the relevant stakeholders in order to improve the quality of the decisions and to make sure that conflicting values could be resolved in proportion to the representation of the people who are or feel affected by the decision (Fiorino, 1990). Lately, there has been a shift towards deliberative and emancipatory forms of participation (Bohman, 1998). The discussion on environmental justice, as well as on social capital, has served as a catalyst for these more intense forms of argument-based participation (Dryzek, 1994). In parallel, the anthropological concept has inspired many organizers of participation to model participation in accordance with the well-established jury format of the US judicial system (Crosby, 1995).

In our view, it is difficult to answer the question of which model is best suited for environmental decision and policy making. There is no ideal model that would fit all environmental problems. The scope of environmental questions and problems varies considerably and the participants may also have different preferences about the suitability of the six models. Yet a review by a panel of the US Academy of Sciences revealed that most participatory exercises were inspired by a functionalist or – more recently – a deliberative model or a combination of both (US National Research Council, 2008). There may be good reasons for combining functionalist and deliberative perspectives (Stern and Fineberg, 1996; Renn, 2008, pp. 290ff): First, environmental decision making relies to a great extent on knowledge and science input. A disregard for the findings of science and other forms of knowledge leads in most cases to real losses in terms of health impacts or biodegradation. The functional concept of participation integrates all kinds of knowledge, thus improving the overall decision-making process. Second, environmental problems can rarely be resolved through scientific input alone. The answer to the question of what ought to be protected and what can be tolerated depends on moral reasoning and normative judgments. Furthermore, environmental problems face a diversity of interests and preferences that demand a convincing rationale for reconciliation. Pure bargaining would probably not be sufficient. Deliberation aims at the representation and discussion of all relevant arguments. The functional and deliberative concepts therefore complement one another. A fusion of the two approaches combines the functional approach’s analytic force with deliberation’s consensus reaching potential.

One suggestion for combining functional and deliberative decision making is the model of analytic–deliberative decision making that has been advocated by Stern and Fineberg (1996) and reconfirmed in the latest report of the US Academy of Sciences (2008). This idea belongs to the most promising suggestions for developing an integrative approach to inclusive governance based on the inclusion of experts, stakeholders and the general public (Stern and Fineberg, 1996; Chess et al., 1998; Tuler and Webler, 1999; Webler et al., 2001; Renn, 2004). Such a process is
designed to provide a synthesis of scientific expertise, a common interpretation of the analysed relationships and a balancing of pros and cons for regulatory actions based on insights and values.

Analysis in this context means the use of systematic, rigorous and replicable methods of formulating and evaluating knowledge claims (Stern and Fineberg, 1996; see also Tuler and Webler, 1999, p. 67). These knowledge claims are normally produced by scientists (natural, engineering and social sciences, as well as the humanities). In many instances, relevant knowledge also comes from stakeholders or members of the affected public (Horlick-Jones et al., 2007).

Deliberation highlights the style and nature of problem solving through communication and collective consideration of relevant issues (Stern and Fineberg, 1996, pp. 73, 215ff; original idea of discursive deliberation from Habermas, 1970, 1987). It combines different forms of argumentation and communication, such as exchanging observations and viewpoints, weighing and balancing arguments, offering reflections and associations and putting facts into a contextual perspective. The term deliberation implies equality among the participants, the need to justify and argue for all types of (truth) claim and an orientation towards mutual understanding and learning (Habermas, 1987, 1991; Dryzek, 1994; Cohen, 1997; literature that applies to risk management includes the following: Kemp, 1985; Tuler and Webler, 1995; Webler, 1995, 1999; IRGC, 2005; Renn 2008, pp. 284ff). What are the advantages of analytic–deliberative models of participation in the field of environmental policy making? First, deliberation can produce common understanding of the issues or the problems based on the joint learning experience of the participants with regard to systematic and anecdotal knowledge (Weber et al., 1991). Furthermore, it may produce a common understanding of each party's position and argumentation (rationale of arguing) and thus assist in a mental reconstruction of each actor's argumentation (Warren, 1993; Tuler, 1996).

Second, deliberation can produce new options for action and solutions to a problem. This creative process can be mobilized either by finding win–win solutions or by discovering identical moral grounds on which new options can grow (Fisher and Ury, 1981; Webler, 1995, 1999). Each position within a deliberative discourse can survive the crossfire of arguments and counter-arguments only if it demonstrates internal consistency, compatibility with the legitimate range of knowledge claims and correspondence to the widely accepted norms and values of society. Deliberation clarifies the problem, makes people aware of framing effects and determines the limits of what could be called reasonable within the plurality of interpretations (Skillington, 1997).

Third, deliberation can also produce common agreements. The minimal agreement may be a consensus about dissent (Raiffa, 1994; Renn and Webler, 1998, p. 64). If all arguments are exchanged, participants know why they disagree. They may not be convinced that the arguments of the other side are true or morally strong enough to change their own position; but they understand the reasons why the opponents came to their conclusion. At the end, the deliberative process produces several consistent and – in their own domain – optimized positions that can be offered as package options to legal decision makers or the public. Once these options have been subjected to public discourse and debate, political bodies such as agencies or parliaments can make the final selection in accordance with the legitimate rules and institutional arrangements, such as a majority vote or executive order. Final selections can also be performed by popular vote or referendum. In addition, deliberation creates ‘second-order’ effects on individuals and society by providing insights into the fabrics of political processes and creating confidence in one’s own agency to become an active participant in the political arena (thus indirectly serving the emancipatory model of participation). By participating they can enhance their capacity to raise their voice in future issues and become empowered to play their role as active citizens in the various political arenas.

Last, deliberation may result in consensus. Often, deliberative processes are used synonymously with consensus-seeking activities (Coglianese, 1997). This is a major misunderstanding. Consensus is a possible outcome of deliberation, but not a mandatory requirement (compare van den Hove, 2007). If all participants find a new option that they all value more than the one option they preferred when entering the deliberation, a ‘true’ consensus is reached (Renn and Webler, 1998, p. 69). It is clear that finding such a consensus is the exception rather than the rule. Less stringent is the requirement of a tolerated consensus. Such a consensus rests on the recognition that the selected decision option might serve the ‘common good’ best, but at the expense of some interest violations or additional costs. In this situation, people who might be worse off than before, but who recognize the moral superiority of the solution, can abstain from using their power of veto without approving the solution. In our own empirical work, deliberation has often given rise to tolerated consensus solution, particularly in siting conflicts (one example is provided by Schneider et al., 1998). Consensus and tolerated consensus should be distinguished...
from *compromise*. A compromise is a product of bargaining, with each side gradually reducing its claim to the opposing party until they reach an agreement (Raiffa, 1994). All parties involved would rather choose the option they preferred before starting deliberations, but since they cannot find a win–win situation or a morally superior alternative they look for a solution that they can ‘live with’, well aware of the fact that it is the second or third best solution for them. Compromising on an issue relies on full representation of all vested interests.

In our view, the analytic–deliberative approach offers many advantages. However, depending on the risk issue in question, this approach can be supplemented with elements of other participation concepts such as the potential for empowerment offered by the emancipatory approach. Yet the analytic and deliberative momentum needs to be maintained.

**Conclusions**

The objective of this paper was to address the need for inclusive governance when it comes to dealing with complex environmental risks. For this purpose, the paper explained different concepts of stakeholder and public involvement, and characterized the main features of, and conditions for, an analytic–deliberative process applied to risk problems. Organizing and structuring such a process goes beyond the well meant intention of having the public involved in risk decision making. The mere desire to initiate a two-way communication process and the willingness to listen to public concerns are not sufficient. Discursive processes need a structure that ensures the integration of technical expertise, regulatory requirements and public values. Decisions on risk must reflect effective regulation, efficient use of resources, legitimate means of action and social acceptability.

These inputs can be provided by the different systems of society: efficiency by economic markets; knowledge on effectiveness by scientists and experts; legitimacy by the political institutions and reflection of values and preferences by including social actors. The objective is to find an organizational structure so that each system contributes to the deliberation process the type of expertise and knowledge that claim legitimacy within a rational decision-making procedure. It does not make sense to replace technical expertise with vague public perceptions, nor is it justified to have the experts insert their own value judgements into what ought to be a democratic process.

To evaluate the potential impact of deliberative processes on policy making, it was useful to distinguish six different concepts for including stakeholders and the public in the decision-making process. These concepts were labelled as functional, neo-liberal, deliberative, anthropological, emancipatory and post-modern. Each of these concepts has a specific philosophical foundation and expresses a different point of view with respect to what democracy means and what role participation can play in this context (Schweizer, 2008). These concepts also suggest corresponding instruments and techniques for structuring and organizing participatory processes. Two of the concepts, the functional and the deliberative, lend themselves to forming what the 1996 National Research Council report on characterizing risks has coined an analytic–deliberative process (Stern and Fineberg, 1996; US National Research Council, 2008). This combination promises to be particularly well suited to dealing with risk problems, as they demand scientific expertise, structured thinking and excellent deliberative skills.

**References**


