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Reflexive Governance in the Public Interest

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Participatory governance and sustainability

Findings of a meta-analysis of stakeholder involvement in environmental decision-making

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Working paper series : REFGOV-GPS-13

This working paper can be cited as follows

Oliver Fritsch and Jens Newig, 2009. Participatory governance and sustainability. Findings of a meta-analysis of stakeholder involvement in environmental decision-making. REFGOV Working Paper Series GPS-13, Centre for Philosophy of Law, Université catholique de Louvain (final version submitted to MIT Press).

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Participatory governance and sustainability

Findings of a meta-analysis of stakeholder involvement in environmental decision-making

Oliver Fritsch / Jens Newig

Abstract: Current policies and scholarly work increasingly promote the participation of non-state actors in environmental governance as a means to more informed and sustainable decisions and a more efficient implementation. Based on the expectation that these two prerequisites are key for attaining policy goals, participatory environmental governance is thus expected to foster more effective improvements of environmental quality. While this instrumental claim has been around for a long time, it has until now remained largely unsupported by systematic empirical research. This paper aims to test these assertions by way of a meta-analysis using qualitative and quantitative methods. 35 cases of local or regional participatory environmental decision-making in North America and Western Europe are analyzed. Several process variables (e.g. participation media and techniques, representativeness, fairness), context variables (such as actor interests and power positions, degree of conflict or the role of policy implementation) and result variables (e.g. collective learning, knowledge gains, building of trust, environmental outputs and outcomes) are examined in order to identify factors that support sustainability goals in a deliberative setting as well as to find out conditions less favorable to ecological outputs and outcomes. The analysis shows that most of the mechanisms described in the literature do play a role – but only in some cases and only to a certain extent. Disillusioningly, the decisive factor for environmental effectiveness appears to be the interests and goals of the involved actors, some of which favor strong ecological solutions while others do not.

Key words: Public participation, knowledge, learning, policy implementation, effectiveness, case studies, secondary analysis, instrumental claim

1 Participatory governance and sustainability – a paradox?

Environmental governance on both sides of the Atlantic increasingly relies on the participation of non-state actors such as citizens and organized interest groups (see Gunningham this volume). Prompted by the U.S. Negotiated Rulemaking Act of 1990 and the Rio Declaration of 1992, which demands in principle 10 that "environmental issues are best handled with the participation of all concerned citizens", followed by the Århus Convention of 1998, four recent European Union directives[1] have legally institutionalized access to information and public participation in environmental decisions.

Among the motives and rationales for public participation, which have traditionally centered around emancipatory and legitimacy aspects, it is now an increased *effectiveness of governance* that is being discussed – and aimed at (Heinelt 2002; Dryzek et al. 2005; Feindt and Newig 2005; Koontz and Thomas 2006). In the face of continuing implementation deficits of environmental policy (Knill and Lenschow 2000) and increasingly complex societal structures, participatory decision modes that are suited to foster collective learning are indeed regarded as a prerequisite for the advancement of sustainable policies (Dryzek 1997). Focusing on substantive outcomes rather than on fairness or other aspects, participation thus becomes a means to achieve environmental goals in a more targeted, swift and effective way (Bulkeley and Mol 2003). Symptomatic is the claim of the guidance document on public participation relative to the EC Water Framework Directive that "public participation is not an end in itself but a tool to achieve the environmental objectives of the Water Framework Directive" (EU 2002, p. 6). Specifically, participatory governance relies on the expectation that participation improves the 'quality' of decisions by incorporating the knowledge of local actors (Steele 2001; Pellizzoni 2003; Yearley et al. 2003). Moreover, it is expected that the involvement of non-state actors leads to a higher acceptance of decisions and thus improves implementation and compliance (Macnaghten and Jacobs 1997; Schenk et al. 2007). Both mechanisms are assumed to ultimately lead to better environmental outcomes as opposed to more hierarchical modes of steering (Newig 2007).

However, this 'instrumental claim' has not remained undisputed. Scholars have pointed out multiple dangers and trade-offs which Dahl (1994) has termed a 'democ-

[1] These are the Water Framework Directive (2000/60/EC), the Strategic Environmental Assessment Directive (2001/42/EC), the new Environmental Information Directive (RL 2003/4/EC) and the Public Participation Directive (2003/35/EC).

ratic dilemma' between effectiveness and participation. From a rational choice perspective, the collective use of resources regularly implies social dilemma situations (Hardin 1968), which call for institutional arrangements on scales large enough to internalize the negative externalities. Participatory decision-making, however, is typically located on local or regional scales (Ostrom 1990; Ostrom et al. 2003; Kastens and Newig 2007), and, contrary to sustainability goals, the interests of local actors tend to focus on shorter time horizons. Accordingly, more and more authors have recently been asking whether participatory modes of implementation actually improve substantive policy outcomes. Even if one does not embrace the notion of participation as the "new tyranny" (Cooke and Kothari 2001), "there is something of a dilemma if participation turns out, empirically, not to improve outcomes" (Lee and Abbot 2003, p. 87-88).

Although the whole field of participation research has now reached a welcome degree of differentiation and variety, the issue of the ecological outcomes of participatory governance has received surprisingly little attention (Beierle and Cayford 2002; Koontz and Thomas 2006). Accordingly, the empirical basis is still weak and, above all, fragmented (see Diduck and Sinclair 2002; Beierle and Cayford 2002). To our knowledge, there is not a single study in English or German that systematically addresses this question. Moreover, systematic conceptionalizations of relevant causal mechanisms are also lacking. Although a considerable body of empirical and theoretical knowledge exists, this lies scattered throughout a large number of single (case) studies, most of which – if at all – only touch upon aspects of outcome effectiveness; the underlying mechanisms are often only implicitly assumed. Thus, Beierle and Cayford in their seminal study on public participation demand 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. Understanding the links between participation and actions on the ground is a high priority. Research should focus on the specific links between public participation and the political, legal, and social forces that drive implementation forward" (Beierle and Cayford 2002, p. 76; see also Koontz and Thomas 2006, p. 118).

This is the starting point for the present chapter. We seek to critically assess the potential of participatory and reflexive governance for the attainment of sustainability goals. We aim to elucidate the conditions as well as the reflexive and participatory mechanisms that are favorable (or less favorable) to foster the generation of local knowledge, collective learning, and eventually the attainment of environmental goals. In a first step, we formulate three clusters of hypotheses regarding causal mechanisms (section 2). Second, we present early findings from a meta-analysis of 35 published case studies on participatory environmental decision processes, drawing

on the set of hypotheses as an analytical framework (section 3). The last section is devoted to our conclusions.

2 Conceptual Framework: Influencing factors and hypotheses

Participatory governance embraces a wide array of forms and settings; 'participation' as such even more so. In line with current strands of literature referred to in the introduction, we focus on those instances of public participation that have been initiated in order to agree on collectively binding public decisions. These include hearings, citizens juries, environmental mediation, public deliberative fora, consensus conferences (Renn 2005), or other forms so long as they serve to include actors that are not routinely engaged in the decision at stake. Participatory processes without aiming at binding decisions, such as Local Agenda 21, are excluded from our analysis. Note that this does not imply that decisions be taken by governmental agencies; often, environmental mediations arrive at decisions that do have a public character and are negotiated in the 'shadow of hierarchy' (Scharpf 1997). Moreover, the analysis shall be restricted to those forms of participatory governance that are situated at a sufficiently regional or local level such that non-organized citizens still have a fair opportunity to participate.

Since participatory governance is embedded in a larger political context, we call for a 'global' perspective linking socio-political *context,* decision *process,* actor characteristics and – as dependent variables – decision *results* such as decision quality (output), implementation and improvements of the ecological state of natural resources (outcome). A first account of such a 'global' perspective has been developed in Newig 2007), including more than 45 influencing factors. This section presents a brief summary of the main hypotheses on the effects of participatory environmental governance put forward in the literature. We group these into three clusters. While the first cluster covers hypotheses explaining decision *output* by process characteristics, the second relates to explanations of decision *outcome* (implementation) by process characteristics. The importance of *context* factors is dealt with in the third cluster.

2.1 Mechanisms I: Improved decisions through participation?

Scholarly literature promoting participatory and reflexive governance as an instrument to more effectively attain sustainability goals (see Voß et al. 2007) puts forward three distinct causal mechanisms leading to more ecological decisions. These are: the breaking open of established decision-making circles, an improved information basis

by including lay local knowledge, and emergent effects of social learning and creative deliberation.

According to the first argument, current environmental managers are captured by interests less supportive of pollution control, nature preservation or sustainable lifestyles, e.g. business or development advocates. Furthermore, environmental decision-making bodies and also administrations are subject to party politics leading to compromises on their ecological goals for competing social or economic objectives. In order to implement a policy which is in line both with the electorate's interests and with general ecological policy goals once agreed upon, these in-groups of decision-makers have to be opened for civil societal actors, nongovernmental organizations and also experts which were not involved so far. Hence, it can be assumed that participatory decisions involving civil society actors will be more favorable to ecological concerns than command-and-control decisions (Smith 2003). However, it is obvious that the plausibility of that argument strongly depends on the validity of its core assumptions. If the capture argument turns out to be wrong, the anticipated transformation of ecological output quality cannot be expected. Conversely, in societal contexts characterized 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 that exist and the respective interests they pursue (Dryzek et al. 2005).

A second argument emphasizes the potential of participation to generate factual information that would otherwise not be available for the decision maker. This holds true in particular for very local issues (see Brousseau et al. this volume). The involvement of informed lay persons may help to provide detailed knowledge of special local characteristics and conditions (López Cerezo and 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, p. 36).

A third strand of arguments discusses in how far collaborative decision-making procedures foster processes of social learning. This line of reasoning goes beyond the mere acquisition of factual knowledge and underlines 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 and Hare 2004; Siebenhüner and Suplie 2005). Many authors identified mutual trust among the participants as a precondition for social learning (Leach and Sabatier 2005). Yet, social psychologists

call attention to potential adverse effects of participatory group processes in policy-making and implementation. Cooke (2001), for instance, argues that groups tend to take risky decisions, are immune towards critical voices and might develop emergent dynamics which is quite different from the interests of those the group is supposed to represent.

In sum, the challenge is to empirically test whether public participation will increase the chance for non-state actors to break open political in-groups, improve the knowledge base of environmental decisions and foster social learning. Finally, it has to be explored whether these mechanisms are in fact likely to enhance ecological standards of decisions.

2.2 Mechanisms II: Improved implementation of decisions through participation?

Implementation research in environmental politics has provided ample evidence that traditional top-down modes of governance face serious implementation problems, which are a principal reason for low performances in reducing pollution or protecting natural resources (see, e.g. Knill and Lenschow 2000). 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 and Jacobs 1997; Bulkeley and Mol 2003).

First and foremost, it is assumed that the effective inclusion of actor groups 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, just because the decision also reflects their interests. In this sense, public participation can also be interpreted as a way to learn more about and respond to potential societal opposition (Linder and Vatter 1996 181). However, the validity of this hypothesis depends to a considerable degree the representation of legitimate interests; if this is not the case, acceptance by third party groups is likely to remain low.

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, so long as the procedure is perceived as fair and legitimate (Creighton 1981; Lind and 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 stress the equal chance to have say and to represent own interests (Webler 1995), others emphasize the transparency of the process, open communication structures, early participation in all stages of policy-making, consensus vote and a neutral and professional moderation between all involved actors (Linder and Vatter 1996). 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. Hence acceptance rates are likely to decrease if important parts of the decisions have already been made elsewhere (Diduck and Sinclair 2002). However, there are only a few empirical studies confirming that a lack of procedural legitimacy accounts for implementation deficits. This point has been raised, among others, by Coglianese (1997) who holds that the pitfalls of conventional rulemaking are strongly overemphasized. 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.[2]

Given the prevailing contradicting theoretical assertions and the lack of empirical underpinning, it will be crucial to examine whether and which forms of public participation impact in what ways on acceptance, implementation and compliance of environmental policies.

2.3 Mechanisms III: Influence of the context

While research on participatory governance has predominantly been focusing on processes, scholars have also been paying attention to the societal context and actor constellations (for an overview see Delli Carpini et al. 2004).

Societal power relations are obviously a decisive factor for the actual influence in a public participation process, because processes with considerable power asymmetries tend to suppress the interests of weaker actors compared to formalized top-down processes. This is likely to impact on the substance of a decision as well as on its acceptance, since disadvantaged actors might choose to delay or prevent imple-

[2] From a normative point of view, the assumptions behind these hypotheses are disputable, as they are only valid within the argumentative realm of deliberative or participatory democracy. Adherents of representative or antagonistic democracy (Mouffe 2006) have developed alternative concepts of procedural fairness or even reject its overall value.

mentation after the process by appealing to court (Cupps 1977; Selle 1996; Turner and Weninger 2005).

As argued above, consensual decision-making can contribute to legitimacy and, thus, to acceptance and improved implementation. However, contextual characteristics such as specific problem constellations might render consensus vote almost impossible. This holds in particular for social dilemma situations such as NIMBY which are virtually irresolvable in consensus without one actor taking a large part of the costs (Elliott 1984; Thomas 1995). On the other hand, in case of problems which 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 often social interaction in a participatory process is the precondition for transforming intractable conflicts into win-win situations which provide benefits for all parties involved (Susskind et al. 1983).

Many of the causal mechanisms presented so far have been claimed – implicitly or explicitly – for participatory implementations of higher-order policies *(policy implementation)*. However, a considerable number of case studies is available that examine citizen involvement in local policy-making *(policy-setting)* or the collaborative interplay of different public agencies and non-state actors in complex multi-level systems. While the participatory instruments employed in both types of settings are often the same, it is reasonable to assume that the causal mechanisms outlined above will work differently. The absence of a given policy goal transforms the rationale of a participatory process from collaborative adaptation to local conditions and improved implementation towards a more power-dominated and interest-based struggle for the general direction of policy. Accordingly, we assume that the political context the decision process is embedded in is likely to have a major impact on the relevance of some causal assumptions discussed and, as a consequence, on policy outputs and outcomes.

3 Findings of a meta-analysis of case studies

3.1 Methodology

In this section, we will put the hypotheses outlined above to an empirical test, seeking to establish an evidence-based understanding about the effectiveness of participatory decision-making. Taking into account that there are as many different forms of citizen involvement as there are contextual settings and actor-interest constellations, only a large number of cases allows for identifying causal factors and influencing variables. Therefore, we scrutinized 35 decisions in participatory environmental governance which have been made in the past three decades (see table 3.1-1). All of

these have been published in journals or edited volumes and are sufficiently well documented.

The cases chosen for this study are a taken from a larger database built up between October 2005 and March 2007. In a broad literature search we identified more than 200 detailed case studies of collaborative and participatory environmental policy and management, which have been elaborated by political scientists, geographers, scholars of environmental conflict resolution, planning and the legal studies, but also sociologists and psychologists. The cases in the data base report environmental collaborations undertaken during the last three decades in Northern America and Western Europe and documents citizen involvement in natural resources management, participatory planning (large-scale infrastructure projects, power plants and waste management facilities) and sustainable community programs. While our prime interest lies in civil society involvement, we also included – as a control group – case studies on negotiations between multiple governmental agencies or between governmental actors and business. The 35 sample cases have been selected according to the comprehensiveness of provided information. Even though these cases do not constitute a sample in a statistical sense and are presumably not representative of all actually carried out environmental decision-making processes in late-modern democracies, they do represent a broad variety of policy issues, political scales, decision contexts and forms of participation (see table 3.1-1). The vast majority of cases – both in the data base and the 35 case sample – stems from North America, reflecting the popularity of public participation approaches, mediation and negotiated rule making in the United States and Canada. The remaining cases are from Europe, mostly Germany. Statistical analysis has shown virtually no significant correlations between the continent and country of the case study with other variables, implying that both structural and process characteristics are well comparable across the Atlantic.

We used the case-survey method (Lucas 1974; Bullock & Tubbs 1987; Larsson 1993), combining qualitative and quantitative techniques. Drawing on the conceptual framework discussed above, we first elaborated a coding-scheme comprising some 100 variables measuring the societal context, the (participatory) process, actor characteristics and decision results, including environmental outputs and outcomes. In a second step we read the selected case studies carefully and coded them, extracting and quantifying all relevant information for each case, thus building up a comprehensive case study database. Most variables were coded on a 0 to 4 point semi-quantitative scale and a few particular variables on an interval or binary scale. Half of the selected studies were coded by at least two researchers, using arithmetic means in case of differences. As the information in the secondary case studies were available as qualitative data, the coding and quantifying procedure itself is ultimately an interpretative one, hence accounting for the qualitative part of the method.

Still, in case of two persons coding one case study, there was an overlap of 75 percent identical codes compared to 25 percent of variables which were coded differently and, consequently, averaged. Across all cases, we were able to code on average 87 percent of variables.

Case	Country	Year	Reference
301h Water Regulation Case	USA	1977	Burgess et al. 1983
Aargau Landfill Siting	CH	1993	Renn et al. 1998
Albemarle Pamlico Estuarine Study	USA	1990	Koontz et al. 2004
Animas River Stakeholder Group	USA	1998	Koontz et al. 2004
Belmont Open Space Controversy	USA	1998	Layzer 2002
Brayton Point Coal Conversion	USA	1977	Burgess and Smith 1983
Cold Lake Large-Scale Bitumen Extraction	CA	1978	Elder 1982
Colstrip Power Plant Mediation	USA	1978	Sullivan 1983
Colorado Grand Canyon River Management Plan	USA	2001	Orton 2005
Foothills Water Management Case	USA	1976	Burgess 1983
Frankfurt Airport Airstrip Extension	D	1999	Geis 2005
Holston River Chemical Plant Mediation	USA	1974	Jaegerman 1983
Hudson River Power Station Settlement	USA	1980	Talbot 1984
Inland Northwest Field Burning Summit	USA	1990	Mangerich and Luton 1995
Interstate 90 Extension	USA	1976	Talbot 1984
Jackson Sewage Treatment Plant	USA	1978	Hill 1983
Lübeck Waste Management Proposal	D	1995	Wiedemann et al. 1995
Münchehagen Hazardous Waste Siting	D	1992	Müller-Erwig 1995; Striegnitz 1997
Neuss Waste Management Plan	D	1993	Fietkau and Weidner 1998
Pig's Eye Mississippi River and Wetlands Case	USA	1980	Nelson 1990a
Portage Island Park Management Case	USA	1979	Talbot 1984
Sand Lakes Quiet Area Oil Drilling Negotiation	USA	1981	Nelson 1990b
Sandspit Harbour Mediation	CA	1992	Sigurdson 1998
San Juan National Forest Mediation	USA	1983	Tableman 1990
Snoqualmie River Flood Protection Mediation	USA	1974	Dembart and Kwartler 1980
Spreewald Riparian Land Project	D	2002	Baranek and Günther 2005
Sugarbush Water Withdrawal Mediation	USA	1992	Fitzhugh and Dozier 1996
Swan Lake Hydroelectric Powerplant Conflict	USA	1979	Talbot 1984
Three Rivers Watershed	USA	1972	Mazmanian 1979
Umatilla Basin Mediation	USA	1992	Neuman 1996
Upper Narragansett Bay Waste Water Treatment	USA	1996	Burroughs 1999
Wildcat and San Pablo Creek Flood Management	USA	1972	Mazmanian 1979
Winfield Locks Toxic Waste Case	USA	1992	Langton 1996
Wisconsin Groundwater Commission	USA	1982	Edgar 1990
Yukon Wolf Management Team	USA	1992	Todd 2002

Table 3.1-1: Overview of case studies analyzed. Third column: average year of participatory process.

In a third step, we calculated Pearson correlation coefficients among variables. To this end, we aggregated some of the original variables. As an example, we defined the new variable 'actor goals' as the arithmetic mean of all individual actor goals. In order to assess whether public participation improved decision quality (output), and implementation in terms of ecological outcomes, we assumed a hypothetical top-down situation for each individual case (see Lewis 1973 for counterfactuals) and asked: To what extend can we assume that public participation helped improving the environmental outputs, their implementation and the ecological conditions, compared to a hypothetical top-down situation? This kind of reasoning is far less speculative as it seems, since public participation is not organized in a contextual vacuum. On the contrary, there is a case history and citizen involvement usually appears to be a late chapter of a story which once started as a top-down process that got stuck or even failed. Understanding this case history allows for a reconstruction of the competent authority's goals and an assessment of probable implementation deficits due to opposition of non-state actors or competing state agencies.

Finally, we controlled for a number of third variables (context variables), which allows to specify the conditions under which participatory governance is conducive to sustainability and when it is not (section 3.4).

3.2 Results I: Better decisions through participation?

In section 2.1 we referred to the widely held view within participation research that participatory forms of governance increase the (ecological) quality of decisions. We operationalize the 'quality' of decisions as (1) the amount of new and useful information generated in the process through the involvement of non-state actors *(information gain);* (2) the extent to which there has been *collective learning* in the sense of more creative solutions or the exploitation of win-win potentials through group interaction; and (3) ultimately, the degree to which a decision takes into account ecological issues, sets environmental standards and is suitable to *enhance environmental quality* compared to the reference scenario.

(1) In most of the 35 cases, new and useful information was in fact generated. The variable 'information gain' received an average score of 1.9 points[3] (with a standard deviation of .9). However, 'information gain' is only loosely correlated with process-related variables (see table 3.2-1). Only variables related to the type of participants show significant correlations. Participation of a governmental authority appears to foster information gain, while the involvement of individual citizens tends to hamper

[3] Unless otherwise noted, we used a 0 to 4 point semi-quantative scale.

it. This suggests that – contrary to theory –, private citizens have (at least on average) little specific knowledge to offer compared to that of governmental agencies, which holds true for cases such as the *Animas* stakeholder group, but clearly not for others such as the *Albemarle-Pamlico* estuarine study, where dedicated citizens contributed much relevant information. Other variables relating to the intensity of participation show no significant statistical relation with information gain. On the level of the whole data set, this finding clearly contradicts the hypothesis of the importance of lay local knowledge.

	Information, reflection and learning		Environmental outputs	
	Information gain	Collective learning	Decision goal – stakeholder goals	Decision goal – govt. goal
Grassroots involved			.30	
Citizens involved	-.32			
Government participates	.36 *			
Spokespersons		.44 **		
Controlled participant select.				.46 **
Face-to-face		.36 *	.47 **	.60 ***
Mediation / facilitation		.50 **	.30	.58 ***
Representation		.47 **		
Fairness		.53 **		
Communication		.55 ***		.32
Consultation		.43 *		
Participation		.61 ***		

Table 3.2-1: Correlates of process with 'quality of decision' variables. Only significant correlations with $p < .1$ are depicted. * $p < .05$, ** $p < .01$, *** $p < .001$.

Indeed, in many of the cases in which much useful information was generated, issues were very technical, leaving little room for citizens to contribute. In the *Holston* river case, for instance, citizens and grassroots groups left the negotiations over water quality standards with a large chemical plant entirely to the US Environmental Protection Agency (USEPA). Likewise, in the *Animas* stakeholder group, which worked on a remediation plan for heavily polluted mining sites to improve water quality, citizens and representatives of environmental organizations could contribute only little to solving the very technical issues. Similarly, in the *Lübeck* and *Neuss* waste management cases, much useful information was generated, but mainly through the involvement of experts. On the other hand, environmental groups and engaged citizens succeeded in the *Albemarle-Pamlico* estuarine process to work closely with experts and generate an immensely improved scientific basis for an estuarine conservation and management plan.

All things considered, although there is a considerable gain of useful information in the cases analyzed, we find hardly any evidence that this crucially depends on the way the decision process is conducted and to what extent it is participatory.

(2) With 'collective learning' – defined as the extent to which collectively new and creative ideas and solutions were developed and win-win potentials were discovered within the decision process – we find considerably more evidence of the role of participation. The variable obtains an average score of 2.1 (with a standard deviation of 1.0). It is positively correlated with many process-related variables (see table 3.2-1) such as the degree of stakeholder interaction and the intensity of communication and information flows, but also aspects of process fairness and legitimate representation of stakeholders influence collective learning. The high correlation of information-flow related variables[4] suggest that an effective information flow presupposes deliberation, reflection and the development of creative solutions. Legitimacy-related variables (spokespersons, representation, fairness), consistent with theory, appear to influence the willingness of stakeholders to actually cooperate and thus learn collectively.

Two positive examples are the *Aargau* and *Snoqualmie* cases. In the former, four citizens fora composed of citizen representatives of nine Swiss communities as potential waste sites successfully (and consensually) developed an ecologically rational ranking of waste sites. In the first environmental mediation in the US, environmentalists, farmers, residents and the US Army Corps of Engineers discussed flood protection at the Snoqualmie river. In a controversial, but fair and highly participatory mediation process, stakeholders discovered common interests and win-win potentials, which led to an innovative compromise benefiting both ecological and flood-protection interests. Conversely, the insufficient involvement of citizens and open-space proponents in the *Belmont* hospital case contributed to the fact that, although an enormous amount of information was generated, hardly any innovative solutions could be developed.

Comparing the results regarding 'collective learning' with those of 'information gain', leads us to draw two conclusions. First, both information gain and collective learning happen in the analyzed cases to an approximately equal degree and with similar variance. Second, collective learning to a much larger extent than information

[4] Following Rowe and Frewer 2005, we define 'communication' as information flow from project organiser (e.g. a mediator or an governmental agency) to participants, 'consultation' as vice versa, and 'participation' as two-way information flow between project organiser and participants.

gain appears to depend on the way the process is conducted. Information and technical data, it seems, can be generated without having to rely on participation; creative new solutions and win-win-potentials, on the other hand, appear to presuppose high degrees of participation.

(3) Ultimately, we are interested to see whether participation not only improves the knowledge base of the decisions but actually leads to more ecological decisions. Measured on a scale form -4 to 4, the ecological standard of decisions averages at .2 (standard deviation: 1.8), i.e. in some cases, environmental programs were enacted, while in others, large development projects, harmful to the environment, were decided upon. Taking this output variable (decision goal) as the relevant measure, we find that the by far highest correlation is with the variable 'mean actor goals' (.89, $p < .001$). This clearly suggests that it is the interests of the stakeholders that more than any other factor determine the output. While it does not come as a surprise that stakeholder interests affect governance outputs, the predominance of this factor is indeed stunning. It suggests that regardless of how the process is actually shaped, the societal interests will determine the output. In order to examine the effect of participation more closely, we first calculated the difference of the output and the mean actor goals. The key variables that statistically correlate with this measure of difference are the involvement of grassroot actors, face-to-face settings and a mediated process (table 3.2-1).

The *Colstrip* mediation might serve here as an example. This case reports how a tribe of Indians opposed the upgrading of a power plant close to their homelands and achieved additional measures of air pollution control as a precondition for the upgrading. This participatory process is typical in particular as those actors taking an ecological perspective preferred to put forward economic, quality of life and health-related arguments to support their case instead of employing ecological or even eco-centric reasons. Obviously, emphasizing personal harm and affection was key for success. In other cases, the decision output was ecologically inferior to the mean stakeholder goals, largely due to the non-involvement of an environmentally-oriented grassroots initiative. This was the case in *Belmont*, where a private hospital and a nearby municipality negotiated the future use of ecologically valuable property which has been declared for sale by the former. As the participatory process excluded green NGOs and conservation-oriented citizen groups, ecological arguments met with no response. As a consequence, the agreement allowed for the sale of the estate and also its commercial use leading to a major deterioration of nature. Contrary to the *Colstrip* case, though, green actors could not refer to direct negative impacts for those they represented, considerably weakening their general position.

In order to determine whether participatory governance – as opposed to 'top-down' administrative or governmental decisions – actually makes 'a difference', we calculated the difference between decision output and the governmental goal (average of policy goal and agency goal). Assuming that without participation, the pure government goal would have been decided, this difference gives us a measure of the deviation of the hypothetical, counterfactual top-down alternative. As table 3.2-2 shows, in a slight majority of cases, outputs were ecologically inferior to the counterfactual top-down alternative. In particular, this is observable when environmental agencies, such as the US EPA, initiated public participation processes. Their ambitious ecological approach is regularly watered down by participants who neither share the agency's environmental awareness nor the will for rigorous implementation of ecological measures. In a sense, this can be interpreted as the reversal of the 'capture hypothesis' discussed in section 2.1. Consequently, a participatory agreement is closer to a compromise between competing interests than to a collective search for ecological optimal solutions. This was the case in the *Spreewald* riparian land project, where local actors from agriculture, forestry, fishery and tourisms opposed strict measures, fearing expropriation and loss of incomes. In other instances, such as the mentioned *Yukon* or *Snoqualmie* cases, participation led to ecologically superior decisions.

	Improvement	Deterioration	No difference	No data	Sum
Output	12	15	4	4	35
Outcome	16	5	11	3	35

Table 3.2-2: Differences of environmental output and outcome variables regarding the hypothetical top-down alternative (governmental environmental goal). Output denotes the substantial quality of a policy decision towards environmental protection, outcome the degree of policy implementation.

Contrary to theory, the learning-related variables 'information gain' and 'collective learning' are not significantly correlated with either of the environmental output variables. This suggests that both are really two different matters. Improved ecological standards do not require an improved knowledge base; conversely, learning effects need not lead to ecologically better decisions.

3.3 Results II: Better implementation through participation?

The two main lines of reasoning elaborated in section 2.2 suggest that (1) participatory and reflexive decision-making helps to resolve conflicts, increases trust among the participants, builds social capital and leads to an improved acceptance of decisions. (2) This, in turn, is supposed to enhance the implementation of decisions and thus, ultimately, improve environmental outcomes or impacts.

(1) Table 3.3-1 gives an overview of the multiple correlates between process variables and output variables relating to conflict resolution, trust building and acceptance. The six output variables obtain average scores of 2.2 to 3.1 with standard deviations around 1.0, indicating relatively high levels of conflict resolution, trust building and acceptance in the analyzed case studies, but with considerable variance. Three of the – supposedly – independent variables show the most important correlations: the existence of legitimate spokespersons, representation, and, foremost, fairness. Interestingly, all three are dimensions of the *legitimacy* of the decision process, thus strongly supporting the claims of procedural justice theory. Furthermore, fairness is the only variable correlating with the acceptance of third-party actors. All in all, the legitimacy of the process appears even more important for the acceptance of results than the structural process characteristics, although the latter do play a significant role. Some process variables appear to have quite particular effects, such as the importance of government (agencies) for the final decision; this decreases trust building but, quite plausibly, increases the acceptance of the decision by government (agency) itself. Remarkably and unexpectedly, methods of facilitated and structured information elicitation, although they contribute to an education of stakeholders (correlation .36, $p < .05$), seem to impede acceptance.

The *Snoqualmie* river mediation may serve to illustrate a case of a highly participatory process with a well accepted decision. The mediated process served both to resolve a year-old conflict and to produce a solution that was accepted by stakeholders and government. On the contrary, the decision made in the *Albemarle-Pamlico* process, highly participatory as well – although not mediated – was not so much accepted, largely due to the voluntary non-participation of a certain actor group. Conversely, the agreement in the *Holston* river case was well accepted by the one stakeholder, a large chemical company, without any broad participation in the classical sense; mere technical bargaining with the USEPA sufficed.

	Conflict resolution	Trust building inter-NSA	Trust building NSA-govt.	Acceptance NSA	Acceptance govt.	Acceptance third parties
Government decision		-.46 *	-.38 *		.32	
Identifiable actors				.35 *		
Spokespersons	.36 *	.39 *	.34	.51 **	.30	
Facilitated inform. elicit.				-.46 **	-.33	
Face-to-face			.31	.42 *		
Mediation / facilitation			.38 *	.45 **	.39 *	
Representation	.33	.53 **	.47 **			
Fairness	.57 ***	.77 ***	.72 ***	.51 **		.50
Number participants (lg)				-.43 *		
Communication			.50 **			
Consultation		.42 *	.40 *			
Participation			.30			

Table 3.3-1: Correlates of process with 'acceptance' variables. Only significant correlations with $p < .1$ are depicted. * $p < .05$, ** $p < .01$, *** $p < .001$.

(2) While the examined cases generally provided thorough material on decision outputs, much less information was given on their implementation. This is mainly due to the fact that the case descriptions typically end with a successfully completed decision, partly because case studies were published before implementation could even have taken place. About a dozen case studies do, however, supply sufficient information on implementation; another twenty cases allowed at least reasonable guesses about what would happen. When, for instance, in the *San Juan* National Forest mediation case it is agreed that in a certain area there will be no tree-cutting, then it is reasonable to assume that this will most likely be implemented, given the fact that implementation equals 'doing nothing', plus the obvious possibility to detect any violation. For several of the published case studies, additional information on implementation could be found in the internet, e.g. on websites of citizens advisory committees or other organizations.

As table 3.2-1 shows, there was an (apparent) improvement of implementation in most cases. It should be noted that what we refer to is implementation of environmental measures, not necessarily a larger project as such. In the *Foothills* case, for instance, the construction of a major water reservoir – which is expected to negatively affect water quality and sustainable urban planning in the city of Denver, Colorado – is facilitated through a complex, mediated process, whereas the construction of recreational areas (i.e. the 'ecological' part of the agreement) has not even started two years after the agreement.

Statistically, acceptance of non-state-actors correlates with implementation (environmental outcomes) at .34 (with p = .06), while all other 'acceptance' variables show no significant correlations. The *Holston* river case presents a clear example of an improved implementation through a negotiated settlement. If we follow the reasoning of the author, an environmentally less stringent agreement was negotiated, but has a much better chance of implementation as compared to a hypothetical top-down case because of the substantially reduced risk of long court trials with uncertain conclusion and delayed implementation. Similarly, without the participatory agreement in the *Spreewald* case, federal funds for the large nature conservation project would not even have been granted; given the local opposition to the project, the participatory agreement constituted virtually a prerequisite for implementation.

3.4 Results III: Influence of the context

The context of the analyzed cases apparently has (1) a considerable *direct* influence both on the process design as well as on outputs and outcomes. Due to space restrictions, we will concentrate on the latter aspects. (2) Context variables also have important *indirect* consequences in that they affect the correlations between process and result variables.

(1) *Direct* effects of context variables are summarized in table 3.3-1. As expected, the degree of conflict among the relevant parties correlates negatively both with quality of decision as well as with acceptance variables, indicating that less conflictual settings are more likely to produce desired outputs and outcomes. For instance, in the *Upper Narragansett Bay* process, a rather technical problem of wastewater treatment is collaboratively tackled in a little conflictual setting; rational collaboration yields considerable information and a broadly accepted agreement with a rather high ecological standard. Likewise, the existence of solutions (technical, legal, organizational, etc.) appears to have a positive influence on ecological decision standards as well as on conflict resolution and overall trust building, albeit not on acceptance. Again, *Upper Narragansett Bay* is a typical example of a case with a high potential of (technical) solutions. The existence of win-win potentials shows similar effects. A typical case of a high win-win potential and resulting conflict resolution, trust building and acceptance is the *San Juan* National Forest mediation. Whereas the USDA Forest Service sought to clear-cut a certain forested area in a touristy region, local stakeholders opposed this plan for economic and ecological reasons. The fact that the area under consideration, originally viewed as a unit, could be split up in a part with high touristy value with no tree-cutting and another, more distant part with tree-cutting, constituted an important win-win potential that was successfully used for a consensual

agreement. As expected, the variable social capital correlates positively with the acceptance of decisions by non-state actors, indicating a more consensual decision environment, and even with environmental standard of decisions. Finally, the degree to which a the issue of the decision process was clearly defined contributed positively to the acceptance of decisions. Here, again, the more technical cases such as *Upper Narragansett Bay* or the *Holston* river case provide examples of very clearly defined issues, as opposed to the complex setting of the *Albemarle-Pamlico* estuarine study which produced very low acceptance on the part of certain non-state actor groups.

	Information gain	Decision goal	Decision goal – gvt. goal	Conflict resolution	Trust building Inter-NSA	Trust building NSA-govt.	Acceptance NSA	Acceptance govt.
Degree of conflict	-.31	-.36 *					-.34 *	-.30
Existence of solutions		.35 *		.37 *	.39 *	.43 *		
Win-win potential				.37 *		.32	.41 *	
Social capital			.33				.45 **	
Defined issue							.42 *	

Table 3.3-1: Correlates of context with results variables. Only significant correlations with $p < .1$ are depicted. * $p < .05$, ** $p < .01$, *** $p < .001$.

(2) Context variables show *indirect* effects by affecting the way process variables correlate with result variables. Thus, they function as 'third variables', specifying the conditions under which the above (3.2. and 3.3) described relationships exist or do not exist. By assessing their impact, we understand the conditions under which participation fosters sustainability and those under which it does not. Overall, we find considerable effects of context variables on correlations between process and result variables.

We first considered variables that characterize whether the decision (process) is driven by government or by non state actors. One variable measures agenda-setting by government or by non-state actors, another measures whether or not a higher-order policy goal exists that needs to be implemented. For those cases with a given higher-order policy goal we find even more positive correlations between 'decision goal – government goal' and process variables as compared to those depicted in table 3.2-2; cases *without* given higher-order policy goal show no such correlations whatsoever. Very similarly, in the subset of cases in which government is the leading agenda-setter, multiple strong correlations between 'decision goal – government goal' and process variables exist, whereas those cases with non-state actors as primary agenda-setters show hardly any such correlations. Furthermore, learning-related variables

correlate much higher with process-related variables in the cases with given-policy goals and with government as agenda setter. On the other hand, 'fairness' and 'legitimate representation' correlate much higher with learning, trust building and acceptance variables in those cases without higher-order policy goal and in which non-state actors are the dominant agenda setters. Both findings lead us to conclude that different mechanisms are at work in governmental policy implementation settings as opposed to those in which local actors seek to resolve local conflicts and set their own policy goals. In the latter, fairness and legitimacy aspect appear to play a principal role for conflict resolution, trust building and acceptance. However, this has hardly any effects on ecological outputs or outcomes. In the former, we find many of the hypotheses regarding the effects of participation and learning on ecological outputs and outcomes to be confirmed.

Second, we examined the effect of (un) favorable context conditions such as the degree of conflict present among the relevant actors. For cases with high levels of conflict we found distinctive and high correlations between process variables – including those characterizing information flows – with information gain, (collective) learning, building of trust and acceptance by non-state actors; much less so for cases with low levels of conflict. Regardless of this, process variables in both subsets correlate very similarly with 'decision goal – government goal'. Hence, and not surprisingly, the building of trust and the resolution of conflict plays a much more important role in highly conflictual settings. On the other hand, this does not appear to affect environmental outcomes, suggesting that the resolution of conflicts is more a preliminary to sustainable decision-making than an actual success factor.

4 Conclusions and outlook

Will participatory and reflexive governance foster (collective) learning, build and utilize local knowledge, and ultimately produce more ecological and sustainable outcomes, as compared to classical top-down administrative decision-making? In this chapter, we have sought to contribute to responding to this question by presenting findings from a meta-analysis of 35 case studies of – more or less – participatory environmental governance.

With respect to our main hypotheses, we find a divided result. The analysis provides, on the one hand, evidence that many of those mechanisms discussed in the literature can indeed be observed, yet only in certain cases and only to a certain extent.

- The main hypothesis according to which participation improves the quality of environmental decisions cannot generally be confirmed. Only in one third of

all cases new perspectives involved, information generated or social learning processes initiated lead to a better consideration of environmental perspectives in the final agreement. In 43 percent of all cases, the involvement of non-state actors accounts for less stringent environmental decisions.

- However, we were able to clearly identify improvements of environmental policy implementation as to litigation rates and compliance due to the involvement of non-state actors. While public participation obstructed environmental outcomes in only 16 percent, it improved outcomes in 46 percent.
- The single most important factor for environmental outputs and outcomes are the interests and goals of the involved actors. While it is not surprising that these do play a role, the strength of the correlations (coefficients around .85 with $p < .001$, stable for almost all controlled third variables) is indeed striking.
- Even though the scholarly literature on participation tends to emphasize process characteristics as important influencing factors, our analysis highlights the importance of the societal and ecological *context.* While a number of context variables such as the existence of win-win potentials or of social capital directly influences outcomes, the context also affects the way process variables affect outcomes. Remarkably, the influence of participatory and reflexive forms of governance is most evident in settings with external policy goals and/or governmental agenda-setting, while in the opposite cases (no external policy goal, civil society agenda-setting) participation hardly makes any difference for the attainment of sustainable outputs and outcomes.
- While information gains and collective learning play considerable roles in the analyzed cases, these do not necessarily imply more sustainable outputs and outcomes. Apparently, improved ecological standards do not require an improved knowledge base, and conversely, learning effects need not lead to ecologically better decisions.

Our analysis has focused on local or regional forms of decision-making, allowing for an intensive involvement of concerned actor groups. Here, participatory approaches appear to be most fruitful in *policy implementation* settings. Further integration of existing case study knowledge will be crucial to deepen our understanding of the mechanisms at work. As there is, up to now, little experience with participatory and reflexive approaches to govern global sustainability, policy makers will be well advised to carefully consider the plethora of empirical results gained on regional decision scales. Accordingly, advantages of deliberation and reflexivity in governing global public goods, which have also been voiced in this volume, have to be carefully confronted with possible pitfalls. Participatory forms of environmental governance, thus, are a two-edged sword with the potential to both support or hamper the attainment of sustainability goals, depending on the societal and environmental context.

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