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More Effective Natural Resource Management Through Participatory Governance? Taking Stock of the Conceptual and Empirical Literature – and Moving Forward

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1 Introduction

Environmental and natural resource governance in modern democracies increasingly relies on the participation of non-state actors such as citizens and organised interest groups. Followed by the U.S. Negotiated Rulemaking Act of 1990 and the Rio Declaration of 1992, which demands that "environmental issues are best handled with the participation of all concerned citizens", the Århus Convention of 1998 and four subsequent recent European Union directives have legally institutionalised access to information and public participation in environmental decisions.

Participatory governance, in this discourse, is indeed touted as a 'solution' to persistent environmental problems (cf. the introductory chapter by Hogl et al.), implying a shift in the participation discourse from emancipation and legitimacy to the *effectiveness* of policy-making and thus instrumentalising participation for the purposes of environmental policy delivery. This 'instrumental claim', however, can be and is being contested on theoretical and empirical grounds. It will therefore be crucial to determine whether, and under what conditions, participatory governance does or does not foster effective environmental and natural resource management as opposed to the more classical modes of hierarchical or market-based governance.

To this end, the present chapter will proceed in three steps. I first review the current discourses on participatory governance in environmental and natural resource management. I argue that this has shifted from furthering emancipation and providing legitimacy to increasing governance effectiveness and illustrate this by drawing on recent conceptual literature as well as policy documents.

In a second step, I analyse theoretical assumptions from different strands of literature regarding the relationship of participation and governance effectiveness. Those who advocate participatory governance as a means to improve environmental quality argue that participation in environmental decision-making (1) leads to outputs (collectively binding agreements) with higher environmental standards and (2) fosters the implementation of and compliance with decisions (outcomes). Both mecha-

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nisms are assumed to ultimately improve environmental impacts, as opposed to more hierarchical modes of steering. However, almost all of these arguments find competing theoretical claims, some of which are made in different literatures, such as those on policy implementation, commons research, or social psychology.

In a third step, I provide an overview of the empirical literature. While countless single case studies on participation in environmental and natural resource management have been published, a number of comparative assessments are available, all of which deal almost exclusively with participatory governance in the United States. Empirical evidence regarding the links between participation and effectiveness is on the whole sporadic and ambiguous.

The chapter concludes by summarizing conceptual and empirical research gaps and outlining a research agenda. In particular, I argue for evidence-based approaches, drawing on more rigorous comparative empirical research, case study meta-analyses and experimental research designs.

2 The 'instrumental claim' of participatory environmental governance[2]

Among the motives and rationales for public participation, which have traditionally centred around emancipatory and legitimacy aspects, the expectation of increased *effectiveness of governance* has reached centre stage (Coenen et al. 1998; Randolph & Bauer 1999; Heinelt 2002; Koontz & Thomas 2006). Certainly, the participation of non-state actors in public decisions – beyond democratic elections and referenda – has a long tradition. With the environmental movement and grass-root actors' beginning to demand a say in political matters in the 1960s, an emancipatory motive had been prevalent in the societal discourse that became most highly developed in Habermas' concept of deliberative democracy (Habermas 1991 [1962]). While this has continued to play a role (Renn et al. 1995a; Dryzek 1997), the current emphasis on participation is rather one "from above" in that state and supranational organisations have discovered participation as a means to secure legitimacy for their policies, and thus also for their polity. Within the scholarly literature, this expectation can be exemplified by the assumption of Heinelt (2002: 17), "that participation leads to a higher degree of sustainable and innovative outcomes". Likewise, Randolph & Bauer (1999: 169) assert that collaborative and participatory environmental management is more likely to "result in decisions that enhance environmental protection". Beierle & Cayford (2002: 5) diagnose that "the purpose of participation has shifted from merely providing accountability to developing the substance of policy". In the face of continuing implementation deficits of environmental policy (Knill & Lenschow 2000) and increasingly complex societal structures, participatory decision modes that foster collective learning are indeed regarded as prerequisites for the advancement of ecologically sustainable policies (Dryzek 1997). Focusing on substantive impacts rather than on fairness or other aspects, participation is thus regarded as an *instrument* to better achieve environmental goals.

This 'instrumental claim' is also strongly been made in current environmental – notably European – public policy. The Aarhus Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters of 1998 has been legally implemented in the EU by the Public Participation Directive 2003/35/EC. In this spirit, three further EU directives were passed that explicitly demand public participation in environmental decisions. Of these, we analyse the Water Framework Directive (2000/60/EC; WFD)[3], which combines substantive requirements ('good water status') with procedural obligations, including information and consultation of the public as well as its 'active involvement' in the implementation process (Art. 14 WFD).

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[2] Parts of this paragraph have been published in Newig & Fritsch 2009b.

[3] The other two, purely procedural ones, are the Directive 2001/42/EC on the Strategic Environmental Assessment and the new Environmental Information Directive (2003/4/EC).

Rationale for public participation			Århus Convention	WFD (GD)
effectiveness	Improving environmental quality, reach environmental goals		preambles 5, 6, 7, 9	pp. 7, 26
	quality of decision	Making available of lay local knowledge to public decision-makers	preamble 16	pp. 24, 26, 41
		Making available of knowledge regarding attitudes and acceptance on the part of civil society actors to the public decision-makers		p. 24
	quality of implementation	Increasing environmental awareness, education, information on the part of civil society actors	preambles 9, 14	p. 4, 26
		Increasing acceptance of and identification with a decision on the part of civil society actors	preamble 10	pp. 4, 26, 41
		Building trust among civil society actors and between them and public authorities		p. 26, 41
		Alleviating conflicts by mediation of interests		pp. 26, 41
legitimacy	Increasing transparency of decision-making and control of state policy and governmental decision-makers		preambles 10, 11	p. 26
	Pursuit of legitimate self-interests on the part of the NSA (with respect to access to courts)		preamble 18	
	Strengthening democracy		preamble 21	

Table 1: Different rationales for public participation as they appear in different European legal documents, each stating the respective source (preamble or page). WFD-GD: Public Participation Guidance Document relative to the WFD (EU 2002). NSA: Non-state actors. CA: Competent authority. Source: Newig 2007: 55.

Rationales that stress *outcome-oriented legitimacy (effectiveness)* can be found in the Århus Convention as well as in the WFD (see table 1). Both documents mention the importance of better informed *decisions* through the inclusion of lay (local) knowledge. In particular, the documents accompanying the WFD point to the relevance of information regarding the possible acceptance of decisions by the addressees. Furthermore, *policy implementation* is expected to be improved through participation. According to preamble 14 WFD, "the success of this Directive relies on close cooperation and coherent action at Community, Member State and local level as well as on information, consultation and involvement of the public, including users". More specifically, the WFD guidance document on public participation[4] states that "[p]ublic participation is not an end in itself but a tool to achieve the environmental objectives of the Water Framework Directive" (EU 2002: 6). All three documents assume that participation improves environmental awareness of non-state actors. Very importantly, participation is expected to improve the acceptance of and identification with decisions on the part of the involved actors and, therefore, a facilitated implementation. Notably, the WFD guidance document reckons that participatory processes will mediate conflicting interests in the forefront of a decision and thereby reduce the potential of future litigation and thus the involved costs. Moreover, improved mutual trust both among the non-state actors and between these and the authorities is ex-

[4] The CIS – an unprecedented institution for fostering and ensuring the coherent implementation of an EU directive – has produced 14 thematic guidance documents which were agreed by representatives ('water directors') of all 15 Member States at that time and the Commission.

pected, which in the long run is likewise supposed to lead to an improved acceptance and implementation of decisions.

Rationales of *input-oriented legitimacy* are on the whole less important in the analysed documents, although they figure quite prominently in the Århus Convention. The main argument here is the transparency of decision-making in the sense of a control of state decision-makers. This, however, also touches upon an aspect of increased effectiveness. Perhaps the most important argument of legitimacy, namely the "strengthening of democracy", is only mentioned in the Århus Convention.

To conclude, public participation in environmental decisions in the European policy context is expected to increase legitimacy, predominantly on the part of improved policy outputs. Specifically, *output-oriented legitimacy* (policy effectiveness) is to be enhanced by means of improved *input-oriented legitimacy* (inclusion, procedural legitimacy).

This 'instrumental claim', which has been put forward both in scholarly works and in policy documents, has not been systematically substantiated by empirical data. Participation research has long been focusing on process characteristics and social outcomes, largely neglecting substantive (environmental) outcomes and impacts (Koontz & Thomas 2006). In fact, "the literature often tends to be somewhat idealistic as regards deliberation, public consultation and democracy" (Papadopoulos & Warin 2007). Nonetheless, contesting claims exist in different scholarly sub-disciplines as regards the effectiveness of participatory governance.

3 Theoretical departures: participation and environmental effectiveness – a paradox?

Participatory governance (Heinelt 2002; Schmitter 2002; Grote & Gbikpi 2002; Lovan et al. 2004) implies that societal problems (such as environmental degradation) or conflicts are to be dealt with by aiming for collectively binding decisions (Mayntz 2003; Schmitter 2006; Heinelt 2008)[5]. Hence, 'participatory governance' does not cover participatory processes that do not aim at collectively binding decisions (such as most Local Agenda 21 processes). In this regard, the concept of participatory governance is narrower than 'public participation' or 'public involvement' in general. On the other hand, 'participatory governance' is a sufficiently broad concept to embrace both participation in formal, state-initiated administrative procedures as well as bottom-up, civic initiatives of conflict resolution, so long as collectively binding decisions are sought.

Outcome-oriented participation research is a relatively new field. By far the most participation-related literature has focused on process attributes (Reed 2008). Many of these draw on political and social theories such as communicative rationality (Habermas 1981) or discursive democracy (Dryzek 1990). A prominent example is the evaluation of participatory processes as to their 'fairness' and 'competence' (Renn et al. 1995b; Webler & Tuler 2000; Kinney & Leschine 2002). In the mediation literature, as another example, the relevant dependent variable is typically output (attainment of an agreement) and not its environmental outcomes or impacts (Bacow & Wheeler 1984; Blackburn & Bruce 1995; Weidner 1998; Holzinger 2001).

A number of scholars have provided theoretical assumptions on ecological impacts of participatory environmental governance. Those who advocate participatory governance as a means to improve environmental quality argue that participation in environmental decision-making (1) leads to *outputs* (collectively binding agreements) with higher environmental standards and (2) fosters the implemen-

[5] Schmitter (2006: 161) defines governance as "a method or mechanism for dealing with a broad range of *problems/conflicts,* in which actors regularly arrive at mutually satisfactory and *binding decisions* by negotiating and deliberating with each other and cooperating in the implementation of these decisions" (emphasis added, JN).

tation of and compliance with decisions *(outcomes)*. Both mechanisms are assumed to ultimately improve environmental *impacts,* as opposed to more hierarchical modes of steering (Lafferty & Meadowcroft 1996). However, almost all of these arguments find competing theoretical claims, some of which are made in different literatures, such as those on policy implementation, commons research, or social psychology. (3) Finally, a number of scholars point to the importance of the societal and environmental context to the effectiveness of participatory governance.

The principal arguments behind these three assumptions can be summarised as follows:

(1) Participation and environmental outputs: One line of reasoning suggests that the participation of civil society actors opens up established networks of decision-making among public officials and economic interests, thus "greening" decisions by giving more consideration to environmental matters (Smith 2003). This argument is also brought forward in the wider debate on the environmental effectiveness of democratic institutions (Lijphart 1999; Poloni-Staudinger 2008). Conversely, in societal contexts characterised by a highly committed environmental administration and a less environmentally friendly citizenship, participatory decision-making is likely to water down high ecological goals (Burgess et al. 1983). Whether or not participation will improve environmental standards most likely depends on the kind of actors involved and the respective interests they pursue (Hunold & Dryzek 2005). A recent study by Layzer (2008) found that collaborative approaches to ecosystem protection yielded less protective results than did traditional regulatory approaches, because the collaborative process included stakeholders with an interest in natural resource development.

A second argument emphasises the potential of participation to generate factual information that would otherwise not be available for the decision-makers (Freeman 1997; Reed et al. 2006). The involvement of informed lay persons may help to provide detailed knowledge of special (local) characteristics and conditions (López Cerezo & González García 1996; Pellizzoni 2003). However, competing approaches deny this information deficit of public authorities, the more so as many decisions in environmental governance are highly technical in nature and thus call for expert knowledge instead of lay contributions (Thomas 1995; Rydin 2007).

A third strand of argument discusses the extent to which participatory decision-making fosters processes of collective learning. This line of reasoning goes beyond the mere acquisition of factual knowledge and underlines the fact that group interactions might be the starting point for collectively and creatively developing new solutions due to genuine deliberation and reflection, an inspiring group atmosphere, and the multiplicity of perspectives involved (Doak 1998; Pahl-Wostl & Hare 2004). Many authors identified mutual trust among the participants as a precondition for social learning (Leach & Sabatier 2005). Social psychologists, however, call attention to potential adverse effects of participatory group processes. Cooke (2001), for instance, argues that groups tend to take risky decisions, are immune towards critical voices and might show emergent dynamics quite different from the interests of those the group is supposed to represent.

The effectiveness of participatory environmental governance – which is very often located on a geographical scale small enough to enable face-to-face communication – can generally be questioned from a rational choice perspective. Early research has indicated that the collective use of resources (such as clean environmental media) regularly implies social dilemma situations (Hardin 1968), which call for institutions on scales large enough to internalise the negative externalities. Participatory decision-making, however, is typically located on rather local scales, and, contrary to sustainability goals, the interests of local actors tend to focus on shorter time horizons. Dahl (1994) has termed this a "democratic dilemma" between effectiveness and citizen participation.

Many authors point to the process-dependency of the quality of decision outputs, maintaining that only "well-conducted" processes (US-NRC 2008), e.g. those that give participants a clear perspective on the results of their involvement, will be successful in this sense (Aldred & Jacobs 2000).

(2) Participation and environmental outcomes / impacts: What separates outputs, as discussed above, from outcomes or impacts, is implementation. A number of participation scholars hold that not only does participation lead to more 'ecological' outputs but also that decisions made in a participatory manner are more completely implemented than those of a top-down setting (Mangerich & Luton 1995; Gbikpi & Grote 2002; Brogden 2003; Lundqvist 2004), thus ultimately leading to improved impacts on environmental quality.

The overall record of implementation of environmental decisions in modern democracies has been quite low, revealing serious 'implementation deficits' or 'gaps' (Knill & Lenschow 2000; Carter 2007). Often, these deficits can be attributed to low rates of acceptance amongst implementing agencies, competing state actors and affected citizens. These groups of actors can delay and prevent policy implementation or take legal action in order to preserve their interests. Green political theorists or public participation scholars argue that citizen involvement and mediated negotiated rulemaking have the potential to effectively respond to these concerns (Macnaghten & Jacobs 1997; Bulkeley & Mol 2003).

First and foremost, it is assumed that the effective inclusion of actor groups – in particular, potential addressees of decisions – with their respective preferences and interests into decision-making will enhance acceptance on their part for the final decision, and thus improve implementation and compliance, simply because the decision also reflects their interests (Langbein & Kerwin 2000; Gbikpi & Grote 2002). However, the validity of this hypothesis depends to a considerable extent on the representation of legitimate interests; if this is not the case, acceptance by third party groups is likely to remain low (Elliott 1984).

Second, procedural legitimacy is a major factor for increasing acceptance and implementation rates (Sabatier et al. 2005). Scholars of procedural justice argue that this increase of acceptance can even be observed when the final decision contradicts stakeholders' interests, as long as the procedure is perceived as being fair and legitimate (Creighton 1981; Lind & Tyler 1988; Tyler 1990). However, scholarly literature has produced quite a diverse set of assumptions on how procedural legitimacy can be attained in a participatory process. While some authors stress the equal opportunity to have a say and to represent one's own interests (Webler 1995), others emphasise the transparency of the process, open communication structures, early participation in all stages of policy-making, consensus vote and neutral and professional moderation between all actors involved (Linder & Vatter 1996; Richards et al. 2004). Many authors argue that rules of fairness are effective only if the actors involved will actually have a chance to impact upon the final decision (Holtkamp 2006). Hence acceptance rates are likely to decrease if important parts of the decisions have already been made elsewhere (Diduck & Sinclair 2002).

Policy effectiveness naturally plays a central role in the literature on implementation, steering and governance. The participation of non-state actors has repeatedly been mentioned as a factor influencing policy delivery (Hill & Hupe 2002), yet generally with respect to the regulatory capture of agencies by firms aiming to water down environmental decisions. In fact, participatory decision-making has traditionally – in the 'top-down' school of implementation research – been viewed as an obstacle to effective implementation, due to the higher number of 'clearance points' (Pressman & Wildavsky 1984 [1973]; Ingram & Mann 1980) and veto players (Tsebelis 1995). Even the 'bottom-up' school, focusing on local bureaucrats (Lipsky 1971), has largely neglected the role of non-state actors in administrative decision-making. With some rare early exceptions (Mazmanian & Sabatier 1980), participation is only lately being discussed as a desideratum in policy implementation, albeit primarily due to emancipatory considerations (deLeon & deLeon 2002).

(3) Importance of the context: Recently, authors have pointed to the context dependency of the effectiveness of participation. Rather than asking whether and to which extent what participatory forms are most effective with respect to environmental impacts, the question is transformed into:

Under *what circumstances* is participation effective in the above sense (Busenberg 2000; Lejano et al. 2007). Thus, Delli Carpini et al. (2004: 336) point out that "the impact of deliberation and other forms of discursive politics is highly context dependent. It varies with the purpose of the deliberation, the subject under discussion, who participates, the connection to authoritative decision makers, the rules governing interactions, the information provided, prior beliefs, substantive outcomes, and real-world conditions. As a result, deliberation, under less optimal circumstances, can be ineffective at best and counterproductive at worst".

Several context factors possibly affecting outputs or outcomes of decision processes are mentioned in the literature, many of which potentially apply to participatory governance as well. To give an example, the (conflictual) constellation of actor interests may be more or less favourable to consensual solutions and may call for different modes of participatory decision-making (Holzinger 2005). In some very severe constellations involving collective good dilemmas such as the so-called 'NIMBY' (Not In My Back Yard) situations, participation and direct exchange among participants is put forward as a prerequisite for an accepted decision. This typically involves siting decisions, such as the choice of waste disposal facility sites, which are commonly agreed to be necessary for the community (and the environment), but which no actor wants in their immediate neighbourhood. In these cases, civic participation is advocated as a means to rationalise conflicts and foster the negotiation of compensation measures (Matheny & Williams 1985; Renn et al. 1996; Schively 2007). Other studies have found that participation remains ineffective even in 'NIMBY' siting situations (Holtkamp 2006; Bogumil et al. 2003). On the other hand, in the case of issues that can be framed as win-win situations, participatory decision-making is more likely to foster high-quality decisions and swift implementation. This is due to the fact that social interaction is often the precondition for transforming intractable conflicts into win-win situations that provide benefits for all parties involved (Susskind et al. 1983). A final example is the geographic scale on which decision-making is situated. According to Koontz (1999), citizens' preferences with regard to natural resources (such as a national park) are partly a function of their distance to the resource, in that those living close to it favour its economic use, while those living further away favour its environmental preservation, leading to different participation strategies on the part of civil society actors.

To conclude, the different strands of literature bear a number of inconsistencies regarding the environmental consequences participatory governance. While it is increasingly argued that participatory governance is likely to foster the performance of policy-making, this would appear paradoxical in other strands of the literature, given the prevailing commons dilemmas and the manifold veto-positions of non-state actors. There is thus a great need for integrated, comparative research. Whereas implementation theory focuses on the *effectiveness* of policies (considering participation as one of many governance modes), participation research centres on the *processes* (taking environmental impacts into account as only one of many evaluative criteria). The intersection of both is what needs to be spelt out more clearly.

4 Empirical studies of participatory environmental governance

Case studies are an abundant source of data on participatory environmental governance. Countless single case studies have been published[6], varying greatly in scope, length and quality. Many were written by practitioners, some of whom were involved in the described processes, either as media-

[6] It is virtually impossible to cite even a representative fraction of these case studies. Some particularly well-known cases include the Snoqualmie river conflict, which was one of the earliest intensive forms of environmental participation in the United States (Dembart & Kwartler 1980); the Quincy Library Group Conflict (Bryan & Wondolleck 2003); the Aargau landfill siting process (Renn et al. 1996) or the Neuss waste management mediation (Holzinger 1997; Weidner & Fietkau 1995).

tors, administrators, participants or scientists. Many studies written by practitioners lack any explicit conceptual background. On the whole, most studies, if at all, consider environmental impacts in a rather cursory manner (see Newig 2007). Apparently, most cases were published in North America, reflecting the popularity of public participation approaches, mediation and negotiated rulemaking in the United States and Canada.

While the vast majority of publications analyse single cases, a number of comparative assessments are available, all of which deal almost exclusively with participatory governance in the United States.

- The pioneering work by Bingham (1986) compares 161 cases of environmental mediation with regard to their potential for consensus. An attempt is made to link outputs (i.e. whether or not consensus was reached) to certain influencing factors. However, this attempt remains cursory, and no causal explanations are offered. Since neither implementation of decisions nor their adequacy in terms of problem resolution is regarded, many questions remain open. However, the study offers a number of potentially important context and process factors, which have to be complemented by those of other (more recent) studies.
- In his seminal study, Coglianese (1997) examined 67 cases of negotiated rulemaking. He finds that, contrary to expectations, participatory processes last longer and lead to litigation more often than non-participatory decisions. He argues, on the contrary, that participatory modes of governance could increase acceptance problems as disagreements on who shall given right to participate can never be fully resolved. Furthermore, participatory processes shed light on disadvantageous aspects of the decision at hand which affected persons were unaware of so far, hence reducing acceptance. Contrary to this, studying eight negotiated rulemakings and six comparable conventional rulemakings of the US Environmental Protection Agency, Langbein & Kerwin (2000) find enhanced learning and greater participant satisfaction in negotiated rulemaking, but report no influence on environmental effectiveness.
- Chess & Purcell (1999) investigated some 20 single and multiple-case studies on participation in environmental decisions, defining a number of context, process and outcome (output) aspects. Remarkably, they find that the form of participation *does not* determine the process or outcome success.
- A specific sector of participatory governance – watershed management – was examined by Leach et al. (2002), Sabatier et al. (2005) and Leach (2006). Following participant interviews in 76 watershed partnerships in the states of California and Washington, the democratic merits of collaboration and participation and their effect on outputs (regardless of whether an agreement was reached) is measured, including variables such as social capital and collective learning. In a similar context, Lubell et al. (2002) studied the genesis and viability of 958 watershed partnerships in the United States. In all of these studies, context factors and environmental impacts are not systematically included.
- The hitherto most comprehensive comparative analysis of participatory environmental governance processes was presented by Beierle & Cayford (2002). In a meta-analysis of 239 published cases, they distinguish context, process and result variables, defining 'success' mainly in terms of democratic legitimacy. As the authors themselves acknowledge, environmental outcomes are largely neglected. On the whole, the analysis is strongly aggregated, such that many findings seem virtually incomprehensible. Nevertheless, this study is the largest of its kind and provides numerous insights into methodological issues such as case selection, coding and possible biases.
- Newig & Fritsch have conducted a case survey of some 40 cases of more and less participatory environmental decision procedures in the United States and Europe (Newig & Fritsch 2009a; Fritsch & Newig 2009). The authors found that although participation in the studied

cases tended to foster social goals such as conflict resolution and trust building, it did not significantly improve environmental outcomes as compared to less participatory processes. While environmental outcomes were largely determined by the preferences of the involved actors, context variables crucially influenced the impact of participation on environmental outcomes.

- Very recently, the US National Academy of Sciences (US-NRC 2008) published a broad study on the overall virtues and risks of public participation in environmental assessment and decision-making. Focusing strongly on the US, the authors review a wealth of conceptual and empirical literature (almost 300 cases), largely organised as a classic review. This will be helpful for integrating conceptual literature and for constructing a comprehensive coding scheme. With a strong focus on practical implications, the volume provides a number of policy recommendations. While the context of participation is acknowledged as affecting outcomes, the general conclusion is that "well-conducted processes" can compensate for context-related difficulties. The authors conclude by calling for a stronger consideration of contextual variables, more multi-case comparative studies "that allow a stronger assessment of generality and causality" and an "increased level of rigor in research design" (p. 9-15).

To conclude, considerable research gaps exist regarding the effectiveness of participatory governance in terms of environmental consequences. Drawing on different literatures, empirical studies provide only sporadic evidence on either claims. On the whole, the crucial issue of the environmental impacts of participatory governance has until now received much too little attention (Koontz & Thomas 2006).

5 Towards an evidence-based approach

This short overview of the state of the art in the international debate shows two main points. On the one hand, there is a multitude of partly complementary, partly competing, and partly contradictory assumptions on the environmental effectiveness of participatory governance. While the mainstream of the participation literature assumes a positive relationship between participation and effective environmental and natural resources management – or even presupposes this –, research from other (sub-) disciplines such as social psychology or policy implementation view these assumptions this in a different light. Second, empirical research still remains patchy and highly ambivalent. While a considerable number of (single) case studies are available, mainly in North America and Europe, they still await a systematic and comparative analysis. It becomes evident that the societal and problem-related context of participatory governance is decisive for the way in which participation impacts on environmental policy delivery. Preferences and perceptions of the involved actors appear to play a key role.

On the whole, much research needs to be done in order to understand whether and how and under what circumstances participatory governance enhances environmental management. In their seminal comparative study, Beierle & Cayford (2002: 76) conclude that "more research on implementation is needed. The value of public participation will ultimately be judged by its ability to enhance implementation and show demonstrable benefits for environmental quality". More recently, and quite to the point, Koontz & Thomas (2006: 118) diagnose: "Although scholars have developed many variables for measuring process characteristics and policy outputs, much work remains to be done in order to link these variables with policy outcomes. Existing research on policy outcomes has focused primarily on social outcomes (such as trust and social capital), and a considerable gap remains in our understanding of the effect of process characteristics and policy outputs on environmental outcomes".

In short: There is much belief on the merits of participation in environmental governance, but little evidence. Despite this severe lack of knowledge, environmental administration all over the industrialised world continues to use more or less participatory methods, largely subject to political fads that come and go. A number of strategies appear appropriate, which can be subsumed under the heading of 'evidence-based approaches'.

On the one hand, a huge potential lies in the knowledge distributed over hundreds of single case studies ("an intellectual goldmine awaiting discovery"; Jensen & Rodgers 2001). This ought to be systematically aggregated and analysed with regard to the environmental effectiveness of participatory governance. To this end, case study meta-analyses (case surveys) can be conducted. The case survey method is a particular form of large-*N* meta-analysis. Different from standard meta-analyses, which integrate quantitative analyses (Lipsey & Wilson 2001), case surveys integrate qualitative studies, transforming qualitative data into (semi-) quantitative data using a coding scheme and expert judgements by multiple coders (Lucas 1974; Yin & Heald 1975; Larsson 1993). The results can be analysed with available analytical methods. Thus, case surveys draw on the richness of the case material, on different researchers and research designs, and allows for a much wider generalisation than can single cases. Surprisingly, the method has rarely been employed. The only major study of interest has been presented by Beierle & Cayford (2002), drawing on more than 200 single cases.

Furthermore, given the instrumental rationale for participatory governance, this subject lends itself outstandingly to be tested with field experiments, the "gold standard" in medicine and in health and education studies. Random choice of pre-defined types of participatory methods can considerably reduce biases such as factors that typically influence the choice of participation (or non-participation) and thus allow for a significantly better evaluation of environmental outcomes. Experiments are established in many fields of science and scholarship. In medicine and health research, randomized controlled trials are widely used to determine the effects of specific interventions. Experimental methods are becoming increasingly important in social science (Oakley et al. 2003). Their obvious advantage over classical observations (single and comparative case studies) lies in the possibility for unbiased inference about causal relations. Whereas laboratory settings allow for precisely controlled contexts (such as in experimental economics), real world (field) experiments combine the advantage of natural political contexts with methodological benefits of random assignment (Druckman et al. 2006). Experimental methods have been used predominantly in simple settings that involve only distinct interventions and variables involved. For instance, a large experiment in Tennessee analysed the effect of school class size reduction on student performance (Hanushek 1999). Here, the intervention (class size reduction) is simple and relatively easy to implement. The applicability of field experimentation in the social sciences is still controversially discussed (see the special issue edited by Sherman 2003). In political science, experimental research is increasingly used, but still on a very low level and far from being established as state-of-the art (Green & Gerber 2003). Applications mostly involve mass political behaviour such as in political psychology, electoral politics and legislative politics (Druckman et al. 2006: 627). In contrast, few if any studies have been conducted complex areas such as governance research. Therefore, its practical limitations are not yet known, because "political scientists have yet to advocate and implement this type of research design" (Green & Gerber 2003: 103). Given the growing experience with experimental methods, the time seems now ripe to attempt experimental research in such complex areas of political and administrative science. The methodology of complex field experiments involving environmental policy-makers still needs to be elaborated. This opens up promising perspectives for future inter- and transdisciplinary research.

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