Participatory methods in coastal systems

Floortje M. d'Hont[1], Jill H. Slinger[1]

1 Faculty of Technology, Policy and Management, Delft University of Technology, Jaffalaan 5, 2628 BX Delft, The Netherlands (f.m.dhont@tudelft.nl)

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1. A participatory imperative in transdisciplinary science

Traditional coastal management in the Netherlands involves regular nourishment of the coast with small volumes of sand, to address structural erosion. A recent project on collaboration and co-design of nature-based interventions in coastal channel-shoal systems (CoCoChannel) investigates the feasibility of a new multi-functional concept that involves depositing a more "concentrated nourishment" in the marine environment, further from the coast of Texel Island. This nourishment intends to counter coastal retreat and to provide social benefits (e.g. recreation and nature) in an integrated, flexible and potentially more cost-effective manner. In the implementation of the nourishment, because cooperation between local stakeholders, experts, public and private organizations and (regional) governmental officials is considered beneficial for the multifunctional character of the Dutch North Sea coast, stakeholder consultation and interaction is intended. This fits with an integrated and participatory management style in water and coastal management, as supported by institutional arrangements such as the European Water Framework Directive (Pahl-Wostl et al., 2007; Thissen & Walker, 2013) and the EU directive establishing a framework for maritime spatial planning. Stakeholder participation is becoming common practice (Reed, 2008), especially in water and coastal governance (Morinville & Harris, 2014; Taljaard et al., 2013).

Over the last few decades, many review articles highlight the benefits of participation in governance issues (Arnstein, 1969; De Bruijn & Herder, 2009; Enserink et al., 2010; Koppenjan & Groenewegen, 2005; Mayer et al., 2004; Morinville & Harris, 2014; Reed, 2008; Stave, 2010; Taljaard et al., 2012). The claimed benefits of participation are not always fully substantiated by empirical research (Newig & Fritsch, 2009; Reed, 2008). In this article we examine the claims for public participation in coastal management and environmental management (cf. Morinville & Harris, 2014; Newig & Fritsch, 2009; Reed, 2008). We concentrate on a critical review of the selected literature and in seeking insights, we cast the net widely to cover the key elements that contribute to public participation in the broader field of coastal management and environmental management. We examine literature reviews and cross-analyses from the past two decades. This initial, broad assessment is justified based on the understanding that the water and coastal environment is a component of the environment in general, so that the claims in integrated environmental management are also applicable to integrated coastal management. The Netherlands is a deltaic region, where aspects of integrated coastal management and integrated water management apply. To cover both, we turn to Environmental Management.

In analyzing the scientific reasoning underlying the rationale for public participation, we first considered adopting a structured, formal approach (cf. Booth et al., 2008; Sadler, 2004; Toulmin et al., 1979). However, Toulmin's model for argumentation analysis was not entirely appropriate to our goal. Instead, we chose to adopt the perspective of Max-Neef (2005), who distinguishes layers within a complex, embedded space, because it fits with multi-stakeholder context and the hierarchic environmental complexity governing systems (Cuppen, 2012; Ostrom, 2009).

This paper starts with presenting the method and analysis framework in Section 2. An overview of the results of the analysis are presented in Table 2 on page 5. In Section 3, three overarching insights generated from the

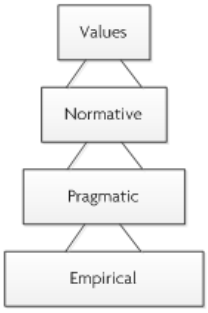
cross-comparison are discussed. Finally, we discuss the preliminary conclusions and provide directions for further steps in this research project in Section 4.

2. Method and analysis framework

An analysis four-layer framework adapted from Max-Neef (2005) is used to analyze the underlying rationale for choosing participatory approaches in the selected literature. The layers (i.e. values; normative layer; pragmatic layer; empirical layer) provide a means of categorizing the underlying rationale for choosing a participatory approach. Transdisciplinarity as defined by Max-Neef (2005), distinguishes disciplines along four different hierarchical levels (Table 1). At the base of the pyramid is the *empirical level*, which asks and answers the question '*what exists'?* The second level is the *pragmatic level* and answers the question '*what are we capable of doing?'* and relates to more technological disciplines. The third level is the *normative level* and answers the question '*what is it we want to do?',* which is in democratic societies usually answered by democratic tools such as voting, or assessment approaches such as environmental impact assessment, that originated as a normative response to growing traction from the environmental movement (Max-Neef, 2005). The final, top layer is the *values* layer and answers the question *'What should we do?'* Or '*how should we do what we want to do?'* (Max-Neef, 2005). An example of such a value is to act to embrace democratic ideals.

The scientific reasoning for public participation in the selected literature is compared and categorized across a broad range of literature (Table 2) according to the four different levels. The claims, reasons and evidence presented in the selected literature are listed in Table 2. Additionally, an indication is given per article with the gist of the reasoning, and to which layer from the framework (Table 1) it is ascribed, thus providing an overview of the differences in reasoning.

Table 1: Layered framework applied in analysing claims for participatory benefits



Layer	Addressed in this layer, according to Max-Neef (2005)	Specified to participation in environmental decision-making	Remarks
Values	*What should we do? How should we do what we want to do?*	Do we choose for a participatory approach? What is the rationale for choosing the participatory approach?	Not merely a yes/no answer. The corresponding answer relates to associated values with participation (e.g. equality, democratic ideals)
Normative	*What is it we want to do?*	What are the objectives for choosing a participatory approach?	The answer includes "outcome objectives"
Pragmatic	*What are we capable of doing?*	Which level of participation do we want to achieve? What methods do we use?	The answer includes "process objectives" and relates to levels of participation and existing constraints (e.g. resources, time constraints)
Empirical	*What exists?*	Can we evaluate the extent our goals were met, due to the chosen participatory approach	Closely related to outcomes of interest and/or criteria

3. Insights on the role of participatory design

Reviewing the selected literature has generated a series of insights, of which an overview of which is presented in Table 2 on page 5.

In his extensive literature review on stakeholder participation for environmental management, Reed (2008) addresses stakeholder participation in environmental management, and examines evidence for claims made

for, and against, participation. Reed recognizes that participation in environmental management is no panacea and describes arguments deriving from different lines of reasoning. On the one hand, value-related reasoning perceives participation as a "democratic right" (Martin & Sherington, 1997); it enables "empowerment" (Greenwood et al., 1993; Macnaghten & Jacobs, 1997; Okali et al., 1994; Wallerstein, 1999); it increases equity and decreases marginalization of those in the periphery of the decision-making context (Morinville & Harris, 2014; Reed et al., 2010). On the other hand, more pragmatic lines of argument focus on the quality, durability and feasibility of decisions that were made through stakeholder engagement (e.g. participation enables interventions to be better adapted to local environmental conditions) (Beierle, 2002; Richardson & Pugh III, 1981; Rowe & Frewer, 2000). Overall, a wide array of benefits from participation are described in the literature.

In addition to the insights gained from revising the literature in Table 2, the analysis allowed for comparison and cross-analysis in addition to these insights, and three general observations are listed below.

3.1. Evidence for claimed benefits of participation

Claims for the participation panacea are not always warranted (Morinville & Harris, 2014; Newig & Fritsch, 2009; Reed, 2008). Longitudinal studies with a predominant anthropological and sociological perspective support claims of the long-term effects of engagement with policy makers and local stakeholders (Devlin & Yap, 2008; O'Faircheallaigh, 2010). For project-based studies with a shorter time horizon, unsubstantiated promises of the benefits of proposed participatory processes are found, which may lead to disappointment and distrust by stakeholders and policy makers in the longer term (Newig & Fritsch, 2009; Reed, 2008).

3.2. Discrepancy between the rationale for a participatory approach and its objectives

From a governance perspective, the benefits of participatory policy-making processes for governments are usually described as normative objectives, such as building better policy decisions, avoiding litigation, gaining legitimacy, educating stakeholders and building trust and strategic alliances (Irvin & Stansbury, 2004). Such claimed benefits are used to justify choosing for participation and stakeholder engagement. However, the choice for participation happens earlier, and regularly lies more on the value-related level, linked to democratic ideals, equity and empowerment, and implicit assumptions that participatory decision-making will be more sustainable, that it can foster social learning and insights in non-scientific fields, or simply because there is more support and funding for participatory (research) projects in recent decades because of the positive image of participation (Reed, 2008; Stringer et al., 2006). There is evidently an (implicit) discrepancy between the rationale for choosing participation and the outcome-driven objectives underlying this choice.

3.3. Participation: a democratic right or a pragmatic tool?

When describing participatory approaches in (environmental) management situations, people use different kinds of (pro and con) claims, reasons and evidence (Booth et al., 2008; Toulmin et al., 1979). Where some emphasize implicitly or explicitly that participation an imperative, not necessarily because it *can lead* to democracy, but because it *inherently is* democracy (Arnstein, 1969; Habermas, 1987; Morinville & Harris, 2014). Others focus on the potential for participation to be a useful tool towards more democracy and transparency (Agarwal, 2001, 2010; Blackstock et al., 2007; Greenwood et al., 1993; Landry et al., 2003; Macnaghten & Jacobs, 1997; Okali et al., 1994; Richards et al., 2004; Wallerstein, 1999). These strands of thinking underline the distinction between democratic principles and democratic practice and should be considered as such in participatory policy design.

4. Conclusions, further research and reflection

In this paper, we utilized a framework to assess some recurring claims and arguments for the use of participatory decision-making in environmental management. In conclusion, the underlying rationale for

choosing a participatory style of project management is not always explicated, although it cannot be denied that the positive image of participation, its visibility and marketability, and its association with democratic ideals might give the approach political traction. This might lead to overly ambitious application of a participatory style and stakeholder inclusion where another approach might be more effective, efficient and suitable. The practice of participation is no one-size-fits-all approach. Instead, it should be tailor-made, of an appropriate ambition level and fit-for-purpose for each environmental management problem. These findings will be used in dealing with the dilemmas associated with the structural erosion of Holland and Texel Island owing to the nested-scale dynamics in the area, and to improve long-term Dutch flood defense in a sustainable manner.

Table 2 – Summary of findings

Article	Remarks on the claims, reasons and evidence presented in corresponding article	Reasoning
Rowe and Frewer (2000)	Rowe and Frewer (2000) focus on the nature of engagement, and conceptualize types of public engagements by communications flows between parties, in which "participation" as two-way communication between participants and exercise organizers.	Pragmatic level
Habermas (1987)	Habermas (1987) suggests participation should be both "competent" and ''fair'', equalizing power between participants and representing the full range of relevant stakeholders and (cf. (Renn, 2006; Webler et al., 1995; Webler & Tuler, 2000)	Values and normative level
Arnstein 1969, and alternatives to her ladder of participation (e.g. Biggs 1989, Pretty, 1995a,b; Goetz and Gaventa, 2001)	Arnstein's (1969) ''ladder of participation'' describes a scale of increasing stakeholder involvement, from passive dissemination of information (''manipulation''), to active engagement (''citizen control''). Much of the literature assumes that higher steps of the ladder should be preferred over lower ones (i.e. normative reasoning) (Arnstein, 1969; Evely et al., 2011). However, others view Arnstein's typology as a tool to highlight fundamental differences between levels of abstraction, and recognize that different contexts require different levels of participation, thus focusing more on the suitability or "fitness-for-purpose" (e.g. D'Hont, 2014; Richards et al., 2004; Tippett et al., 2007).	Normative level or pragmatic level, depending on author
Okali et al. (1994)	Okali et al. (1994) distinguish types of participation based on categories of objectives for which participation is used (i.e. "research-driven" and "people-driven" participation) (cf. Warner, 1997; Michener, 1998).	Normative level
Tippett et al. (2007)	Tippett et al. (2007) explored existing participatory methodologies, and identified differences between methods to achieve different processes in participation to inform; design active engagement processes; consult; deliver implementation of management plans; or to monitor and learn from the effectiveness of participatory practice.	Pragmatic level
Martin and Sherington (1997)	Martin and Sherington (1997) argue for the democratic value of stakeholder participation, by arguing that relevant stakeholders, who otherwise would by marginalized, can be included in the decision- making process, thus promoting active citizenship, with benefits for the wider society.	Values level
Richards et al. k (2004)	Richards, Carter and Sherlock (2004) claim that stakeholder participation accounts for a diversity of values and needs in society and recognizes complexity in human-environmental interactions. Thus, stakeholder participation can increase public trust in decision-making and in the wider civil society, although transparency and acknowledgement of conflicting perspectives between stakeholders are necessary in the participatory process.	Values and normative level
Multiple articles on empowerment of stakeholders	Many authors argue for participation enabling empowerment of stakeholders through (co-)generation of knowledge (Greenwood et al., 1993; Macnaghten & Jacobs, 1997; Okali et al., 1994; Wallerstein, 1999) and social learning (Blackstock et al., 2007; Pahl-Wostl et al., 2007). Empowerment is a value directly linked to democratic ideals, knowledge generation is more a normative objective/benefit.	Values and normative
Newig and Fritsch (2009)	Meta-analysis of 35 cases of participatory environmental decision-making in the US and Western Europe. Their empirical research found that the important determinant of effectiveness was the goals and interests of the participants, especially how strongly they favored environmental outcomes.	Empirical research
Koontz (2005)	An empirical, multiple case-analysis to study the significance of the effect of stakeholder participation on the recommendations of policies in the US. The only significant effect existed appeared in counties where both elected officials and the citizens were highly concerned about the issues (sense of urgency) and where there were strongly connected social networks addressing these issues.	Empirical research
Sultana and Abeyasekera (2007)	Sultana and Abeyasekera (2007) found statistical evidence that participation led to fewer conflicts between stakeholders and to greater uptake of conservation measures.	Empirical research
Beierle (2002)	Beierle(2002) concluded based on his empirical meta-analysis from 239 case studies of stakeholder involvement in environmental decision-making, that intensive stakeholder processes are more likely to yield better decisions.	Empirical research
Chess and Purcell (1999)	Chess and Purcell (1999) found different methods (public meetings, workshops, or citizen advisory committees) did not affect the extent to which outcome and process goals were achieved. Success was more likely to be affected by (quality of) facilitation of discussions, planning quality, clarity of the set goals and good communication (versus lack of information and condescending attitudes towards participants)	Empirical research
Morinville and Harris (2014)	Morinville and Harris (2014) argue that failure to engage local actors frequently results in inadequate monitoring, ineffective governance, and poor outcomes, which results in arguments, both explicit and implicit, for participation. Also the international development and water governance literatures echo a strong imperative for participation with a focus on effective governance in addition to considerations such as equity.	Values and normative level

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