

Beyond Panaceas:
Assessing the Implementation and Performance of
Participatory, Multi-Level Governance in European
Water Resource Management

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Abstract

Water is an essential natural resource, yet we are experiencing a global water crisis. This crisis is first and foremost a crisis of governance rather than of actual physical resources. Capacities of single, unitary states are severely challenged by the complex, multi-scalar, and dynamic structure of contemporary problems in water resource management. New modes of governance stress the potential of public participation and scalar restructuring for effective and legitimate environmental decision-making. However, a lack of evidence on the actual implementation and instrumental value of novel governance modes stands in stark contrast to the strong beliefs and assumptions that often see these being propagated as ‘panaceas’ or ‘universal remedies’. With this doctoral dissertation I aim to contribute to a deeper understanding of the implementation and performance of public participation and scalar restructuring in environmental governance, and particularly to engage in systematic research into the contextual factors that shape the performance of such governance innovations.

Based on the conceptual approaches of participatory, multi-level governance and scale, I advance a conceptual framework specifying mechanisms and important contextual factors describing the potential of participation and rescaling to impact on the efficacy of environmental decision-making. Applying this framework, I employ a mixed-methods approach combining qualitative, quantitative, set-theoretic, and review methods, with the aim of maximising the validity of results. Drawing on the institutional frame of the European Water Framework Directive (WFD), I first assess the extent and conditions under which participation and rescaling are actually implemented in the European water resource management regime. Subsequent analyses examine whether these governance shifts, where implemented, actually lead to environmentally effective and legitimate political decisions, and foster social outcomes.

Results indicate that actual changes in governance structures remain modest, whereas previous institutional structures and experiences prove rather durable. Hence, despite recent shifts distributing authority towards alternative actors and scales, the state has persisted in its role as central authority in the European water resource management regime. To the extent that they were implemented, public participation and rescaling were generally positively related with the environmental effectiveness and legitimacy of political outcomes. The analysis provides a context-sensitive understanding, by unravelling the supposedly linear relationship between governance inputs and outputs to develop a more nuanced picture of the governance process rather as a composition of multiple, interdependent causal mechanisms that, depending on their actual configuration, lead to various outcomes. In this way, particularly the tension between legitimacy and effectiveness of political outcomes is disentangled, with both being seen as the result of distinct but interrelated properties of the governance system and its contextual circumstances.

The thesis furthermore provides insights of practical and policy relevance, highlighting the need and potential to take a context-sensitive perspective in policy design and decision-making. The framework paper and the Ph.D. thesis thus together enhance academic understanding of environmental governance and its potential contributions to sustainability transitions.

Framework Paper

Beyond Panaceas: Assessing the Implementation and Performance of Participatory, Multi-Level Governance in European Water Resource Management

1 Introduction

Water is regarded as an essential natural resource, yet we are experiencing a global water crisis with freshwaters under severe and constant pressure (Palmer et al. 2008; Vörösmarty et al. 2010). This crisis, it has been argued by many, is first and foremost a crisis of governance rather than of actual physical resources (Gupta et al. 2013; Meinzen-Dick 2007; WWAP 2015). Capacities of single, unitary states are severely challenged by the complex, multi-scalar, and dynamic structure of contemporary problems in water resource management (Gerlak et al. 2013; Koontz et al. 2004; Schmitter 2002). It is becoming increasingly urgent to address water governance failures and identify strategies to successfully mitigate human impact on water resources (Kenward et al. 2011).

Over recent decades, many institutional arrangements have been advanced by policy-makers and scholars to address these challenges and to improve water resource management – e.g. user organisations, water markets, coordinated river basin planning, devolution, and decentralisation (Ingram 2011; Meinzen-Dick 2007). What most of these approaches have in common is their reference to the state in its classical, territorial configuration and hierarchical mode of governance. Alternative modes of environmental governance stress the restructuring of established relationships between the state and society, and spatial reconfiguration of policy making (Hysing 2009; Lemos and Agrawal 2006; Sørensen 2006). In practice, these governance shifts entail, on the one hand, the opening-up of political decision-making to non-state actors by means of collaborative governance (Fung 2006; Newig and Kvarda 2012); and, on the other hand, a spatial rescaling of decision-making processes around alternative, ecologically delimited, scales (Moss and Newig 2010; Reed and Bruyneeel 2010). These principles can also be observed in prominent concepts in contemporary water governance, such as integrated water resources management or water security (Bakker and Morinville 2013; Molle 2009).

Like other alternative governance paradigms, public participation and the rescaling of environmental governance have been critiqued for being propagated as ‘panaceas’ (Meinzen-Dick 2007; Ostrom et al. 2007) or ‘universal remedies’ (Ingram 2011) without taking into account the complex specificities of society-environment interactions (see Bixler et al. 2015; Molle 2008; Termeer et al. 2010). Problems arise when a single solution is transferred to other contexts, or applied to a wide range of problems (Ostrom and Cox 2010). A lack of attention to the specificities of particular social and environmental circumstances may lead to insufficient and negligent implementation of participatory or rescaled governance structures (e.g. Waylen et al. 2015). Even if implemented suitably, these solutions may still prove inadequate, producing mixed success, or even widespread institutional failure (Acheson 2006). Hence,

while there is much belief on the merits of collaborative governance and rescaling, there remains a lack of evidence on how and under what circumstances these are actually taken up for implementation, and how they might prove instrumental in achieving the goals of sustainable development (Cohen and McCarthy 2015; Conley and Moote 2003; Gerlak et al. 2013; Koontz and Thomas 2006). There is, therefore, a need for research that looks beyond idealised solutions, to disentangle causal mechanisms (Conley and Moote 2003; Nyhlén and Lidén 2014) and work towards context-sensitive analysis of water resource governance (Dietz et al. 2003; Hering and Ingold 2012; Lejano et al. 2007; Pahl-Wostl et al. 2012).

With this doctoral dissertation I respond to the need for evidence-based, and context-sensitive research in collaborative environmental governance. The overall motivation of this research is *to contribute to a deeper understanding of the implementation and performance of public participation and scalar restructuring in environmental governance, and particularly to engage in systematic research into the contextual factors that shape the performance of such governance innovations*. More specifically, the aims structuring my research programme are:

- Aim #1: Conceptual clarification:* To provide a concise conceptual framework for understanding precisely the mechanisms through which public participation and rescaling in environmental governance contribute to the effectiveness and legitimacy of political outputs, under specification of important boundary and contextual factors;
- Aim #2: Stocktaking:* To understand the degree to which such an institutional shift in governance is actually occurring in the contemporary European water management regime;
- Aim #3: Evaluating performance:* To analyse the environmental and political performance of water resource governance institutions; and
- Aim #4: Synthesis:* To draw overarching lessons for the study and implementation of collaborative environmental governance.

Empirically, this research takes advantage of the institutional frame provided by the EC Water Framework Directive (WFD), issued in 2000. Striving for the goal of good water status in all European waters, the WFD includes detailed procedural and institutional provisions by which this goal is to be achieved (Page and Kaika 2003). These include both rescaling of planning and implementation to the scale of river basin districts (Moss 2012), and restructuring of governance processes including provisions for public participation, encouraging the active involvement of ‘all interested parties’ – including water users, the wider public, and other stakeholders (Newig and Koontz 2014). As such, the WFD represents an institutional shift that changes scalar and participation structures across Europe, and thus provides an apt test-bed to address the research aims in rigorous and valid comparative analyses.

In this framework paper, I first outline in section 2 the conceptual background on which this dissertation rests, namely the conceptual lens of participatory and multi-level governance, discussing in particular the relevance of public participation and scale in environmental governance. Section 3 briefly discusses the WFD, paying particular attention to its provisions regarding participation and river basin management planning. Section 4 provides an overview of the methodological approach taken, before the individual constituting articles and their contributions to the overall aims of this dissertation are discussed in section 5. Section 6 con-

cludes by reflecting on the key insights gained, their practical relevance, and avenues for future research.

2 Conceptual background

The notion of a shift from ‘government to governance’ is often invoked to characterise recent changes in the ways in which society is governed. However, governance is by no means a coherent concept, and there is not even consensus on the set of phenomena that can be grouped under this notion (Jordan et al. 2005; van Kersbergen and van Waarden 2004). Rather, governance can be seen as offering a frame of reference for assessing different modes of collective decision-making (Bruns and Gee 2009). As such, the term derives much of its popularity from “its capacity unlike that of the narrower term ‘government’ – to cover the whole range of institutions and relationships involved in the process of governing” (Pierre and Peters 2000, 1).

Beyond conceptual controversy and a lack of definitional clarity, there is some agreement about some fundamental characteristics of governance. At the core of most academic work on governance lies the idea that the role and capacity of the state has changed in response to the increasingly complex, dynamic and pressing governance challenges of our time (Hysing 2009). The state’s political steering capabilities are facing centrifugal tendencies as authority is dispersed *upwards*, towards international and regional organisations, such as the EU; *downwards*, to lower levels of government and devolved localities; and *outwards* to private sector and civil society actors (Pierre and Peters 2000). Based on this understanding governance, as employed here, has two main elements: A procedural element, reflected in public participation and collaborative governance; and a structural, spatial element, evident in debates on multi-level governance and scale (see Benz 2007).

2.1 Public participation

Framed broadly, governance refers to those configurations of political decision-making in which the boundaries between the public and private sectors have become blurred (Stoker 1998). This includes in particular forms of decision-making subsumed under the labels of public participation (Beierle and Cayford 2002; Dietz and Stern 2008; Webler and Tuler 2006) and collaborative governance¹ (Ansell and Gash 2007; Gerlak et al. 2013; Koontz 2006).

Public participation is defined here, drawing on Renn (2005, 227), as “*all forms of influence on the design and formulation of collectively binding agreements by persons and organisations that are not routinely in charge of these tasks*” (translation from Newig and Kvarda 2012). It is worth emphasising that participation under this definition is understood as part of the political process aiming to reach a collectively binding decision. This embraces a variety of governance modes and ‘degrees’ of participation. To distinguish between different forms and allow for a concise, and comprehensive empirical assessment of collaborative decision-

¹ Throughout the paper, the terms ‘participation’ and ‘participatory governance’ are used, but acknowledging that there is considerable overlap with the concepts of ‘collaboration’ and ‘collaborative governance’, which are more common in the North American context.

making processes, participation is understood as a multi-dimensional concept comprising three main elements (Fung 2006; Newig and Kvarda 2012):

- (1) *Involvement of stakeholders*: Participatory processes can be characterised according to their modalities for recruitment and composition of participants. Recruitment modalities may vary between open access and targeted selection of participants. Processes can be distinguished, according to their composition, between those primarily involving individual citizens, and those focussing on organised interests represented by professional stakeholders (see also Meadowcroft 2004). These factors play a decisive role in assessing the representativeness of processes.
- (2) *Communication and collaboration*: The manner, direction and intensity of information flows and communication provide a second dimension of participation. Communication can span a broad spectrum from one-way information flows in either direction, to intensive dialogue and deliberation (see also Rowe and Frewer 2005). Communication and information flows are an important part of the procedural component of participation.
- (3) *Power delegation to participants*: Depending on the relevance of the participatory process and its role in wider political decision-making, participants will be given various degrees of influence. These may range from very limited voice or none at all, through possibilities to formulate recommendations and preferences, up to co-governing (see also Arnstein 1969). This dimension serves as another important component for the analysis of the procedural aspects, but also the output dimension of participatory processes.

Participatory governance is widespread in environmental policy and water resource management (Gerlak et al. 2013; Koontz and Thomas 2006). Scholars and practitioners place high hopes in the potential for public participation to improve the environmental standards and legitimacy of political decisions. As an alternative to more traditional, top-down and regulatory forms of environmental governance, participation potentially approaches the complexities of water resource issues in effective ways (cf. Berardo and Gerlak 2012; Carr et al. 2012). Bringing together a range of stakeholders, collaborative governance processes may arrive at a deeper understanding of the issues at hand (Pahl-Wostl 2002) through the representation of a wide range of interests (Dryzek 2005; Smith, M. P. 2009), as well as different forms of environmental knowledge (Fazey et al. 2012; Wondolleck and Yaffee 2000), especially from local sources (Smith, G. 2003). In particular the communicative forms of negotiation and deliberation are seen as instrumental for the effective allocation of resources and stakeholders' orientation towards the common good (Ansell and Gash 2007; Smith, G. 2003). This may enhance the environmental quality and flexibility of political outputs, and foster the development of social capital (Leach and Sabatier 2005) and acceptance among stakeholders (Chess and Purcell 1999; Newig 2012) with a positive impact on enforcement and implementation on the ground by resource users and responsible authorities (Campbell et al. 2011; Newig et al. 2005).

Given these potential and often assumed benefits, participation is at times promoted as a panacea. An idealised narrative of participatory environmental governance and collaborative natural resource management has emerged in the academic literature and in actual policy-making,

hailing participation almost universally to bring about the aforementioned benefits (Conley and Moote 2003; Cook et al. 2013).

However, empirical evidence on the performance of public participation and understanding of the key mechanisms, let alone contextual factors, are still lacking (Dietz and Stern 2008; Gerlak et al. 2013; Tuler and Webler 2010; Young, J. C. et al. 2013 recent empirical studies: Cheng et al. 2015; Scott 2015). Moreover, many authors are critical about the performance and potential of participation. Collaborative processes may demand additional resources, both in financial terms, and in terms of personnel and time, potentially delaying decision-making (Irvin and Stansbury 2004). Negative dynamics, such as co-optation, groupthink, and manipulation by powerful interest groups may evolve in such processes, aggravating the adverse effects and undermining the overall efficacy and legitimacy of participatory decision-making (Coglianese 1997; Cooke and Kothari 2001; Lubell 2004; McCloskey 2000). The lack of robust evidence and uncertainty regarding the performance of participation poses not only a scientific challenge, but also a dilemma for ‘green democracy’, introducing “tension between democratic means and environmental ends” (Wong 2015, 3). Hence, this dissertation shall serve as a piece in the puzzle to better understand the mechanisms and potential of participatory environmental governance.

2.2 Multi-level governance and scale

The redistribution of political competences from the state and its territorial government upwards to international and regional organisations, and downwards in the sense of devolution and decentralisation, has directed the focus of governance research further to multi-level interactions of political institutions. Hence, the notion of multi-level governance (see e.g. Bache and Flinders 2004; Benz 2006; Hooghe and Marks 2003; Piattoni 2010) is employed in the face of issue and institutional complexity “to try to provide a simplified notion of what is pluralistic and highly dispersed policy-making activity, where multiple actors (individuals and institutions) participate, at various political levels, from the supranational to the sub-national or local” (Stephenson 2013, 817). Multi-level governance offers an analytical lens to capture the spatial distinctions among institutions on different levels putting special emphasis on the interlinkages and dynamics between those (ibid.).

Hooghe and Marks (2003) distinguish between two types of multi-level governance. Type I sees authority distributed in a rather stable fashion among a limited number of non-overlapping general-purpose jurisdictions at a given number of territorial levels. This type is predominant within national polities, which are usually organised around a hierarchically ordered system of multi-purpose governments. In contrast, Type II multi-level governance is conceptualised as a rather fluid, more complex composition of functionally-specific jurisdictions often set up to address a specific problem. These jurisdictions overlap and can react flexibly to changing demands leading to a less stable distribution of authority (see also: Blatter 2004; Frey and Eichenberger 1999).

However, more recent contributions, particularly considering European regimes of natural resource management, framed e.g. by the WFD or other European environmental directives, suggest that these types may not adequately describe existing structures of multi-level governance (Moss 2012; Newig and Koontz 2014). Jurisdictions may on the one hand be crafted around functional boundaries (Type II), like river basins or marine regions, but at the same

time possess many characteristics of Type I governance, such as nestedness, non-intersecting membership, or a certain permanence (Newig and Koontz 2014). These alternative descriptions add further detail and subtleties to the broader categories of ‘classical’ multi-level governance theory and, thus, point at the need to analytically frame the manifold spatial dynamics of European environmental governance.

To capture the spatial and multi-level particularities characterising the field of environmental governance, I draw further on the notion of scale. While acknowledging the diverse connotations of scale from various fields such as geography (Brenner 1999; Howitt 2008; Moore 2008), and natural resource management (Cumming et al. 2006; Hein et al. 2006), to name just two (see also Termeer et al. 2010), the term is used here as an analytical category to grasp the spatial challenges of the natural environment and their interactions with the political system and its governance institutions (see also Cohen 2015). Employing the notion of scale highlights, on the one hand, the different spatial logics of environmental resources and in particular water as compared to social and political units and structures; on the other hand, it also allows these to be set in context to each other and their linkages and interactions to be examined. In this way, it serves as an extension of multi-level governance as it provides a suitable lens for distinguishing the concurring spatial dynamics and interactions of natural resource systems, and those of social and political realm.

Scale is defined as a two-dimensional concept (Cash et al. 2006; Gibson et al. 2000; Moss and Newig 2010), distinguishing between:

- *Scalar dimension*: The analytical dimension of a problem under study, such as the biophysical (e.g., hydrological), institutional, or temporal scalar dimension; and
- *Scalar level*: The particular level on a scalar dimension, e.g. the level of a catchment within a river basin, or of a federal state in a federal political–administrative system.

If participation is touted as a process-based instrument to foster the effectiveness and legitimacy of decision-making, changing the multi-level configuration of natural resource governance systems is regarded as structural response to similar governance issues (Cohen 2012; Termeer et al. 2010). Approaches such as integrated catchment management or integrated water resource management favour hydrological scales such as river basins or catchments as the units for sustainable resource management (Cohen and Davidson 2011; Cook et al. 2013). It is assumed that the management of water resources is most effective at a river basin scale, optimising the ‘fit’ between the geographical extent of the resource and the responsible political institutions (Galaz et al. 2008; Moss 2012; Young, O. R. 2002). Multi-level governance systems comprising multiple decision-making centres on various scales and levels, as an alternative to centralised governance steering, are viewed as another structural configuration for increasing the efficacy of environmental management. The interaction and competition between these centres can underpin innovation and adaptation increasing the overall efficacy of the wider resource governance system (Fung and Wright 2001; Ostrom 1999).

Critics of these rescaling attempts in particular point at the frictions, fragmentation, and new mismatches that these changes might bring about. Water resource management on the scalar basis of river basins may on one hand solve misfits between the scope of the resource and the immediately related governance institutions, but it may at the same time create new misfits with other resources and institutions, such as land use planning (Moss 2004), and lead to fur-

ther fragmentation of the governance structures. Similarly, a polycentric system, fragmented into localised entities, may on one hand be capable of solving its own particular problems, but on the other hand it may be unable to address larger-scale challenges, or to pursue wider agendas (Fung and Wright 2001). Finally, fragmentation of governance may lead to “responsibility floating” (Bixler 2014, 166), where responsibility for environmental problems is constantly relocated by actors in a polycentric governance system, leaving no one really in charge of addressing the issues at hand (Yaffee 1997).

However, evidence is here also sparse (for recent studies see e.g. Bernauer and Kuhn 2010; Guerrero et al. 2015; Norman et al. 2015). “Exactly which institutional structures work best in different situations is one of the most important unresolved questions in the policy sciences” (Lubell 2015, 44). Hence, there is a need for systematic research in order to arrive at a more comprehensive understanding of mechanisms and contextual factors under which these structural changes prove effective for the environment (Cohen and McCarthy 2015; Gerlak 2014).

3 Research context: European water resource governance

Water operates according to its own scalar dimensions, based on hydrological and ecosystem boundaries (Blomquist and Schlager 2005; Molle 2009; for a critical overview see also: Warner et al. 2008), ranging from small water bodies, to large cross-border waterways with multiple riparians. These run counter to political-administrative scalar dimensions and challenge the classical territorial differentiation of political authority. Furthermore, water resources have a non-physical, social dimension. Individuals, organisations, and society at large attribute a variety of values and meanings to the aquatic environment, manifested in numerous interests and stakes (Savenije and van der Zaag 2000). As such, water governance is characterised by the most fundamental issues and dilemmas of scale and participation in multi-level environmental governance (Moss and Newig 2010).

The EC Water Framework Directive (WFD) can be perceived as a manifestation of these governance innovations. Issued in 2000, with the aim of achieving good water status for all European waters (Art. 4), the WFD introduced detailed procedural principles and routines through which this goal should be reached (Newig and Koontz 2014; Page and Kaika 2003). The central vehicles for implementation of the Directive in the member states are the River Basin Management Plans (RBMPs) and Programmes of Measure (PoMs). These contain detailed stocktakes of current water conditions and pressures, and identify actions to achieve the prescribed quality goals. The first plans had to be issued by the end of 2009, and these are updated cyclically every six years through subsequent planning cycles.

This planning approach is particularly interesting from a governance perspective as it institutionalises a relocation of authority to the alternative scalar dimension of river basin districts (Art. 3) and prescribes the involvement of stakeholders, and the wider public (Art. 14). Newig and Koontz (2014) characterise this as a ‘mandated participatory planning’ approach to policy implementation. The Directive requires member states to assign all water bodies and coastal waters to river basin districts and assign a competent authority for each of these. Rivers crossing national borders should be managed by all riparians in cooperation. However, each member state is ultimately responsible for the portion of any basin within its territory (van

Rijswick et al. 2009). Further, the WFD places specific obligations on member states to inform, consult and involve stakeholders and the public at different stages of the planning process. While information provision and public consultation are mandatory, the Directive merely “encourage[s] the active involvement of all interested parties in the implementation of this Directive, in particular in the production, review and updating of the river basin management plans” (Art. 14 (1)).

The WFD attaches high instrumental value to the scalar reconfiguration and institutionalisation of participation to improve the quality of planning (see also EC 2002; Kastens and Newig 2008; Moss 2012). At the same time, the Directive remains rather vague as to how this governance shift should be achieved, and affords member states considerable leeway regarding both the implementation of river basin management and public participation (Ker Rault and Jeffrey 2008; van Rijswick et al. 2009; Wright and Fritsch 2011). Debate has arisen about the extent to which this governance shift has actually occurred (Andersson et al. 2012; Junier et al. 2010; Moss 2012).

4 Research design and methodology

This dissertation is compiled in a cumulative way, and consists of the following core contributions:

- [A1] Newig, J., Challies, E., **Jager, N.W.**, Kochskämper, E., Adzersen, A. (2016). How and under what circumstances does collaborative and participatory governance lead to better (or worse) environmental outcomes? A causal framework for analysis. Submitted to Policy Studies Journal.
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- [A3] **Jager, N.W.**, Challies, E., Kochskämper, E., Newig, J., Benson, D., Blackstock, K., Collins, K., Ernst, A., Evers, M., Feichtinger, J., Fritsch, O., Gooch, G., Grund, W., Hedelin, B., Hernández-Mora, N., Hüesker, F., Huitema, D., Irvine, K., Klinkke, A., Lange, L., Loupsans, D., Lubell, M., Matczak, P., Maganda, C., Páres, M., Saarikoski, H., Slavíková, L., van der Arend, S., von Korff, Y. (2016). Transforming European Water Governance? EU Water Framework Directive implementation in 13 member states. *Water* 8 (156). doi:10.3390/w8040156.
- [A4] **Jager, N.W.** (2016). Transboundary cooperation in European water governance – a set-theoretic analysis of international river basins. *Environmental Policy and Governance* 26 (4): 278-291. doi: 10.1002/eet.1717.
- [A5] Newig, J., **Jager N.**, Challies, E. (2012). Führt Bürgerbeteiligung in Umweltpolitischen Entscheidungsprozessen zu mehr Effektivität und Legitimität? Erste Ergebnisse einer Metaanalyse von 71 Wasserpolitischen Fallstudien. (Does public participation in environmental decision making lead to more effectiveness and legitimacy?). *Zeitschrift für Politikwissenschaft* 22 (4): 527–564.
- [A6] Kochskämper, E., Challies, E., Newig, J., **Jager, N.W.** (2016). Participation for effective environmental governance? Evidence from Water Framework Directive implementation in Germany, Spain and the United Kingdom. *Journal of Environmental Management* 181: 737–748. <http://dx.doi.org/10.1016/j.jenvman.2016.08.007>

Three additional publications provide supplementary perspectives supporting the argument advanced in the core papers and highlighting the relevance of the research beyond the focus of this dissertation:

- [S1] Newig, J., Adzersen, A., Challies, E., Fritsch, O., **Jager, N.** (2013). Comparative Analysis of Public Environmental Decision-Making Processes – a Variable-Based Analytical Scheme. INFU Discussion Paper 37/13. Lüneburg.
- [S2] Newig, J., Challies, E., **Jager, N.**, Kochskämper, E. (2014). What Role for Public Participation in Implementing the EU Floods Directive? A Comparison With the Water Framework Directive, Early Evidence from Germany and a Research Agenda. *Environmental Policy and Governance* 24 (4): 275–288. doi:10.1002/eet.1650.
- [S3] Newig, J., Kochskämper, E., Challies, E., **Jager, N.W.** (2016). Exploring Governance Learning: How Policymakers Draw on Evidence, Experience and Intuition in Designing Participatory Flood Risk Planning. *Environmental Science & Policy* 55: 353–360. doi:10.1016/j.envsci.2015.07.020.

Aiming to disentangle panacea claims and to contribute to a deeper, contextualised understanding of the mechanisms at play, this dissertation intends to support the elaboration of middle-range theories in environmental governance (see Boynton 1982; George and Bennett 2005). Middle-range theories spur the development of tractable and parsimonious theoretical approaches without oversimplifying social reality by formulating specified conditional generalisations of limited scope (George and Bennett 2005).

Middle-range theories pose particular methodological challenges in managing and analytically grasping highly complex processes and structures to arrive at internally and externally valid results. A major tension exists between, on one hand, the objective to arrive at a deep and detailed understanding of mechanisms and contextual conditions of governance processes, and on the other hand the aspiration to gain insights that are relevant beyond the ultimate reach of a given site or case. The first objective calls particularly for qualitative, or case study methods that include a smaller number of cases and analyse these in-depth to arrive at a thorough understanding of mechanisms and causalities (George and Bennett 2005). The second aim of generalisability requires large-N quantitative analyses that establish a (statistical) relationship between various variables and factors for a large population of cases and instances (Coppedge 1999). Formulated in terms of research methodology, the first aims at maximising *internal validity*, while the second strives for *external validity* (Cox 2015; McDermott 2011; Yin 2014).

This dissertation meets these research design and methodological challenges by employing a *mixed-method design* (Biesenbender and Héritier 2009; Creswell and Plano Clark 2007; Johnson and Onwuegbuzie 2004; Johnson et al. 2007). Mixed-method research is particularly suitable for the aims of this study, as it promotes a context-sensitive analysis of the phenomena under study (Johnson et al. 2007).

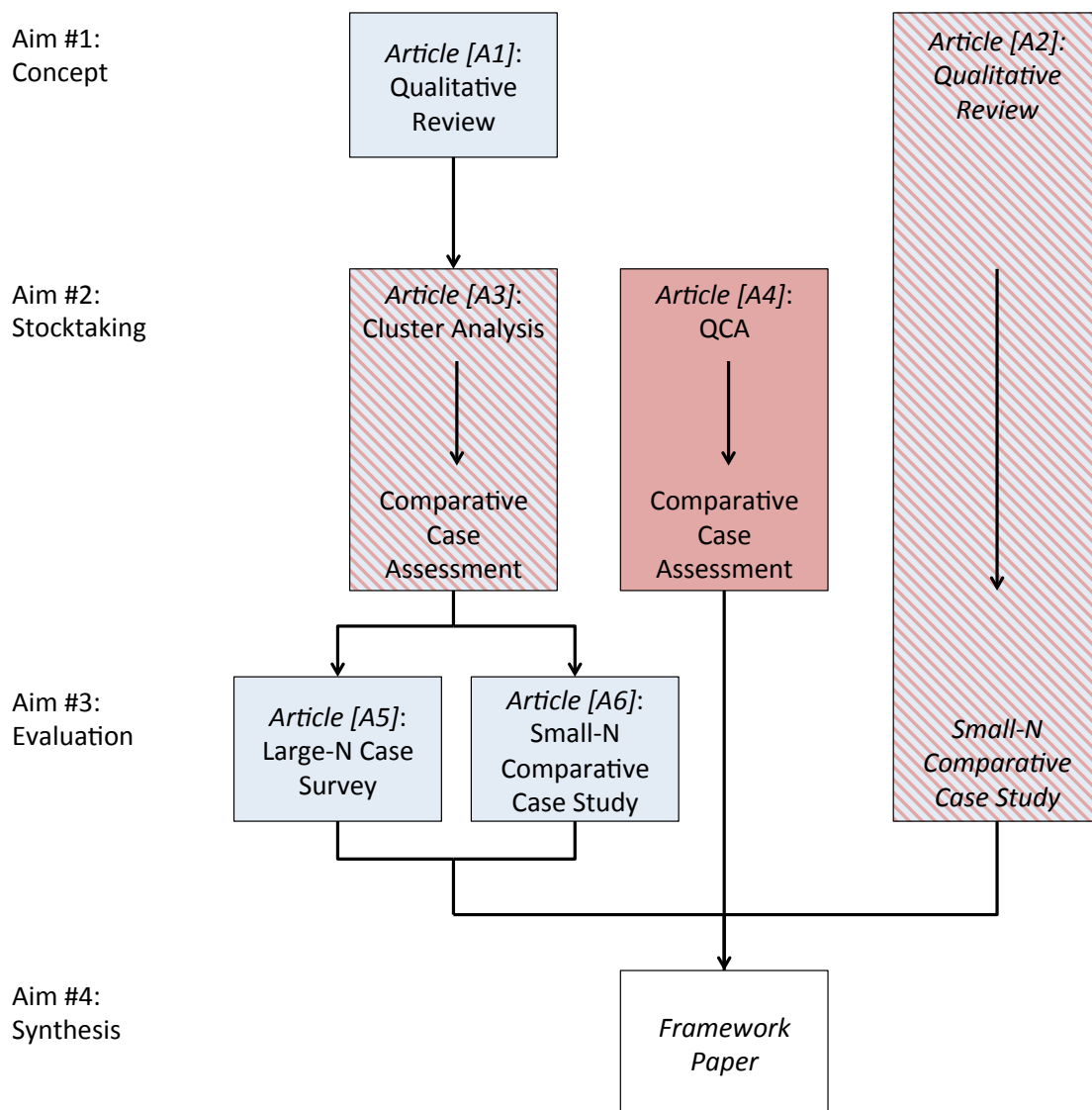


Figure 1: Thesis structure according to aims, conceptual focus and methodology.

Note: Arrows depict sequential methodological and conceptual relations between and within single contributions. Parallel boxes indicate method triangulation. Colours highlight the thematic focus of each contribution: blue = primarily focussing on public participation, red = issues of multi-level governance and scale, stripes = involving both elements.

In particular, the contributions are designed according to a nested mixed-method design (see Lidén 2013; Lieberman 2005), as shown in figure 1. For each of the aforementioned aims of this study a particular set of methods was selected, and together these comprise a consistent approach for the overall question of this research. Different methodological approaches are linked in various ways: Sequentially, with one building on the insights of the other; and by triangulation, obtaining different but complimentary data on the same topic to better understand the issue at hand (see Creswell and Plano Clark 2007).

The conceptual groundwork was laid in articles [A1] and [A2] through qualitative literature reviews (for an introduction into this method see: Hart 1998). In this step, the key terms of ‘participation’ and ‘scale’ are defined and integrated into a conceptual framework, specifying potential mechanisms at work together with their boundary conditions and contextual factors. These insights serve as a theoretical lens for the subsequent analyses. Contribution [S1] of this dissertation operationalises this perspective providing a set of variables and constants

characterising the situation of interest and its context. Initially drafted as a coding scheme for a case-survey meta-analysis (see also below), it provides a comprehensive collection of variables and mechanisms to assess the different components of environmental decision-making.

The empirical studies comprising this dissertation (articles [A2] – [A6]), all rely on an environmental decision-making process as the basic unit of analysis, or case. A case in this sense is defined as “a process with the aim of reaching a collectively binding decision on a given issue” ([S1], 10). Based on this understanding of a case, a variety of methods for data collection and analysis are applied. On the qualitative side, articles [A2] and [A6] encompass comparative case studies, each involving 2-3 cases and a combination of extensive literature and document analysis with semi-structured interviews. For both articles, the case material was structured and analysed according to the conceptual groundwork and its operationalisation outlined before. This type of research is suited to understanding mechanisms and the influence of contextual factors, and grasping institutional diversity (Gerlak et al. 2013; Ostrom 2009) as it allows the extensive analysis of any number of process and context characteristics (Conley and Moote 2003). However, the gain in internal validity and sense-making comes at the cost of generalisability of findings, which may be moderate (Payne and Williams 2005) and confined to specific contexts determined by the selection of cases and theoretical propositions (Bengtsson and Hertting 2014; Yin 2014).

Aiming for greater external validity of findings, contributions [A3] to [A5] of this dissertation rely on synthesising and integrative methods of data gathering and (statistical) analysis. The fields of environmental governance and public policy in general are characterised by a great abundance of dispersed, small-n case studies with no or only weak links to each other. These studies, spread across a myriad of publications, constitute a so far largely untapped resource for research (Jensen and Rodgers 2001; Newig and Fritsch 2009a). Particularly for the context-sensitive analysis of mechanisms, the synthesis of this case-bound knowledge appears highly useful. A meta-analysis of these studies taps into the richness of the qualitative (narrative) case material and generates a scientific benefit beyond the scope of the initial studies (Aguinis et al. 2011; Cox 2011; Harden et al. 2014; Kenward et al. 2011; Ostrom 2007). Hence, article [A5] of this dissertation draws on a case survey meta-analysis (see Beierle and Cayford 2002; Larsson 1993; Newig and Fritsch 2009b; Yin and Heald 1975) conducted in the context of a larger on-going research project², aggregating 71 case studies from the field of water governance from various locations, contexts, and times.

Finally, I included a set of methods – namely hierarchical cluster analysis (Everitt et al. 2001), and Qualitative Comparative Analysis (QCA) (Ragin 2000; Rihoux and Ragin 2009) – to bridge the trade-offs between internal and external validity. Applied appropriately, these approaches have the potential to build a “meaningful ‘medium-range’ social science [... which has] higher explanatory power and greater social and political relevance” (Berg-Schlosser and Cronqvist 2005, 172). The strength of this approach lies in the rigor of systematic cross-case analysis, while at the same time paying justice to the particularities of single cases (Marx et al. 2014; Ragin 1987). As such, it lends itself particularly well to the analysis of contextual factors and particular configurations of the causal field (Britt 1997). Further, to emphasise case

² EDGE – Evaluating the Delivery of Environmental Governance using an Evidence-based Research Design, awarded by the ERC to Prof. Jens Newig. See for more detail: <http://sustainability-governance.net/projects/edge/>.

particularities and illustrate in more detail the ideal-typical causal mechanisms identified, these analyses are combined with shorter case study assessments. In this way, a balance between internal and external validity is reached, leading to meaningful results that are also of relevance beyond the initial case focus.

5 Results

In the following section I outline briefly the contribution of each publication to the overall aims of the research. Figure 1, above, illustrates the roles and foci of the individual articles.

5.1 Aim #1 – Conceptual clarification

The systematic analysis of mechanisms (see Hedström and Ylikoski 2010) of collaborative multi-level governance poses a particularly challenging task. It requires a holistic view involving potential causal and contextual factors to circumvent the danger of simplistic argumentation, but at the same time needs to allow for a feasible and meaningful analysis. To meet this challenge, the conceptual contributions included in this dissertation rely on an inductive approach (cf. Cox 2011) drawing on the numerous empirical and conceptual studies structuring the field of environmental governance. Hence, three contributions ([A1], [A2], [S1]) review in greater detail the particular, ideal-typical mechanisms through which participation and scalar restructuring may enhance the environmental and political performance of environmental governance, and translate these into a research programme.

All research contained in this dissertation is based on a generalised model of political decision-making as depicted in figure 2. Induced by a collective issue, a decision-making process (including a degree of public participation) leads to a political decision with implications for the environment. At the same time, it also has social consequences, e.g. changing social capital among constituencies, or generating acceptance, that in turn influence the implementation of the decisions taken, and ultimately the environmental impact of the process. All of these steps, however, do not occur in a vacuum, but are embedded in a particular social, political, and environmental context shaping the actual nature of this process.

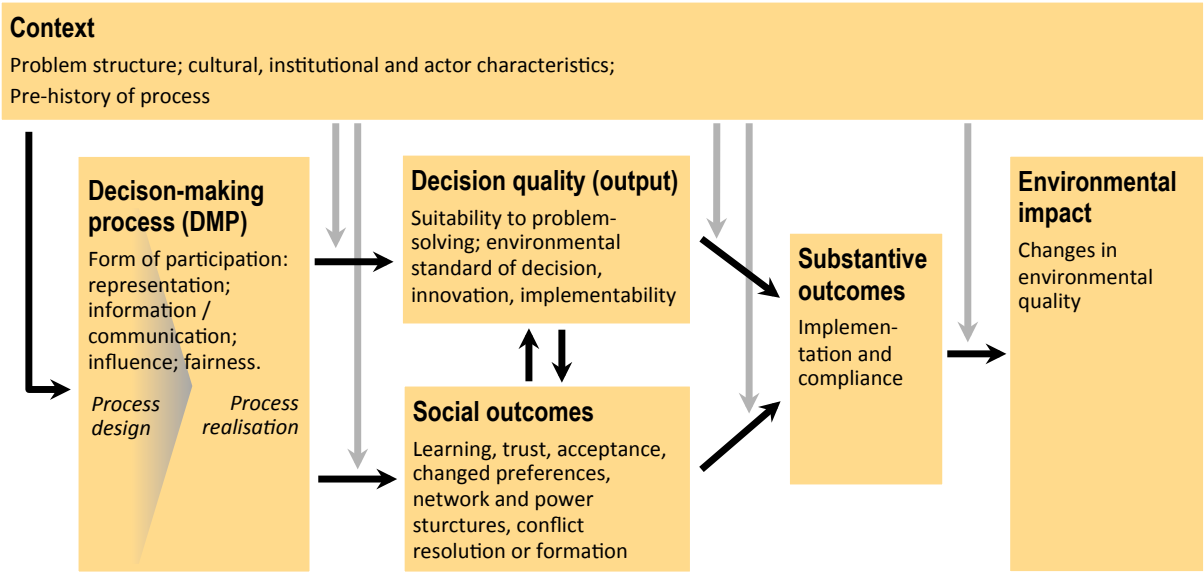


Figure 2: Conceptual model of environmental decision-making: Relating participation to outputs, outcomes and impacts. Source: [S1].

Article [A1] follows this inductive review approach and establishes the conceptual ground-work for examining the environmental and political effectiveness of public participation. It distills key arguments from the existing literature, and integrates them into a consistent framework of causal mechanisms, paying particular attention to contextual conditions. Building on a systematic synthesis of insights from a large variety of scientific fields and disciplines, the article constructs a comprehensive framework describing the relationship between participation and the environmental standard of outputs, and the implementation of outputs (i.e. the effect of participation on environmental outcomes and impacts). Overall, 19 single mechanisms and numerous conditioning factors are identified, and grouped into five distinct clusters:

- (1) Opening up of decision-making to environmental concerns: Through the inclusion of environmental concerns (as represented by e.g. environmental NGOs) decision-making processes arrive at more environmentally beneficial outputs;
- (2) Incorporation of environmentally relevant knowledge: Participation strengthens the knowledge base of decisions by including different kinds of knowledge, so improving environmental policy outputs and their likelihood of implementation;
- (3) Dialogue and collective learning for environmental outcomes: Communicative interaction among participants leads to improved allocation of resources, learning and innovation, and fosters orientation towards the common good, all having positive implications for the environmental standard of political decisions and their acceptance;
- (4) Acceptance and conflict resolution for implementation: Participation fosters the acceptance of decisions as stakeholders feel represented, or treated in a fair manner, with an overall positive effect on implementation and compliance;
- (5) Capacity building for implementation: Involvement in participatory decision-making processes provides stakeholders and decision-makers with information and builds individual and collective capacities that aid implementation and compliance.

The identification of these central mechanisms serves as an important first step to analytically grasp the dynamics and complexities of collaborative environmental governance. It divides this complex system into analytically manageable categories and factors, and simultaneously highlights interlinkages between single components. Being ultimate cause for one particular causal mechanism, a particular process property can be at the same time a conditioning factor for another mechanism (Cox 2011; see also Ostrom 2007). Hence, this framework has particular value in making the interactions apparent.

Appendix [S1] serves as operationalisation of the conceptual framework. It contains all major variables identified in article [A1] plus additional ones, allowing for the mapping of the context, process and outcomes of a given environmental decision-making process. Overall, the analytical scheme comprises 315 single variables, grasping e.g. the context of a given decision-making process, its actual properties, involved actors, and several measures for environmental and social outcomes (and impacts). It provides concise definitions of each variable along with a proposition for a quantitative scale, on which to measure and assess the phenomenon of interest. This analytical scheme proved instrumental for all further analyses, both qualitative and quantitative, as it provides a comprehensive tool to examine multi-level environmental governance in its complexity, including major context factors.

This framework is amended by the conceptual considerations included in article [A2]. This paper highlights the role of the scalar configuration of the multi-level governance system for the effectiveness and legitimacy of collaborative decision-making. Similar to article [A1], this contribution inductively reviews claims about the influence of scale on the performance of participatory governance from the literature across various fields, and synthesises the underlying ideal-typical, often contradictory and competing mechanisms at work. In this way, 9 mechanisms were identified, grouped into three clusters:

- (1) Participation and scalar level: How effectiveness and legitimacy of participatory governance structures are affected by their scalar location;
- (2) Participation and scalar dimension: The role of participation for issues of fit;
- (3) Participation in polycentric governance systems.

The article, again, sets the scene and sharpens the analytical focus for the empirical research to come in the course of the dissertation. But it also performs another important function in the conceptual framework, as it fills the gap between the procedural and the structural elements of governance. Analytically, these aspects are strongly related. Their dynamics happen simultaneously, and influence each other. An analysis that aspires to be context-sensitive thus also needs to consider and conceptualise the interaction between these elements. Articles [A1] and [A2], given their complementary focus, constitute a theoretical contribution to analytically grasp these complex interactions and to make them accessible for empirical research.

5.2 Aim #2 – Stocktaking

At face value the WFD is, as outlined in section II.3, a prime example for a shift from government to governance (Page and Kaika 2003), given its prescription for river basin management and public participation. Articles [A3] and [A4], however, put this claim to the test, and seek a deeper understanding of whether and under which conditions this shift is happening.

Article [A3] assesses the extent of the transformation of EU water governance resulting from the WFD, focussing in particular on the aspects of public participation and the introduction of water resource management on a river basin scale. Building on cooperation with 27 water governance and country experts, this contribution compares the trajectories of 13 EU member states quantitatively and qualitatively. On the basis of a multi-dimensional coding system each country's changes in participation and river basin management were mapped quantitatively, and by means of an agglomerative cluster analysis four ideal-typical implementation trajectories were derived:

- (1) *Water governance pioneers* with considerable experience in river basin management and participation;
- (2) *Water resource planners* with established, hydrological structures and moderate increases in participation from previously expert-dominated planning;
- (3) *The leap-frog* transforming into institutionalised river basin management and participation; and
- (4) *Water resource governance adopters*, for which river basin management and participation were rather new phenomena.

One example case from each of these clusters was then explored in depth, on the basis of an extensive document and literature analysis, in order to gain further insight into the actual tra-

jectories. Generally, institutional change and governance adaptation can be described as slow and irregular. Pre-existing governance structures proved relatively persistent, and often remained dominant under the newly introduced water resource governance regime. Where changes occurred these were largely limited to the operational level without transferring real power or authority to other levels of governance or non-state actors. In this, the article corroborates previous studies that have highlighted the pivotal role of the state (e.g. Jordan et al. 2005; Waylen et al. 2015).

A complimentary perspective is offered by article [A4], which provides a set-theoretic analysis of international river basins. It focuses in particular on the international level and asks under which conditions states collaborate internationally in the management of their transboundary rivers under the WFD, and hence, allow for a transfer of authority upwards to the supranational, river basin level. The paper draws on postulates of neo-liberal theory of international relations and international regimes, which serves to complement state-centred policy and governance research (Jochim and May 2010; Wälti 2010). Based on a set of relevant conditions derived from this background, a Qualitative Comparative Analysis (QCA) for all European transboundary river basins was undertaken, which led to four distinct patterns of interacting contextual factors supporting international river basin cooperation. These highlight the very strong mitigating effect of transaction costs on the occurrence of collaborative river basin management, but alone these do not explain states' willingness to enter into cooperation. They must be activated by a favourable incentive structure, i.e. high problem pressure, or legal or domestic incentives. The insights of the QCA were, as in article [A3], augmented by a qualitative assessment of example cases selected from each configuration of factors. These contributed to a deeper understanding of the actual mechanisms that were facilitated by the identified sets of contextual conditions.

Articles [S2] and [S3] serve further as excursus and additional perspective to this stocktaking exercise. Article [S2] contains an early assessment of the implementation of the participatory provisions of the EU Floods Directive among German federal states. Findings point in a very similar direction to those of articles [A3] and [A4], as we found that overall the baseline level for participation was even lower than for the WFD. This appears particularly noteworthy, as stakeholders and the public may be considerably more directly affected by flooding than by issues of water quality. Article [S3] elaborates further on this topic and offers a glimpse behind the scenes of flood risk policymaking. It examines the sources of learning that policymakers draw on in designing and running participatory processes in flood risk management. The results suggest that officials mainly rely on prior experience within their own jurisdiction in the field of flood risk and water management planning. Alternative sources from other jurisdictions or policy fields draw considerably less attention, indicating a general tendency of path-dependency, and scope for more coordinated approaches to learning.

5.3 Aim #3 – Evaluating performance

As outlined in Articles [A1] and [A2] it is assumed that public participation and scalar restructuring lead to better informed decisions, stronger consideration of environmental values (Smith, G. 2003) and ecosystem dynamics (Galaz et al. 2008), and higher levels of acceptance and compliance (Bulkeley and Mol 2003). Articles [A2], [A5] and [A6] examine these hy-

potheses empirically and shed light on whether, and under what conditions, changes in the water governance regime enhance its environmental effectiveness and legitimacy.

Article [A5] approaches the political and environmental performance of public participation in water governance in a quantitative way and establishes some broader tendencies. The paper presents first results of a case survey meta-analysis on 71 published water governance case studies from Europe, North America and Australasia. Each of these was coded independently by three researchers using the comprehensive, theoretically informed coding scheme provided in [S1]. The results of the statistical analysis show a generally strong positive relationship between the intensity of participation during decision-making and the generation of acceptance of the output, the resolution of conflicts and the environmental quality of political decisions. The study also indicates some further tendencies in relation to relevant factors and circumstances. Drawing on the different elements of participation (see section 2.1), processes providing for actual influence and power delegation to participants score high for conflict resolution and acceptance of the decision, while the procedural aspects of dialogue and deliberation are very strongly related to conflict resolution, and less to acceptance and environmental quality of the decision. Here, the actual representation of environmental interests shows the greatest effects. Further, the analysis reveals considerable correlation effects between acceptance of a decision and its environmental quality, indicating generally high relevance of the underlying stakeholder field. Finally, the process characteristics that display the strongest effects for the environmental effectiveness of the process are those regarding information sharing and external transparency of the process – that is, those requiring rather limited interaction and involvement of participants.

Article [A6] building on the same conceptual framework and characterisation of the causal field, provides further insights into the actual mechanisms at play in participatory governance. The paper assesses in detail three case studies of WFD implementation from Germany, the UK, and Spain, and examines the plausibility of the mechanisms identified in article [A1]. It pays particular attention to influential contextual factors and boundary conditions. Building on a large amount of empirical material from a comprehensive document analysis and 15 in-depth interviews with policymakers and stakeholders the results of the analysis extend and specify those of article [A5]. Generally, article [A6] supports the claim that intensive participation leads to a higher environmental standard of the output. But it also emphasises that this is not due to one factor or mechanism, but results from the complex interaction and overlap of causal pathways. In each case every mechanism played a role, but with varying intensity and in various directions depending on contextual and intervening factors. For example, in each of the processes studied participants could contribute with their own local knowledge, but only in one case, where this knowledge was taken up by technical experts, could this be translated into a political programme with a high environmental standard and high likelihood of implementation. In the other cases, where processes did not provide for the integration of lay and expert knowledge, outputs remained inferior and thorough implementation was deemed unlikely. Hence, process design as the accommodation of the contextual circumstances into the political sphere proved of pivotal importance, not only for the environmental standards of the decision but also for the social outcomes such as acceptance, trust, learning and empowerment.

Finally, article [A2] analyses empirically issues of scale and multi-level governance and their influence on the performance of the governance system. The paper comprehensively examines a number of often contradictory and competing mechanisms by which the scalar configuration of a (participatory) multi-level governance system influences the legitimacy and effectiveness of environmental decision-making in a comparative case study analysis of two multi-level systems in the context of the implementation of the WFD in Germany. On a broader level, the study provides qualified evidence for the hypothesis that participation on local levels is generally both more effective and legitimate than on higher levels, pointing to the need for yet more place-specific multi-level governance approaches. Regarding the dispersion of authority from administrative bodies to institutions on a hydrological scalar dimension, the picture becomes mixed. The misfit between these scales appears particularly challenging for the legitimacy of processes as the established organisation structures of administration and stakeholders run counter to the logic of hydrological scales. However, a place-specific, multi-level process design on the basis of evolved structures spanning both scalar dimensions proved favourable for mitigating these frictions. In each case, this coexistence of institutions on both scales led to a polycentric governance system. The analysis shows that effectiveness in providing and implementing high quality environmental decisions depends to a large degree on the configuration of these systems. The competition of different institutions and centres of authority during planning appeared instrumental in the integration of capabilities from many sources and, hence, favourable for the environmental standard of the output. However, a similar fragmentation of responsibilities in the implementation phase proved comparatively less effective given the increased transaction and coordination costs, which outweigh the positive aspects of flexibility.

Overall, articles [A2], [A5], and [A6] indicate a positive, but nuanced relationship between effectiveness and legitimacy in participatory and rescaled governance processes. Participation and balanced multi-level structures appear to foster social outcomes in particular, such as conflict resolution, social capacity building, and acceptance, which may in turn have positive influences on the overall legitimacy and implementation of political decisions. Findings on the environmental effectiveness of process outputs, however, are rather mixed. Mechanisms seem more complex and dependent on intervening and conditioning factors. Processes responsive to these dynamics and contextual circumstances have proven to enhance the environmental effectiveness of governance processes considerably. Therefore, this dissertation supports the findings of other recent studies that, using various methods across several contexts, came to similar results (see e.g. Scott 2015; Ulibarri 2015).

5.4 Aim #4: Synthesis

Having addressed the key aims of the research individually, this section strives to synthesise the various insights and to set these into the context of wider debates in (environmental) governance research, and finally to draw overarching lessons and conclusions.

5.4.1 Finding I: Muddling through governance changes

The degree to which a transition from government to governance is in fact occurring is subject to heated debate in political research and only backed by scarce evidence (Heinrich et al. 2010; for an overview, see e.g. Robichau 2011). The different viewpoints can be broadly

characterised as state-centric and society-centric (Jordan 2008). The society-centric position argues that state capacities are progressively being hollowed out (e.g. Rhodes 1996), with authority being dispersed to alternative levels and to non-state actors. The state-centric position, in contrast, questions this erosion of authority and perceives the state, despite the reduction of its services in recent decades, enduring as the critical actor and guarantor for accountability and political legitimacy (e.g. Pierre and Peters 2005). The results gathered in the articles of this doctoral dissertation offer some further insights to this debate.

Analysis of the European water resource management regime, particularly in articles [A2], [A3], [A4], [A6], and [S2], on one hand, do not support the assertion that there has been a radical dispersion of authority away from the state. In almost all of the cases observed the state has retained its powers and key role as the main actor in water governance. On the other hand, however, despite rather modest changes induced by the WFD, indicating a general tendency of path dependency, every country case included in this study displays at least some tendencies of dispersion of authority to non-state actors, and/or alternative levels and scales. The experiences vary between minor modifications of established state routines (e.g. Ireland in article [A3]), up to far-reaching transfer of competences for water resource management on the scalar dimension of river basins and the related stakeholders (e.g. Sweden in article [A3]). Hence, both, the state-centric and society-centric positions appear overly radical, and offer only imprecise descriptions.

Instead, a middle position, as taken by Bell and Hindmoor's (2009) 'state-centric relational' approach may be best suited to characterising the current situation of European water governance. According to this position the state retains its position as central authority and controller of governing capacities. But at the same time it engages in a relational way in strategic interactions with other non-state actors on various levels. This does not imply that these relationships are necessarily equal. These alliances may mean that the state aims to "govern better rather than less" (Wallington et al. 2008, 3). This approach appears particularly relevant for the cases examined. The overall trajectory observed in almost every case is that established state structures are amended and enhanced by additional institutions on alternative scalar dimensions and involving non-state actors. Through these new relations the efficacy of water resource governance may well be improved, but, nonetheless, they remain asymmetric with the state remaining the ultimate authority.

The research also suggests an explanation for these incremental, path-dependent adaptations of governance structures. As article [S3] indicates, when adapting to new situations and governance requirements, policy makers turn to their own experience and to their immediate environment, and adapt established solutions incrementally. Emphasising the role of transaction costs, the findings of article [A4] point in a similar direction. Here, international cooperation in river basin management flourished particularly among states that already nurtured close relations, implying relatively minimal additional efforts and transaction costs. Charles Lindblom (1959) coined the term 'muddling through' for this kind of behaviour among policy makers and administrators.

This has important consequences for political research and in particular the analysis of political decisions and governance restructuring. It means, when evaluating the choice and performance of various governance alternatives, a context-sensitive analytical approach has to con-

sider not only the alternatives available, but also the current state of the system because this may have a strongly limiting factor to the alternatives available to decision-makers.

5.4.2 *Finding II: Multi-level governance and the democratic dilemma*

The findings generated through the individual analyses contained in this dissertation provide some interesting and novel insights on the conceptualisation and theory building around governance – particularly in relation to the evaluation of participatory, multi-level governance processes according to effectiveness and legitimacy.

Governance approaches are marked by a problem-solving bias, assuming that actors and institutions share the common goal of actually addressing a political problem. Governance research therefore often narrows its focus on the output dimension and problem-solving capabilities of the system, leaving aside questions of democratic legitimacy, power, and domination (Mayntz 2006). Issues of legitimacy come into focus often only incidentally, as the counterpart to effectiveness, with one having a limiting effect on the other. Hence, discussions of governance in general, and multi-level governance in particular, are dominated by a rhetoric of dilemmas between effectiveness and legitimacy (cf. DeBardeleben and Hurrelmann 2007b). These may take the form of e.g. the ‘democratic dilemma’ (Dahl 1994) between the effectiveness of a political system and citizens’ democratic control; or the ‘Faustian bargain’ (Bache and Chapman 2008; Peters and Pierre 2004) between the performance of Type-II multi-level governance institutions and democratic accountability (for further notions of governance dilemmas see e.g. Lundqvist 2004; DeBardeleben and Hurrelmann 2007a).

All of these dilemma concepts share a perception of the relationship between governance effectiveness and legitimacy as linear and inversely related. In each of these models, an increase in governance effectiveness, either through the fitting of governance institutions to problem-centred scales instead of territorial ones (Faustian bargain), or through the upscaling of governance authority (democratic dilemma), comes at the cost of a loss in legitimacy and accountability (or vice versa). This highlights a further commonality, namely a rather simplistic understanding of the policy processes limited to the legitimation dimensions of inputs and outputs. Input legitimacy refers to the reflection of the political will *of* the people expressed institutionally through representative politics, while output legitimacy means the effective promotion of common welfare *for* the constituency (Scharpf 1999; Schmidt 2013), i.e. embracing the issue of effectiveness.

This dissertation strives to open the ‘black box’ between input and output, and additionally considers the throughput dimension focussing on the nature and properties of the decision-making process as such (Schmidt 2013). The analytical identification of single, concurring mechanisms linking input and output in political decision-making (articles [A1], [A2]) is a useful means to specify and systematically grasp the throughput dimension. It breaks with the linear relationship between input and output legitimacy (or effectiveness) and offers a multi-dimensional picture of how various process properties may have the potential to moderate the relationship between those two dimensions. Policy outputs, in this sense, are not only determined by the political input but are subject to the interplay of various competing mechanisms bound by a number of conditioning and contextual factors. These mechanisms may enhance or contradict each other leading in sum to a unique and context-specific configuration deter-

mining the actual shape of the output, and hence, the actual relation between input legitimacy and effectiveness.

This interplay of various causal mechanisms may lead to dilemma situations, but this need not be the case. As observed empirically in articles [A2] and [A6], the inclusion of concerned stakeholders could have detrimental effects on the quality of decisions. For example, the case of WFD implementation in Spain shows (article [A6]) that broad inclusion of affected stakeholders and their concerns in the political process produced a political programme that was hardly feasible to implement. The rescaling of processes to the sub-basin level in the German state of Lower Saxony (article [A2]), in order to arrive at effective decision-making encountered problems of representation and input legitimacy. In both cases processes were designed in a way that the causal mechanism at play did not mitigate the tensions between input and output legitimacy, but rather accentuated these. For instance, both processes provided insufficient opportunities for conflict resolution and interest mediation so that the positive effects of the concerned mechanisms, linking inclusive and effective decision-making, were not realised. On the other hand, the empirical case studies offer alternative, non-dilemmatic narratives: The observed cases from the German federal states of Schleswig-Holstein (article [A6]) and North Rhine-Westphalia (article [A2]) tell (mostly) positive stories for input legitimacy and effectiveness despite some major scalar restructuring. In the Wupper sub-basin in North Rhine-Westphalia stakeholders and the public had wide possibilities to participate in a multi-level participatory process with various venues that, in the end, resulted in a comprehensive programme of measures and thorough implementation. Hence, input and output legitimacy and effectiveness were achieved in this case. One reason for this favourable setting lies in the context-sensitive process design, which provided for high input of local knowledge by participants and employed various communicative tools for the moderation of interests supporting the mechanisms determined by these factors (see also results of article [A5], supporting these claims).

While these examples may be illustrative of more extreme trajectories, most empirical cases are likely to lie somewhere in the middle, with mixed performance in legitimacy and effectiveness. The proposed framework however, may offer an entry point to gain improved understanding of these situations by seeing them as the result of a unique configuration of a set of interlinked causal mechanisms.

5.4.3 Finding III: Methodological reflection

Beyond the findings relating to public participation and multi-level governance, the research offers further methodological insights for the study of this subject. Specifically, grasping multi-level governance processes as configurations of alternative mechanisms and contextual factors has provided interesting insights. This procedure allowed me, on one hand, to conceptually grasp causal paths in their complexity and contextuality, also highlighting interaction with other factors and mechanisms. On the other hand, it provided a useful basis for empirical research, both qualitative and quantitative.

The mixed methods design employed in this dissertation made use of these analytical possibilities, and combined qualitative, quantitative and set-theoretic methods in a comprehensive way with the goal of arriving at a balance between internal and external validity. Reflecting on this strategy, it can be concluded that this goal was achieved to a large extent. The compo-

sition of sequential and triangulating methodological approaches created a balance between understanding case-specific mechanisms and processes, and the generalisability of findings. The studies conducted were instrumental in understanding the mechanisms through which multi-level governance may be implemented and contribute to the political performance of the governance system, including contextual factors conditioning these.

However, it should also be highlighted that the combination of analytical techniques could potentially be improved. One possibility to increase the internal validity of results may be field experiments and randomised control trials (Gerber and Green 2012). Given the logistical and organisational difficulties of randomly modelling alternative participatory interventions in real-life decision-making processes (as article [S3] shows), a feasible strategy might be to look for natural experiments (Dunning 2012; Robinson et al. 2009) in border regions between nations or federal states. Border regions can be considered as “laboratories for institutional change” (Blatter 2003, 505). A top-down governance intervention initiated by some higher order authority (e.g. the EU or national government), such as the WFD or the Floods Directive, may stimulate very different institutional responses on both sides of the border, resulting in different political outputs. A research design of this type has the further advantage that environmental properties stay rather constant, as ecological systems are delineated by other boundaries than territorial borders. Hence, such a methodological strategy may be particularly suited to maximising internal validity. Employing further advanced statistical techniques to analyse the data obtained from the case survey or alternative data sources may increase external validity. The analyses contained here (article [A5]) assessed the data only rather superficially by means of descriptive statistics and correlation analysis. These are suitable to arrive at an initial understanding of the interlinkages between factors at play, but do not themselves provide for a deeper understanding of mechanisms and hypotheses. Here additional techniques may be appropriate, such as general linear modelling, or structural equation modelling. In this way the wider scope of the case survey multi-case case comparison can be used and combined with a much deeper understanding of mechanisms and contexts, further optimising internal and external validity.

Beyond the choice of particular research methods and techniques, the systematic assessment of causal mechanisms and contextual conditions, undertaken in this study, can be seen as a first step towards a more thorough understanding of the dynamics of complex, social-ecological systems. Systems thinking (e.g. Meadows 2008) as a holistic view may provide a useful approach for a deeper, integrative comprehension of sustainability problems (e.g. Kemp et al. 2007). Such approaches focus on the interconnections between the properties of the environmental and social systems in a formalised manner, acknowledging that the functioning of the system might be greater than the sum of its parts. The framework steering this dissertation research, based on causal mechanisms and contextual factors, similarly examined interconnections between properties, but may however profit from an integrated understanding of the wider system. Attempts at such systematisation are well under way (see e.g. Harden et al. 2014; Lubell 2015; Ostrom 2009). They are scientifically demanding, requiring holistic, multi-level analyses transcending disciplinary boundaries, methods, and traditions. Yet, systems approaches may hold great potential for advancing research and policy-making towards more sustainable development. Systems approaches proved useful in recognising the dependence of humanity on ecosystems, fostering collaboration across scientific disciplines – includ-

ing a methodological pluralism –, and between science and society, and in advancing policy frameworks considering social-ecological interactions (Fischer et al. 2015). This methodological and conceptual angle may be instrumental in identifying leverage points for (policy) intervention (Abson et al., submitted) and avenues towards more sustainable development.

6 Conclusions

The present water crisis, with its complex challenges of persistent, intricate and cross-border environmental problems, is first and foremost a crisis of governance rather than of actual physical resources. In the face of this crisis, alternative governance modes emerged questioning the established roles of the state in its classical, territorial configuration and hierarchical governance style. The inclusion of non-state actors by means of public participation and the rescaling of governance processes, as major procedural and structural elements of this governance shift, are at times perceived as panaceas on the way to sustainable development.

This dissertation has sought to look beyond these as idealised solutions and contribute to a wider, context-sensitive understanding of the implementation and performance of public participation and scalar dynamics in environmental governance. To this end, first, the concepts of collaborative, multi-level governance, and the notion of scale, have been integrated into a conceptual groundwork. This made it possible to analytically grasp the ways in which public participation and rescaling may contribute to environmentally effective and legitimate political processes and decisions. Special emphasis was put on the identification of precise, ideal-typical mechanisms linking participation and rescaling to governance outputs, particularly considering the interlinkages and conditioning dynamics between various factors. This framework informed further analysis, both qualitative and quantitative. Following aim #2 and examining the degree to which the implementation of public participation and river basin management envisaged by the WFD were actually occurring, analyses revealed that changes remained modest, whereas previous institutional structures and experiences proved rather durable. Hence, despite recent shifts distributing authority towards alternative actors and scales, the state has persisted in its role as central authority in the European water resource management regime. To the extent that they were implemented, public participation and rescaling were generally positively related with the environmental effectiveness and legitimacy of political outcomes. Beyond this general tendency, the analysis, striving for a wider, context-sensitive understanding, unravelled the supposedly linear relationship between governance inputs and outputs to develop an understanding of the governance process rather as a composition of multiple, interdependent causal mechanisms that, depending on their actual configuration, lead to various outcomes. In this way, particularly the tension between legitimacy and effectiveness of political outcomes was disentangled, with both being seen as the result of distinct but interrelated properties of the governance system and its contextual circumstances.

Based on these immediate findings, three overarching lessons for water governance, and environmental governance more broadly, can be drawn from this research: First, neither public participation nor rescaling of governance can be considered panaceas. Neither functions as an automatic step towards sustainable development. While this may appear unsurprising, the analyses have also shown that both, participation and rescaling *can* show considerable, posi-

tive effects. The communicative element of participation, for instance, proved particularly beneficial for social outcomes, such as conflict resolution, capacity building, and acceptance generation. River basin management has been seen to function especially well where it was entrenched and adapted to the wider multi-level political system. This highlights the second major point: Context matters. The ecological, social, and political conditions in which governance processes are embedded have shown themselves to be strong constraining factors on both the implementation and performance of new structures and processes. Participation and river basin management were especially successful in those cases where political and social structures were already predisposed to these governance shifts, as e.g. river basin management was practiced before, or where political and civic actors played some role in environmental management earlier and entered into a committed cooperation. And finally, third: The role of government actors remains crucial. As discussed, despite changes in governance structures and processes to integrate new actors and scales, government officials and agencies remained the main driving forces behind the water governance processes observed. While unitary government planning and action may by no means be sufficient for positive environmental impacts, their strong resource and capacity base proved to be an important factor for the translation of plans into action on the ground.

Policy makers and practitioners may benefit from these insights in various ways. The design of governance processes demands careful consideration of the overall governing goals and objectives, acute awareness of the environmental and societal context, and on-going dialogue with relevant actors and stakeholders. The mechanisms and factors identified in the conceptual and empirical contributions comprising this dissertation may provide a viable entry point for such approaches. They foster the awareness of possible goals and objectives and direct focus onto relevant structural and procedural conditions, simplify the diversity of environmental and societal settings, but also allow for analytically grasping complexity. A contextual perspective informed by this approach, does not only consider the properties of the participatory processes and scalar structures at hand as viable entry points to foster the performance of governance. It further actively engages in the context, identifying and nurturing those conditions promoting positive effects of participatory and rescaled water governance. For example, rather than just relying on an inclusive and deliberative decision-making process, accompanying activities such as field visits, technical training or social events may alter the basic social conditions on which the actual process rests. These efforts may have an overall positive effect, both socially and ultimately also environmentally. Such opportunities impacting on environmental decision-making indirectly may provide important leverage points significantly influencing the likelihood of success of procedural and structural governance changes, in particular where the basic conditions in this respect are less well developed. By adopting such a contextual perspective, decision makers may be better equipped to take important process design decisions and put these into a dialogue with political and environmental demands and the context at hand.

This research opens up pathways for further investigation. One obvious opportunity to build on this dissertation lies in testing the identified mechanisms and conditions in other contexts, beyond the European water management regime. The EU itself has issued a number of environmental directives, such as the Air Quality Directive, the Floods Directive, the Habitat Directive, or the Marine Strategy Directive that also entail procedural provisions for rescaling to

ecosystem-based management and/or collaborative governance. In particular, comparisons across these directives would constitute an interesting research endeavour, on the one hand limiting the institutional and geographic context, but on the other hand offering insights into many different environmental issues concerning scale, multi-level governance and collaboration. Such comparisons are still rare to date. Apart from extending the tools employed and insights gained in this research to other environmental media, it appears also worthwhile to apply these to other geographic regions. The EU, given its socio-economic, environmental and climatic conditions, provides a particular context for the study of water governance. Environmental and societal issues in other world regions may be very different from the EU experience, opening up opportunities for further interesting comparative studies with very deviant cases. Comparisons designed in this way may be instrumental in eliminating the EU- or water-specific properties of participatory governance and rescaling, and approaching the fundamental underlying social and political principles of environmental governance.

7 References

- Abson, David J., Jörn Fischer, Julia Leventon, Jens Newig, Thomas Schomerus, Ulli Vilsmaier, Henrik von Wehrden, et al. n.d. “Leverage Points for Sustainability Transformation.” submitted to *AMBIO*.
- Acheson, James M. 2006. “Institutional Failure in Resource Management.” *Annual Review of Anthropology* 35 (1): 117–34.
- Aguinis, Herman, Charles A. Pierce, Frank A. Bosco, Dan R. Dalton, and Catherine M. Dalton. 2011. “Debunking Myths and Urban Legends About Meta-Analysis.” *Organizational Research Methods* 14 (2): 306–31.
- Andersson, Ingela, Mona Petersson, and Jerker Jarsjö. 2012. “Impact of the European Water Framework Directive on Local-Level Water Management: Case Study Oxunda Catchment, Sweden.” *Land Use Policy* 29 (1): 73–82.
- Ansell, Chris, and Alison Gash. 2007. “Collaborative Governance in Theory and Practice.” *Journal of Public Administration Research and Theory* 18 (4): 543–71.
- Arnstein, Sherry R. 1969. “A Ladder Of Citizen Participation.” *Journal of the American Planning Association* 35 (4): 216–24.
- Bache, Ian, and Rachael Chapman. 2008. “Democracy through Multilevel Governance? The Implementation of the Structural Funds in South Yorkshire.” *Governance* 21 (3): 397–418.
- Bache, Ian, and Matthew Flinders. 2004. *Multi-Level Governance*. Oxford: Oxford University Press.
- Bakker, Karen, and Cynthia Morinville. 2013. “The Governance Dimensions of Water Security: A Review.” *Philosophical Transactions of the Royal Society A* 371 (20130116).
- Beierle, Thomas C., and Jerry Cayford. 2002. *Democracy in Practice: Public Participation in Environmental Decisions*. Washington, D.C.: Resources for the Future.
- Bell, Stephen, and Andrew Hindmoor. 2009. *Rethinking Governance. The Centrality of the State in Modern Society*. Melbourne: Cambridge University Press.
- Bengtsson, Bo, and Nils Hertting. 2014. “Generalization by Mechanism: Thin Rationality and Ideal-Type Analysis in Case Study Research.” *Philosophy of the Social Sciences* 44 (6): 707–32.
- Benz, Arthur. 2006. “Governance in Mehrebenensystemen.” In *Governance-Forschung. Vergewisserung Über Stand Und Entwicklung*, edited by Folke Schuppert, Gunnar, 95–120. Baden-Baden: Nomos.
- . 2007. “Governance in Connected Arenas – Political Science Analysis of Coordination and Control in Complex Rule Systems.” In *New Forms of Governance in Research Organizations: Disciplinary Approaches, Interfaces and Integration*, edited by Jansen, Dorothea, 3–22. Dordrecht: Springer.
- Berardo, Ramiro, and Andrea K. Gerlak. 2012. “Conflict and Cooperation along International Rivers: Crafting a Model of Institutional Effectiveness.” *Global Environmental Politics* 12 (1): 101–20.
- Berg-Schlosser, Dirk, and Lasse Cronqvist. 2005. “Macro-Quantitative vs. Macro-Qualitative Methods in the Social Sciences: An Example for Empirical Democratic Theory Employing New Software.” *Historical Social Research* 30 (4): 154–75.
- Bernauer, Thomas, and Patrick M. Kuhn. 2010. “Is There an Environmental Version of the Kantian Peace? Insights from Water Pollution in Europe.” *European Journal of International Relations* 16 (1): 77–102.
- Biesenbender, Sophie, and Adrienne Héritier. 2009. “Mixed-Methods Designs in Comparative Public Policy Research: The Dismantling of Pension Policies.” In *Comparative Policy Studies. Conceptual and Methodological Challenges*, edited by

- Engeli, Isabelle and Rothmayr Allison, Christine, 237–64. Basingstoke: Palgrave Macmillan.
- Bixler, R. Patrick. 2014. “From Community Forest Management to Polycentric Governance: Assessing Evidence from the Bottom Up.” *Society & Natural Resources* 27 (2): 155–69.
- Bixler, R. Patrick, Jampel Dell’ Angelo, Orleans Mfune, and Hassan Roba. 2015. “The Political Ecology of Participatory Conservation: Institutions and Discourse.” *Journal of Political Ecology* 22: 164–82.
- Blatter, Joachim. 2003. “Beyond Hierarchies and Networks: Institutional Logics and Change in Transboundary Spaces.” *Governance* 16 (4): 503–26.
- . 2004. “‘From Spaces of Place’ to ‘spaces of Flows’? Territorial and Functional Governance in Cross-Border Regions in Europe and North America.” *International Journal of Urban and Regional Research* 28 (3): 530–48.
- Blomquist, William, and Edella Schlager. 2005. “Political Pitfalls of Integrated Watershed Management.” *Society & Natural Resources* 18 (2): 101–17.
- Boynton, George R. 1982. “On Getting from Here to There.” In *Strategies of Political Inquiry*, edited by Ostrom, Elinor, 29–68. Beverly Hills: Sage.
- Brenner, Neil. 1999. “Beyond State-Centrism? Space, Territoriality, and Geographical Scale in Globalization Studies.” *Theory and Society* 28 (1): 39–78.
- Britt, David W. 1997. *A Conceptual Introduction To Modeling: Qualitative and Quantitative Perspectives*. Mahwah: Lawrence Erlbaum Associates.
- Bruns, Antje, and Kira Gee. 2009. “From State-Centered Decision-Making to Participatory Governance Planning for Offshore Wind Farms and Implementation of the Water Framework Directive in Northern Germany.” *GAIA* 18 (2): 150–57.
- Bulkeley, Harriet, and Arthur P.J. Mol. 2003. “Participation and Environmental Governance: Consensus, Ambivalence and Debate.” *Environmental Values* 12 (2): 143–54.
- Campbell, Joseph T., Tomas M. Koontz, and Joseph E. Bonnell. 2011. “Does Collaboration Promote Grass-Roots Behavior Change? Farmer Adoption of Best Management Practices in Two Watersheds.” *Society & Natural Resources* 24 (11): 1127–41.
- Carr, G., G. Blöschl, and D. P. Loucks. 2012. “Evaluating Participation in Water Resource Management: A Review.” *Water Resources Research* 48 (11).
- Cash, David W., W. Neil Adger, Fikret Berkes, Po Garden, Louis Lebel, and Per Olsson. 2006. “Scale and Cross-Scale Dynamics: Governance and Information in a Multilevel World.” *Ecology and Society* 11 (2). Citeseer: 8.
- Cheng, Antony S., Andrea K. Gerlak, and Katherine Mattor. 2015. “Examining the Adaptability of Collaborative Governance Associated with Publicly Managed Ecosystems over Time: Insights from the Front Range Roundtable, Colorado, USA.” *Ecology and Society* 20 (1): 35.
- Chess, Caron, and Kristen Purcell. 1999. “Public Participation and the Environment: Do We Know What Works?” *Environmental Science & Technology* 33 (16): 2685–92.
- Coglianesi, Cary. 1997. “Assessing Consensus: The Promise and Performance of Negotiated Rulemaking.” *Duke Law Journal* 46 (6): 1255–1350.
- Cohen, Alice. 2012. “Rescaling Environmental Governance: Watersheds as Boundary Objects at the Intersection of Science, Neoliberalism, and Participation.” *Environment and Planning A* 44 (9): 2207–24.
- . 2015. “Nature’s Scales? Watersheds as a Link between Water Governance and the Politics of Scale.” In *Negotiating Water Governance. Why the Politics of Scale Matter*, edited by Norman, Emma S., Cook, Christina, and Cohen, Alice, 25–40. Farnham: Ashgate.
- Cohen, Alice, and Seanna Davidson. 2011. “The Watershed Approach: Challenges, Antecedents, and the Transition from Technical Tool to Governance Unit.” *Water Alternatives* 4 (1): 1–14.

- Cohen, Alice, and James McCarthy. 2015. "Reviewing Rescaling: Strengthening the Case for Environmental Considerations." *Progress in Human Geography* 39 (1): 3–25.
- Conley, Alexander, and Margaret A. Moote. 2003. "Evaluating Collaborative Natural Resource Management." *Society & Natural Resources* 16 (5): 371–86.
- Cook, Brian R., Mike Kesby, Ioan Fazey, and Chris Spray. 2013. "The Persistence of 'Normal' Catchment Management despite the Participatory Turn: Exploring the Power Effects of Competing Frames of Reference." *Social Studies of Science* 43 (5): 754–79.
- Cooke, Bill, and Uma Kothari. 2001. *Participation: The New Tyranny?* London: Zed Books.
- Coppedge, Michael. 1999. "Thickening Thin Concepts and Theories N: Combining Large N and Small in Comparative Politics." *Comparative Politics* 31 (4): 465–76.
- Cox, Michael. 2011. "Advancing the Diagnostic Analysis of Environmental Problems." *International Journal of the Commons* 5 (2): 346–63.
- . 2015. "A Basic Guide for Empirical Environmental Social Science." *Ecology and Society* 20 (1).
- Creswell, John W., and Vicki L. Plano Clark. 2007. *Designing and Conducting Mixed Methods Research*. Thousand-Oaks: Sage.
- Cumming, Graeme S., David H. M. Cumming, and Charles L. Redman. 2006. "Scale Mismatches in Social-Ecological Systems: Causes, Consequences, and Solutions." *Ecology and Society* 11 (1).
- Dahl, Robert A. 1994. "A Democratic Dilemma: System Effectiveness versus Citizen Participation." *Political Science Quarterly* 109 (1): 23–34.
- DeBardeleben, Joan, and Achim Hurrelmann, eds. 2007a. *Democratic Dilemmas of Multilevel Governance. Legitimacy, Representation and Accountability in the European Union*. Houndmills: Palgrave Macmillan.
- . 2007b. "Introduction." In *Democratic Dilemmas of Multilevel Governance. Legitimacy, Representation and Accountability in the European Union*, edited by DeBardeleben, Joan and Hurrelmann, Achim, 1–14. Houndmills: Palgrave Macmillan.
- Dietz, Thomas, Elinor Ostrom, and Paul C. Stern. 2003. "The Struggle to Govern the Commons." *Science* 302 (5652): 1907–12.
- Dietz, Thomas, and Paul C. Stern. 2008. *Public Participation in Environmental Assessment and Decision Making*. Washington, D.C.: The National Academies Press.
- Dryzek, John S. 2005. *The Politics of the Earth: Environmental Discourses*. Oxford: Oxford University Press.
- Dunning, Thad. 2012. *Natural Experiments in the Social Sciences: A Design-Based Approach*. Cambridge: Cambridge University Press.
- EC. 2002. "Guidance on Public Participation in Relation to the Water Framework Directive. Active Involvement, Consultation, and Public Access to Information." Brussels: European Commission.
- Everitt, Brian S., Sabine Landau, and Morven Leese. 2001. *Cluster Analysis*. London: Arnold.
- Fazey, Ioan, Anna C. Evely, Mark S. Reed, Lindsay C. Stringer, Joanneke Kruijssen, Piran C. L. White, Andrew Newsham, et al. 2012. "Knowledge Exchange: A Review and Research Agenda for Environmental Management." *Environmental Conservation* 40 (1): 1–18.
- Fischer, Joern, Toby A. Gardner, Elena M. Bennett, Patricia Balvanera, Reinette Biggs, Stephen Carpenter, Tim Daw, et al. 2015. "Advancing Sustainability through Mainstreaming a Social-Ecological Systems Perspective." *Current Opinion in Environmental Sustainability* 14: 144–49.
- Frey, Bruno S., and Reiner Eichenberger. 1999. *The New Democratic Federalism for Europe. Functional, Overlapping and Competing Jurisdictions*. Cheltenham: Edward Elgar.
- Fung, Archon. 2006. "Varieties of Participation in Complex Governance." *Public Administration Review* 66 (Special Issue): 66–75.

- Fung, Archon, and Erik Olin Wright. 2001. "Deepening Democracy: Innovations in Empowered Participatory Governance." *Politics & Society* 29 (1): 5–41.
- Galaz, Victor, Per Olsson, Thomas Hahn, Carl Folke, and Uno Svedin. 2008. "The Problem of Fit among Biophysical Systems, Environmental and Resource Regimes, and Broader Governance Systems: Insights and Emerging Challenges." In *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers*, edited by Young, Oran R., King, Leslie A., and Schroeder, Heike, 147–86. Cambridge: MIT Press.
- George, Alexander L., and Andrew Bennett. 2005. *Case Studies and Theory Development in the Social Sciences*. Cambridge: MIT Press.
- Gerber, Alan S., and Donald P. Green. 2012. *Field Experiments: Design, Analysis, and Interpretation*. New York: Ww Norton.
- Gerlak, Andrea K. 2014. "Policy Interactions in Human-Landscape Systems." *Environmental Management* 53 (1): 67–75.
- Gerlak, Andrea K., Mark Lubell, and Tanya Heikkila. 2013. "The Promise and Performance of Collaborative Governance." In *Oxford Handbook of U.S. Environmental Policy*, edited by Kamieniecki, Sheldon and Kraft, Michael, 413–34. New York: Oxford University Press.
- Gibson, Clark C., Elinor Ostrom, and T K Ahn. 2000. "The Concept of Scale and the Human Dimensions of Global Change: A Survey." *Ecological Economics* 32 (2): 217–39.
- Guerrero, Angela M., Örjan Bodin, Ryan R.J. Mcallister, and Kerrie A. Wilson. 2015. "Achieving Social-Ecological Fit through Bottom-up Collaborative Governance: An Empirical Investigation." *Ecology and Society* 20 (4): 1–28.
- Gupta, Joyeeta, Claudia Pahl-Wostl, and Ruben Zondervan. 2013. "'Glocal' Water Governance: A Multi-Level Challenge in the Anthropocene." *Current Opinion in Environmental Sustainability* 5 (6): 573–80.
- Harden, Carol P., Anne Chin, Mary R. English, Rong Fu, Kathleen A. Galvin, Andrea K. Gerlak, Patricia F. McDowell, et al. 2014. "Understanding Human–Landscape Interactions in the 'Anthropocene.'" *Environmental Management* 53 (1): 4–13.
- Hart, Chris. 1998. *Doing a Literature Review. Releasing the Social Science Research Imagination*. London: Sage.
- Hedström, Peter, and Petri Ylikoski. 2010. "Causal Mechanisms in the Social Sciences." *Annual Review of Sociology* 36 (1): 49–67.
- Hein, Lars, Kris van Koppen, Rudolf S. de Groot, and Ekko C. van Ierland. 2006. "Spatial Scales, Stakeholders and the Valuation of Ecosystem Services." *Ecological Economics* 57 (2): 209–28.
- Heinrich, Carolyn J., Laurence E. Lynn, and H. Brinton Milward. 2010. "A State of Agents? Sharpening the Debate and Evidence over the Extent and Impact of the Transformation of Governance." *Journal of Public Administration Research and Theory* 20 (SUPPL. 1): 3–19.
- Hering, Janet G., and Karin M. Ingold. 2012. "Water Resources Management: What Should Be Integrated?" *Science (New York, N.Y.)* 336 (June): 1234–35.
- Hooghe, Liesbet, and Gary Marks. 2003. "Unraveling the Central State, but How? Types of Multi-Level Governance." *American Political Science Review* 97 (2): 233–43.
- Howitt, Richard. 2008. "Scale." In *A Companion to Political Geography*, edited by Agnew, John, Mitchell, Katharyne, and Toal, Gerard, 138–57. Oxford: Blackwell.
- Hysing, Erik. 2009. "From Government to Governance? A Comparison of Environmental Governing in Swedish Forestry and Transport." *Governance* 22 (4): 647–72.
- Ingram, Helen. 2011. "Beyond Universal Remedies for Good Water Governance: A Political and Contextual Approach." In *Water for Food in a Changing World*, edited by Garrido, Alberto and Ingram, Helen, 241–61. Oxford: Routledge.

- Irvin, R.A., and J. Stansbury. 2004. "Citizen Participation in Decision Making: Is It Worth the Effort?" *Public Administration Review* 64 (1): 55–65.
- Jensen, Jason L., and Robert Rodgers. 2001. "Cumulating the Intellectual Gold of Case Study Research." *Public Administration Review* 61 (2): 235–46.
- Jochim, Ashley E., and Peter J. May. 2010. "Beyond Subsystems: Policy Regimes and Governance." *Policy Studies Journal* 38 (2): 303–27.
- Johnson, R. Burke, and Anthony J. Onwuegbuzie. 2004. "Mixed Methods Research: A Research Paradigm Whose Time Has Come." *Educational Researcher* 33 (7): 14–26.
- Johnson, R. Burke, Anthony J. Onwuegbuzie, and Lisa A. Turner. 2007. "Toward a Definition of Mixed Methods Research." *Journal of Mixed Methods Research* 1 (2): 112–33.
- Jordan, Andrew. 2008. "The Governance of Sustainable Development: Taking Stock and Looking Forwards." *Environment and Planning C: Government and Policy* 26 (1): 17–33.
- Jordan, Andrew, Rüdiger K.W. Wurzel, and Anthony Zito. 2005. "The Rise of 'New' policy Instruments in Comparative Perspective: Has Governance Eclipsed Government?" *Political Studies* 53 (3): 477–96.
- Junier, Sandra, Ilke Borowski, Gabrielle Bouleau, Eduard Interwies, and Erik Mostert. 2010. "Implementing the Water Framework Directive: Lessons for the Second Planning Cycle." In *The Water Framework Directive: Action Programmes and Adaptation to Climate Change*, edited by Quevauviller, Philippe, Borchers, Ulrich, Thompson, K. Clive, and Simonart, Tristan, 80–98. Cambridge: RSC Publishing.
- Kastens, Britta, and Jens Newig. 2008. "Will Participation Foster the Successful Implementation of the Water Framework Directive? The Case of Agricultural Groundwater Protection in Northwest Germany." *Local Environment* 13 (1): 27–41.
- Kemp, René, Derk Loorbach, and Jan Rotmans. 2007. "Transition Management as a Model for Managing Processes of Co-Evolution towards Sustainable Development." *International Journal of Sustainable Development* 14 (1): 1–15.
- Kenward, R. E., M. J. Whittingham, S. Arampatzis, B. D. Manos, T. Hahn, A. Terry, R. Simoncini, et al. 2011. "Identifying Governance Strategies That Effectively Support Ecosystem Services, Resource Sustainability, and Biodiversity." *Proceedings of the National Academy of Sciences* 108 (13): 5308–12.
- Ker Rault, Ph. A., and P. J. Jeffrey. 2008. "Deconstructing Public Participation in the Water Framework Directive: Implementation and Compliance with the Letter or with the Spirit of the Law?" *Water and Environment Journal* 22 (4): 241–49.
- Koontz, Tomas M. 2006. "Collaboration for Sustainability? A Framework for Analyzing Government Impacts in Collaborative- Environmental Management." *Sustainability: Science Practice and Policy* 2 (1): 15–24.
- Koontz, Tomas M., Toddi A. Steelman, JoAnn Carmin, Katrina Smith Korfmacher, Cassandra Moseley, and Craig W. Thomas. 2004. *Collaborative Environmental Management: What Roles for Government?* Washington, DC: Resources for the Future.
- Koontz, Tomas M., and Craig W. Thomas. 2006. "What Do We Know and Need to Know about the Environmental Outcomes of Collaborative Management?" *Public Administration Review* 66 (s1): 111–21.
- Larsson, Rikard. 1993. "Case Survey Methodology: Quantitative Analysis of Patterns Across Case Studies." *Academy of Management Journal* 36 (6): 1515–46.
- Leach, William D., and Paul A. Sabatier. 2005. "Are Trust and Social Capital Key to Success? Watershed Partnerships in California and Washington." In *Swimming Upstream: Collaborative Approaches to Watershed Management*, edited by Sabatier,

- Paul A., Focht, Will, Lubell, Mark, Trachtenberg, Zev, Vedlitz, Arnold, and Matlock, Marty, 233–58. Cambridge: MIT Press.
- Lejano, Raul, Helen Ingram, John Whiteley, Daniel Torres, and Sharon Agduma. 2007. “The Importance of Context: Integrating Resource Conservation with Local Institutions.” *Society & Natural Resources* 20 (2): 177–85.
- Lemos, Maria Carmen, and Arun Agrawal. 2006. “Environmental Governance.” *Annual Review of Environment and Resources* 31 (1): 297–325.
- Lidén, Gustav. 2013. “What about Theory? The Consequences on a Widened Perspective of Social Theory.” *Quality and Quantity* 47 (1): 213–25.
- Lieberman, Evan S. 2005. “Nested Analysis as a Mixed-Method Strategy for Comparative Research.” *American Political Science Review* 99 (3): 435–52.
- Lindblom, Charles E. 1959. “The Science of ‘Muddling Through.’” *Public Administration Review* 19 (2): 79–88.
- Lubell, Mark. 2004. “Collaborative Environmental Institutions: All Talk and No Action?” *Journal of Policy Analysis and Management* 23 (3): 549–73.
- . 2015. “Collaborative Partnerships in Complex Institutional Systems.” *Current Opinion in Environmental Sustainability* 12: 41–47.
- Lundqvist, Lennart J. 2004. “Integrating Swedish Water Resource Management: A Multi-Level Governance Trilemma.” *Local Environment* 9 (5): 413–24.
- Marx, Axel, Benoît Rihoux, and Charles Ragin. 2014. “The Origins, Development, and Application of Qualitative Comparative Analysis: The First 25 Years.” *European Political Science Review* 6 (1): 115–42.
- Mayntz, Renate. 2006. “Governance Theory Als Fortentwickelte Steuerungstheorie.” In *Governance-Forschung. Vergewisserung Über Stand Und Entwicklungslinien*, edited by Schuppert, Gunnar Folke, 11–20. Baden-Baden: Nomos.
- McCloskey, M. 2000. “Problems with Using Collaboration to Shape Environmental Public Policy.” *Valparaiso University Law Review* 34 (2): 423–34.
- McDermott, Rose. 2011. “Internal and External Validity.” In *Cambridge Handbook of Experimental Political Science*, edited by Druckman, James N., Green, Donald P., Kuklinski, James H., and Lupia, Arthur, 27–40. Cambridge: Cambridge University Press.
- Meadowcroft, James. 2004. “Participation and Sustainable Development: Modes of Citizen, Community and Organisational Involvement.” In *Governance for Sustainable Development: The Challenge of Adapting Form to Function*, edited by Lafferty, William M., 162–90. Cheltenham: Edward Elgar.
- Meadows, Donella H. 2008. *Thinking in Systems*. London: Earthscan.
- Meinzen-Dick, Ruth. 2007. “Beyond Panaceas in Water Institutions.” *Proceedings of the National Academy of Sciences of the United States of America* 104 (39): 15200–205.
- Molle, François. 2008. “Nirvana Concepts, Narratives and Policy Models: Insights from the Water Sector.” *Water Alternatives* 1 (1): 131–56.
- . 2009. “River-Basin Planning and Management: The Social Life of a Concept.” *Geoforum* 40 (3): 484–94.
- Moore, Adam. 2008. “Rethinking Scale as a Geographical Category: From Analysis to Practice.” *Progress in Human Geography* 32 (2): 203–25.
- Moss, Timothy. 2004. “The Governance of Land Use in River Basins: Prospects for Overcoming Problems of Institutional Interplay with the EU Water Framework Directive.” *Land Use Policy* 21 (1): 85–94.
- . 2012. “Spatial Fit, from Panacea to Practice: Implementing the EU Water Framework Directive.” *Ecology and Society* 17 (3).
- Moss, Timothy, and Jens Newig. 2010. “Multilevel Water Governance and Problems of Scale: Setting the Stage for a Broader Debate.” *Environmental Management* 46 (1): 1–6.

- Newig, Jens. 2012. "More Effective Natural Resource Management through Participatory Governance? Taking Stock of the Conceptual and Empirical Literature – and Moving Forward." In *Environmental Governance. The Challenge of Legitimacy and Effectiveness*, edited by Hogl, Karl, Kvarda, Eva, Nordbeck, Ralf, and Pregernig, Michael, 46–68. Cheltenham: Edward Elgar.
- Newig, Jens, and Oliver Fritsch. 2009a. "Environmental Governance: Participatory, Multi-Level - and Effective?" *Environmental Policy and Governance* 19 (3): 197–214.
- . 2009b. "The Case Survey Method and Applications in Political Science." Toronto: APSA 2009 meeting.
- Newig, Jens, and Tomas M. Koontz. 2014. "Multi-Level Governance, Policy Implementation and Participation: The EU's Mandated Participatory Planning Approach to Implementing Environmental Policy." *Journal of European Public Policy* 21 (2): 248–67.
- Newig, Jens, and Eva Kvarda. 2012. "Participation in Environmental Governance: Legitimate and Effective?" In *Environmental Governance. The Challenge of Legitimacy and Effectiveness*, edited by Hogl, Karl, Kvarda, Eva, Nordbeck, Ralf, and Pregernig, Michael, 29–45. Cheltenham: Edward Elgar.
- Newig, Jens, Claudia Pahl-Wostl, and Katja Sigel. 2005. "The Role of Public Participation in Managing Uncertainty in the Implementation of the Water Framework Directive." *European Environment* 15: 333–43.
- Norman, Emma S., Christina Cook, and Alice Cohen. 2015. *Negotiating Water Governance. Why the Politics of Scale Matter*. Farnham: Ashgate.
- Nyhlen, Jon, and Gustav Lidén. 2014. "Methods for Analyzing Decision-Making: A Framework Approach." *Quality and Quantity* 48 (5): 2523–35.
- Ostrom, Elinor. 1999. "Coping with Tragedies of the Commons." *Annual Review of Political Science*, no. 2: 493–535.
- . 2007. "A Diagnostic Approach for Going beyond Panaceas." *Proceedings of the National Academy of Sciences of the United States of America* 104 (39): 15181–87.
- . 2009. "A General Framework for Analyzing Sustainability of Social-Ecological Systems." *Science* 325: 419–22.
- Ostrom, Elinor, and Michael Cox. 2010. "Moving beyond Panaceas: A Multi-Tiered Diagnostic Approach for Social-Ecological Analysis." *Environmental Conservation* 37 (04): 451–63.
- Ostrom, Elinor, Marco A. Janssen, and John M. Anderies. 2007. "Going beyond Panaceas." *Proceedings of the National Academy of Sciences of the United States of America* 104 (39): 15176–78.
- Page, Ben, and Maria Kaika. 2003. "The EU Water Framework Directive: Part 2. Policy Innovation and the Shifting Choreography of Governance." *European Environment* 13 (6): 328–43.
- Pahl-Wostl, Claudia. 2002. "Participative and Stakeholder-Based Policy Design, Evaluation and Modeling Processes." *Integrated Assessment* 3 (1): 3–14.
- Pahl-Wostl, Claudia, Louis Lebel, Christian Knieper, and Elena Nikitina. 2012. "From Applying Panaceas to Mastering Complexity: Toward Adaptive Water Governance in River Basins." *Environmental Science and Policy* 23: 24–34.
- Palmer, Margaret A., Catherine A. Reidy Liermann, Christer Nilsson, Martina Flörke, Joseph Alcamo, P. Sam Lake, and Nick Bond. 2008. "Climate Change and the World's River Basins: Anticipating Management Options." *Frontiers in Ecology and the Environment* 6 (2): 81–89.
- Payne, G, and M Williams. 2005. "Generalization in Qualitative Research." *Sociology* 39 (2): 295–314.

- Peters, B. Guy, and Jon Pierre. 2004. "Multi-Level Governance and Democracy: A Faustian Bargain?" In *Multi-Level Governance*, edited by Bache, Ian and Flinders, Matthew, 75–89. Oxford: Oxford University Press.
- Piattoni, S. 2010. *The Theory of Multi-Level Governance: Conceptual, Empirical, and Normative Challenges*. Oxford University Press.
- Pierre, Jon, and B. Guy Peters. 2000. *Governance, Politics and the State*. Basingstoke: Macmillan.
- . 2005. *Governing Complex Societies*. Basingstoke: Palgrave.
- Ragin, Charles C. 1987. *The Comparative Method: Moving beyond Qualitative and Quantitative Strategies*. Berkeley: University of California Press.
- . 2000. *Fuzzy-Set Social Science*. Chicago: Chicago University Press.
- Reed, Maureen. G., and Shannon. Bruyneel. 2010. "Rescaling Environmental Governance, Rethinking the State: A Three-Dimensional Review." *Progress in Human Geography* 34 (5): 646–53.
- Renn, Ortwin. 2005. "Partizipation – Ein Schillernder Begriff." *GAIA* 14 (3): 227–28.
- Rhodes, Roderick A.W. 1996. "The New Governance: Governing without Government." *Political Studies* 44 (4): 652–67.
- Rihoux, Benoît, and Charles C. Ragin. 2009. *Configurational Comparative Methods: Qualitative Comparative Analysis (QCA) and Related Techniques*. Los Angeles: SAGE.
- Robichau, Robbie Waters. 2011. "The Mosaic of Governance: Creating a Picture with Definitions, Theories, and Debates." *Policy Studies Journal* 39 (S1): 113–31.
- Robinson, Gregory, John E. McNulty, and Jonathan S. Krasno. 2009. "Observing the Counterfactual? The Search for Political Experiments in Nature." *Political Analysis* 17 (4): 341–57.
- Rowe, Gene, and Lynn J. Frewer. 2005. "A Typology of Public Engagement Mechanisms." *Science, Technology & Human Values* 30 (2): 251–90.
- Savenije, Hubert H. G., and Pieter van der Zaag. 2000. "Conceptual Framework for the Management of Shared River Basins: With Special Reference to the SADC and EU." *Water Policy* 2: 9–45.
- Scharpf, Fritz. 1999. *Governing in Europe: Effective and Democratic?* Oxford: Oxford University Press.
- Schmidt, Vivien A. 2013. "Democracy and Legitimacy in the European Union Revisited: Input, Output and 'Throughput.'" *Political Studies* 61 (1): 2–22.
- Schmitter, Philippe C. 2002. "Participation in Governance Arrangements: Is There Any Reason to Expect It Will achieve 'Sustainable and Innovative Policies in an Multi-Level Context?'" In *Participatory Governance. Political and Societal Implications*, edited by Grote, Jürgen R and Gbikpi, Bernard, 51–69. Opladen: Leske & Budrich.
- Scott, Tyler. 2015. "Does Collaboration Make Any Difference? Linking Collaborative Governance to Environmental Outcomes." *Journal of Policy Analysis and Management* 34 (3): 537–66.
- Smith, Graham. 2003. *Deliberative Democracy and the Environment*. London: Routledge.
- Smith, Mark P. 2009. "Finding Common Ground: How Advocacy Coalitions Succeed in Protecting Environmental Flows." *Journal of the American Water Resources Association* 45 (5): 1100–1115.
- Sørensen, Eva. 2006. "Metagovernance. The Changing Role of Politicians in Processes of Democratic Governance." *American Review of Public Administration* 36 (1): 98–114.
- Stephenson, Paul. 2013. "Twenty Years of Multi-Level Governance: 'Where Does It Come From? What Is It? Where Is It Going?'" *Journal of European Public Policy* 20 (6): 817–37.
- Stoker, Gerry. 1998. "Governance as Theory: Five Propositions." *International Social Science Journal* 50 (155): 17–28.

- Termeer, Catrien J. A. M., Art Dewulf, and Maartje van Lieshout. 2010. "Disentangling Scale Approaches in Governance Research: Comparing Monocentric, Multilevel, and Adaptive Governance." *Ecology and Society* 15 (4): 29.
- Tuler, Seth, and Thomas Webler. 2010. "How Preferences for Public Participation Are Linked to Perceptions of the Context, Preferences for Outcomes, and Individual Characteristics." *Environmental Management* 46 (2): 254–67.
- Ulibarri, Nicola. 2015. "Tracing Process to Performance of Collaborative Governance: A Comparative Case Study of Federal Hydropower Licensing." *Policy Studies Journal* 43 (2): 283–308.
- van Kersbergen, Kees, and Frans van Waarden. 2004. "'Governance' as a Bridge between Disciplines: Cross-Disciplinary Inspiration Regarding Shifts in Governance and Problems of Governability, Accountability and Legitimacy." *European Journal of Political Research* 43: 143–71.
- van Rijswick, Marleen, Herman Kasper Gilissen, and Jasper Kempen. 2009. "The Need for International and Regional Transboundary Cooperation in European River Basin Management as a Result of New Approaches in EC Water Law." *ERA Forum* 11 (1): 129–57.
- Vörösmarty, C J, P B McIntyre, M O Gessner, D Dudgeon, a Prusevich, P Green, S Glidden, et al. 2010. "Global Threats to Human Water Security and River Biodiversity." *Nature* 467 (7315): 555–61.
- Wallington, Tabatha, Geoffrey Lawrence, and Barton Loechel. 2008. "Reflections on the Legitimacy of Regional Environmental Governance: Lessons from Australia's Experiment in Natural Resource Management." *Journal of Environmental Policy & Planning* 10 (1): 1–30.
- Wälti, Sonja. 2010. "Multi-Level Environmental Governance." In *Handbook on Multi-Level Governance*, edited by Enderlein, Hendrik, Wälti, Sonja, and Zürn, Michael, 411–22. Cheltenham: Edward Elgar.
- Warner, Jeroen, Philippus Wester, and Alex Bolding. 2008. "Going with the Flow: River Basins as the Natural Units for Water Management?" *Water Policy* 10 (Supplement 2): 121–38.
- Waylen, Kerry A., Kirsty L. Blackstock, and Kirsty L. Holstead. 2015. "How Does Legacy Create Sticking Points for Environmental Management? Insights from Challenges to Implementation of the Ecosystem Approach." *Ecology and Society* 20 (2): 21.
- Webler, Thomas, and Seth Tuler. 2006. "Four Perspectives on Public Participation Process in Environmental Assessment and Decision Making: Combined Results from 10 Case Studies." *Policy Studies Journal* 34 (4): 699–722.
- Wondolleck, Julia M., and Steven L. Yaffee. 2000. *Making Collaboration Work. Lessons from Innovation in Natural Resource Management*. Washington, D.C.: Island Press.
- Wong, James K. 2015. "A Dilemma of Green Democracy." *Political Studies*, online first.
- Wright, Stuart A.L., and Oliver Fritsch. 2011. "Operationalising Active Involvement in the EU Water Framework Directive: Why, When and How?" *Ecological Economics* 70 (12): 2268–74.
- WWAP. 2015. "Water for a Sustainable World. World Water Development Report 2015." Paris.
- Yaffee, Steven L. 1997. "Why Environmental Policy Nightmares Recur." *Conservation Biology* 11 (2): 328–37.
- Yin, Robert K. 2014. *Case Study Research: Design and Methods*. Los Angeles: Sage.
- Yin, Robert K., and Karen A. Heald. 1975. "Using the Case Survey Method to Analyze Policy Studies." *Administrative Science Quarterly* 20 (September): 371–82.

- Young, Juliette C., Andrew Jordan, Kate R. Searle, Adam Butler, Daniel S. Chapman, Peter Simmons, and Allan D. Watt. 2013. "Does Stakeholder Involvement Really Benefit Biodiversity Conservation?" *Biological Conservation* 158: 359–70.
- Young, Oran R. 2002. *The Institutional Dimensions of Environmental Change: Fit, Interplay, and Scale. Organization*. Cambridge: MIT Press.

Annex

Article [A1]:

How and under what circumstances does collaborative and participatory governance lead to better (or worse) environmental outcomes? A causal framework for analysis

Abstract

Many have advocated for collaborative governance and the participation of citizens and stakeholders on the basis that it can improve the environmental outcomes of public decision-making, as compared to traditional, top-down decision-making. Others point to the potential negative effects of participation on environmental outcomes. This article draws on several literatures to identify five clusters of causal mechanisms describing the relationship between participation and environmental outcomes. We distinguish (a) mechanisms that describe how participation impacts on the environmental standard of outputs from (b) mechanisms relating to the implementation of outputs. Mechanisms in clusters I, II and III focus on the role of representation of environmental concerns, participants' environmental knowledge and dialogical interaction in decision-making. Clusters IV and V elaborate on the role of acceptance, conflict resolution and collaborative networks for the implementation of decisions. Identifying the conditions under which participation may also lead to better (or worse) environmental outcomes helps to resolve apparent contradictions in the literature. We conclude by outlining avenues for research that builds on this framework for analysis.

Keywords: environmental governance; effectiveness; stakeholder involvement; deliberation; causal hypotheses, causal mechanisms; public policy, literature review.

How and under what circumstances does collaborative and participatory governance lead to better (or worse) environmental outcomes? A causal framework for analysis

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Abstract

Many have advocated for collaborative governance and the participation of citizens and stakeholders on the basis that it can improve the environmental outcomes of public decision-making, as compared to traditional, top-down decision-making. Others point to the potential negative effects of participation on environmental outcomes. This article draws on several literatures to identify five clusters of causal mechanisms describing the relationship between participation and environmental outcomes. We distinguish (a) mechanisms that describe how participation impacts on the environmental standard of outputs from (b) mechanisms relating to the implementation of outputs. Mechanisms in clusters I, II and III focus on the role of representation of environmental concerns, participants' environmental knowledge and dialogical interaction in decision-making. Clusters IV and V elaborate on the role of acceptance, conflict resolution and collaborative networks for the implementation of decisions. Identifying the conditions under which participation may also lead to better (or worse) environmental outcomes helps to resolve apparent contradictions in the literature. We conclude by outlining avenues for research that builds on this framework for analysis.

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“To advocate democracy is to advocate procedures, to advocate environmentalism is to advocate substantive outcomes: what guarantee can we have that the former procedures will yield the latter sorts of outcomes?” – Goodin (1992, 168)

1. Moving beyond competing claims about effectiveness of participation and collaboration

Scholars and public administrators are increasingly engaging with participatory and collaborative modes of governance in order to improve environmental outcomes of public decision-making. The motives and rationales for public participation, which have traditionally centered around notions of emancipation and legitimacy, have been shifting towards an expectation of increased effectiveness of governance. Following this ‘instrumental claim’ (Newig 2012), participation is advocated and used to open up decision-making, integrating local knowledge and the perspectives of a multitude of actors (Berkes and Folke 2002, Pellizzoni 2003), and to promote acceptance and implementation of decisions (Macnaghten and Jacobs 1997). Participation is thus assumed to lead “to a higher degree of sustainable and innovative outcomes” (Heinelt 2002, 17). Many observers have argued that the value and success of collaborative and participatory governance will ultimately be judged by its ability to improve environmental conditions (e.g. Beierle and Cayford 2002, Conley and Moote 2003).

However, it is precisely this capacity to solve environmental problems that remains disputed (Dietz and Stern 2008; Young et al. 2013), because, while collaborative governance continues to proliferate, there remains no consensus on its performance (Gerlak, Lubell, and Heikkila 2013). Even where strong relations between collaborative processes and environmental outcomes are empirically established, it remains unclear, why and how this is the case (Scott 2015). Furthermore, competing claims as to the effectiveness of collaborative and participatory approaches pose a dilemma for ‘green democracy’, introducing “tension between democratic means and environmental ends” (Wong 2015, 3).

Different fields of study have made a variety of arguments on the pros and cons of participation with respect to environmental outcomes. The existing literature is therefore fragmented, and leaves us with logical inconsistencies. Clearly, environmental benefits of participatory decision-making are not automatic, but rather are contingent on an array of intervening factors (Irvin and Stansbury 2004). This article seeks to move a step forward by integrating existing claims from multiple research fields on the participation-outcomes link into a coherent framework. To this end, we distill key assumptions from the literature, and integrate them into a consistent system of causal mechanisms. We present a causal framework comprising five clusters of what have emerged from the literature as core mechanisms, which address the relationship between participation and (a) the environmental standard of outputs, and (b) implementation of outputs. We disaggregate these mechanisms as far as possible, to isolate causal relations between important variables in the policy process, and tease out the often implicit assumptions on which each mechanism relies. We therefore not only specify and clarify hypothesized causal mechanisms between participation and environmental outcomes and im-

pacts, but also identify the contextual conditions under which participation may lead to better (or worse) environmental outcomes.

Our focus lies here on the instrumental value of collaboration and participation in environmental governance. We acknowledge the significance of moral and democratic motivations for public participation alongside instrumental rationales, however, and recognize that there are overlaps and important trade-offs between these. We do not advance any particular ‘pro’ or ‘anti’ participation argument in this paper, but rather seek to examine in detail what we suggest are the most important mechanisms described in the literature. The mechanisms identified and examined below have been refined from ongoing meta-analytic research examining a large body of case study evidence on collaborative and participatory environmental decision-making (Newig et al. 2013).

Examining gaps and contradictions among these mechanisms, as well as key conditioning factors, we aim to identify important variables for empirical investigation, to integrate competing claims as to the effectiveness of collaborative and participatory environmental governance. This is useful for two reasons: First, it should provide a point of reference for future theorizing and hypothesizing. Complementary or competing hypotheses, or refined causal mechanisms, can be compared against this framework, potentially improving the conceptual basis of participatory governance. Second, it can and should guide and organize empirical enquiry by helping to focus on relevant empirical factors for assessing participation and its outcomes in single or comparative case studies, and by guiding the interpretation of findings. Such a framework should thus aid the generation and consolidation of robust evidence on the ‘instrumental’ value of collaborative and participatory modes of environmental governance.

The paper proceeds as follows. Section 2 presents our conceptual framework for the analysis of participatory decision-making processes and clarifies key terms used in the paper. Section 3 outlines our methods. Section 4 presents the core mechanisms on opening up decision-making, incorporation of environmentally relevant knowledge, dialogue, veto players, conflict resolution, acceptance and capacity building for implementation and compliance, based on a thorough review of the literature. Both positive and negative mechanisms linking participation and effectiveness are elaborated. Section 5 concludes the paper with reflections on the key insights gained, the potential and limitations of our framework, and future research directions.

2. Conceptual framework and definition of key terms

We consider the participation and collaboration¹ of stakeholders² in public decision-making processes aiming for collectively binding decisions on environmental issues. This captures a wide variety of governance modes and ‘degrees’ of participation or collaboration in planning, licensing or rule-making. A decision-making process (DMP) may be initiated in a ‘top-down’

¹ Throughout the paper we use the terms ‘participation’ and ‘participatory governance’ due to their better compatibility with the European approach, but we acknowledge that there is considerable overlap with the concepts of ‘collaboration’ and ‘collaborative governance’, which are more common in the North American context.

² We define stakeholders as actors potentially affected by the environmental problem and the consequences of possible solutions. These may be individual citizens or representatives of governmental, private or civil society groups or organizations.

or a ‘bottom-up’ fashion, and may comprise a single process or several related (sub-)processes (e.g. public hearings, task forces, round tables, citizen advisory committees etc.) that are to a greater or lesser extent participatory or collaborative.

Participation, as understood here, is a multi-dimensional concept and comprises various elements of collaboration. There is some agreement in the literature that three dimensions of participation are of particular importance. Participation can be more or less ‘intensive’ in each of these dimensions (Newig and Kvarda 2012; Fung 2006):

1. *Involvement of stakeholders*: The range of parties included in the process (e.g. involvement of few selected experts vs. a broad range of stakeholders).
2. *Communication and collaboration*: The manner, direction and intensity of information flows (e.g. one-way information provision vs. collaborative development of preferences).
3. *Power delegation to participants*: The extent to which participants can influence the decisions to be taken.

The mechanisms comprising the framework presented here relate to one or more of these dimensions treated as independent variables, which are assumed to produce social and/or environmental outcomes. For analytical purposes, a DMP concludes with the production of a substantive output such as a collectively binding decision or plan. The process may also generate a variety of social outcomes, depending on the nature and degree of participation and collaboration. These may include: individual and collective learning; awareness raising; acceptance of the process and output; conflict resolution and trust-building; and strengthening social capital and networks among stakeholders (Newig et al. 2013). A participatory DMP may also generate negative outcomes by, for example, eroding trust among participants and stakeholders, alienating the public, or triggering new conflicts. The interaction of substantive outputs and social outcomes shapes the substantive outcomes of a process in terms of the quality or extent of implementation and compliance. In this way, it is hypothesized, a DMP eventually produces environmental impacts, understood as actual changes in environmental quality.

The mechanisms presented below are summarized in Figure 1. Following Elster (1989), we assume that “[a] mechanism explains by opening up the black box and showing the cogs and wheels of the internal machinery. A mechanism provides a continuous and contiguous chain of causal or intentional links between the explanans and the explanandum” (cited in Hedström and Ylikoski 2010, 51).

Mechanisms relate, first, to the link between input and output variables. Second, we recognize that causal relations depend not only on these mechanisms, but also on their interaction with the surrounding context. Specification of the context within which a given mechanism works is an important, yet often ignored, step in assessing its explanatory power (Falletti and Lynch 2009), and we therefore seek to account for contextual *conditioning factors* at each stage of the process.

The core aims of the paper are thus to identify (1) mechanisms (and independent and dependent variables) linking participation and outputs/outcomes/impacts; and (2) conditioning factors, both internal and external to decision-making processes (i.e. broadly within and beyond the control of process organizers). We argue that such conditioning factors largely determine

whether and to what degree a particular mechanism operates. By identifying mechanisms and conditioning factors, conflicting claims and hypotheses about the scope for participation and collaboration to improve environmental governance can potentially be reconciled.

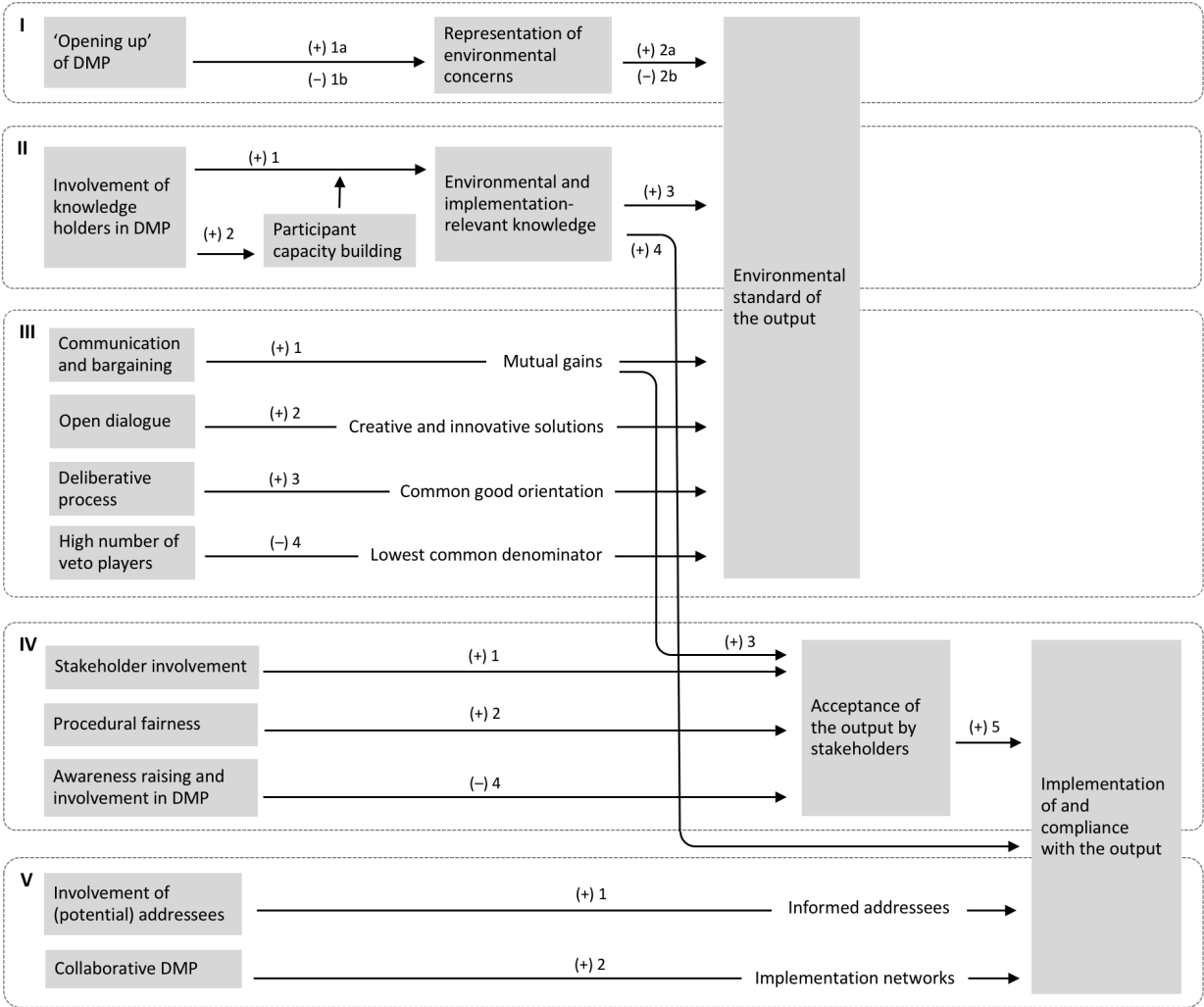


Figure 1. Overview of mechanisms linking participation to environmental and social outcomes, organized in clusters (Roman numerals) and individual mechanisms (Arabic numerals within clusters). Plus signs (+) denote reinforcing relationships, minus signs (-) denote weakening relationships. For example, the top left arrow combines mechanisms M I.1a (positive influence of ‘opening up’ on representation of environmental concerns) and M I.1b (negative influence).

3. Methodology

Based on previous research (Newig 2007; Newig and Fritsch 2009a; Newig et al. 2013), we first identified basic hypotheses on the relation of participation and environmental outcomes. Informed by an extensive literature review, we distilled key mechanisms from these, with particular attention to contextual conditions mentioned explicitly or implicitly in the literature.

We consulted literature from *inter alia* political science, public administration, legal studies, social psychology, environmental studies, decision science, mediation and conflict resolution. While some of this literature is rather conceptual in nature, many contributions also rely on empirical evidence.

The review proceeded iteratively, applying a snowballing approach to the point that we achieved adequate coverage and corroboration of core mechanisms, and no highly relevant new arguments emerged. A conventional search string was deemed impractical for our purposes given the multi-dimensionality of the phenomenon under investigation, the multidisciplinary nature of the literature, and the diverse and contested terminologies surrounding public participation and collaboration.

To aid the more precise identification of causal mechanisms, we disaggregate what often appear in the literature as complex, multi-step mechanisms – or merely hypotheses linking different variables – into basic steps in a causal chain. This process yielded 19 mechanisms relating participation to outputs, and outcomes. We present these in five clusters, reflecting five fundamental ways in which participation and collaboration are assumed to affect environmental outcomes.

4. Mechanisms linking participation and collaboration to environmental outcomes

In this main chapter we outline in detail each of the mechanisms we identified, and discuss the conditioning variables that affect them.

4.1. Cluster I: Opening up of decision-making to environmental concerns

It has been widely argued that the inclusion of environmental concerns – e.g. as represented by environmental NGOs and environmental administration – in participatory governance structures leads to more environmentally beneficial decisions (Smith 2009, Brody 2003; Dryzek 2005; Smith 2003). In this mechanism cluster, we first consider whether and how ‘opening up’ increases representation of environmental concerns in decision-making as opposed to a less open process. Arguably, an ‘opening up’ of decision-making may have both positive and negative implications for the representation of environmental concerns (mechanisms M I.1a/b). Second, we address the extent to which inclusion of environmental concerns impacts positively or negatively on the environmental quality of decisions (M I.2a/b).

(1) Opening up and the representation of environmental concerns

M I.1a: *Opening up a decision-making process to non-state actors leads to stronger representation of environmental concerns in a DMP.*

M I.1b: *A merely open (but not inclusive) DMP leads to weaker representation of environmental concerns.*

The reasoning behind M I.1a is that conventional public environmental DMPs “often fail to incorporate the whole range of environmental values” (Smith 2003, 129). ‘Opening up’ a

DMP allows stakeholders from many – often underrepresented – sectors of society to participate (Fung 2006). Arguably, environmental groups and other actors motivated by environmental concerns will have a strong incentive to participate in a DMP affecting environmental matters, and thus be rather strongly represented (Larson and Lach 2008; Binder and Neumayer 2005).

Whether or not a participatory process substantially represents environmental concerns (M I.1a versus M I.1b) depends on both the potential participants themselves, and how the process is designed.

- *Stakeholders' environmental orientation*: Depending on the issue and the scope of the DMP, stakeholders may be more or less strongly oriented towards the environment (Larson and Lach 2008, Fung 2006; Newig and Fritsch 2009a). This may depend *inter alia* on the spatial scale on which a decision is to be made. Decisions at the local level tend to be biased towards economic development at the expense of environmental values (Koontz 1999; Layzer 2002; Irvin and Stansbury 2004). Also, perceived issue salience has been found to decline with distance from the issue at stake (Hannon 1994).
- *Willingness to participate*: Stakeholders' willingness to participate can vary (Newig 2007). Actors weigh up expected costs and benefits of participation, especially considering their likelihood of influencing the output or decision (Koontz 1999, Turner and Weninger 2005). This is particularly true for environmental groups that have to gain or maintain credibility (Holzinger 2000, Whelan and Lyons 2005). Further, when actors perceive their concerns to be already sufficiently represented, they may refrain from participating (Diduck and Sinclair 2002).
- *Stakeholder capacity*: Well-resourced actors are more able and more likely to participate (Fung 2006, Fung and Wright 2001; Diduck and Sinclair 2002). Environmental groups tend to have fewer resources at their disposal (Ansell and Gash 2008; Layzer 2002), often working on a voluntary or non-profit basis. Where meetings and other participation events are held during work hours, and where attendance necessitates travel, the costs to environmental groups are relatively high. This is especially true for smaller, non-professionalized and local environmental groups. Access to resources and capacity to meaningfully participate is often related to scale: Stakeholder representatives at regional or national levels are usually selected on competency-based criteria, and have access to more professional resources than counterparts at local levels of governance (Rockloff and Moore 2006).
- *Open versus inclusive process*: The above stakeholder-related factors cannot be considered in isolation from the participatory process design. In particular, it makes a difference whether a DMP is 'open' (to everyone), relying essentially on self-recruitment of participants, or whether it is 'inclusive' in that the organizers deliberately invite certain stakeholders with the aim of assembling a balanced and representative group (Fung 2006). Targeted stakeholder selection can help to offset underrepresentation of environmental groups, as can the use of positive incentives, the reimbursement of attendance costs, and the choice of appropriate process timeframes and meeting locations.

To sum up, a participatory process is more likely to lead to stronger representation of environmental concerns when stakeholders show a strong environmental orientation and a strong

tendency and capacity to participate (M I.1a). Completely open processes are prone to suffer from imbalances of participants, making underrepresentation of environmental concerns more likely (M I.1b). Processes employing specific measures to target and support otherwise underprivileged stakeholder groups potentially contribute to strong representation of environmental concerns.

(2) Representation of environmental concerns and environmental quality of decisions

M I.2a: *Increased representation of environmental concerns in a DMP fosters environmental advocacy, impacting positively on the environmental quality of the output.*

M I.2b: *Increased representation of environmental concerns in a DMP tends to co-opt environmental groups, weakening their position and impacting negatively on the environmental quality of the output.*

M I.2a assumes that environmental actors, by participating in a DMP, have better chances to advocate for environmental concerns than if they were not involved. The particular values, arguments and knowledge (see cluster II) brought to the table by proponents of environmental interests can enhance the environmental quality of outputs (Brody 2003). This may also induce changes in the policy positions of other actors and coalitions engaged in the process (Smith 2009).

M I.2b, by contrast, argues, first, that in participatory processes, environmental groups may be co-opted by more powerful actors. The cordial relationships often developed among parties in collaborative processes may lead to greater concessions on the part of environmental groups ('pacification' or 'seduction', Amy 1987). Moreover, the obligation for participants to engage 'reasonably' can stifle expressions of objection and frustration, which may be cast as counter-productive and non-constructive. In this way participation can serve to suppress and dilute the concerns and convictions that environmental groups bring to the table.

Second, environmental groups may be deprived of other, more effective ways to pursue environmental concerns (Berry 1981). By taking part in a DMP – or choosing to 'play the consensus game' (Whelan and Lyons 2005, 597) – groups may lose recourse to means of challenging power from outside of participatory settings, such as lawsuits, protest or direct action. This may result in an overall loss of influence for environmental groups (Ansell and Gash 2008, Bulkeley and Mol 2003, Fung and Wright 2001). Indeed under some circumstances effective influence may only be possible in confrontation with authorities (Dryzek 1995).

What determines whether representation of environmental concerns in a participatory process improves or weakens the environmental quality of a decision, and whether actors pursuing environmental goals are able to effectively influence decisions in collaborative settings?

- *Process characteristics:* Professional facilitation or mediation by a neutral third party, along with clear rules and procedures, can help overcome power imbalances and avoid co-optation of (environmental) groups (Amy 1987, Cooke 2001).
- *Stakeholder characteristics:* Stakeholders may be more or less prone to co-optation. According to negotiation theory, actors will opt out of a collaboration or negotiation if they can more effectively pursue their concerns elsewhere – i.e. when their 'best alternative to a

negotiated agreement' (BATNA) is better than what they can expect from the process they are in (Susskind, McKernan, and Thomas-Larmer 1999). Some actors, however, do not have full knowledge of the alternatives open to them (Holzinger 2000), let alone of those open to other actors, which can lead actors to stay in the process at the risk of being co-opted (Susskind, McKernan, and Thomas-Larmer 1999). Further, environmental stakeholders may be more or less experienced with 'outside process' campaigns such as litigation or organizing public protests (Whelan and Lyons 2005).

4.2. Cluster II: Incorporation of environmental knowledge

A second strand of thinking builds on the assumption that participation strengthens the knowledge base of decisions through incorporating different kinds of local and/or lay knowledge, thereby enhancing environmental policy outputs and their implementability (Brody 2003, Wondolleck and Yaffee 2000, Fazey et al. 2013; Ostrom 1990; Beierle and Cayford 2002; Olsson and Folke 2001; Fischer 2000; Fung 2006).

(1) Relevance of lay and local knowledge for decision-making

M II.1: *Involving actors directly occupied with the environmental issues at hand in decision-making, leads to a higher degree of environmentally relevant knowledge and knowledge relevant for implementation being made available to the DMP.*

This assumes that the information basis for decision-making is, in the first instance, incomplete or biased (Daniels, Lawrence, and Alig 1996; Pellizzoni 2003; Coenen 2008). As Smith (2003, 62) notes: "Too often, decision makers [...] are far removed from the impact of their decisions, and the experiences, knowledge and perspectives of those whose practices are more attuned to the change in ecosystems are not articulated". Involving stakeholders in decision-making may improve the information base in different ways, depending on the nature of both the uncertainties at issue, and the knowledge held by stakeholders.

Stakeholders – or 'knowledge holders' (Schmitter 2002), for that matter – may hold local knowledge that is more accurate than knowledge normally available to decision-makers. Scientific models may simply be wrong or inadequate if they fail to take account of local conditions (Wynne 1992; Fischer 2000). Further, local actors may have specific knowledge that can complement existing models (i.e. specialist knowledge, Wynne 1992).

Through participatory processes, authorities may also gain insights into the social context within which measures will be implemented (López Cerezo and González García 1996). For example, officials may learn if and how stakeholders communicate and interact, what local norms and customs prevail, and what the social 'costs' of implementation might be. In this way authorities may better anticipate the extent of local acceptance of proposed measures (van Asselt and Rotmans 2002), and thereby learn about the likelihood of implementation and compliance (Newig, Pahl-Wostl, and Sigel 2005).

Conditioning factors for M II.1:

- *Knowledge deficit (decision-maker):* As stated above, a certain lack of knowledge on the part of decision-makers is an obvious precondition (Daniels, Lawrence, and Alig 1996;

Hurlbert and Gupta 2015). This, however, may not be easily recognized in practice. Decision-makers may not perceive a knowledge deficit, whereas in reality stakeholders could actually contribute relevant and valuable knowledge to inform decision-making.

- *Knowledgeable stakeholders*: To contribute meaningfully, stakeholders must be sufficiently knowledgeable (Thomas 1995). Therefore, if there is a choice, the ‘right’ stakeholders must be invited to participate. This may require tailoring the spatial scale of a DMP to that of the issue at stake. Below (2) we discuss how in a longer participatory process, participants can be educated and empowered to be able to contribute more meaningfully.
- *Structured knowledge integration*: The process ought to facilitate knowledge exchange and input by participants. Structured methods to achieve this include individual interviews or participatory modelling (see Rowe and Frewer 2005; Renn 2006).

(2) Education and empowerment of participants for more meaningful participation

Meaningful public input, in terms of provision of environmentally relevant knowledge and/or knowledge relevant for implementation (as per M II.1) does not occur automatically, but often presupposes capacity building among participants. This can happen during a participatory process, where information exchange informs and empowers participants, increasing their ability to provide constructive, environmentally relevant input.

M II.2: *Participation improves participants’ understanding of the issues at hand, increasing the likelihood of their providing constructive, environmentally relevant input.*

As Beierle and Cayford (2002, 15) assert, “[i]ncreasing public understanding of environmental problems builds capacity for solving those problems [... and] to formulate alternatives”. Laird (1993) argues that participation can empower participants by improving their understanding and capacity to analyze an issue. This counters the assertion that a lack of knowledge will inhibit stakeholders’ effective participation in decision-making on technical issues (ibid., citing Brooks 1984). Improved understanding on the part of stakeholders contributes to what Emerson, Nabatchi and Balogh (2011) call ‘capacity for joint action’ (discussed in more detail in cluster V).

For capacity building among participants, communication must allow for two-way information flow. The extent to which participation and collaboration do improve participants’ knowledge and capacity depends on several factors:

- *Knowledge deficit (participants)*: A precondition for this mechanism is that participants are not already sufficiently knowledgeable, which is typically the case in ‘technically intensive’ issues (Laird 1993). While this may seem obvious, it means that there will be relatively straightforward issues where participant capacity building is simply unnecessary.
- *Engaged participants*: Participants must be interested in the subject, willing to listen, and prepared to engage with the perspective of the administration. This may be lacking in highly conflictual situations where levels of trust are low. Stakeholders must have a minimum level of trust in government and public institutions (Macnaghten and Jacobs 1997), while on the other hand, participants should critically engage with expert knowledge and advice in “their efforts to form their own view on the issue under consideration” (Laird 1993, 354).

- *Understandable and unbiased information*: Information provided by the organizers must be comprehensive and understandable for interested lay stakeholders. Where information is skewed or biased, or certain views or community sectors are over-represented, uptake of information by participants is likely to be hindered.

(3) Knowledge and environmental outputs

Assuming that participation does make relevant knowledge available to environmental decision-making processes, and that interaction in participatory settings can foster this by informing and empowering stakeholders, it is further argued that:

M II.3: *A higher degree of environmentally relevant knowledge made available to a DMP leads to higher environmental standards of the output.*

However, just because knowledge is available, does not mean it will automatically inform a decision. Public decision-making is a political process shaped by interests and power, as discussed in Cluster I above. Political will to draw on knowledge made available during a DMP – both by decision-makers and by interested stakeholders – is thus a precondition, notably with regard to the formal decision-making stage following a participatory format (Flynn 2008).

(4) Knowledge and implementation

In addition to improving outputs, stakeholder knowledge harnessed or generated in participatory processes may also improve implementation.

M II.4: *Environmentally relevant and implementation-relevant knowledge included in a DMP makes implementation of the decision more likely.*

The key idea is that an output that builds on the practical knowledge and experience of stakeholders, and through these targets solutions that are accepted by implementing actors, is more likely to be implemented than one that lacks this kind of grounding in (local) knowledge. Whether or not implementation *actually* happens, depends on multiple factors, which are addressed in more detail in M IV.5 below (e.g. acceptance by implementers and decision-makers).

4.3. Cluster III: Group interaction, learning and mutual benefits

Participation as reflected in mechanism clusters I and II above can be thought of as ‘additively’ valuable in that decision-making profits from inputs (e.g. environmental concerns, or environmentally relevant knowledge). However, participation can also be ‘multiplicatively’ valuable in that the *interaction* of participations yields solutions that “would not have occurred to the participants individually” (Smith 2003, 62). This presupposes a process characterized by dialogue among participants. We identify four mechanisms capturing the effects of different kinds of dialogic processes (negotiation, open dialogue, and deliberation and vetoing), the types of solutions they can produce (mutual gains, innovation, and common good orientation) and their environmental implications, as well as potential negative effects.

(1) Negotiation and mutual gains for environmentally beneficial outputs

The first mechanism asserts that negotiation – underpinned by communication and bargaining – allows for the identification of positive-sum solutions. Compared to a non-negotiated outcome, a positive-sum (‘win-win’) solution represents an improved allocation of the resources at stake in a DMP, so that all or many affected interests benefit, including the environment (Brody 2003).

***M III.1:** A DMP characterized by a higher degree of communication and bargaining is more likely to lead to the identification of mutual gains than a DMP with little or no communication and bargaining.*

This refers to a form of dialogue that – in contrast to more restricted participation modes such as petitions or public hearings – is relatively communication intensive (Beierle and Cayford 2002, Susskind, Levy, and Thomas-Larmer 2000). Intensive face-to-face dialogue (Ansell and Gash 2008, Brody 2003, Delli Carpini, Cook, and Jacobs 2004) creates conditions under which negotiating parties develop an understanding of each other’s capabilities, needs and preferences, and are thereby more likely to arrive at a solution that increases mutual gains (Bingham 1986). Compared to more deliberative processes (discussed below), negotiation is less ambitious, and parties need not develop a common value basis or shared purpose, but rather pursue their own self-interest.

The basic premise for negotiation to happen is that participants’ exit options are not preferable to negotiation (cf. the discussion in I.2). Whether or not a participatory process involving negotiation will produce mutual gains depends on procedural fairness, potentially through professional facilitation (Beierle 2002, Susskind, McKernan, and Thomas-Larmer 1999). Identifying mutual gains likely increases chances that the environment will also benefit, but this also depends on the representation of environmental concerns in the DMP (cluster I).

(2) Open dialogue, innovation and learning for environmentally beneficial outputs

Beyond securing mutual gains, dialogue may foster innovation beneficial to the environment.

***M III.2:** A participatory DMP characterized by open dialogue more likely leads to the development of creative and innovative solutions to environmental problems than one without open dialogue.*

Interaction and dialogue among diverse participants potentially produces innovative results through the exchange of different perspectives, information and knowledge, and mutual learning (Fazey et al. 2013, Leach et al. 2013). Learning by individuals and/or groups of participants may imply improved understanding of other participants’ perspectives and the problem at hand, and/or transformation of views and values via critical reflection (Connick and Innes 2003, Armitage, Marschke, and Plummer 2008). Innovation and win-win solutions often go hand in hand (see example in Dembart and Kwartler 1980), and through learning and developing new ways of thinking, long-term impasses can be overcome (cf. examples in Connick and Innes 2003). Exchanging perspectives and knowledge of different types (e.g. lay-local and expert knowledge) appears to be particularly relevant in situations of radical uncertainty, where problems are characterized by indeterminacy, complexity or incommensurability (Pel-

lizzoni 2003). When recourse to simple, established or known solutions is not possible, innovative approaches become more important.

As the mechanisms underlying innovation are centered on knowledge and learning, the same conditioning factors discussed for M II.1 to M II.3 apply. Apart from process design that allows for open and fair dialogue, there should be a trustful and collaborative group atmosphere, and a shared sense of purpose among participants (Connick and Innes 2003). Facilitation is held to be conducive to effective knowledge exchange, and to compensate for strategic behavior (Fazey et al. 2013).

(3) Deliberation and environmentally beneficial outputs

Possibly the most promising – but also the most demanding – mechanism of dialogical processes is deliberation:

M III.3: *A deliberative participatory process setting is more likely to produce an orientation of participants' views towards the common good, and therefore more likely to produce outputs more favorable to the environment, than a non-deliberative DMP.*

A deliberative setting is characterized by intensive dialogue conducive to rational arguing, as opposed to mere bargaining or negotiation (Elster 2000). The key feature of deliberation, separating it from other mechanisms described here, is the common good orientation of the discourse, characterized by “preferences and justifications which are ‘public-spirited’ in nature [because] preferences held on purely self-interested grounds become difficult to defend in a deliberative context” (Smith 2003, 63). A deliberative setting is expected to “transform initial policy preferences (which may be based on private interest [...], prejudice and so on) into ethical judgements on the matter in hand” (Miller 1992, 62) and towards an output that secures benefits for all parties *and* the environment (Aldred and Jacobs 2000). Whether or not the environment profits from deliberation may depend on the extent to which an environmental issue actually is a ‘common good’ issue (as opposed to affecting a particular group of individuals).

A deliberative process setting is defined by three main factors:

- It is transparent and fair, based on clear rules that enable equal participation and unimpeded dialogue, and allow participants to challenge assumptions and the status quo (e.g. through professional facilitation) (Ansell and Gash 2008, Bulkeley and Mol 2003, Innes and Booher 1999, Smith 2003).
- The dialogue is conducive to following the most ‘reasonable’ argument (Fung and Wright 2001, Webler and Tuler 2000). All participants are well informed and listened to and, through ‘communicatively rational’ discussion in the Habermasian sense, able to express themselves sincerely, accurately and comprehensibly (Innes and Booher 1999, Webler and Tuler 2000, Renn 2006). Interaction among participants is unforced, undistorted, and involves competent individuals (Dryzek 1995). Power play does not distort the deliberation (Flynn 2008, Smith 2003). The process creates and maintains a trustful atmosphere and a sense of common purpose (Papadopoulos and Warin 2007).
- Participants are honest and respectful of each other, open to other points of view, and willing to listen and learn (Webler and Tuler 2000).

Deliberation is less likely to foster a common good orientation when processes and outputs are perceived as unlikely to have an impact, when conflict cannot be overcome, or when the issue or decision is highly politicized. Similarly, pronounced power imbalances among participants, and unreasonable expectations of the process can be detrimental to deliberation (Selin and Chavez 1995).

(4) Veto players and consensus at the lowest common denominator

There is a danger that participatory decision-making produces suboptimal agreements. In a process striving for consensus, the participation of a large number of actors who can potentially veto a decision may be detrimental to achieving public-good oriented solutions.

M III.4: *The more veto players involved in a DMP, the more likely the output will have lower environmental standards.*

A veto player is “an individual or collective actor whose agreement is required for a policy decision” (Tsebelis 1995, 293). In the context of environmental governance, it has been claimed that with an increasing number of veto players dramatic changes of the status quo are less likely, with solutions instead being based on the lowest common denominator, with negative consequences for the environmental standard of outputs (Brody 2003, Layzer 2008, Tsebelis 1995, Brandt and Svendsen 2013). Whether or not this occurs likely depends on:

- *Mode of decision-making:* Where consensus is not necessary, fewer veto positions exist.
- *Degree of conflict:* The further the positions of participants differ, the less scope for negotiation, and the more likely that solutions will emerge at the lowest common denominator (Tsebelis 1995). Consequently, planners aiming to arrive at implementable solutions try to enlarge negotiation space from the outset.
- *Participants’ willingness and ability to cooperate:* This applies both to the attitude of participants in general, and to the leeway that representatives of organizational actors have to negotiate in a decision-making process (Tsebelis 1995).

4.4. Cluster IV: Acceptance and conflict resolution for implementation.

A fourth main function of participation and collaboration is to foster the *acceptance* of decisions, with a view to better compliance and implementation (Bulkeley and Mol 2003, Macnaghten and Jacobs 1997). We distinguish between *implementation* as “those actions by public and private individuals (or groups) that are directed at the achievement of objectives set forth in prior policy decisions. This includes both one-time efforts to transform decisions into operational terms, as well as continuing efforts to achieve the large and small changes mandated by policy decisions” (van Meter and van Horn 1975, 447); and *compliance* as “the specific obedience or lack thereof to a law or directive” (van Meter and van Horn 1975, 454).

Acceptance is crucial for effective governance, because outputs with a high environmental standard on paper but little acceptance by addressees and implementers are likely to remain symbolic and ineffective, if implementation cannot be centrally monitored and enforced. The main overall precondition for acceptance to be beneficial to the environment is of course that the decision to be implemented is itself potentially environmentally beneficial.

(1) Accommodation of interests

The most straightforward mechanism in this cluster assumes that participation serves to accommodate relevant interests, making acceptance by participating groups and their constituencies more likely.

M IV.1: *A higher degree of participation leads to the accommodation of more diverse interests in the output, which increases acceptance by stakeholders.*

Acceptance may be enhanced due to a sense of ‘decision ownership’ developed among participants in inclusive, participatory processes (Brody 2003; Newig 2012; Chess and Purcell 1999).

This requires meaningful contributions from participants, and the willingness of authorities to consider participants’ interests in a final decision (Diduck and Sinclair 2002). Representatives must be perceived as legitimate spokespersons by affected stakeholders (Brody 2003, Newig 2012). Likewise, the exclusion of important groups with means to oppose the implementation of a decision (e.g. through legal challenges) bears the danger of non-acceptance (Layzer 2002).

(2) Procedural fairness

“No matter how good an agreement is by some standards, if it was reached by a process that was not regarded as fair, open, inclusive, accountable, or otherwise legitimate, it is unlikely to receive support” (Innes and Booher 1999, 415). Expressed positively, we suggest that:

M IV.2: *A DMP that is perceived as fair and legitimate is likely to be accepted by participants, their respective constituencies, and other stakeholders.*

If stakeholders believe that a process was run fairly, and they trust in the purpose of the process, they are more likely to accept the final decision and other outcomes of the process (Susskind and Cruikshank 1987, Webler and Tuler 2000). A strong sense of procedural justice among stakeholders can even increase acceptance of decisions that do not reflect the substantive interests of all stakeholders (Lind and Tyler 1988, Susskind and Cruikshank 1987, Lawrence and Deagen 2001; Wondolleck and Yaffee 2000).

Characteristics of a fair and just process include:

- Early and meaningful involvement for those directly participating – i.e. fair representation (Newig 2007, Webler and Tuler 2002) and no foregone conclusions (Newig 2012; Diduck and Sinclair 2002).
- A certain level of trust on the part of stakeholders in the intentions of the process organizers and institutions (Webler and Tuler 2000).
- Within-process communication that permits participants to express their views: “Citizens value opportunities to speak, whether or not this voice is linked to influence over the decisions made by the political body” (Lind and Tyler 1988, 170). Participants should have access to accurate information and technical resources (Susskind and Cruikshank 1987, Webler and Tuler 2002), and mediation, if needed, should be impartial (Webler and Tuler 2000).

- For stakeholders outside of the immediate process, perceptions of fairness may rely on openness in the sense of transparency (Reed 2008) and accountability (Webler and Tuler 2000, 2002 cf. Bradbury et al. 1994).

(3) Negotiation, mutual gains and conflict resolution for acceptance

A third route to acceptance is via outputs that make more stakeholders better-off. Processes that produce such positive-sum solutions (as discussed in mechanism III.1) may involve the successful resolution of conflicts.

M IV.3: Mutual gains and conflict resolution resulting from negotiation increase acceptance of the DMP's output on the part of stakeholders.

While a solution assuring mutual gains may be more acceptable to negotiating parties (Susskind, McKernan, and Thomas-Larmer 1999), the extent to which it is more widely accepted – e.g. by stakeholders and the public at large – depends on negotiating parties' representativeness of their wider constituencies (Elster 2000).

In the case of value conflicts, especially where actors hold strongly opposing values, conflict resolution can be difficult. However, skilled facilitators or mediators may be able to bring initially adversarial parties together, establishing and maintaining ground-rules for negotiation (Leach and Pelkey 2001), and ensuring fairness. The extent to which a given consensus or resolution is accepted in the longer run, and by stakeholders and addressees beyond the immediate participants, is likely to depend on those factors at work in conjunction with the generation of acceptance more generally (see M IV.1).

(4) Waking sleeping dogs

M IV.4: Raising stakeholders' awareness of issues, and their involvement in decision-making, leads them to consider possible negative effects of decisions and thus increases opposition to environmentally beneficial measures.

According to Coglianese (1997), participation can (1) introduce conflict over who counts as a legitimate participant; and (2) fuel conflict by heightening stakeholder sensitivities to adverse aspects or implications of a decision. Moreover, participants “may also find that the more time they invest in a rulemaking proceeding, the less willing they are to overlook imperfections of the rule” (Coglianese 1997, 1326-1327).

These individual (sub-)mechanisms can work together, triggering opposition by stakeholders excluded from the decision-making process, while including others whose interests are potentially divergent. In light of these effects, the promise of participation can lead to unrealistic expectations among stakeholders as to what a participatory process can accomplish (Coglianese 1997).

Whether participation actually increases conflict or opposition to a decision depends in part on the interests at stake. The more stakeholders have a (potentially) high stake in the issue, and the more pronounced the conflicts among stakeholders, the more likely this mechanism is to operate. Careful stakeholder analysis may help avoid conflict via the first sub-mechanism by ensuring that no potential veto players are left out of the process. The second sub-

mechanism is likely to be more important where environmental issues remain relatively obscure and have not been widely publicly debated.

(5) Acceptance for implementation and compliance

Acceptance of environmental decisions, generated through participatory and collaborative processes, is expected ultimately to foster implementation and compliance, thus strengthening environmental impacts (Stave 2002):

M IV.5: The greater the degree of acceptance by stakeholders, the higher the likelihood of implementation and compliance.

This may happen through (1) reduction of opposition to outputs, and (2) generation of support for outputs. The former argument, commonly found in the consensus building and conflict resolution literatures, holds that acceptance generated in a participatory process (e.g. via negotiation, positive-sum effects, procedural justice) reduces opposition to the output (e.g. via litigation) and potential non-compliance, thereby facilitating implementation (Bulkeley and Mol 2003, Innes and Booher 1999, Susskind and Cruikshank 1987, Yearley et al. 2003).

The latter argument links acceptance to stakeholders' increased willingness to (co-)implement and voluntarily comply with outputs. In this sense, acceptance actively and positively motivates stakeholders (Coenen 2008, Layzer 2002, Susskind, McKearnan, and Thomas-Larmer 1999). This assumes that stakeholders are addressees or potential co-deliverers of a given decision, or perform some other function in implementation.

This relationship is sometimes seen almost as an automatism, with acceptance considered equivalent to successful implementation and compliance (Coenen 2008, Heinelt 2002, Lawrence and Deagen 2001). But, as Beierle and Cayford (2002) warn, the link between participation and implementation should not be taken for granted. A number of factors can have a significant influence – particularly on implementation:

- Even where a participatory process produces agreement on goals and objectives, disagreement can arise over implementation, which can be delayed or stalled;
- Where a DMP has succeeded in producing an (environmentally beneficial) output, but excluded important actors – e.g. politicians and bureaucrats, private sector actors – implementation may be hampered by excluded interests (see also M III.4);
- As there may be a considerable time lag between decision-making and implementation, circumstances may change such that implementation as initially envisaged becomes infeasible or undesirable.

4.5 Cluster V: Capacity building for implementation and compliance

Participatory decision-making processes can provide decision-makers and participants with information and build individual and collective capacities that aid implementation and compliance.

(1) Informing policy addressees

M V.1: *Participation of policy addressees early in a DMP increases the likelihood and degree of implementation and compliance.*

Involving policy addressees (i.e. state and non-state actors who will be responsible for implementing and/or complying with an output) from the early stages of a participatory process, informs them and increases their capacity to act, adapt and behave in ways conducive to implementation and compliance (Brody 2003, Innes and Booher 2004, Newig 2007). Through involvement in the DMP, policy addressees become more informed on the issue at hand (Koontz and Thomas 2006, Pellizzoni 2003) and become alerted to opportunities for voluntary action (Campbell, Koontz, and Bonnell 2011). Even less intensive forms of participation, such as consultation, may have positive effects through increasing stakeholders' understanding of policies and potential difficulties in implementation (Yearley et al. 2003).

Arguably, various process characteristics will influence the uptake of information by participants; these have been described in the context of M II.2 above.

Of further relevance are the conditioning factors mentioned in M IV.5 on whether or not actors are likely to engage in or facilitate implementation.

(2) Networks for implementation

M V.2: *Participation fosters the formation of networks among participants, which lead to improved implementation and compliance.*

Intensive communication and repeated face-to-face interaction in participatory processes helps to build trust and respect among participants (Layzer 2008, Susskind, McKearnan, and Thomas-Larmer 1999), who come to recognize that others have important knowledge and capacities, or common interests, which means that joint action will be beneficial (Innes and Booher 2004). With this basis for collective action (Emerson, Nabatchi, and Balogh 2011), participants are more likely to take on collective responsibility for the outcomes of the process. This accumulated social capital is an important foundation for collaborative networks³ (Innes and Booher 1999, Innes and Booher 2004, Reed 2008).

Networks of policy addressees potentially mobilize collectively-held knowledge and civic capacity, in ways that are appropriate to and supportive of implementation (deLeon and deLeon 2002). First, the sense of common purpose and the trust that underpin network development, are likely to motivate individuals voluntarily to comply out of consideration for others and the environment, developing “ways to address the problem, [which] they could not do individually given their more narrow perspectives or resources, or the assumption that they have to operate alone” (Booher and Innes 2002). Second, networks can aid mutual monitoring and social control, thus fostering the detection of non-compliance (Ostrom 1990; Leach and Pelkey 2001).

³ Following Torfing (2005), we understand governance networks for implementation as relatively stable horizontal relations of interdependent, but operationally autonomous actors that are self-regulating within certain limits and that contribute to the implementation of agreed decisions.

The formation of such relationships and networks depends on a range of factors. For actors to have reason to become part of a network in the first place, each must have something that the others need, and recognize the benefits of sharing (Booher and Innes 2002). Furthermore, where there is an underlying lack of trust among participants, a DMP must generate trust and build respect to a certain extent. How far networks aid implementation and compliance may depend on whether a DMP succeeds in generating a sense of ownership, and commitment to the decision or plan on the part of addressees (see also mechanism cluster IV).

5. Discussion and conclusion

In the introduction to this article we observed that as participatory approaches to environmental governance have proliferated, so too has research on public participation and stakeholder engagement. The evidence and arguments contained in this now substantial body of work, however, embody competing claims and seemingly contradictory mechanisms on the implications of public participation for environmental governance. This paper has outlined a conceptual framework that

- identified the hypothesized causal mechanisms most commonly described in the literature, linking the process of – more/less – participatory decision-making to environmental outcomes;
- uncovered the often implicit assumptions behind individual causal mechanisms and elucidated these as contextual or ‘conditioning’ factors.

For organizing the analysis, it has proven useful to distinguish mechanisms that link participation with the environmental standard of outputs from mechanisms relating to implementation with and compliance of outputs. Across the 19 mechanisms, organized in five clusters (see figure 1 and table 1), different dimensions of participation are addressed. Some mechanisms relate to the selection and composition of participating actors, others to modes of interaction and communication within a process, and yet others to the degree of power delegation to participants. We may conclude that depending on the goal of a process, fundamentally different dimensions of participation come into play.

The importance of context for the effectiveness of participation has repeatedly been highlighted (e.g. Irvin and Stansbury 2004). Considering the often implicit assumptions behind the respective causal mechanisms has allowed us to specify the conditions under which a particular mechanism holds, or other mechanisms with possibly opposite implications. For example, whether the involvement of environmental concerns in a decision-making process impacts positively or negatively on the environmental standard of a decision likely depends on the extent to which environmental groups are prone to co-optation by non-environmental interests and on their capacities for campaigning in alternative venues outside a collaborative process (mechanism I.2 a/b).

Table 1: Overview of mechanisms including contextual (conditioning) variables.

Mechanism	Independent variables (feature of participation)	Dependent variables (results)	Conditioning variables	
			Internal to the DMP	External to the DMP
Cluster I – Opening up of decision-making to environmental concerns				
1a. Access for environmental concerns	Opening up decision-making for groups typically outside the policy process	Strong (a) versus weak (b) representation of environmental concerns	Targeted recruitment, balanced representation of stakeholders	Environmental orientation of stakeholders, willingness and capacity to participate
1b. Domination of non-environmental concerns				
2a. Advocacy of environmental concerns	Representation of environmental concerns in DMP	Strong (a) versus weak (b) environmental output	Facilitation or mediation	Environmental groups' susceptibility to co-optation
2b. Co-optation of environmental groups				
Cluster II – Incorporation of environmental knowledge				
1. Harnessing lay / local environmental knowledge for decision-making	Involving issue-related stakeholders in a DMP	Additional / more specific knowledge relevant to the DMP and implementation	Structured knowledge integration	Knowledge deficit among decision-makers; knowledgeable stakeholders
2. Education and empowerment of participants for meaningful participation	Stakeholder involvement in DMP	Empowered and knowledgeable participants	Clear, understandable information; trust-building	Engaged stakeholders but with knowledge deficits; trust in authorities
3. Sound information basis for environmentally-appropriate decision-making	Environmental knowledge available to DMP	Strong environmental output		Political will and commitment; stakeholder interests
4. Knowledge fosters the implementability of decisions	DMP includes environmental and implementation-relevant knowledge	Implementation of decision	Lasting conflict resolution; no important groups excluded	Participants charged with implementation; participant capacities
Cluster III – Group interaction, learning and mutual benefits				
1. Negotiation and bargaining for mutual gains	Communication intensive DMP	Strong environmental output	Facilitation, representation of environmental concerns	Capacities and relative exit options of participants
2. Group innovation and learning	DMP with open dialogue; group interaction	Innovative solutions benefitting strong environmental output	Facilitation, shared sense of purpose, trust-building	Complex problem setting; competent participants
3. Deliberation and common good orientation of participants	Deliberative setting	Strong environmental output	Professional facilitation, trust-building, fair and transparent process	Environment as common good issue; competent participants; low conflict and power imbalance
4. Consensus at lowest common denominator	Number of veto players involved in DMP	Weak environmental output	Consensus-based decisions	Degree of conflict; narrow negotiation space
Cluster IV – Acceptance and conflict resolution for implementation				
1. Accommodation of participant interests	Stakeholder involvement, power delegation	Acceptance of output by stakeholders	No important groups excluded	Participants are legitimate representatives
2. Acceptance through procedural fairness	Fair, open, inclusive, accountable, or otherwise legitimate DMP	Acceptance of output by participants and other stakeholders	Early involvement, transparency, accountability	Trust in authorities
3. Negotiation, mutual gains and conflict resolution for acceptance	DMP that produces mutual gains and resolves conflicts	Acceptance of output by stakeholders	Facilitation and mediation; no important groups excluded	Participants are legitimate representatives
4. "Waking sleeping dogs": Stakeholders become aware of negative aspects of decisions	Stakeholder awareness raising and involvement in decision-making	Increased controversy and opposition to strong environmental outputs	Excluding important stakeholders; raising unrealistic expectations	Diverse stakeholders with high stakes and conflicting interests
5. Acceptance for implementation and compliance	Acceptance of output by stakeholders	Implementation of and compliance with output	Lasting conflict resolution; no important groups excluded	Participants charged with implementation; participant capacities
Cluster V – Capacity building and implementation and compliance				
1. Potential addressees are informed of upcoming obligations	Early participation of policy addressees	Implementation of and compliance with output	Clear, understandable, unbiased information	Addressee interests and capacities, technical feasibility
2. Social capital and network-building for implementation	Collaborative DMP	Implementation of and compliance with output in collaborative networks	Intensive face-to-face interaction; trust-building, sense of ownership	Participants have potential role in implementation; participant capacities, technical feasibility

Table 1 summarizes all 19 mechanisms and specifies the conditioning variables associated with the dependent and independent variables. Independent variables are defined as the central features of a (participatory) process (e.g. representation of environmental concerns in DMP). Conditioning variables, which impact on the relation between dependent and independent variable, may be associated with the external context in which decision-making processes take place, or with factors internal to a DMP, relating to the design and functioning of processes themselves. From the viewpoint of a process organizer, *external factors* can in principle be taken as given, determining the scope of possible process design options. *Internal factors* represent the particular process specifications of a mechanism (e.g. facilitation or early involvement).

In analyzing conditioning factors, we find that many of these are repeatedly mentioned (e.g. process facilitation; trust-building; not excluding important groups; stakeholders' environmental orientation). While this highlights the relative importance of these factors, it does not mean that these are universally important 'success factors' for participatory processes.

Generally it needs to be emphasized that despite the analytical stance we have taken here, these mechanisms in a given decision-making setting will not occur in isolation but are often closely interrelated. In particular, mechanisms that rely on the same independent and conditioning variables are likely to occur in conjunction. From a process-organizer perspective, this may imply opportunities but also challenges. For example, intensive face to face interaction may both enable social learning (cluster III) and foster networks for implementation (cluster V). Conversely, involving stakeholders into decision-making may entail many 'positive' effects for environmental outputs (cluster I in particular) but also 'wake sleeping dogs' (M IV.5).

While this paper has focused on the instrumental value of participation for the environment, we find that many of the independent and conditioning variables relate to aspects of democratic legitimacy, such as access to decision-making, balanced representation, and procedural fairness. This supports the argument that democratic legitimacy and effectiveness are in many ways closely related in participatory public environmental decision-making.

We have illustrated how unpacking and disaggregating competing claims allows for a more precise identification of the opposing mechanisms that underpin these claims as well as the relevant conditioning factors that separate them. Together, these steps can help take us beyond generalizations about the effectiveness (or lack thereof) of participatory governance, while also illuminating specific contextual factors that help explain contradictory claims.

We see at least three areas for further research, which at the same time demarcate both the potential and the limitations of this study.

First, our treatment of (participatory) process features has deliberately remained rather abstract, owing to the goal of precisely describing causal mechanisms that are valid across a broad range of actual situations. Future research could link the identified mechanisms and internal conditioning factors to particular participatory formats and instruments, such as citizen juries, watershed collaborations, deliberative opinion polls, and so forth.

Second, while this study has focused on environmental decision-making, several of the mechanisms described here could have more general relevance and apply to other sectors as well, such as public health, spatial planning, or budgeting.

Third, we see great potential for this framework to structure and guide empirical research on the effectiveness of participatory governance. The mechanisms and variables put forth here could serve as a basis for the formation of testable hypotheses. One promising avenue by which to test such hypotheses would be an empirical meta-analytical research strategy for the purpose of consolidating findings from the case record. Case-survey meta-analysis (Beierle and Cayford 2002, Newig and Fritsch 2009b) provides a formal and structured means to draw upon the rich qualitative data contained in numerous (single) case studies. Coding a number of variables (relating to context, decision-making process, outputs, outcomes and impacts) and mechanisms for a large-N sample of cases of participatory decision-making would produce a semi-quantitative dataset suitable for formal statistical analysis that should shed light on the effect of key variables in various contexts. As a complementary method, there is considerable scope to employ causal process tracing (George and Bennett 2005, Gerring 2007) in order to assess the extent to which different mechanisms and clusters of mechanisms are relevant to particular cases, and to examine specific causal mechanisms. Both approaches, especially if employed in combination with other primary research methods such as comparative case studies, and field experimentation, have the potential to substantially improve our conceptual models and our knowledge on what works under what conditions in environmental governance.

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References

- Aldred, Jonathan, and Michael Jacobs. 2000. "Citizens and wetlands: evaluating the Ely citizens' jury." *Ecological Economics* 34:217-232.
- Amy, Douglas J. 1987. *The Politics of Environmental Mediation*. New York: Columbia University Press.
- Ansell, Chris, and Alison Gash. 2008. "Collaborative Governance in Theory and Practice." *Journal of Public Administration Research and Theory* 18 (4):543-571.
- Armitage, Derek, Melissa Marschke, and Ryan Plummer. 2008. "Adaptive co-management and the paradox of learning." *Global Environmental Change* 18 (1):86-98.
- Beierle, Thomas C. 2002. "The Quality of Stakeholder-based Decisions: Lessons from the Case Study Record." *Risk Analysis* 22 (4):739-749.

- Beierle, Thomas C., and Jerry Cayford. 2002. *Democracy in Practice. Public Participation in Environmental Decisions*. Washington, DC: Resources for the Future.
- Berkes, Fikret, and Carl Folke. 2002. "Back to the Future: Ecosystem Dynamics and Local Knowledge." In *Panarchy. Understanding Transformations in Human and Natural Systems*, edited by Lance H. Gunderson and Crawford Stanley Holling, 121-146. Washington, Covelo, London: Island Press.
- Berry, Jeffrey M. 1981. "Beyond Citizen Participation: Effective Advocacy Before Administrative Agencies." *Journal of Applied Behavioral Science* 17 (4):463-477.
- Binder, Seth, and Eric Neumayer. 2005. "Environmental pressure group strength and air pollution: An empirical analysis." *Ecological Economics* 55 (4):527-538.
- Bingham, Gail. 1986. *Resolving Environmental Disputes. A Decade of Experience*. Washington, D.C.: The Conservation Foundation.
- Booher, David E., and Judith E. Innes. 2002. "Network Power in Collaborative Planning." *Journal of Planning Education and Research* 21 (3):221-236.
- Brandt, Urs Steiner, and Gert Tinggaard Svendsen. 2013. "Is local participation always optimal for sustainable action? The costs of consensus-building in Local Agenda 21." *Journal of Environmental Management* 129:266-273.
- Brody, Samuel D. 2003. "Measuring the Effects of Stakeholder Participation on the Quality of Local Plans Based on the Principles of Collaborative Ecosystem Management." *Journal of Planning Education and Research* 22 (4):407-419.
- Brooks, Harvey. 1984. "The Resolution of Technically Intensive Public Policy Disputes." *Science, Technology, & Human Values* 9 (1):39-50.
- Bulkeley, Harriet, and Arthur P.J. Mol. 2003. "Participation and Environmental Governance: Consensus, Ambivalence and Debate." *Environmental Values* 12 (2):143-154.
- Campbell, Joseph T., Thomas M. Koontz, and Joseph E. Bonnell. 2011. "Does collaboration promote grass-roots behavior change? Farmer adoption of best management practices in two watersheds." *Society and Natural Resources* 24 (11):1127-1141.
- Chess, Caron, and Kristen Purcell. 1999. "Public participation and the environment: Do we know what works?" *Environmental Science & Technology* 33 (16):2685-2692.
- Coenen, Frans H.J.M., ed. 2008. *Public Participation and Better Environmental Decisions: The Promise and Limits of Participatory Processes for the Quality of Environmentally Related Decision-making*. Dordrecht: Springer.
- Coglianesi, Cary. 1997. "Assessing Consensus: The Promise And Performance Of Negotiated Rule-making." *Duke Law Journal* 46:1255-1346.
- Conley, Alexander, and Margaret A. Moote. 2003. "Evaluating Collaborative Natural Resource Management." *Society and Natural Resources* 16 (5):371-386.
- Connick, Sarah, and Judith E. Innes. 2003. "Outcomes of Collaborative Water Policy Making: Applying Complexity Thinking to Evaluation." *Journal of Environmental Planning and Management* 46 (2):177-197.
- Cooke, Bill. 2001. "The Social Psychological Limits of Participation?" In *Participation: the new tyranny?*, edited by Bill Cooke and Uma Kothari, 102-121. London, New York: Zed Books.

- Daniels, Steven E., Rick L. Lawrence, and Ralph J. Alig. 1996. "Decision-making and ecosystem-based management: applying the Vroom-Yetton model to public participation strategy." *Environmental Impact Assessment Review* 16 (1):13-30.
- deLeon, Peter, and Linda deLeon. 2002. "What Ever Happened to Policy Implementation? An Alternative Approach." *Journal of Public Administration Research and Theory* 12 (4):467-492.
- Delli Carpini, Michael X., Fay Lomax Cook, and Lawrence R. Jacobs. 2004. "Public Deliberation, Discursive Participation, and Citizen Engagement: A Review of the Empirical Literature." *Annual Review of Political Science* 7:315-344.
- Dembart, Lee, and Richard Kwartler. 1980. "The Snoqualmie River Conflict: Bringing Mediation into Environmental Disputes." In *Roundtable Justice. Case Studies in Conflict Resolution*, edited by Robert B. Goldmann, 39-58. Boulder: Westview Press.
- Diduck, Alan, and A. John Sinclair. 2002. "Public Involvement in Environmental Assessment: The Case of the Nonparticipant." *Environmental Management* 29 (4):578-88.
- Dietz, Thomas, and Paul C. Stern, eds. 2008. *Public participation in environmental assessment and decision-making. Panel on Public Participation in Environmental Assessment and Decision Making, National Research Council*. Washington, D.C.: National Academic Press.
- Dryzek, John S. 1995. "Political and ecological communication." *Environmental Politics* 4 (4):13-30.
- Dryzek, John S. 2005. *The Politics of the Earth. Environmental Discourses. 2nd Edition*. Oxford: Oxford University Press.
- Elster, Jon. 2000. "Arguing and Bargaining in Two Constituent Assemblies." *Journal of Constitutional Law* 2 (2):345-421.
- Emerson, Kirk, Tina Nabatchi, and Stephen Balogh. 2011. "An Integrative Framework for Collaborative Governance." *Journal of Public Administration Research and Theory* 22:1-29.
- Falletti, Tulia G., and Julia F. Lynch. 2009. "Context and causal mechanisms in political analysis." *Comparative Political Studies* 42 (9):1143-1166.
- Fazey, Ioan, Anna C. Evely, Mark S. Reed, Lindsay C. Stringer, Joanneke Kruijssen, Piran C. L. White, Andrew Newsham, Lixian Jin, Martin Cortazzi, Jeremy Phillipson, Kirsty Blackstock, Noel Entwistle, William Sheate, Fiona Armstrong, Chris Blackmore, John Fazey, Julie Ingram, Jon Gregson, Philip Lowe, Sarah Morton, and Chris Trevitt. 2013. "Knowledge exchange: a review and research agenda for environmental management." *Environmental Conservation* 40 (1):19-36.
- Fischer, Frank. 2000. *Citizens, Experts, and the Environment. The politics of local knowledge*. Durham: Duke University Press.
- Flynn, Brendan. 2008. "Planing cells and citizen juries in environmental policy: Deliberation and its limits." In *Public participation and better environmental decisions. The promise and limits of participatory proceses for the quality of environmentally related decision-making*, edited by Frans H.J.M. Coenen, 57-71. Enschede: Springer.
- Fung, Archon. 2006. "Varieties of Participation in Complex Governance." *Public Administration Review* 66 (Special Issue):66-75.

- Fung, Archon, and Erik Olin Wright. 2001. "Deepening Democracy: Innovations in Empowered Participatory Governance." *Politics & Society* 29 (1):5-41.
- George, Alexander L., and Andrew Bennett. 2005. *Case Studies and Theory Development in the Social Sciences*. Cambridge.
- Gerlak, Andrea K., Mark Lubell, and Tanya Heikkila. 2013. "The promise and performance of collaborative governance." In *The Oxford Handbook of US Environmental Policy*, edited by Sheldon Kamieniecki and Michael Kraft, 413-434. New York: Oxford University Press.
- Gerring, John. 2007. *Case Study Research. Principles and Practices*. Cambridge: Cambridge University Press.
- Goodin, Robert E. 1992. *Green Political Theory*. Cambridge: Polity Press.
- Hannon, Bruce. 1994. "Sense of place: geographic discounting by people, animals and plants." *Ecological Economics* 10:157-174.
- Hedström, Peter, and Petri Ylikoski. 2010. "Causal mechanisms in the social sciences." *Annual Review of Sociology* 36:49-67.
- Heinelt, Hubert. 2002. "Achieving Sustainable and Innovative Policies through Participatory Governance in a Multi-level Context: Theoretical Issues." In *Participatory governance in multi-level Context. Concepts and experience*, edited by Hubert Heinelt, Panagiotis Getimis, Grigoris Kafkalas, Randall Smith and Erik Swyngedouw, 17-32. Opladen: Leske + Budrich.
- Holzinger, Katharina. 2000. "Limits of Co-operation: A German Case of Environmental Mediation." *European Environment* 10 (6):293-305.
- Hurlbert, Margot, and Joyeeta Gupta. 2015. "The split ladder of participation: A diagnostic, strategic, and evaluation tool to assess when participation is necessary." *Environmental Science & Policy* 50:100 - 113.
- Innes, Judith E., and David E. Booher. 2004. "Reframing Public Participation: Strategies for the 21st Century." *Planning Theory & Practice* 5 (4):419-436
- Innes, Judith E., and David E. Booher. 1999. "Consensus Building and Complex Adaptive Systems. A Framework for Evaluating Collaborative Planning." *Journal of the American Planning Association* 65 (4):412-423.
- Irvin, René A., and John Stansbury. 2004. "Citizen Participation in Decision Making. Is it worth the effort?" *Public Administration Review* 64 (1):55-65.
- Koontz, Tomas M. 1999. "Citizen Participation: Conflicting Interests in State and National Agency Policy Making." *The Social Science Journal* 36 (3):441-458.
- Koontz, Tomas M., and Craig W. Thomas. 2006. "What Do We Know and Need to Know about the Environmental Outcomes of Collaborative Management?" *Public Administration Review* 66 (supplement 1):111-121.
- Laird, Frank N. 1993. "Participatory Analysis, Democracy, and Technological Decision Making." *Science, Technology, & Human Values* 18 (3):341-361.
- Larson, Kelli L., and Denise Lach. 2008. "Participants and non-participants of place-based groups: An assessment of attitudes and implications for public participation in water resource management." *Journal of Environmental Management* 88:817-830.
- Lawrence, Rick L., and Debbie A. Deagen. 2001. "Choosing Public Participation Methods for Natural Resources: A Context-Specific Guide." *Society and Natural Resources* 14:857-872.

- Layzer, Judith A. 2002. "Citizen Participation and Government Choice in Local Environmental Controversies." *Policy Studies Journal* 30 (2):193-207.
- Layzer, Judith A. 2008. *Natural Experiments: Ecosystem-Based Management and the Environment*. Cambridge, Mass.: MIT Press.
- Leach, William D., and Neil W. Pelkey. 2001. "Making watershed partnerships work: A review of the empirical literature." *Journal of Water Resources Planning and Management* 127 (6):378-385.
- Leach, William D., Christopher M. Weible, Scott R. Vince, Saba N. Siddiki, and John C. Calanni. 2013. "Fostering Learning through Collaboration: Knowledge Acquisition and Belief Change in Marine Aquaculture Partnerships." *Journal of Public Administration Research and Theory* 23 (2):1-32.
- Lind, Edgar Allen, and Tom R. Tyler. 1988. *The Social Psychology of Procedural Justice*. New York, London.
- López Cerezo, José A., and Marta González García. 1996. Lay knowledge and public participation in technological and environmental policy. *Phil & Tech* 2 (1).
- Macnaghten, Phil, and Michael Jacobs. 1997. "Public identification with sustainable development. Investigating cultural barriers to participation." *Global Environmental Change* 7 (1):5-24.
- Miller, David. 1992. "Deliberative Democracy and Social Choice." *Political Studies* XL (Special Issue):54-67.
- Newig, Jens. 2007. "Does public participation in environmental decisions lead to improved environmental quality? Towards an analytical framework." *Communication, Cooperation, Participation (International Journal of Sustainability Communication)* 1 (1):51-71.
- Newig, Jens. 2012. "More effective natural resource management through participatory governance? Taking stock of the conceptual and empirical literature - and moving forward." In *Environmental Governance. The Challenge of Legitimacy and Effectiveness*, edited by Karl Høgl, Eva Kvarda, Ralf Nordbeck and Michael Pregernig, 46-68. Cheltenham: Edward Elgar.
- Newig, Jens, Ana Adzersen, Edward Challies, Oliver Fritsch, and Nicolas Jager. 2013. *Comparative analysis of public environmental decision-making processes: a variable-based analytical scheme. INFU Discussion Paper No. 37 / 13*. Vol. 37/13. Lüneburg.
- Newig, Jens, and Oliver Fritsch. 2009a. "Environmental Governance: Participatory, Multi-Level – And Effective?" *Environmental Policy and Governance* 19 (3):197-214.
- Newig, Jens, and Oliver Fritsch. 2009b. "More Input - Better Output: Does citizen involvement improve environmental governance?" In *In Search of Legitimacy. Policy Making in Europe and the Challenge of Complexity*, edited by Ingolfur Blühdorn, 205-224. Opladen, Farmington Hills: Barbara Budrich.
- Newig, Jens, and Eva Kvarda. 2012. "Participation in environmental governance: legitimate and effective?" In *Environmental Governance. The Challenge of Legitimacy and Effectiveness*, edited by Karl Høgl, Eva Kvarda, Ralf Nordbeck and Michael Pregernig, 29-45. Cheltenham: Edward Elgar.
- Newig, Jens, Claudia Pahl-Wostl, and Katja Sigel. 2005. "The Role of Public Participation in Managing Uncertainty in the Implementation of the Water Framework Directive." *European Environment* 15 (6):333-343.

- Olsson, Per, and Carl Folke. 2001. "Local Ecological Knowledge and Institutional Dynamics for Ecosystem Management: A Study of Lake Racken Watershed, Sweden." *Ecosystems* 4 (2):85-104.
- Ostrom, Elinor. 1990. *Governing the Commons. The Evolution of Institutions for Collective Action, Political Economy of Institutions and Decisions*. Cambridge: Cambridge University Press.
- Papadopoulos, Yannis, and Philippe Warin. 2007. "Are innovative, participatory and deliberative procedures in policy making democratic and effective?" *European Journal of Political Research* 46 (4):445-472.
- Pellizzoni, Luigi. 2003. "Uncertainty and Participatory Democracy." *Environmental Values* 12 (2):195-224.
- Reed, Mark S. 2008. "Stakeholder participation for environmental management: a literature review." *Biological Conservation* 114 (10):2417-2431.
- Renn, Ortwin. 2006. "Participatory processes for designing environmental policies." *Land Use Policy* 23:34-43.
- Rockloff, Susan F. , and Susan A. Moore. 2006. "Assessing Representation at Different Scales of Decision Making: Rethinking Local is Better." *Policy Studies Journal* 34 (4):649-670.
- Schmitter, Philippe C. 2002. "Participation in Governance Arrangements: Is there any reason to expect it will achieve "Sustainable and Innovative Policies in a Multi-Level Context"?" In *Participatory Governance. Political and Societal Implications*, edited by Jürgen R. Grote and Bernard Gbikpi, 51-69. Opladen: Leske + Budrich.
- Scott, Tyler. 2015. "Does Collaboration Make Any Difference? Linking Collaborative Governance to Environmental Outcomes." *Journal of Policy Analysis and Management* 34 (3):537-566.
- Selin, Steve, and Deborah Chavez. 1995. "Developing a Collaborative Model for Environmental Planning and Management." *Environmental Management* 19 (2):189-195.
- Smith, Graham. 2003. *Deliberative Democracy and the Environment*. London: Routledge.
- Smith, Mark P. 2009. "Finding common ground: How advocacy coalitions succeed in protecting environmental flows." *Journal of the American Water Resources Association* 45 (5):1100-1115.
- Stave, Krystyna A. 2002. "Using system dynamics to improve public participation in environmental decisions." *System Dynamics Review* 18 (2):139-167.
- Susskind, L, Paul F. Levy, and Jennifer Thomas-Larmer, eds. 2000. *Negotiating Environmental Agreements. How to avoid Escalating confrontation, Needless Costs; and Unnecessary Litigation*. Washington, DC: Island Press.
- Susskind, Lawrence , Sarah McKernan, and Jennifer Thomas-Larmer, eds. 1999. *The consensus building handbook : a comprehensive guide to reaching agreement*. Thousand Oaks, Calif. [u.a.]: Sage.
- Susskind, Lawrence, and Jeffrey Cruikshank. 1987. *Breaking the Impasse. Consensual Approaches to resolving Public Disputes*. New York Basic Books.
- Thomas, John Clayton. 1995. *Public Participation in Public Decisions: New Skills and Strategies for Public Managers*. 1st ed, *The Jossey-Bass Public Administration Series*. San Francisco: Jossey-Bass.

- Torring, Jacob. 2005. "Governance network theory: towards a second generation." *European Political Science* 4:305-315.
- Tsebelis, George. 1995. "Decision Making in Political Systems: Veto Players in Presidentialism, Parliamentarism, Multicameralism and Multipartism." *British Journal of Political Science* 25 (3):289-325.
- Turner, Matthew A., and Quinn Weninger. 2005. "Meetings with Costly Participation: An Empirical Analysis." *Review of Economic Studies* 72 (1):247-268.
- van Asselt, Marjolein B. A. , and Jan Rotmans. 2002. "Uncertainty in Integrated Assessment Modelling: From Positivism to Pluralism." *Climatic Change* 54 (1-2):75-105.
- van Meter, D., and C. van Horn. 1975. "The Policy Implementation Process. A Conceptual Framework." *Administration & Society* 6 (4):445-488.
- Webler, Thomas, and Seth Tuler. 2000. "Fairness and Competence in Citizen Participation." *Administration & Society* 32 (5):566-595.
- Webler, Thomas, and Seth Tuler. 2002. "Unlocking the Puzzle of Public Participation." *Bulletin of Science, Technology & Society* 22 (3):179-189.
- Whelan, James, and Kristen Lyons. 2005. "Community Engagement or Community Action: Choosing Not to Play the Game." *Environmental Politics* 14 (5):596-610.
- Wondolleck, Julia M., and Steven L. Yaffee. 2000. *Making Collaboration Work. Lessons from Innovation in Natural Resource Management*. Washington, D.C., Covelo: Island Press.
- Wong, James K. 2015. "A Dilemma of Green Democracy." *Political Studies* in press.
- Wynne, Brian. 1992. "Misunderstood misunderstanding: social identities and public uptake of science." *Public Understanding of Science* 1 (3):281-304.
- Yearley, Steve, Stefe Cinderby, John Forrester, Peter Bailey, and Paul Rosen. 2003. "Participatory Modelling and the Local Governance of the Politics of UK Air Pollution: A Three-City Case Study." *Environmental Values* 12 (2):247-262.
- Young, Juliette C., Andrew Jordan, Kate R. Searle, Adam Butler, Daniel S. Chapman, Peter Simmons, and Allan D. Watt. 2013. "Does stakeholder involvement really benefit biodiversity conservation?" *Biological Conservation* 185:359-370.

Article [A2]:

Disentangling puzzles of spatial scales and participation in environmental governance – The case of governance re-scaling through the European Water Framework Directive

Abstract

This article attempts to shed new light on prevailing puzzles of spatial scales in multi-level, participatory governance as regards the democratic legitimacy and environmental effectiveness of governance systems. We focus on the governance re-scaling by the European Water Framework Directive (WFD), which introduced new governance scales (mandated river basin management) and demands consultation of citizens and ‘active involvement’ of stakeholders. This allows to examine whether and how rescaling through deliberate governance interventions impacts on democratic legitimacy and effective environmental policy delivery. To guide the enquiry, this article organizes existing – partly contradictory – claims on the relation of scale, democratic legitimacy and environmental effectiveness into three clusters of mechanisms, integrating insights from multi-level governance, social-ecological systems, and public participation. We empirically examine WFD implementation in a comparative case study of multi-level systems in the light of the suggested mechanisms. We compare two planning areas in Germany: North Rhine Westphalia and Lower Saxony. Findings suggest that the WFD did have some impact on institutionalizing hydrological scales and participation. Local participation appears generally both more effective and legitimate than on higher levels, pointing to the need for yet more tailored multi-level governance approaches, depending on whether environmental knowledge or advocacy is sought. We find mixed results regarding the potential of participation to bridge spatial ‘misfits’ between ecological and administrative scales of governance, depending on the historical institutionalization of governance on ecological scales. Polycentrism, finally, appeared somewhat favorable in effectiveness terms with some distinct differences regarding polycentrism in planning versus polycentrism in implementation.

Keywords: Multi-level governance, re-scaling, democratic dilemma, polycentric governance, sustainable water resources management, mandated participatory planning.

Disentangling Puzzles of Spatial Scales and Participation in Environmental Governance—The Case of Governance Re-scaling Through the European Water Framework Directive

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Abstract This article attempts to shed new light on prevailing puzzles of spatial scales in multi-level, participatory governance as regards the democratic legitimacy and environmental effectiveness of governance systems. We focus on the governance re-scaling by the European Water Framework Directive, which introduced new governance scales (mandated river basin management) and demands consultation of citizens and encourages ‘active involvement’ of stakeholders. This allows to examine whether and how re-scaling through deliberate governance interventions impacts on democratic legitimacy and effective environmental policy delivery. To guide the enquiry, this article organizes existing—partly contradictory—claims on the relation of scale, democratic legitimacy, and environmental effectiveness into three clusters of mechanisms, integrating insights from multi-level governance, social-ecological systems, and public participation. We empirically examine Water Framework Directive implementation in a comparative case study of multi-level systems in the light of the suggested mechanisms. We compare two planning areas in Germany: North Rhine Westphalia and Lower Saxony.

Findings suggest that the Water Framework Directive did have some impact on institutionalizing hydrological scales and participation. Local participation appears generally both more effective and legitimate than on higher levels, pointing to the need for yet more tailored multi-level governance approaches, depending on whether environmental knowledge or advocacy is sought. We find mixed results regarding the potential of participation to bridge spatial ‘misfits’ between ecological and administrative scales of governance, depending on the historical institutionalization of governance on ecological scales. Polycentricity, finally, appeared somewhat favorable in effectiveness terms with some distinct differences regarding polycentricity in planning vs. polycentricity in implementation.

Keywords Multi-level governance · Re-scaling · Democratic dilemma · Polycentric governance · Sustainable water resources management · Mandated participatory planning

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Introduction

Fundamental questions in governance are related to issues of scale, defined here as the spatial configuration of (multi-level) governance systems. Such spatial configurations have implications for the effectiveness and legitimacy of political outputs: While decision-making processes on smaller, more local scales allow for the representation of large parts of the community and directly correspond to their preferences, many important environmental and sustainability issues can only be tackled effectively on larger scales. More remote from the citizens, however, decision-making on larger

scales tends to fall short of democratic legitimacy. This tension has been termed “democratic dilemma between system effectiveness and citizen participation” (Dahl 1994). It is of particular importance in environmental governance, where issues are typically complex, with increasing spatial connectedness, and transgressing administrative jurisdictions (Meadowcroft 2002; Young et al. 2006). In order to cope with such problems of spatial ‘misfit’ (Moss 2003; Young 2002), functionally specific governance institutions are increasingly implemented on scales that correspond to the geographic boundaries of environmental problems (Hooghe and Marks 2003). Following this trend, governance in the European Union (EU) and elsewhere is characterized by a multiplicity of vertical, horizontal and functionally specific levels of decision-making. Aiming to balance diverse aspects of legitimacy and effectiveness, such polycentric systems also tend to further increase governance complexity, leading to problems of transparency and accountability (Peters and Pierre 2005). To cope with these deficits, the EU has undertaken efforts to decentralize environmental decision-making and policy implementation (Jordan 2002), including the involvement of citizens and local interest groups. These efforts seek to make governance more effective, for example by incorporating local knowledge into decisions and by generating greater acceptance and implementation of decisions (Heinelt et al. 2002), and at the same time enhance the legitimacy of decision-making.

A prototypical example of such purposeful re-scaling is the EU Water Framework Directive (WFD). The WFD has introduced new governance scales (mandated river basin management) and demands consultation of citizens and encourages ‘active involvement’ of stakeholders in the course of its implementation (Jager et al. 2016; Kaika 2003; Newig and Koontz 2014). This ‘re-scaled’ (Moss 2004) structure of European water governance entails virtually all of the above sketched scale-related puzzles of democratic legitimacy and effective policy delivery, revolving around non-state actor participation in mandated planning as the central vehicle of WFD implementation.

While a diversity of disciplines—such as federalism (Dahl 1994; Oates 2002), social ecological systems (Berkes, Folke), or institutionalism (Ostrom, Young)—have been contributing a variety of aspects, there is still surprisingly little consolidated knowledge about how ‘scalar’ approaches relate to effective and legitimate environmental governance (Gerlak 2014; Newig and Fritsch 2009). This article contributes to the conceptual literatures on scalar and multi-level governance in that it systematically integrates the scalar puzzles by formulating precise mechanisms and discussing their empirical relevance in a comparative study of WFD implementation in Germany. In doing so, this article also contributes to the growing body of research on

the governance implications of WFD implementation. We examine the triangular relations of scale, participation, and the normative dimensions of environmental governance (legitimacy and effectiveness) in order to address the following research questions: (1) To what extent does non-state actor participation on different levels of water governance impact the legitimacy and effectiveness of public decision-making? (2) To what extent does Dahl’s (1994) ‘democratic dilemma’ empirically exist in WFD-related multi-level systems? (3) What is the role of functionally specific multi-level governance arrangements (Hooghe and Marks 2003), institutionalized through river-basin management, and how can participation in such polycentric systems help overcome related problems of ‘fit’ (Moss 2003)?

The remainder of this article is organized as follows. In section 2, we lay out the conceptual framework, condensing propositions from different streams of literature into (causal) mechanisms. These serve to guide empirical research of a comparative case study of multi-level systems in the context of WFD implementation (section 3). The research design examines multiple levels from the EU to local catchment level, focusing on two distinct planning areas in Germany, the Wupper sub-basin in North Rhine Westphalia and the Hase sub-basin in Lower Saxony (LS). Empirical findings will be discussed in the light of the mechanisms (section 4), before we conclude by reflecting on the overall research approach and discuss avenues for further research (section 5).

Theorizing on the Relation of Participation, Scales, Levels, Democratic Legitimacy and Environmental Effectiveness

In this section, we first define the key concepts of the analysis, such as scale, level, polycentricity, participation, legitimacy and effectiveness. Subsequently, we develop the analytical framework, integrating assumptions from the literature into a set of hypothesized causal mechanisms, linking scale, level, polycentricity, and participation with legitimacy and effectiveness.

Definition of Key Concepts

Relying on conceptual insights from different strands of scholarly research, there are a number of somewhat conflicting mechanisms concerning the relationship between public participation and environmental outcomes. Generally, we assume that scales and levels of decision-making as well as different types of participation influence outcomes (Newig and Fritsch 2009).

Drawing on existing conceptualizations of scale (Cash et al. 2006; Gibson et al. 2000; Moss and Newig 2010), we distinguish between scalar dimension and scalar level. Scalar *dimension* refers to “an analytical dimension of a problem under study” (Moss and Newig 2010: 4). In the context of environmental governance, two dimensions are of particular importance, namely the biophysical (here: hydrological) and the institutional scalar dimension (Hein et al. 2006). Scalar *level* denotes the “units of analysis that are located at the same position on a scale” (Gibson et al. 2000: 218). Of particular importance to this research are the different levels of the EU multi-level governance system (e.g., EU—national—federal state—municipality), and the levels on the hydrological scale (basin—sub-basin—catchment).

In line with much current scholarship, we assess environmental governance against the criteria of democratic legitimacy and effectiveness (see e.g., Høgl et al. 2012).

Based on the policy cycle model (Easton 1965), three dimensions of *democratic legitimacy* can be distinguished (Scharpf 1997; Schmidt 2013). Participation can play a central role in achieving each of these forms of legitimacy in public decisions. Input-oriented legitimacy refers to the constitution of the (participant) decision-making body. A central criterion is representation of those with a ‘stake’ or other legitimate interest (see Fung 2006; Schmitter 2002 for detailed criteria). The legitimacy of democratic decisions rests to a large degree on the procedures employed, referred to as ‘throughput.’ Democratic processes allow the accommodation of different (often conflicting) interests, ensure transparency and monitoring by those not involved. This implies that procedures are fair and that participants have an actual say in decisions. Finally, output-oriented legitimacy, has been defined as a measure of acceptance of the output on the part of all affected parties (cf. Benz 2001).

Effectiveness, on the other hand, describes the substantive dimension of policy-making. Like legitimacy, the concrete measurement of effectiveness is challenging (Koontz and Thomas 2006; Newig and Fritsch 2009; Young 2011). This has to do with often complex causal chains of intermediate steps from decision-making to tangible impacts on environmental quality. To aid analysis, we draw on the literature on the effectiveness of environmental institutions (Mitchell 2008), distinguishing output, outcome and impact. To this, we add the dimension of substantive process quality. Applying this approach to the effectiveness of participatory arrangements to reach the goals of the WFD, i.e., the attainment of good ecological status, we arrive at the following criteria:

- **Process quality:** the extent to which participation gauges ecologically relevant information from participants that can be included in the processes of planning and

developing measures for the implementation of the WFD;

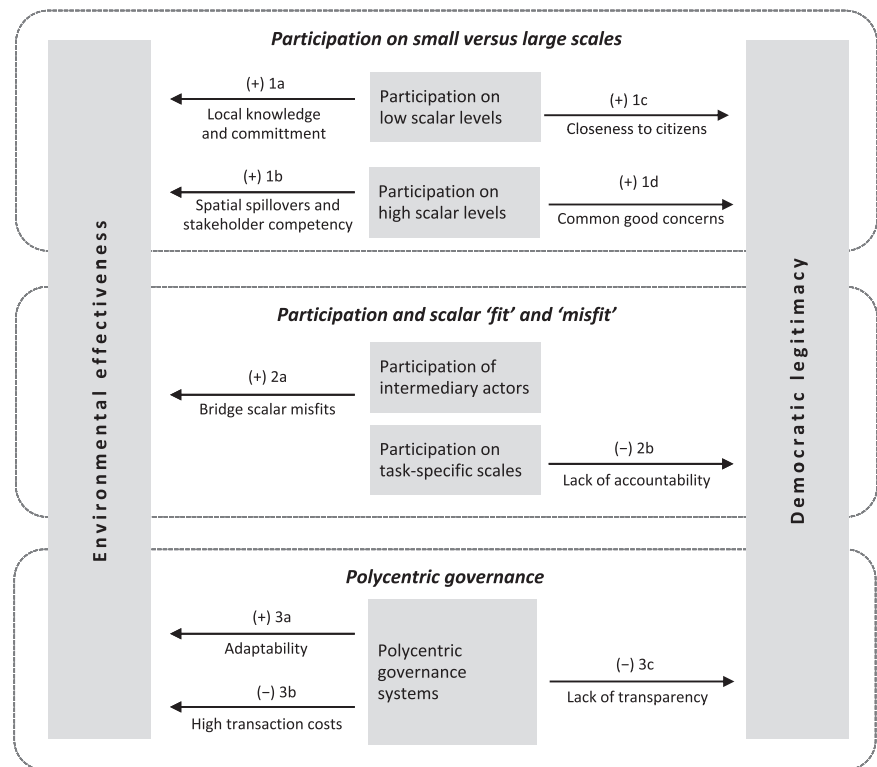
- **Output:** the extent to which decision outputs (River Basin Management Plans (RBMP) and supplementary documents such as “implementation timetables”) align with the goals of the WFD;
- **Outcome:** indications of actual implementation of measures toward reaching the WFD’s goals.
- **Impact:** Changes (improvements or deteriorations) of water status (river structure, nutrient load, etc.) as measured by states’ and EU official reports.

Several issues arise with this measurement of effectiveness. First, we need reliable information on how information was gathered from participants during participatory processes. This has been possible in most cases. Second, decision outputs (RBMP and other documents) must be sufficiently clear in their content to allow for a comparison with WFD aims and goals. In practice, plans are often either quite general or remain vague or cryptic in the actual measures they contain. Third, implementation activities on the ground are manifold and often decentralized; our assessment via interviews and document analysis reveals indications but not necessarily a complete picture of implementation activities. Finally, it is difficult to assess the actual impact of most of the implemented measures because of the long-term nature of many of the involved biophysical processes (Koontz and Thomas 2006). Notwithstanding these methodological challenges, the diversity of indicators employed does allow for a nuanced assessment of effectiveness, including the uncertainties at stake.

Analytical Framework for Analysis

In the following, we summarize what emerges from several literatures as key causal mechanisms. Following Elster (1989), we suggest that “[a] mechanism explains by opening up the black box and showing the cogs and wheels of the internal machinery. A mechanism provides a continuous and contiguous chain of causal or intentional links between the explanans and the explanandum” (cited in Hedström and Ylikoski 2010: 51). In our analysis, mechanisms link scale and participation in governance with legitimate and effective environmental decision-making. We organize these into three clusters regarding participation on small vs. large scales (1), scalar ‘fit’ (2), and polycentric governance (3). Figure 1 presents an overview of all mechanisms. It is not our intention, nor is it possible with the present research design, to ‘test’ these assumptions with any standard of rigor. Rather, we use these as a focused lens to discern relevant issues in the studied cases of WFD implementation that can be connected to and interpreted in the light of existing conceptualizations.

Fig. 1 Overview of conceptual framework comprising three clusters of mechanisms, which link scale-related factors to environmental effectiveness and democratic legitimacy



Participation and Scalar Level: Participation on Small vs. Large Scalar Levels

Environmental federalism (Oates 2002) has long debated on what level environmental decisions are most efficiently taken. Much of the participation-related literature holds local-level participation to be particularly suited to reaching effective decisions (Bingham 1986). Citizens and stakeholders, including environmental non-governmental organizations (NGOs), living in close proximity to the relevant environmental resources are assumed to often possess a more detailed, comprehensive, and contextualized understanding of these resources than do the responsible authorities (Steele 2001; Thomas 1995). Local actor participation is thus expected to lead to better informed decisions (Pellizzoni 2003; Yearley et al. 2003). Other scholars stress the importance of social cohesion and the construction of social capital at local levels fostering trust, commitment and ownership among participants and, hence, contributing to a common problem-solving capacity (Cheng and Daniels 2003; Newig and Fritsch 2009). Moreover, solutions developed and rooted in such a socially cohesive and committed environment are expected to more likely generate high levels of implementation and greater compliance (Ostrom 1990). Taken together, these arguments constitute

Mechanism 1a: Participatory governance on low scalar levels is conducive to environmental effectiveness.

Opposing this mechanism, and drawing again on Dahl (1994), there are strong arguments to support that collective

matters with regard to environmental problems can typically be dealt with more effectively on wider (e.g. national or supranational) rather than very local scalar levels (Flynn 2000). Given negative environmental spillovers (Benson and Jordan 2010) of local activities, attempts to solve such problems locally represent a collective-action dilemma (Hardin 1968; Olson 1969). Moving to higher spatial levels of decision-making can internalize such spillovers, making pro-environmental decisions more likely. Moreover, local administration is assumed to be more susceptible to lobbying (regulatory capture) by economic development interests or—in a more favorable light—interested to negotiate local exceptions from stricter national legislation (van Stigt et al. 2016). In addition, participants at higher levels of governance are assumed to possess greater professional competency (Rockloff and Moore 2006), such that more suitable decisions in terms of ecological outputs are made at this level. Hence, this mechanism states:

Mechanism 1b: Participatory governance on higher scalar levels is conducive to environmental effectiveness.

When it comes to legitimacy, local decision-making is expected to be better able to generate representative and legitimate governance procedures (Dahl 1994; Loubier et al. 2005). This is due to the higher degree of commitment to, identification with, and interest in the local environment:

Mechanism 1c: The legitimacy of participatory decision-making is inversely related to the scalar level of governance.

Contrary to this mechanism, other scholars stress that the views and values of the general public, particularly interests that are not place-based (e.g. general welfare or ecological conservation), are likely to be better represented on larger geographic scales than at the local one, because with local scales, local self-interest tend to prevail, disregarding the larger common good (Soma and Vatn 2009). Furthermore, higher level processes were found to comply better with principles of representation and of professionalism overall, calling in to question the legitimacy of more local procedures (Rockloff and Moore 2006). Hence, this counter-mechanism states

Mechanism 1d: The legitimacy of participatory decision-making is positively related to the scalar level of governance.

Participation and Scalar Dimensions—Issues of Scalar Fit

Environmental problems typically are not confined by strict boundaries, and drivers for environmental processes may also be situated on different scales, all of which typically cut across political governance units. Such scalar “misfits” (Young 2002) between ecological and governance scales cause spatial spillovers and thus environmental ineffectiveness, which, given their cross-boundary nature, cannot easily resolved through a mere upscaling of governance-levels. The obvious response to such scalar tensions is that administrative scales should be adapted to ecological scales (Young 2002: 20, referring to Berkes and Folke 1998). Participation is regarded as a potential tool “to help us bridge the discontinuity between geographical and jurisdictional boundaries found in water resources management” (Delli Priscoli 2004), in particular if stakeholders manage to adapt flexibly to ecological scales (Cash et al. 2006; Delli Priscoli 2004). Such actors then play the role of intermediaries, operating between other actor groups given their ability to work as boundary organizations across different scales and contexts (Moss 2009):

Mechanism 2a: Participation of intermediary actors helps to bridge scalar misfits.

As regards legitimacy, the alignment of governance processes with hydrological boundaries is not unproblematic. Political institutions based on set territories with unequivocal membership draw on established mechanisms of legitimacy, primarily elections and representation. Functional jurisdictions such as watershed institutions, by contrast, lack a clear notion of membership and therefore tend to perform less well on classic criteria of representation (Meadowcroft 2002) and accountability (Huitema et al. 2009; Peters and Pierre 2005). This suggests that

Mechanism 2b: Participation on task-specific scales tends to suffer from problems of legitimacy as compared to participation on territorial scales.

Polycentric Governance Systems

In addition to the influence of individual scalar levels or dimensions, the overall configuration of the governance system has to be taken into account. Here, polycentricity refers to a system of many autonomous, independent, but interacting, decision-making bodies with overlapping jurisdictions (for an overview see: Aligica and Tarko 2012). This concept has widely been used to study natural resource governance (Andersson and Ostrom 2008; Ostrom 2010). Because they possess multiple decision points, it is argued that polycentric governance systems have greater flexibility than monocentric ones in the event of sudden changes, and their inherent redundancies are expected to produce a higher diversity of possible solutions (Folke et al. 2005; Ostrom et al. 1961), making these systems more effective:

Mechanism 3a: Polycentric systems are more effective, due to greater adaptability.

On the downside, polycentric systems are said to suffer from high fragmentation and co-ordination costs (Huitema et al. 2009). A polycentric—or, for that matter: fragmented—system may on the one hand be capable of solving its own, particular problems, but may be unable to address larger-scale challenges (Fung and Wright 2001). Hence, the counter-mechanism reads

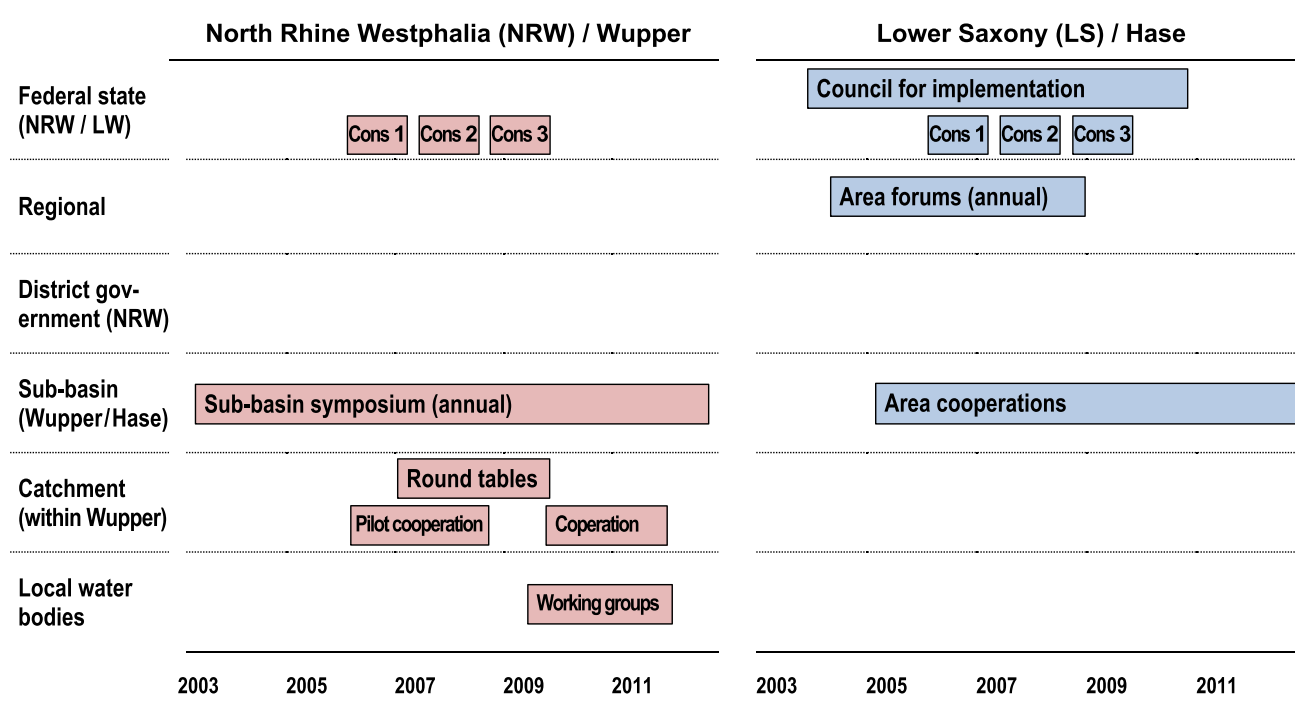
Mechanism 3b: Polycentric systems are less effective, due to higher transaction costs.

When it comes to issues of legitimacy, multiple levels with different venues of decision-making also bear the risk of lacking transparency and problems of legitimacy (Benz 2001). These situations may lead to “responsibility floating” (Bixler 2014), where responsibility over environmental problems is constantly relocated by the actors within a polycentric governance system. Hence, we state that

Mechanism 3c: The number of decision-making levels and the overall complexity of the multi-level system have a negative effect on the transparency and legitimacy of the process.

Implementing the WFD: Certainly Multi-Level, Somewhat Participatory, But Also Legitimate and Effective?

The WFD arguably constitutes the first principal EU policy that aims to achieve substantive goals *and* to enhance democratic legitimacy through deliberate re-scaling of governance (Moss 2004). Following the ‘mandated participatory planning’ approach (Newig and Koontz 2014), the WFD defines material goals (good water status for all EU

Table 1 Participation mechanisms in the multi-level implementation system of the WFD, focusing on the two case regions. ‘Cons’ refers to the formal consultation processes mandated by Art. 14 WFD

member states' inland ground and surface waters), which have to be met following elaborate procedural requirements. These entail the development of RBMP and Programmes of Measures (PoM) within a prescribed six-year planning cycle, assessing current water conditions and defining actions to be taken to reach the overall goal of good water status. These plans themselves serve as political programs stipulating and guiding river basin management and the implementation of measures in the respective river basin districts. Participation of non-state actors¹ plays a vital role in this planning process. Relevant stakeholders and the public must be encouraged to input on the production and implementation of RBMP and PoM (with the first cycle plans due by 2009). In this, EU member states are given substantial leeway in how to operationalize and approach the overall goals and to design governance processes on this way (Newig et al. 2014).

Case Selection and Research Methods

We investigate empirically the scalar particularities of WFD implementation, considering participation across different scales and levels. Our analysis is guided by the above-

¹ Non-state actors are understood as all stakeholders from civil society, including citizens, and from private business, including farming, thus excluding actors from government and administration.

formulated mechanisms. We compare original empirical evidence from two case studies of participatory WFD implementation in the German states of North-Rhine Westphalia (NRW) and Lower Saxony (LS), focusing on one sub-basin in each state. We selected these two states for a number of reasons. First, both are large states with a mix of urban and rural areas and a comparable population of more than 10 million inhabitants. Second, both have a different institutional legacy such that the WFD governance structure arguably will play out differently in both settings. Notably, NRW has administrative districts (Regierungsbezirke) as an intermediate level of government, which LS abolished in 2005; also, NRW has a long-standing tradition of powerful semi-public water associations, which LS and in fact most German states have not. Finally, data acquisition has been greatly facilitated by pre-existing relations of project members to a range of stakeholders in both case study regions.

As Table 1 illustrates, the two states organized WFD implementation in a complimentary way, with NRW concentrating participatory activities on local units below the sub-basin scale, while in LS the sub-basin scale served as the smallest governance unit. With its multiple levels of decision-making, this analytical set-up yields a substantial variety of more or less participatory decision-making processes on different scalar levels and with varying degrees of polycentric complexity.

We analyzed official documents such as RBMP, PoM, implementation timetables, and basin reports, including evaluations and assessments by EU and national agencies; further, secondary literature, internal memos, protocols, websites, and email correspondence. For a comprehensive understanding of the interests at stake, the participatory processes and their outcomes, we conducted guided interviews at the levels of the EU, Germany, the two federal states, and municipalities. A total of 27 interviews were conducted between April 2011 and February 2013 with decision makers and process organizers, as well as with representatives of interest groups and associations. They lasted on average between one and two hours. We performed a content analysis of the interview transcripts and the additional case material. Using the analysis software MAXqda, the case material was structured into context, process, output, and implementation (127 codes), and ordered by relevance for each mechanism. Quotes are marked in the text and can be found in the online supplementary material. In this way, we reconstructed the participatory processes and linked them to their respective substantial and social outputs.

North-Rhine Westphalia

In NRW, the state environmental ministry is charged with WFD implementation. In 2005, operative implementation was assigned to the four district governments. Our core example is the river Wupper, a tributary to the Rhine with a

length of 115 km (see Fig. 2). The Wupper sub-basin is a heavily populated area with ~890,000 inhabitants. Diverse water uses (tourism, agriculture, industry, hydroelectricity) have led to some conflicts and environmental degradation in the past. The Wupper sub-basin cuts across the Düsseldorf and Cologne district governments, with a lead role assigned to the Düsseldorf government. For planning purposes, the sub-basin was further divided into three planning units of Upper Wupper, Lower Wupper, and Dhünn.

Aside from the district governments, a water board—the ‘Wupperverband’—is one of the principal actors in the area. This sub-basin-wide public body was established by the government in 1930 and is responsible for the main water management tasks (e.g., water body maintenance, wastewater treatment, and water supply). Municipalities, water utilities, and larger industrial enterprises are obligatory members of the Wupperverband and pay substantial fees (Moss 2012).

Round Tables

In NRW, stakeholders were involved in Round Tables between 2008 and 2009. In the Wupper area, these were organized by the district government of Düsseldorf and held at the level of the planning units Upper Wupper, Lower Wupper, and Dhünn. Their aim was to include local knowledge into the planning process (District Government Düsseldorf 2008a). Their output served as a proposal for the production of RBMP and PoM by the state environmental ministry.

The district government selected the participants, targeting mostly organized stakeholders related to water management. For example, the first Round Table of the planning unit Lower Wupper involved 21 participants, the second 49 participants, and the third 43 participants including representatives of district governments Düsseldorf and Cologne, the Wupperverband, municipalities, farmers association, an environmental NGO (‘Naturschutzbund Germany’ - NABU), land owners, infrastructure operators, water utilities etc. (District Government Düsseldorf 2008b). According to an interviewee, many participants primarily attended out of concern for negative consequences for their constituency (Interview LANUV, quote #1). One of the crucial points during discussions was the voluntary nature of the implementation process (Interview district government, quote #2).

It was agreed that only generic measures but no concrete proposals for action were to be included in the official PoM, while concrete measures were only documented in background papers (District Government Düsseldorf 2008a,c). The more detailed ideas for specific measures that were gathered during the Round Tables were transferred to the next stage, the ‘cooperations’, which are discussed below. One interviewee characterized the Round Tables as a place

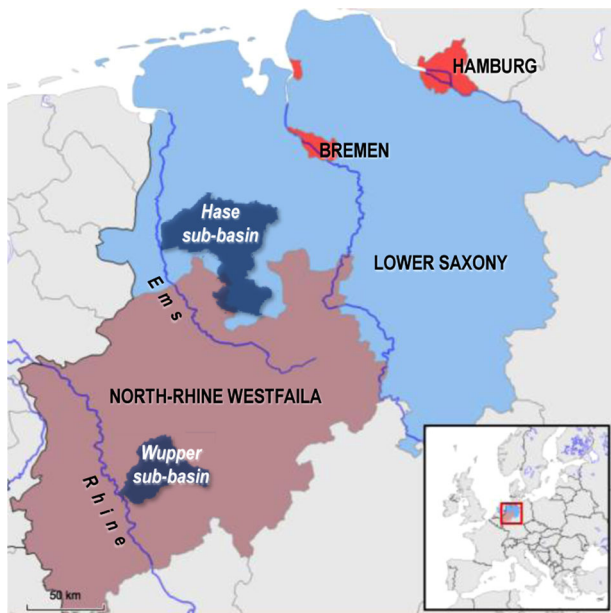


Fig. 2 The case study regions of Lower Saxony with the Hase sub-basin and North-Rhine Westphalia with the Wupper sub-basin, located in the north-western part of Germany. Own drawing created with stepmap.de

for information presentation by the organizers and general discussion, while little input was actually solicited from stakeholders (Interview district government, quote #3). Other interviewees felt that every participant was at least given the opportunity to voice his or her opinion or interest, and that these concerns were taken up for consideration (Interviews local agriculture association; water association, quote #4). Participants also reported that the Round Table allowed them to establish informal relationships with other stakeholders that made it easier to cooperate with them (Interview chamber of agriculture, quote #5) and to learn about the implementation process (Interview district government, quote #6).

Local Cooperations

In NRW, concrete planning, elaboration, and prioritization of measures to implement the WFD was done in local ‘cooperations’. In the Wupper area, three cooperations were created at the level of planning units, organized by the Wupperverband. In order to allow for intense participation, cooperations were sub-divided into a total of 10 working groups that covered small areas such as specific water bodies. Each working group had between 13 and 60 participants². Following introductions into the planning process by experts of the Wupperverband or the water authorities, participants had the opportunity for in-depth discussion of measures using prepared maps and graphic tools (e.g., Wupperverband 2011). Between 2010 and 2012, among the three cooperations, a total of 25 workshops were conducted in which more than 100 stakeholders participated (Wupperverband 2012). Each cooperation summarized its planning results in a map containing detailed information on potential measures concerning their feasibility, priority, costs, and impacts. These results were incorporated into ‘implementation timetables’, planning documents that included the maps and lists of measures and which were published in 2012, serving as a concretization of the RBMP and PoM³.

Symposium

In 2010, the district government and the Wupperverband established a joint symposium for the whole Wupper area. This format resulted from a fusion of two separate but similar annual meetings, which previously had been held by each of the two public bodies on their own. The symposium is held annually and aims primarily at informing a broader audience of stakeholders on the current progress of WFD

implementation, and secondarily at discussing issues of water resource management in more general terms.

Substantive Outcomes

For all German river basin districts, including those in NRW and LS, the official planning documents of RBMP and PoM turned out to provide only cursory information on concrete measures and their implementation (European Commission 2012). Hence, these documents do not lend themselves to substantially assess measures and action on the ground, let alone their attribution to the planning process and participation of stakeholders. In NRW, the environmental ministry compensated for sparse information in the planning documents by publishing more detailed ‘fact sheets’. These contain substantive outputs and potential programmatic measures in a more fine-grained way on the level of sub-basins and even catchments (NRW Ministry of the Environment 2009). Additionally, in the Wupper area, the implementation timetables contained concrete measures and actions on the ground (Wupperverband 2012). These identify more than 900 single measures for the Wupper’s three planning units covering diverse areas such as morphology, point source pollution, land use, or fishery. Measures span from efforts to enhance the information basis through further studies and monitoring to substantive and cost-intensive infrastructure measures, such as the relocation of riverbeds or the removal of artificial barriers. Despite the major expenditures that some of these measures entail, only nine measures were assessed as impossible, while almost 70 % had already implemented or deemed possible in 2012 by the Wupperverband, who is charged with implementation (Wupperverband 2012). With this, the Wupper ranges above the German average when it comes to measure implementation: a recent evaluation on behalf of the EU Commission (WRc plc 2015) for all German river basins estimated an average of 50–68 % being under implementation.

Water status in the Wupper sub-basin improved during the last WFD cycle between 2008 and 2014. The number of water bodies with good or better ecological status doubled in this time, constituting now around a quarter of water bodies in the sub-basin. At the same time the share of water bodies with poor or bad water status or potential decreased by 40 percent, indicating an overall positive trend. Main persisting issues in the sub-basin are hydro-morphological deficits, i.e., severely altered river beds offering only sparse aquatic habitats, passability for fish, and pressures from urban settlements (North Rhine Westphalia Ministry of Environment 2015). Attributing these positive developments in environmental quality directly to the processes and activities described above appears problematic, as alterations in river structures may show their environmental impact only after some time lag. Notwithstanding these caveats, improvements in water status often occurred regarding the river structure and habitats, which was

² See [https://www.wupperverband.de/internet/mediendb.nsf/gfx/6B5A7EA631FBD243C12579E400417AC8/\\$file/Text%20Begrue%C3%9Fung.pdf](https://www.wupperverband.de/internet/mediendb.nsf/gfx/6B5A7EA631FBD243C12579E400417AC8/$file/Text%20Begrue%C3%9Fung.pdf). (last accessed 14 July 2016).

³ http://wupperverband.de/internet/web.nsf/id/pa_de_planungseinheiten.html (last accessed 14 July 2016).

targeted in multiple measures developed in the participatory processes.

Lower Saxony

The responsible authority for WFD implementation is the LS Ministry of the Environment, with operative implementation carried out by the environmental state agency ('Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz' - NLWKN). We focus on the Hase area, a sub-basin of the river Ems, which is characterized by agriculture and intensive livestock farming. Excess production of liquid manure has resulted in high pressure on ground and surface water due to high nitrate concentrations. Intensive agriculture has come to be a part of the region's identity and "is reflected by the interests and perceptions of many actors involved in the implementation process of the WFD" (Kastens and Newig 2008).

Area Forums

The earliest major form of public involvement were the area forums, established by the environmental ministry. From 2004 to 2009, these were held annually in four hydrologically defined regions, with up to 100 participants attending each meeting. The ministry used the area forums to give an account of the overall progress of the implementation process and of technical aspects. These formats were criticized as lacking sufficient feedback possibilities on the part of participants (Ridder et al. 2007).

Area Cooperations

As a more active form of involvement, LS established 30 local 'area cooperations' in 2005, on the level of sub-basins. According to a ministerial decree (Lower Saxony Ministry of Environment 2005), area cooperations were designed to accompany the whole WFD implementation process. However, no formal decision-making competence was transferred to the participants, which was seen critically in an earlier assessment (Kastens and Newig 2008). The state government provided each cooperation with an annual budget of 15,000 Euro for implementing measures (Kommunale Umwelt-Aktion U.A.N. 2008). The area cooperation covering the Hase sub-basin met several times per year from 2006 to 2009 and just annually thereafter. Initially, it was intended to involve one representative of each stakeholders group, such as administrative counties and municipalities, farmers associations, business, water boards, environmental NGOs, and regionally specific actors (e.g., dyke associations, fisheries). However, as municipalities could not agree on one representative, several were accepted. Other organized interests such as the fisheries requested inclusion in the

Hase area cooperation. Some interviewees saw this as a clear disadvantage because larger groups made discussions more difficult and harder to moderate (Interview maintenance association, quote #7), reducing the possibilities for dialogue and discussion (Interview environmental organization, quote #8). In contrast to the municipalities, environmental organizations had problems finding a capable representative for each area cooperation (Interview environmental organization, quote #9).

During the Hase area cooperation meetings, different interests of participants became apparent: Agricultural representatives and water maintenance boards stressed the function of flowing water bodies for agriculture, seeing little room for space intensive and costly natural development of water bodies (Interviews maintenance organization; agricultural association, quote #10). Some of the municipalities and other stakeholders saw the WFD as a chance to stress the rivers' use for people's well-being, recreational interests and tourism (Interview county; environmental organization, quote #11, see also quote #20). The tension between (agricultural) land use and environmental protection created some controversy, but no heated conflicts were reported (Interview water treatment, quote #12). A great obstacle to the whole process was the unresolved question of financing because only few small measures could be implemented with 15,000 Euro per year (Interview maintenance association; agricultural association, quote #13). In terms of capacity building, three maintenance associations in the sub-basin regions formed an umbrella organization in order to increase the capacity to implement measures and the municipalities established means of information exchange. The interviews indicate that participants valued the input of information, provided mainly by the NLWKN, as well as the opportunity to get to know the interests and positions of other stakeholders (Interview maintenance association; water treatment, quote #14).

Substantive Outcomes

Although participants contributed to the compilation of lists that named concrete measures (Interview NLWKN, quote #15), these were not included in the final RBMP or PoM, which listed generic measures only, similar to those in NRW. This is in line with findings from other area cooperations (Koontz and Newig 2014) and an EU evaluation of all German basins (European Commission 2012). The NLWKN published data sheets for each water body, listing core pressures and prioritized measure suggestions fitted to these⁴. For the Hase, these sheets suggested

⁴ http://www.nlwkn.niedersachsen.de/wasserwirtschaft/egwasserrahmenrichtlinie/flussgebietseinheit_ems/hase/wasserkoerperdatenblatt/wasserkoerperdatenblaetter-fuer-die-gewaesser-im-bearbeitungsgebiet-hase-112997.html (last accessed 21 September, 2015).

around 300 measures, covering areas such as morphology, connectivity, point source, and especially also diffuse source pollution. Furthermore, the area cooperation assisted in the declaration of water bodies as natural, artificial, or heavily modified. After some discussions, a large number of water bodies were classified as heavily modified (HMWB) (Interview environmental organization, quote #16).

Actual implementation of measures was and is based on a voluntary model. Action on the ground depends on the commitment and engagement of local governments, authorities, and stakeholders in the basin, who are encouraged to implement identified measures with financial support from the state government (Koontz and Newig 2014). However, potential co-implementers felt that this WFD process had complicated the implementation of measures due to an increase in bureaucracy (Interview maintenance association, quote #17). Furthermore, this decentralized procedure resulted in the disregard of major issues of agricultural pollution, notably nutrients. A recent EU-ordered evaluation of WFD implementation in Germany (WRc plc 2015) found for the Ems basin as a whole that for more than 85 % of all measures to reduce nutrient pollution in agriculture—beyond the requirements of the Nitrates Directive—implementation has not yet started until 2012. On the other hand, implementers reported some progress in the revitalization of river banks (Interview fishery, quote #18) and the removal of other obstacles (Interview maintenance association, quote #19). Many municipalities saw the WFD as an opportunity to conduct projects that combined the aim of natural development with other objectives such as creating value for tourism or ensuring flood protection (Interview municipal association, municipality, quote #20).

The actual impacts of these measures for the water status in the sub-basin and beyond are hard to assess. Surface and groundwater assessments undertaken in 2014 as part of the subsequent WFD planning cycle show that only 1 % of all surface waters of the whole Ems basin is of good or better ecological status with more than 80 % of poor or bad ecological status or potential. In the Hase sub-basin, only 2 out of more than 70 water bodies acquired good ecological status. Compared to the 2008 assessment, improvements are marginal. Groundwater quality even deteriorated in one of the aquifers in the sub-basin. Main pressures continue to be diffuse pollution from agriculture as well as river development and construction (Lower Saxony Ministry of Environment 2015, NLWKN 2009, 2012). These not only affect the water status in the basin but also contribute to considerable eutrophication in the German and Dutch North Sea coastal waters (Bund-Länder Arbeitsprogramm Meeresumwelt 2011).

Discussion in the Light of the Mechanisms

Having examined the different participation mechanisms employed in the two case regions in some detail, we now take a more analytical perspective and relate these findings to the mechanisms formulated at the outset (Table 2).

Participation at Small vs. Large Scalar Levels

Intensive, interactive forms of participation were mostly organized on a sub-basin level or, in the case of the Wupper, in cooperations on an even more local level. Less intensive forms of participation such as formal consultations, the Council, and in LS the area forums were organized on higher spatial levels. Interviews suggest that participants often found the group size too large for meaningful discussion, but overall had the possibility to voice their interests (Interview maintenance association, quote #8). Intensive deliberations mostly took place in very local settings, such as working groups.

Regarding *effectiveness* (M1a and M1b), our findings provide some evidence that *local* participation is conducive to WFD planning processes. In the Hase case, key stakeholders' knowledge on different aspects of water management proved valuable for naming measures and compiling lists, as well as for capacity building (all of which would not likely have been possible on a more aggregated governance level). Even more so, the cooperations in NRW, which were held on yet more local scalar levels, succeeded to include local knowledge by providing detailed maps and implementation timetables and working on specific water bodies. The NRW approach thus re-scaled participation from the sub-basin down to a more local level in order to enhance effectiveness, particularly regarding process quality and outputs, thus, supporting mechanism M1a. In support of M1b, however, it became apparent that the LS area cooperations were situated on too local a level for environmental groups to meaningfully engage. The fisheries representative in the Hase area, for example, did not represent the full spectrum of environmental concerns and was, notably, no expert in nutrient issues. On a more aggregated spatial level, such as the state, environmental groups are organized more professionally, not having to rely on voluntary engagement. Whether or not M1a or M1b holds thus appears to depend on whether participation is to mainly solicit environmental knowledge (favoring local processes—M1a) or whether it seeks to promote environmental advocacy (favoring less local processes—M1b). The dilemma of the LS approach, then, was that the area cooperations tried to achieve both which they could not. NRW, however, with its more flexible and multi-leveled approach of both soliciting local knowledge *and* allowing for effective NGO representation at more aggregated levels, proved superior in effectiveness terms.

Table 2 Summary of mechanisms and related case study evidence

No.	Mechanism	North Rhine-Westphalia/Wupper	Lower Saxony/Hase
M1a (b)	The <i>smaller (higher)</i> the scalar level of participatory governance, the greater the environmental effectiveness of decisions.	In support of M1a: Cooperations on catchment level allowed stakeholder knowledge to bring in knowledge through detailed maps and timetables, tailoring measures around local conditions. —	In support of M1a: Area cooperations on sub-basin level gave stakeholders the opportunity to contribute to lists of measures, adding to the consideration of local conditions. In support of M1b: Environmental groups in particular had limited capacity to participate meaningfully and voice ecological concerns in local processes. In support of M1d: In area cooperations, lay stakeholders faced capacity problems to ensure representation in all venues. Inclusion of all relevant local governments on the sub-basin scale led to hampered discussion quality. In support of M1c: Local fieldtrips increased participants ownership of processes.
M1c (d)	The <i>smaller (higher)</i> the scalar level of governance, the greater the legitimacy of decisions.	In support of M1c: Lay stakeholders faced capacity problems to ensure representation in all local venues. In support of M1c: In processes on catchment scale, participants could voice their concerns and effectively relate to water management issues. In support of M2a: The Wupperversband as historically grown institution embedded in established administrative structures served as important intermediary bridging misfits.	In support of M2a: The inclusion of stakeholders organized on hydrological scales (e.g., maintenance associations) helped to communicate between the different scalar dimensions. In support of M2b: Given the intersection of the Hase sub-basin with multiple municipalities, there appeared a trade-off between full representation of every stakeholder and a proper group size and working climate. Mixed evidence: Polycentricity could mainly be found for the implementation phase, which was decentrally organized.
M2a	Participation of intermediary actors is likely to bridge the <i>misfit</i> between ecological and administrative scalar dimensions.	Against M2b: Relying on a multi-layered structure on sub-basin and catchment levels, a compromise between inclusiveness of the process and a manageable process design could be found. Mixed evidence: Planning competences are dispersed between district governments and water boards, further delegated to various participatory venues (planning polycentricity).	In support of M3a: Implementers (e.g., municipalities, maintenance boards) could realize some locally tailored measures. In support of M3b: Increased transaction and coordination costs could be observed. In support for M3c: Decentralized implementation system proved in transparent.
M2b	Participation on <i>task-specific</i> (i.e., hydrological) scales tends to suffer from problems of legitimacy as compared to participation on territorial scales.	In support of M3a: This allowed for the inclusion of various interests and sources of knowledge and the identification of a large number of specific measures. In support of M3b: Implementation was guided more strongly by central actors. In support for M3c: Multiple venues hampered appropriate representation of every actor.	
M3a (b)	Polycentric systems are <i>more (less)</i> effective.		
M3c	The <i>number of decision-making levels</i> and the overall complexity of the multi-level system have a negative effect on the transparency and legitimacy of the process.		

As regards the *legitimacy* of decision-making, the analysis indicates that the re-scaling to rather local decision-making does benefit participants' commitment and identification with the area and the possibility to address specific issues during the participation process (M1c). However, in the Hase region, stakeholders expressed that the area cooperation was still covering too large an area to identify with the whole region and to discuss particular measures (Interview environmental organization, quote #21). The larger group size resulting from this wider geographic scope further hampered the discussion climate. To strengthen identification among the participants, the area cooperation organized field trips to particular water bodies, which stakeholders were chiefly interested in and which corresponded to their more local sense of place (M1c). In the Wupper case, the cooperations established working groups on an even more local scale, where affected stakeholders had access to and could discuss measures for specific water bodies. This increased ownership on behalf of the participants and led to a high appreciation of the process (Interview nature protection, quote #22).

At the same time, these small-scale participatory processes revealed deficits concerning input legitimacy (representation) (providing support for M1d): In both Wupper and Hase cases, environmental organizations relying on voluntary action by their members (as is typical for local environmental organizations) faced difficulties to represent their interest in each venue. In the Hase region, environmentalists were not able to nominate a member of a genuine environmental group. In the Wupper case, stakeholders from voluntary organizations also reported difficulties to attend activities they were invited to (Interview local agricultural association, quote #23). These findings suggest that highly local participation overburdens voluntary organizations regarding their personnel, time and financial resources—a phenomenon which would likely have been less pronounced in participatory formats on more aggregated levels.

To conclude, we find mixed results regarding Dahl's (1994) proclaimed dilemma between legitimacy through participation (more likely to be attained in local decision-making) and effectiveness (more likely to be attained at more aggregated levels). In fact, both effectiveness and legitimacy were scale-dependent but not in a straightforward way. Contrary to Dahl's expectation, local processes did appear effective in the sense of information-gauging and working toward implementation of measures (as opposed to a counterfactual situation of tackling these issues at a more aggregated scale). However, the actual WFD planning documents, that were to address the overall water-related problems in a larger unit, lacked the rigor and concreteness to be effective, e.g., in terms of tackling the overall nitrate problem in LS. Thus, we find a trade-off between vague outputs (plans) and more effective outcomes (implementation). In terms of

legitimacy we found that the more local, the more stakeholders identified with and accepted decision-making processes but that very local processes did less well regarding access and representation of groups (in particular NGOs). The key scale-related trade-off thus appears not one between legitimacy and effectiveness, but between the different dimensions within the broader concepts of both effectiveness and legitimacy, thus challenging conventional assumptions.

Scalar Fit

Our findings suggest that in both cases a misfit between hydrologically and politically delimited institutions was of concern. Both the Hase and the Wupper sub-basins cross the jurisdictions of multiple local authorities, creating misfits between political scales of interest representation and the newly introduced, hydrologically oriented governance units. According to mechanism M2a, such misfits are likely to be bridged through participation. In the Hase case, some stakeholders such as the maintenance associations, the environmental NGO and the water utilities are in fact organized along hydrological boundaries. As intermediaries, their participation partly helped to communicate between the logic of sub-basin management and the logic of municipal and county administration. In the Wupper case, the misfit between political and hydrological scales is less pronounced because the Wupperverband has a long-grown structure accommodating the hydrological scale dimension. This association, therefore, served as important intermediary between the political institutions and the different processes on the water body level, such as the local cooperations.

With regard to M2b, functionally delimited institutions such as those on hydrological scales are suspected to suffer from a lack of legitimacy. Our case studies partly support this mechanism. In LS, the area cooperations, while cutting across established territorial boundaries, in theory allowed only one representative of each jurisdictional level (Lower Saxony Ministry of Environment 2005). Consequently, counties and municipalities did not feel appropriately represented in this setting (Kommunale Umwelt-Aktion U. A.N. 2006a, b; Lower Saxony Ministry of Environment 2006). This eventually led to an expanded group, allowing for extended representation at the expense of a less productive working atmosphere. In the Wupper basin, a successful attempt was made to circumvent the M2b problem through a multi-layered structure that allowed for greater stakeholder inclusion (see also Hüscher and Moss 2015). Representation was further enhanced by the targeted selection of stakeholders for different arenas following a stakeholder analysis (Seecon 2007).

Our findings thus suggest that scale-adapted governance on functionally delimited scales pose a challenge to

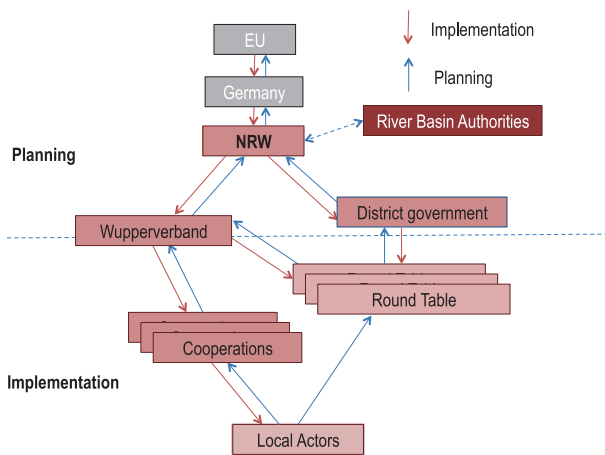


Fig. 3 WFD implementation structure in North-Rhine Westphalia

legitimacy. We may reasonably assume that on those local scales relevant to our study (sub-basin), pollution spillovers (e.g., regarding nitrate pollution of ground and surface waters) are not so pronounced that governance on hydrological scales will actually outperform. Where stakeholders are organized according to ecological boundaries, problems of legitimacy will result.

Polycentric Governance System

With regard to the overall governance system put into place for WFD implementation and its polycentricity, we find substantial differences between LS and NRW. To understand the relevant differences, it is useful to distinguish the institutional set-up of the *planning* process (i.e., the preparation of RBMP and PoMs) and that of the process of *implementing* measures on the ground (illustrated in Figs. 3 and 4).

In LS, planning has been essentially centralized and mainly in the hands of the environmental ministry and the NLWKN, whereas the influence of participatory area cooperations remained limited. Implementation of measures, on the other hand, has been organized decentrally. Many different actors, such as water maintenance boards and municipalities are expected to assume responsibility for the implementation of measures, using the area cooperation as a means of information exchange (Kommunale Umwelt-Aktion U.A.N. 2006a). Interviews reveal that some of these actors indeed realized measures, reacting flexibly to local circumstances (in support of M3a). On the downside, and in support of M3b, interviewees point to the coordination costs of such a decentralized and fragmented system, such as the municipalities who initiated a coordinating body (Interview county, quote #24).

In NRW, the WFD implementation system is both more and less polycentric than in LS: while planning is more polycentric, implementation is less so (cf. Fig. 3). Different

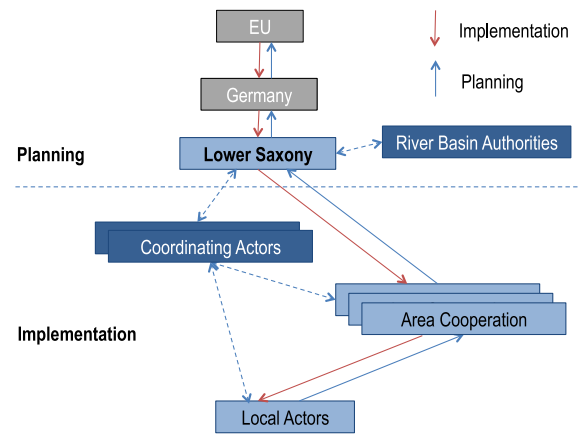


Fig. 4 WFD implementation structure in Lower Saxony

from LS, WFD-related *planning* competencies are distributed over the district governments as well as the water boards such as the Wupperversband (in those sub-basins in which they exist). Both structures compete but also collaborate, this being a typical indicator of polycentricity. The numerous participation mechanisms put into place on different levels and which contributed to the planning efforts, added to this polycentricity. The overall effect of this polycentricity on planning quality is certainly difficult to measure. However, the elaboration of implementation timetables, which identify very concrete measures (as opposed to planning in LS), is clearly a comparative ‘success’, and arguably due in part to the integration of various sources of knowledge by local stakeholders. Moreover, the Wupperversband, competing with the district government, assumed a leadership role, provided considerable resources and served as a source of innovation (Hüesker and Moss 2015). *Implementation* of measures, again different from the LS model, was guided more strongly by central actors (Wupperversband, district government) rather than leaving it solely to local actors. Considering the overall positive trend in the ecological water status, there is no indication to believe that this model was less ‘successful’ as compared to the LS approach in terms of progress toward WFD goals.

Are polycentric systems less legitimate in terms of representation and accountability (M3c)? On the one hand, the complex participatory structures did increase input-oriented legitimacy as compared with the pre-WFD situation in both case regions. In NRW, where polycentricity was highest in the WFD planning realm, competing structures (Wupperversband vs. district government) may have decreased transparency and thus accountability. However, the Wupperversband was legitimized by formal decisions by its members. Legitimacy suffered somewhat because the multitude of different venues for participation was overwhelming for some of the actors, making it difficult for

them to decide where to participate. In LS, the high polycentricity in the implementation realm, closely linked to a lack of central co-ordination or guidance of implementation, entailed a lack of transparency of what measures are implemented by whom as well as a potential withdrawal of state responsibility.

Conclusions

The European WFD attempts to rescale competences of water governance in a newly fashioned multi-level system of mandated participatory planning. This constitutes an experiment for governments, involved stakeholders and citizens across the European Union. German federalism has produced 16 such experiments, as each federal state pursues its own strategy of setting up participation mechanisms. Our comparative study of two such cases reveals, first, that the WFD did impact on institutionalizing hydrological governance scales and participation. Participation has been put in place in various forms and on multiple levels of governance, showing distinct differences between the two studied cases. Contrary to expectations, governance competences have scarcely shifted toward hydrological scales but remain with the federal states, with limited cross-border cooperation in river basins. In NRW, the Wupperverband, acting on sub-basin scale, has been strengthened and partly assumed competences originally held by the district governments. In LS, area cooperations were implemented on sub-basin and catchment scales, but had little influence on planning.

Did the WFD succeed in improving both effective water governance and democratic legitimacy of decision-making through its re-scaling approach? Or do scale-related dilemmas prevail?

As regards Dahl's (1994) 'democratic dilemma' and the local—supra-local dualism, the message taken from the case study comparison is not unequivocal: Given the complexity of water management issues to be tackled for WFD implementation, the more local decision processes appeared both more effective (in the sense of producing better informed and more meaningful outputs) and more legitimate (in terms of relating closer to citizen and stakeholder interest). On the other hand, local processes in LS were more susceptible to being dominated by economic (agricultural) interests, working against strict water protection. To a lesser degree, the argument of greater effectiveness of higher-level decision-making proved relevant, namely the positive effect of central guidance on measures implementation in NRW (which was largely lacking in LS). This relative superiority of local as opposed to higher-level decision-making must, of course, be interpreted against the more local nature of most water management issues

encountered in the two case regions. A key factor determining whether local or less local processes are more effective depended on whether environmental knowledge or environmental advocacy is sought.

Was participation able to bridge 'misfits' between ecological (i.e., hydrological) and administrative scales of governance, or did this introduce new problems of legitimacy? Water-related, task-specific governance scales conflicted with established notions of territorially based representation and legitimacy, thus creating scalar 'misfits'. This was more pronounced in LS, with area cooperations crossing territorial boundaries, as compared to the NRW-model, in the Wupper case due to the strong role of the grown basin-oriented water board. While the participation of actors organized along the sub-basin boundaries in the Hase did appear to bridge misfits, problems of legitimacy and representation remained. Whether participation helps to bridge scale-related misfits appears to depend on the institutional history, with grown structures more likely to perform than fresh reforms of re-scaling.

Polycentricity, finally, appeared somewhat favorable in effectiveness terms. Our analysis suggests to distinguish between governance polycentricity of the planning system and that of the implementation system. Higher polycentricity in planning in NRW proved successful due to competing structures, while higher polycentricity in implementation in LS proved less conducive to both effectiveness and legitimacy. Clearly, this distinction between the planning and the implementation stage will warrant further enquiry.

Three caveats must be mentioned with regard to our assessment. First, contrary to earlier expectations, it has become apparent that the official planning documents (RBMP and PoM) were not used as the central vehicle for the development and implementation of measures on the ground, but rather as a means to symbolically report to the Commission. Instead, the initiated governance mechanisms triggered activities such as the elaboration of additional plans (implementation timetables in NRW) or the promotion of voluntary initiatives (LS) (see Koontz and Newig 2014). Second, the environmental impact of the studied processes and their outputs cannot yet be fully evaluated. Ecological data is still sparse and often real impacts of implemented measures become visible only after some time. Finally, the relevance of the hydrological scales involved in this case study (and similar others) is arguably questionable (Ingram 2011) and ultimately remains an empirical issue. This points to the politics involved in the re-scaling of governance, which has been highlighted in the critical human geography literature (Hüesker and Moss 2015).

Beyond, but related to the initial assumptions contained in the three sets of mechanisms, three key insights emerge from this empirical study. First, a major re-scaling effort such as the one introduced by the WFD cannot easily

resolve scale-related trade-offs between effectiveness and legitimacy. Rather, grown, co-evolved institutional structures appear more important than ‘optimized’ scalar governance arrangements. Second, the dualism of effectiveness vs. legitimacy appears less pronounced than potential trade-offs between dimensions within either concept. Third, the concept of polycentricity appears more diverse than initially assumed and can be disentangled into polycentricity in planning and polycentricity in implementation.

The findings reported here are of wider importance to related attempts at governance re-scaling through mandated participatory planning. Such new governance modes appear, for example, in the Floods Directive, that mandates flood risk management plans to be produced until 2015 on the level of flood-risk areas (Newig et al. 2014), regarding the biodiversity regime (Paavola et al. 2009), or the Ambient Air Quality Directive (Newig and Koontz 2014). Research on scalar, multi-level, and participatory governance will, therefore, continue to be relevant beyond the implementation of the WFD.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

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References

- Aligica PD, Tarko V (2012) Polycentricity: From Polanyi to Ostrom, and beyond. *Governance* 25:237–262
- Andersson KP, Ostrom E (2008) Analyzing decentralized resource regimes from a polycentric perspective. *Policy Sci* 41: 71–93
- Benson D, Jordan A (2010) The scaling of water governance tasks: a comparative federal analysis of the European union and Australia. *Environ Manage*. 46:7–16
- Berkes F, Folke C (eds) (1998) Linking social and ecological systems. Management practices and social mechanisms for building resilience. Cambridge University Press, Cambridge, UK

- Benz A (2001) Restoring accountability in multilevel governance, ECPR Grenoble
- Bingham G (1986) Resolving environmental disputes. a decade of experience. The Conservation Foundation, Washington, D.C
- Bixler RP (2014) From community forest management to polycentric governance: assessing evidence from the bottom up. *Soc Nat Resour* 27:155–169
- Bund-Länder Arbeitsprogramm Meeresumwelt (2011) Konzept zur Ableitung von Nährstoffreduzierungszielen in den Flussgebieten Ems, Weser, Elbe und Eider aufgrund von Anforderungen an den ökologischen Zustand der Küstengewässer gemäß Wasserrahmenrichtlinie, Hannover
- Cash DW et al. (2006) Scale and cross-scale dynamics: governance and information in a multilevel world. *Ecol Soc* 11:8
- Cheng AS, Daniels SE (2005) Getting to “we”: Examining the relationship between geographic scale and ingroup emergence in collaborative watershed planning. *Human Ecology Review* 12:30–43
- Dahl RA (1994) A democratic dilemma: system effectiveness versus citizen participation. *Polit Sci Quart* 109:23–34
- Delli Priscoli J (2004) What is public participation in water resources management and why is it important? *Water Int* 29:221–227
- District Government Düsseldorf (2008a) EG-Wasserrahmenrichtlinie. Ergebnisvermerk zum 1. Runden Tisch „Obere Wupper und Dhünn“ am 20.02.2008, Düsseldorf
- District Government Düsseldorf (2008b) Attendance lists of Round Tables at February 19, February 20, April 09, April 10, April 14, May 28, May 29, June 03 2008, Düsseldorf, Marienheide & Wuppertal-Barmen
- District Government Düsseldorf (2008c) EG-Wasserrahmenrichtlinie Ergebnisvermerk zum 3. Runden Tisch, „Dhünn“ am 03.06.2008, Düsseldorf
- Easton D (1965) A framework for political analysis. Prentice-Hall, Englewood Cliffs
- Elster J (1989) Nuts and Bolts for the social sciences. Cambridge University Press, Cambridge
- European Commission (2012) Member state: Germany. Accompanying the document “Report from the Commission to the European Parliament and the Council on the Implementation of the Water Framework Directive (2000/60/EC)”, COM(2012) 670 final, Brussels
- Flynn B (2000) Is local truly better? some reflections on sharing environmental policy between local governments and the EU. *Eur Environ* 10:75–84
- Folke C, Hahn T, Olsson P, Norberg J (2005) Adaptive governance of social-ecological systems. *Ann Rev Environ Resour* 30:441–473
- Fung A (2006) Varieties of participation in complex governance. *Public Admin Rev* 66:66–75
- Fung A, Wright EO (2001) Deepening democracy: innovations in empowered participatory governance. *Polit Soc* 29:5–41
- Gerlak AK (2014) Policy interactions in human-landscape systems. *Environ Manage* 53:67–75
- Gibson CC, Ostrom E, Ahn T-K (2000) The concept of scale and the human dimensions of global change: a survey. *Ecol Econ* 32:217–239
- Hardin G (1968) The tragedy of the commons. *Science* 162:1243–1248
- Hedström P, Ylikoski P (2010) Causal mechanisms in the social sciences. *Ann Rev Sociol* 36:49–67
- Hein L, van Koppen K, de Groot RS, van Ierland EC (2006) Spatial scales, stakeholders and the valuation of ecosystem services. *Ecol Econ* 57:209–228
- Heinelt H, Schmitter PC, Smith R, Swyngedouw E, Getimis P, Kafkalas G (2002) Achieving sustainable and innovative policies through participatory governance in a multi-level context. Final Report, Darmstadt

- Hogl K, Kvarda E, Nordbeck R, Pregernig M (eds) (2012) Environmental governance. The challenge of legitimacy and effectiveness. Edward Elgar, Cheltenham
- Hooghe L, Marks G (2003) Unraveling the central state, but how? Types of multi-level governance. *Am Polit Sci Rev* 97:233–243
- Huitema D, Mostert E, Egas W, Moellenkamp S, Pahl-Wostl C, Yalcin R (2009) Adaptive water governance: assessing the institutional prescriptions of adaptive (co-)management from a governance perspective and defining a research agenda. *Ecol Soc* 14(1):26
- Hüesker F, Moss T (2015) The politics of multi-scalar action in river basin management: Implementing the EU Water Framework Directive (WFD). *Land Use Policy* 42:38–47
- Ingram H (2011) Beyond universal remedies for good water governance. In: Garrido A, Ingram H (eds) *Water for food in a changing world*, Routledge, London, pp 241–261
- Jager NW et al. (2016) Transforming European water governance? participation and river basin management under the EU water framework directive in 13 member states. *Water* 8:1–22
- Jordan A (2002) The Implementation of EU environmental policy: a policy problem without a political solution? In: Jordan A (ed) *Environmental policy in the European union: actors, institutions and processes*. Earthscan, London, pp 301–328
- Kaika M (2003) The water framework directive: a new directive for a changing social, political and economic European framework. *Eur Plan Stud* 11:299–316
- Kastens B, Newig J (2008) Will participation foster the successful implementation of the water framework directive? the case of agricultural groundwater protection in northwest Germany. *Local Environ* 13:27–41
- Kommunale Umwelt-AktioN U.A.N. (2006a) Protokoll des Erfahrungsaustauschs der wib für gemeindliche Vertreter zur Arbeit in den Gebietskooperationen am 09.03.2006, Hannover
- Kommunale Umwelt-AktioN U.A.N. (2006b) Protokoll des 2. Erfahrungsaustauschs der wib für gemeindliche Vertreter zur Arbeit in den Gebietskooperationen am 10.10.2006, Hannover
- Kommunale Umwelt-AktioN U.A.N. (2008) Protokoll des 4. Erfahrungsaustauschs der wib für gemeindliche Vertreter zur Arbeit in den Gebietskooperationen am 03.12.2007, Hannover
- Koontz TM, Newig J (2014) Cross-level information and influence in mandated participatory planning: alternative pathways to sustainable water management in Germany's implementation of the EU Water Framework Directive. *Land Use Policy* 38:594–604
- Koontz TM, Thomas CW (2006) What do we know and need to know about the environmental outcomes of collaborative management? *Public Admin Rev* 66:111–121
- Loubier S, Rinaudo JD, Garin P, Boutet A (2005) Preparing public participation at the catchment level: comparison of three methodologies applied to the Hérault river basin. *Water Sci Technol* 52:33–41
- Lower Saxony Ministry of Environment (2005) Erlass des Umweltministeriums vom 15.03.2005. Konzept für die Umsetzung der Wasserrahmenrichtlinie im Geschäftsbereich des Niedersächsischen Umweltministeriums - Bildung von Gebietskooperationen, Hannover
- Lower Saxony Ministry of Environment (2006) Ergebnisniederschrift über die Besprechung des Niedersächsischen Umweltministeriums mit den Leitungen und Geschäftsführungen der Gebietskooperationen sowie der erweiterten Fachgruppen OW, GW und der FG WA über die Umsetzung der EG Wasserrahmenrichtlinie am 12.09.2006 in Verden. Referat 21, Hannover
- Lower Saxony Ministry of Environment (2015) Niedersächsischer Beitrag zu den Bewirtschaftungsplänen 2015 bis 2021 der Flussgebiete Elbe, Weser, Ems und Rhein nach § 118 des Niedersächsischen Wassergesetzes bzw. nach Art. 13 der EG-Wasserrahmenrichtlinie, Hannover
- Meadowcroft J (2002) Politics and scale: some implications for environmental governance. *Landsc Urban Plan* 61:169–179
- Mitchell RB (2008) Evaluating the performance of environmental institutions: what to evaluate and how to evaluate it? In: Young OR, King LA, Schroeder H (eds) *Institutions and environmental change. principal findings, applications, and research frontiers*. MIT Press, Cambridge, pp 79–114
- Moss T (2003) solving problems of 'fit' at the expense of problems of 'interplay'? the spatial reorganisation of water management following the EU Water Framework Directive. In: Breit H, Engels A, Moss T, Troja M (eds) *How Institutions change. Perspectives on Social Learning in Global and Local Environmental contexts*. Leske + Budrich, Opladen, pp 85–121
- Moss T (2004) The governance of land use in river basins: prospects for overcoming problems of institutional interplay with the EU Water Framework Directive. *Land Use Policy* 21:85–94
- Moss T (2009) Intermediaries and the governance of sociotechnical networks in transition. *Environ Plan A* 41:1480–1495
- Moss T (2012) Spatial fit, from panacea to practice: implementing the EU Water Framework Directive. *Ecol Soc* 17(3):2
- Moss T, Newig J (2010) Multi-level water governance and problems of scale. Setting the stage for a broader debate. *Environ Manage* 45:1–6
- Newig J, Challies E, Jager N, Kochskämper E (2014) What role for public participation in implementing the EU floods directive? A comparison with the Water Framework Directive, early evidence from Germany, and a research agenda. *Environ Policy Governance* 24:275–288
- Newig J, Fritsch O (2009) Environmental governance: participatory, multi-level—and effective? *Environ Policy Governance* 19:197–214
- Newig J, Koontz TM (2014) Multi-level governance, policy implementation and participation: the EU's mandated participatory planning approach to implementing environmental policy. *J Eur Public Policy* 21:248–267
- NLWKN (2009) Niedersächsischer Beitrag für den Bewirtschaftungsplan für die Flussgebietseinheit Ems nach Art. 13 der EG-Wasserrahmenrichtlinie bzw. nach § 184a des Niedersächsischen Wassergesetzes, Lüneburg: Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz
- NLWKN (2012) Regionalbericht für das Hase-Einzugsgebiet. Darstellung der Grundwassersituation. Norden: Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten- und Naturschutz
- North Rhine Westphalia Ministry of Environment (2009) Steckbriefe der Planungseinheiten in den nordrhein-westfälischen Anteilen von Rhein, Weser, Ems und Maas. Oberflächengewässer und Grundwasser Teileinzugsgebiet Rhein/Wupper, Düsseldorf
- North Rhine Westphalia Ministry of Environment (2015) Steckbriefe der Planungseinheiten in den nordrhein-westfälischen Anteilen von Rhein, Weser, Ems und Maas. Bewirtschaftungsplan 2016–2021. Oberflächengewässer und Grundwasser Teileinzugsgebiet Rhein/Wupper, Düsseldorf.
- Oates WE (2002) A reconsideration of environmental federalism. In: Oates WE (ed) *Environmental policy and fiscal federalism. Selected Essays of Wallace E. Oates*. Edward Elgar, Cheltenham, pp 125–156
- Olson M (1969) The principle of "fiscal equivalence": the division of responsibilities among different levels of government. *Am Econ Rev* 59:479–487
- Ostrom E (1990) *Governing the commons. the evolution of institutions for collective action. political economy of institutions and decisions*. Cambridge University Press, Cambridge

- Ostrom E (2010) Polycentric systems for coping with collective action and global environmental change. *Global Environ Change* 20:550–557
- Ostrom V, Tiebout CM, Warren R (1961) The organization of government in metropolitan areas: a theoretical inquiry. *Am Polit Sci Rev* 55:831–842
- Paavola J, Gouldson A, Kluvánková-Oravská T (2009) Interplay of actors, scales, frameworks and regimes in the governance of biodiversity. *Environ Policy Governance* 19:148–158
- Pellizzoni L (2003) Uncertainty and participatory democracy. *Environ Value* 12:195–224
- Peters BG, Pierre J (2005) Multi-level governance and democracy: a Faustian bargain? In: Bache I, Flinders M (eds) *Multi-level governance*. Oxford University Press, Oxford, pp 75–89
- Ridder, D., Kastens, B., Borowski, I. (2007) Bericht zur Evaluierung der Öffentlichkeitsbeteiligung zur Umsetzung der WRRL in Niedersachsen. Studie im Auftrag des Niedersächsischen Umweltministeriums, Osnabrück, Hannover
- Rockloff SF, Moore SA (2006) Assessing representation at different scales of decision making: rethinking local is better. *Policy Stud J* 34:649–670
- Scharpf F (1997) Introduction: the problem-solving capacity of multi-level governance. *J Eur Public Policy* 4:520–538
- Schmidt VA (2013) Democracy and legitimacy in the European union revisited: input, output and ‘throughput’. *Polit Stud* 61: 2–22
- Schmitter PC (2002) Participation in governance arrangements: is there any reason to expect it will achieve “sustainable and innovative policies in a multi-level context”? In: Grote JR, Gbikpi B (eds) *Participatory governance. Political and societal implications*. Leske + Budrich, Opladen, pp 51–69
- Seecon Deutschland GmbH (2007) Ergebnisse der Interviews und Fragebögen zur Vorbereitung des Workshops “Untere Dhünn”
- Soma K, Vatn A (2009) Local democracy implications for coastal zone management - A case study in southern Norway. *Land Use Policy* 26:755–762
- Steele J (2001) Participation and deliberation in environmental law: exploring a problem-solving approach. *Oxford J Legal Stud* 21:415–442
- van Stigt R, Driessen PJJ, Spit TJM (2016) Steering urban environmental quality in a multi-level governance context. How can devolution be the solution to pollution? *Land Use Policy* 50:268–276
- Thomas JC (1995) Public participation in public decisions: new skills and strategies for public managers. The Jossey-Bass public administration series, 1st edn. Jossey-Bass, San Francisco
- WRc plc (2015) Assessment of Member States’ progress in the implementation of Programmes of Measures during the first planning cycle of the Water Framework Directive. Member State Report: Germany (DE)
- Wupperversand (2011) Protokoll der AG Morsbachsystem im Rahmen der WRRL&Kooperation zur Erstellung des Umsetzungsfahrplans Untere Wupper, 29.11.2011, Wuppertal
- Wupperversand (2012) WRRL - Umsetzungsfahrplan Hydro-morphologie für die Fließgewässer der Planungseinheiten PE_WUP_1000 Untere Wupper, PE_WUP_1100 Obere Wupper, PE_WUP_1200 Dhünn, Wuppertal
- Yearley S, Cinderby S, Forrester J, Bailey P, Rosen P (2003) Participatory modelling and the local governance of the politics of UK air pollution: a three-city case study. *Environ Value* 12:247–262
- Young OR (2002) The institutional dimensions of environmental change: fit, interplay, and scale. *Global environmental accords: strategies for sustainability*. MIT Press, Cambridge
- Young OR (2011) Effectiveness of international environmental regimes: Existing knowledge, cutting-edge themes, and research strategies. *Proc Natl Acad Sci USA* 108:19853–19860
- Young OR, Berkhout F, Gallopin GC, Janssen MA, Ostrom E, van der Leeuw S (2006) The globalization of socio-ecological systems: An agenda for scientific research. *Global Environ Chang* 16:304–316

Online supplementary material to

Disentangling puzzles of spatial scales and participation in environmental governance – The case of governance re-scaling through the European Water Framework Directive

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Table 1: Original interview quotes in German and their English translation.

No	German original	English translation
#1	<p>“Es waren halt Akteure da, mit denen man vorher nichts zu tun hatte. Ich hatte aber den Eindruck, die haben nicht teilgenommen, um ihre Machtposition da irgendwie auszubauen, sondern um zu gucken: Droht mir irgendetwas? Wollen die mir etwas wegnehmen? Wollen sie meinen Gewinn mindern, oder wollen sie mir wie in der Landwirtschaft neue Regeln aufdrücken, neue Probleme schaffen? Also nicht in dem Sinne, dass man da dachte, man bringt sich ein und kann seine Machtposition... hatte ich eigentlich nie den Eindruck. Nur so: Inwieweit bin ich betroffen, muss da gegensteuern?“ (LANUV, S.12)</p>	<p>There were stakeholders present with whom we weren't in contact before. However, I had the impression that they weren't there to strengthen their position of power but rather to see: Is there something threatening for me? Do they want to take something away from me? Do they want to lower my profit or do they want to impose new rules, cause new problems, like in agriculture? Not in the sense that one thought, one can participate and [can strengthen] one's position of power...I never got this impression. It was rather like: In what way am I affected, do I have to take action?</p>
#2	<p>“Es ist ja so, dass der Bewirtschaftungsplan und das Maßnahmenprogramm behördenverbindlich sind. Das heißt also behördenverbindlich für die Bezirksregierung, für die unteren Wasserbehörden, aber auch für die Kommunen. Dass ein Zwang dahinter steht, und zwar der Zwang, die Ziele der Wasserrahmenrichtlinie spätestens 2027 unter Ausschöpfung aller Verlängerungsmöglichkeiten zu erreichen. Auf der anderen Seite ist es immer so von Landesseite propagiert worden, dass der Umsetzungsprozess ein freiwilliger Prozess ist, dass die bösen Worte wie Enteignung und so nie in diesen Prozess nie in diesen Prozess eingebracht werden. Und Sie merken ja schon, da gibt es ein Spannungsfeld. Denn letztendlich, wenn man es zu 100% freiwillig umsetzen würde, [...] würden die Ziele niemals erreichbar sein, das muss man ganz klar sagen. Das heißt, angestrebt wird so viel Freiwilligkeit wie immer möglich ist, aber die Grenzen dieser Freiwilligkeit, die werden durch den Ablauf des Umsetzungsprozesses schon gesetzt. Mit anderen Worten, wenn man erkennt, da ist jemand, der bewegt sich überhaupt nicht, der muss sich aber bewegen, damit die Ziele erreicht werden, dann werden schon irgendwo die Schrauben bisschen angezogen. Da hat es eine Reihe von Leuten gegeben, die sich erst dann bewegt haben, nachdem dann der Druck doch ein bisschen größer geworden ist. Die vertreten möglicherweise, ob sie es mittlerweile auf Überzeugung tun, oder ob sie es tun, weil sie es tun müssen, die vertreten sicherlich ähnliche Positionen wie diejenigen, die sich freiwillig so gewandelt haben, aber ist schon unterschiedlich, wie sie da hingekommen sind.” (district government, #80:59#)</p>	<p>The thing is, the river basin management plan and the programme of measures are binding for public authorities. Which means they are binding for the district government, for the lower water authorities but also for the municipalities. Which means that there is pressure behind all that, the pressure to achieve the goals of the Water Framework Directive at the latest by 2027, using all the given opportunities for extension. On the other hand, the [federal] state government has always put forward that the implementation process is voluntary, that evil words such as expropriation were never used in this context. And you will notice, there is an area of conflict. Because ultimately, if you want to implement this on a 100% voluntary basis, you would never achieve the goals, this is very clear. That means, it is aspired to have as much voluntariness as possible but there are limits to this voluntary nature which are set in the course of the implementation process. In other words, if one notices that there is somebody who is not moving but who should act in order to achieve the goals, there are some ways to exert pressure. There were a couple of people who only acted after the pressure got more intense. They probably have a similar position as the people who voluntarily changed, either out of conviction or because they have to, but there was a different way of getting to this point of view.</p>
#3 24	<p>“Also es ist so, dass die Tagesordnung der Runden Tische, und die bestimmt ja natürlich letztlich auch</p>	<p>The thing is, the agenda of the round tables, which ultimately determines the content, this agenda is</p>

	<p>den Inhalt, dass [die] Tagesordnung schon von den Organisatoren vorgegeben wurde. Das hängt damit zusammen, dass die Runden Tische nur zum Teil Runde Tische zum Diskutieren [waren]. Und zum großen Teil, würde ich sogar sagen, eine Plattform zum Informieren waren. Weil dieser Prozess der Umsetzung der Wasserrahmenrichtlinie war ja ein Prozess, der sich vom Ministerium über die Bezirksregierungen zu den Kommunen, zu den Wasserverbänden erstreckt hat. Und da die Bezirksregierungen in der Mitte dieser Kette sitzen, ist es eigentlich immer so gelaufen, dass wir die Runden Tische benutzt haben, um die Informationen, die vom Umweltministerium kamen, die nächsten Schritte, wie geht es weiter, dass wir die da weitergegeben haben. Umgekehrt haben wir natürlich auch, muss man sagen, die Stimmung auf den Runden Tischen aufgefangen und in Form von Dienstbesprechungen an das Umweltministerium herangetragen haben.” (district government, #84:55#)</p>	<p>set by the organiser. This has to do with the fact, that the round tables were only partly for discussion. And in large part, I would say, they are more a platform to inform people. This is because the implementation process of the Water Framework Directive was a process that extended from the ministry to the district governments all the way to the municipalities and water boards. And because the district council is located in the centre of this chain, we usually used the round tables in order to give people the information that we got from the Ministry of Environment and inform them of the next steps that had to be taken and the way we would proceed. On the other hand, we used the feedback of the round tables and reported this back to the ministry of environment during our meetings.</p>
#4	<p>“Ich sag mal die Naturschutzverbände waren anfangs etwas engagiert oder engagierter. Aber das hat sich alles eingependelt. Es ist keiner vergessen worden, alle konnten ihre Meinung vertreten, es wurde fast auf alles Rücksicht genommen, was so machbar war.” (local agricultural association, #21:42#)</p> <p>“In diesen Runden ist sehr produktiv diskutiert wurden, eigentlich von allen Beteiligten. Das war auffallend, dass nicht jeder unbedingt seine Fahne verteidigt hat, sondern auch Verständnis für die anderen Belange hatte.” (Water association, #15:40#)</p> <p>“Wo es um unsere Themen ging, wo wir beteiligt waren, da waren schon die Akteure, die man sich vorstellen konnte und da auch beteiligt waren, die haben sich auch... ich denke auf Augenhöhe ist das diskutiert worden. Und sie haben sich auch da mit eingebracht und ich glaube auch, dass da keiner jetzt als der "Verlierer" rausgegangen ist. Ist mir in meinem Umfeld nicht bewusst geworden.” (Water association, #21:39#)</p>	<p>I would say that the nature conservation organisations were more engaged at the beginning. But this evened out over time. Nobody was forgotten, all could state their opinion, almost everything that was possible was taking into consideration.</p> <p>During these rounds, every participant was contributing to the discussion in a productive way. It was striking that not everybody was merely depending their point of view but the participants were also very understanding for other concerns.</p> <p>When it came to topics in which we were involved, there were these stakeholders present that you would imagine and they were also participating. ... I think the discussion was at eye level. And they did contribute and I don't believe that anyone left as a "loser". At least not in my environment that I was aware of.</p>
#5	<p>“Q: Wie haben sich dadurch so die Akteurskonstellationen verändert zwischen allen Akteuren, die wir jetzt so durchgegangen sind?</p> <p>A: Da muss ich sogar etwas Positives sagen. Denn Landkreistag, Städte- und Gemeindebund und wie</p>	<p>Q: How did the constellation between stakeholders change, regarding all the stakeholder that we mentioned so far?</p> <p>A: I must say something positive about that. Because you do see the association of counties, the</p>

	<p>die alle heißen, die sieht man da. Aber auch andere, zum Beispiel wieder eine IHK. Und da sagt man: Mann, ich hatte doch folgendes Problem. Wenn ich Sie gerade sehe, kann ich Sie da noch einmal eben drauf ansprechen? Oder haben Sie eine schnelle Antwort, oder darf ich Ihnen eine Email schreiben? Heißt also, unsere Gespräche sind nicht nur konzentriert auf Umsetzung Wasserrahmenrichtlinie, wir haben ja nebenbei noch etwas anderes zu tun. Und da ist durch diese Runden Tische und landesweiten Arbeitsgruppen und wie die Dinger alle heißen, ist man sich vertrauter geworden zwischen den Institutionen. So lästig dieses manchmal ist, und wie viel Arbeitszeit dieses bindet, aber diese Querverbindung, die ist dadurch deutlich besser geworden.“ (Chamber of agriculture, #31:47#)</p>	<p>association of towns and municipalities and whatever you might call them, you see them all there. But you also see others, for example chambers of industry and commerce. And you say: I did have this problem, now that I see you here, could we go over it quickly? Or do you have a quick answer or can I maybe send you an email? Meaning, our talks are not only focused on the implementation of the Water Framework Directive, we do have other things to do as well. And through these round tables and [federal] state-wide working groups and all those things, the institutions became more familiar with each other. However inconvenient it sometimes might be and the amount of work that goes into it, the interconnection actually clearly improved through it.</p>
#6	<p>“Was man generell anmerken muss, ist, dass auf den Runden Tischen im Grunde genommen die Bereitschaft bei den wasserwirtschaftlichen Akteuren erst einmal hergestellt worden ist, um in so einen Prozess, Umsetzungsplanung mit konkreten Maßnahmen einzusteigen. Ich glaube, dass wir die Umsetzungsfahrpläne und die Organisation der Umsetzungsfahrpläne, dass wir die nicht so gut hingekriegt hätten, wenn wir die Runden Tische nicht gemacht hätten. Denn die Leute sind auf den Runden Tischen sensibilisiert worden für den gesamten Umsetzungsprozess. Und als es dann in die Verfeinerung ging, in die Konkretisierung des Umsetzungsprozesses, da waren die soweit sensibilisiert, dass sie in der Lage waren zu sagen: Ja, jetzt kann ich da auch, in welcher Form auch immer, mitarbeiten. Insofern haben die Runden Tische schon eine ganz wichtige Schlüsselfunktion im Umsetzungsprozess erfüllt, das muss man schon sagen.” (district government, #91:05#)</p>	<p>What one can generally note is that the round tables essentially established the willingness of those stakeholders concerned with water management to enter such a process of implementation planning with concrete measures. I think, we wouldn't have been able to manage the implementation timetables and the organisation of the implementation timetables as well without the round tables. Because the round tables sensitised the people for the whole implementation process. And once we got to the refinement, to the concretisation of the implementation process, people were already sensitised so they were able to say, yes, I can cooperate, in what ever form. In this respect, the round tables did have a key function in the implementation process, I guess you can say that.</p>
#7	<p>“eigentlich hätte man das so machen müssen, aus dem Bereich der Gebietskooperation Hase einen Unterhaltungsverband, einen Kommunalvertreter, einen Landkreisvertreter, ein Forstvertreter, einen Fischereivertreter und einer der Naturschutzverbände. Das wäre sechs Leute plus ein bisschen Verwaltung, dann wären Sie bei 10 Leuten gelandet und das waren nachher weit über 20. So, weil, weil die Kommunen und die Landkreise - jeder wollte dabei sein, weil sonst könnte ja etwas zu seinem eigenen Nachteil da beschlossen werden. Und das waren schon mit die größten Startschwierigkeiten. Wer kommt überhaupt mit in diesen, in diesen Kreis rein und irgendwelche Angler sind dann an den Umweltminister rangegangen und dann wurde per</p>	<p>Actually, for there realm of the area cooperation Hase, one should have nominated one person from the maintenance association, one representative from the municipalities, one representative from the countries, one from forestry, one representative from fisheries and one from the nature conservation organisations. This would have been six people, plus some from the administration which would have yielded about 10 people. In the end, there were far more than 20 people, because everybody from the municipalities and the counties wanted to participate in case something would be decided to one's disadvantage. This was one of the biggest challenges in the beginning. Who is allowed to be part of this round? Some anglers went to the Environment Minister and eventually it</p>

	<p>Erllass beschlossen, dass die Fischereileute auch noch mit sitzen dürfen mit 2 Plätzen. Also einmal den behördlichen Fischereischutz und den [...] ehrenamtlichen Fischereischutz! Und da muss man die Frage stellen, das hätten wir mit Sicherheit kleiner aufziehen müssen. Und dann auch stringent. Dann wäre man glaub ich bei der ein oder anderen Fragestellung da besser bei gefahren. Es ist einfach so, wenn sie Gruppen haben über 20 Leute, [die] sind schwer steuerbar.” (Maintenance association, #19:38#)</p>	<p>was decided per decree, that people of the fisheries would also get two seats. One for the governmental and one for the voluntary fishery organisations. And you would have to ask, we would have to organise this in a smaller way. And more stringent. I think it would have been better for one or the other issue that arose. It’s just difficult to have groups with more than 20 people, they are hard to steer.</p>
#8	<p>“Und der Anspruch war ja auch da, dass die Gebietskooperationen stringenter organisiert sind, da sollte eben ein Vertreter der Städte und Gemeinden, [...] einer vom Landkreis [sein], auch wenn zwei oder drei Landkreise beteiligt waren. Aber es wurden meistens alle die kamen da mit aufgenommen, und dadurch wurde es immer mehr zum Lauschclub als zum Diskutierclub.” (environmental organisation, #13:56#)</p>	<p>And the idea was also that the area cooperations should be organised in a more stringent way, that there should be one representative from the cities and municipalities, [...] one from the county, even if one or two counties were involved. But most of the time, everybody that came was included and this way, there was less of a discussion and more of people merely listening.</p>
#9	<p>„Weil wir hatten ja alle Naturschutzverbände; in Niedersachsen haben wir 13 anerkannte Verbände, da gehören auch die Fischereileute dazu, da gehören auch die Jäger dazu, und was weiß ich was dazu gehört, irgendwelche Wandervereine. Aber die großen beiden sind natürlich der NABU und der BUND. [...] inzwischen wohl hatte auch diese Aufteilung der Flussgebiete in Teileinzugsgebiete [stattgefunden, das] hatte damals noch NLÖ [Niedersächsisches Landesamt für Ökologie] gemacht. Dann haben wir gesagt, für jedes Teileinzugsgebiet werden wir dann ohne weiteres einen finden, aber das war nicht so leicht. Letztendlich haben wir dann für jeden einen gefunden, aber erst so nach 1 - 1,5 Jahren.“ (Environmental organisation, #09:54#)</p>	<p>Because we did have all of the nature conservation organisations: in Lower Saxony we have 13 accredited organisations, which include fisheries, huntsmen and whatever else, some hiking clubs. But the biggest two are of course NABU and BUND. In the meantime, the delineation of the river basins in sub-basins was done by the NLÖ [state agency for ecology]. And then we said that we would easily find one representative for each sub-basin but it wasn’t so easy. Essentially we did find one for each sub-basin but only after 1 to 1 ½ years.</p>
#10	<p>“Die Gewässer haben auch bestimmte Aufgaben - ganz klar - und wenn man sich dieses Gebiet hier anschaut - das ist landwirtschaftlich und infrastrukturell sehr stark geprägt und wenn man diese Nutzung und Infrastruktur aufrecht erhalten will, müssen Gewässer eben bestimmte Funktionen erfüllen. So und ich denke mal, die Angst die da damals mit bei den Unterhaltungsverbänden vorherrschte ist mit Sicherheit gewesen, dass diese, diese Funktion der Gewässer nicht mehr vorhanden sein könnten mit den entsprechenden negativen Folgen. Man kann nicht [für] Gewässer einfach die Räumung einstellen. Das geht nicht. Das hat negative Auswirkungen auf die Infrastruktur - landwirtschaftliche Flächen, bebaute Bereiche, aber auch auf das Pflanzen und Artenpotential in diesen Gewässern.“ (maintenance</p>	<p>The water bodies clearly have determined functions. And if you look at this area, which is characterized by intensive agriculture and highly developed infrastructure, if you want to keep this utilisation and infrastructure, the water bodies have to fulfil certain functions. And I think the fear that most of the maintenance associations surely had was that the function of the water bodies wouldn’t exist anymore, which would have negative consequences. You cannot just stop cleaning and clearing water bodies. It doesn’t work that way. It has negative consequences for the infrastructure, agricultural areas, cultivated areas but also on the potential of plants and species in these water bodies.</p>

	<p>association, #08:25#)</p> <p>„Also ich sage jetzt mal so, wenn ich jetzt eine Flurneuordnung starte, und da muss jetzt der Straßenbau, der da stattfindet, der muss kompensiert werden, dann versucht man das natürlich schon in diesen Regionen mit den Bächen schon so hinzukriegen, dass das natürlich auch da in das Konzept hineinpasst. Also sprich Uferbepflanzung und was auch immer. Das ist das eine. Das andere ist natürlich, bei allem was man tut, sollte man natürlich auch das Ende bedenken. [...] das sehe ich dann so oft, das wird immer gerne gefordert, die kompletten Bäche sollen bepflanzt werden, möglichst von beiden Seiten, dann ist die Unterhaltung dieser Bäche natürlich wieder schwierig.“ (agricultural association, #43:27#)</p>	<p>I am phrasing it this way, if I am starting a rezoning programme and the road construction that is happening there has to be compensated for, you do try to implement it in the areas with water bodies in a way that fits into the concept. Meaning plantation of the banks and whatever. This is one thing. The other thing is of course, in everything you do, you should keep the end in mind. I see that a lot, people demanding that all of the creeks should be vegetated, preferably from both sides, that makes the maintenance of these creeks more difficult of course.</p>
#11	<p>“Also zum Beispiel die Stadt [anonymisiert] bearbeitet das Thema Gebietskooperation, oder Wasserrahmenrichtlinie, auch viel mehr im Sinne von Natur erleben, oder Öffnung der Gewässer für die Menschen, als dass sie sich die Qualitätskomponente Makrozoobenthos, oder Fische; das tut sie natürlich auch, aber immer natürlich im Kontext ‘schön, dass da Fische drin sind, weil das ist ja dann auch ein lebenswerter Lebensraum für die Menschen drum herum.’” (county, #12:47#)</p> <p>„Der Stand der Umsetzung, und was man noch machen kann. Wo man noch irgendwelche Sachen anpacken kann. Wir haben hier auch noch den Verein zur Revitalisierung der Haseauen, die auch viel an Umsetzungsarbeiten am oder im Gewässer machen. Das meiste ist zwar <i>um</i> den Gewässern, weil da dann die Zweckverbände alle schon wieder reinspielen, die lieber den Tourismus fördern wollen als die Umwelt. Deshalb haben wir teilweise hier auch viel mit Kanufahrern zu tun jetzt auf der Hase. Und der dann auch noch immer mehr gefördert wird, weil es da ja wieder Gelder gibt.” (environmental organisation, #45:05#)</p>	<p>For example the city of [...] looks at the issue of area cooperation or Water Framework Directive more from a perspective of making the water bodies more accessible for the people, providing a better access to nature instead of looking at the quality component of fish or macrozoobenthos. They do look at that but they evaluate it more in sense of “it’s a good thing that there are a lot of fish because that makes it a more attractive environment for the people”.</p> <p>The status of the implementation and what else could be done. Where other measures can be implemented. We have another association whose purpose is the revitalization of the Hase wetlands. They did a lot of implementation of measures around the water bodies. Most of it is done <i>around</i> the water bodies because the maintenance association would rather promote tourism instead of the environment. This is why we have to deal quite a lot with canoeists on the Hase. And there is quite a big promotion of that because there are more funds available.</p>
#12	<p>“im Gesamteindruck fand ich eher, dass das ein Ideenpool war teilweise und man auf der Basis eher relativ konstruktiv zusammen gearbeitet hat. Also ich hatte jetzt nicht dein Eindruck, dass da ganz große Gegensätze aufgetaucht hat. Selbst die, man müsste ja jetzt eigentlich denken, dass die Landwirte, die Vertreter der Landwirtschaft eher da, jetzt gegen gearbeitet haben, das stimmt aber nicht. Im Endeffekt sind, haben wir akzeptiert,</p>	<p>Regarding the overall impression, I would say that it was a pool of ideas and a rather constructive cooperation. I didn’t have the impression that there were many differences. Even then, you would think that farmers and representatives of agriculture would work against this but that wasn’t true. In the end, we accepted that the legal situation is the way it is in some areas and we were discussing how to solve the problems.</p>

	dass die Gesetzeslage so ist in einigen Bereichen und man hat halt diskutiert wie man die Probleme angehen kann.“ (water treatment, #30:46#)	
#13	<p>“Das fehlende Geld war eigentlich immer ein Dauerthema und die schon erwähnten 15.000 EUR waren ja im Grunde genommen verhinderten sie dass man wirklich intensiv plante, weil man genau gewusst hat, es bringt doch nichts dass man irgendwelche Überlegungen anstellt. Wir wissen dass das Land Niedersachsen nicht mehr als diese 15.000 EUR zur Verfügung stellt“ (Maintenance association, #17:56#)</p> <p>“Die große Problematik ist die Finanzierung. Das ist einmal das ganz große Problem, was wir haben. Und da hat man sich offensichtlich auch, als man diese Wasserrahmenrichtlinie da vollmundig, ich sage mal, propagiert hat, und reingetragen hat ins Land, da hat man sich wahrscheinlich im ersten Moment noch keine Gedanken darüber gemacht: Was kostet das eigentlich?“ (agriculture, #4:30#)</p>	<p>The lacking funds were a permanent issue and the aforementioned 15,000 EUR essentially prevented that anyone did intensive planning because you knew, that making plans didn't make sense. We know that the federal state of Lower Saxony won't provide more than these 15,000 EUR.</p> <p>The biggest problem is the funding. This is one of the main problems that we are facing. And clearly this wasn't thought of when the Water Framework Directive was introduced and propagated: How much is this going to cost?</p>
#14	<p>“Ich denke mal schon, dass es mit Sicherheit zu einer Annäherung der einzelnen Positionen über die Jahre geführt hat und auch zu einer erhöhten Akzeptanz gegenüber den Denkansätzen der anderen Teilnehmer. Das muss man glaub ich schon sagen“ (maintenance association, #29:25#)</p> <p>„für uns wars wirklich interessant und für uns hat - sind das Informationen, die wichtig sind um auch die Einleitung beurteilen zu können und um gegebenenfalls auch darauf hin zu wirken, dass man gegebenenfalls die Abwasserbeseitigungsstruktur vielleicht auch ändert. Wir haben zum Beispiel jetzt äh, ja wir wissen ja, dass der Mühlenbach zum Beispiel in Berge ein prioritäres Gewässer ist, ein FFH Gewässer [unter der EU Flora-Fauna-Habitat Richtlinie] und wir haben jetzt die Kläranlage in Berge aufgehoben nach Nortrup umgeleitet, das bot sich an, wobei der Waldbach in Nortrup ebenfalls ein FFH Gewässer ist, aber so können wir praktisch ein FFH Gewässer schonen.“ (Water treatment, #11:39#)</p> <p>„natürlich wenn es ums Thema Grundwasser ging bin nicht nur ich Akteur, sondern sind auch die unteren Wasserbehörden Akteur und auch verschiedene Kommunen und auch die Landwirtschaftskammer [...] hat auch entsprechende Fachkenntnisse, die sie einbringen</p>	<p>I would think that it surely led to a harmonisation of the individual positions over time and also to a bigger acceptance of other participants' approaches. I think one could say that.</p> <p>It was really interesting for us and these are pieces of information that are important in order to evaluate the discharge and if necessary work towards changing the structure of sewage disposal. For example, we know that the Mühlenbach in Berge is a water body that has high priority, a FFH water body [under the EU Habitat Directive] and we did transfer the sewage treatment plant to Nortrup even though the creek in Nortrup is also a FFH water body. But this way we were able to conserve one FFH water body.</p> <p>When we were talking about groundwater I am not the only stakeholder, there are the lower water authorities, the different municipalities and also the chamber of agriculture, which has</p>

	kann. Deswegen wurde da schon sich fachlich gut ausgetauscht und es ist aus meiner Sicht eben auch eine Bereicherung und ein Erkenntniszugewinn durch diesen Austausch. Also man, man hat natürlich [...] festgestellt, dass man [...] über die] Betroffenheit der anderen viel besser Bescheid wusste und das anders einschätzen konnte.“ (Water treatment, #19:18#)	corresponding expert knowledge that they could introduce. Therefore, there was a good professional exchange and in my point of view, there was an enrichment and also an acquisition of new knowledge and awareness due to this exchange. I noticed that it got easier to know about and estimate the other stakeholders' concerns.
#15	“Es war so, dass wir, dass es eine kurze Zeit gab, wo wir Maßnahmen zu benennen hatten, die wir auch in diese drei Schubladen eingepackt haben, was im Grunde auch ein Stück weit hier bei uns im Hase-Gebiet entwickelt wurde, weil man einfach Angst hatte vor der Verantwortung, dass man nachher für die Finanzierung verpflichtet wird. Das ist hier sicherlich ein bisschen intensiver diskutiert worden, insgesamt hat es hier eine Maßnahmenliste gegeben mit dieser großen Anzahl von diesen Maßnahmen, die dort benannt wurden, aber die Maßnahmen wurden im Prinzip ausschließlich von Unterhaltungsverbänden benannt. [...] ansonsten wars tatsächlich schon so, dass das von den Unterhaltungsverbänden geprägt war und dann nurmehr die Ergebnisse in der großen Runde in der Kooperation vorgestellt wurden. So das was wir auf Papier gebracht haben, das wurde an die Wand geschmissen, konnte auch jeder sich downloaden im Wasserblick [deutsche WFD online Plattform], aber dort haben sich die wenigsten noch intensiver eingebracht.” (NLWKN, #01:02:53#)	There was a short time, in which we had to denominate measures, which we did assign to one of the three categories. This was developed partly in our area, the Hase-area because there was this fear of the responsibility, that one would be obligated to funding it. This surely was discussed more intensely here. Overall, there was a list of measures with this big amount of measures but the measures were basically exclusively denominated by the maintenance association. [...] most of the time things were determined by the maintenance organisation and then the results were presented in a big round. So what we developed was presented and everybody could download it in the “Wasserblick” [German WFD online platform] but this was were not many people were participating intensely.
#16	“Und das Entscheide war dann, es gab ja die Ausweisung der erheblich veränderten Gewässer, heavily modified waterbodies, da hatten die NLWKN, [...] weiß ich nicht, die das zuerst bearbeitet haben. Die hatten einen Vorschlag gemacht, wie viel Prozent ausgewiesen werden als heavily modified, und wie viel nicht. Und dann hat die Landwirtschaft erkannt: Wenn wir Gewässer alle als erheblich verändert ausweisen, dann müssen wir nicht so viel an den Gewässern machen. [...] daher sind wir in Niedersachsen bei 85%.“ (Environmental organisation, #28:36#) „Und es war so, das war die einzige Aufgabe, wo die Gebietskooperationen selber was gemacht haben. Die sollten die erheblich veränderten Gewässer ausweisen.“ (Environmental organisation, #30:20#)	The important thing was, there was the denomination of the heavily modified waterbodies, I think it was the NLWKN [...], or I don't know, that first worked on this. They made a proposal regarding what percentage would be identified as heavily modified and what percentage wouldn't. And then the agriculture realized, if we identified all waterbodies as heavily modified, then we wouldn't have to do as much [...] and this is why we are at 85% in Lower Saxony. This was the only task that the area cooperations did themselves. They had to identify the heavily modified water bodies.
#17	“Aber es gab auch früher schon mal die Möglichkeit, dass zum Beispiel wenn ein Absturz umgebaut werden sollte in eine Sohlgleite, wurde ein Förderantrag gestellt und dann hat der	There has been a previous possibility, for example to rebuild a drop into a river bank revetment, an application for support was submitted and the maintenance unions said, in order to do this we

	<p>Unterhaltungsverband zum Beispiel gesagt, das Ding bauen wir für 15.000 EUR. Wir machen das mit eigenem Gerät, mit eigenem Personal, erhöhen dadurch die eigene Wirtschaftlichkeit und das Land spart Geld dadurch. Aber mit ja, FDP Politikern im Land wurde gesagt, das wollen wir nicht mehr, es muss alles ausgeschrieben werden und es muss vergeben werden. So und dadurch ist, so seh ich das, und auch ein paar andere Kollegen, gewisses Interesse an solchen Maßnahmen-na klarerlahmt.“ (Maintenance association, #46:18#)</p>	<p>need 15,000 EUR. We are doing it with our own equipment, our own staff, we are increasing the cost effectiveness and the [federal] state is saving money. But yeah, with politicians from the FDP [German liberal party] it was said that this doesn't work that way anymore, everything has to be tendered and then awarded to someone. And in my and also some colleagues' point of view, this led to a decrease of interest in these kind of measures.</p>
#18	<p>“[...] darauf haben wir ja auch gesehen, dass nicht mehr alles Holz weggemacht wird. Und wir werden jetzt sehen, wie es sich hier weiterverhält. Und somit sind wir hier in diesen Gebiet eigentlich Vorreiter, wieder Bäume am Gewässer stehen zu lassen, um auch eine Beschattung in den Gewässern zu kriegen, und ein Ufererhalt. Und dass man dort einen vernünftigen Fluss wieder hat.“ (Fishery, #14:40#)</p>	<p>[...] regarding that we also noticed that not all of the wood was removed. We will now see how this will go on. This makes us pioneers in this area, to have more trees at the water bodies in order to get shadows and a preservation of banks into the water bodies. In order to create a better stream.</p>
#19	<p>“also es war so, dass natürlich auch die Ziele der Wasserrahmenrichtlinie den Unterhaltungsverbänden bekannt waren und die waren natürlich bemüht im Rahmen ihrer Unterhaltungsmaßnahmen auch Querbauwerke zu entfernen. Das ist ja dann auch so nach und nach erfolgt, [...]. Von Hammerstein haben sie an der Mühle haben sie auch ein Querbauwerk wieder zusammen entfernt und ja, das sind alles so Dinge, die werden ja nicht vom Land unterstützt, sondern die laufen praktisch dann auf der Ebene der Unterhaltungsverbände was jetzt Oberflächengewässer betrifft. Aber so direkt, dass die Gebietskooperation irgendeine Maßnahmen umgesetzt hat, die dann jetzt wirklich dann auch eine maßgebliche Aufgabe - also sagen wir mal eine maßgebliche Erfüllung der Wasserrahmenrichtlinie herbeigeführt hätten [...] - das kann man nicht sagen. Das, weil einfach da der - ja wie soll ich sagen - im Endeffekt wären die, sind die Kosten für die Umsetzung der Wasserrahmenrichtlinie viel zu hoch. Das muss über Fördermittel durchs Land erfolgen, langfristig. Zum Beispiel hat man jetzt über Flurbereinigung - ja, da hat der Landkreis das ein oder andere renaturiert. Zum Beispiel am Reitbach sind glaub ich mittlerweile 2-3km mit einer Aue versehen worden im Zuge von Flurbereinigungsmaßnahmen. Das sind dann alles so Maßnahmen wo man versucht Ausgleichsflächen zu, ja einzubinden, um letztlich auch die Ziele der Wasserrahmenrichtlinie umsetzen zu können. Wir haben auch bei dem Ausbau der Kläranlage in Nortrup mussten wir ja</p>	<p>The maintenance organisations of course knew about the goals of the Water Framework Directive and they made an effort within the realm of their measures of maintenance to remove barriers. This did happen little by little. They did remove structural obstacles starting from Hammerstein at the mill so these are all things that are not supported by the [federal] state but are more happening on the level of the maintenance associations, regarding surface waters. But in a sense that the area cooperation implemented measures that significantly led to a compliance with the Water Framework Directive – I don't think this happened. Because in the end, the costs for the implementation of the Water Framework Directive are way too high. In the long run, this would have to be done through subsidies of the [federal] state. There were some renaturations by the county, for example the Reitbach, I think there are now 2-3 km of wetlands as part of plot realignment. These are all types of measures where you try to include buffer strips in order to achieve the goals of the Water Framework Directive. As part of the extension of the sewage treatment plant in Nortrup we also had to create buffer strips and we simultaneously funded part of the works at the Reitbach. I think it was something like 10,000 EUR. The use of the area cooperation is ultimately that you use things like that in order to achieve the goals of the Water Framework Directive. And essentially it is also enforced through the area cooperation. It's a very important part of the area cooperation.</p>

	<p>auch Ausgleich schaffen und da haben wir auch einen Teil dieser Strecke am Reitbach mitfinanziert. Ja, 10.000 EUR oder sowas. Und das ist auch Sinn der Gebietskooperation, dass man letztlich auch solche Sachen, ja, gezielt zur Erfüllung der Ziele der Wasserrahmenrichtlinie nutzt. Ja, und das wird im Prinzip durch diese Gebietskooperation auch mit forciert. Das ist ein ganz wichtiger Ausfluss der Gebietskooperation.“ (treatment association, 2-#04:26#)</p>	
#20	<p>“Q: Um es da vielleicht ein bisschen umzubrechen, was wären dann so die Interessen der Kommunen? [...]”</p> <p>A: Also ein Aufhänger für die Gemeinden ist sicherlich bei manchen Hochwasserschutz gewesen. Dann ist es das Landschaftsbild. Für die Gewässer dritter Ordnung habe ich ganz klar die rechtliche Aufgabe der Gewässerunterhaltung, sprich der Pflege und Entwicklung.” (municipal association, #17:20#)</p> <p>„Q: Sie haben gerade gesagt „typische gemeindliche Interessen“. Was sind das? Was ist, in dieser Gebietskooperation, die da reingetragen worden?”</p> <p>A: Ja, typische gemeindliche Interessen, das sind diejenigen Fragen, mit denen wir uns täglich auseinandersetzen. Bauleitplanung, also die über Bauleitplanung umgesetzt werden. Fragen der Attraktivität der Landschaft, Erholungsnutzen von Landschaft. Aber auch die ganzen Interessen, wenn man all die Verantwortlichkeiten, insbesondere existenzielle Fragen wie Hochwasserschutz nimmt, dann ist das natürlich ein Interesse der Gemeinde. Wo man natürlich auch gerade beim Thema, wo es um das Wasser geht, wo man als Gemeinde auch froh ist, wenn man sagen kann: Das, was passiert, passiert auch im Interesse des Hochwasserschutzes, für den wir ja selbstverständlich verantwortlich sind.“ (municipality, #36:40#)</p>	<p>Q: To break it down a bit more, what were the interests of the municipalities? [...]</p> <p>A: For some municipalities flood protection was certainly one access point, and the scenic value of the landscape. For third order water bodies, they clearly have the legal responsibility of maintenance and development.</p> <p>Q: You just mentioned ‘municipal interests’. What are these? What was brought to the table in this area cooperation?</p> <p>A: Typical municipal interests are those issues that are occupying also our every-day work. Things that are implemented through land use planning. Issues of the scenic and recreational value of the landscape. But also, regarding responsibilities, existential issues such as flood protection. When it comes to issues of water, you are glad as a municipality when you can say: the things that are done are also in the interest of flood protection, for which we are responsible.</p>
#21	<p>“Q: War die Größe der Gebietskooperationen, eben orientiert an diesen Teileinzugsgebieten, war das sinnvoll?”</p> <p>A: Wie ich sagte, Schleswig-Holstein hat genauso so viele Arbeitsgruppen wie wir Gebietskooperationen haben. Während Niedersachsen doppelt so groß ist. Also die sind schon ziemlich groß. [...] Man könnte sagen: Grenzwertig. [...] und das Problem natürlich, und da muss man sich auch klar darüber sein, dass als Naturschutzverband, auch der Leuchtturm [deren</p>	<p>Q: Was the size of the area cooperation oriented at the sub-basins, did that make sense?</p> <p>A: As I said, Schleswig-Holstein [neighboring federal state] has as many working groups as we have area cooperations. Lower Saxony is twice as big so you could say that they are pretty big. [...] you could say borderline [...] and the problem which one has to keep in mind is that the nature conservation organization and his representative is</p>

	Repräsentant] oder wie auch immer, der wird auch nicht alles kennen.“ (Environmental organisation, #36:32#)	not going to know everything.
#22	“Aber bei einer letzten Besprechung sind aus den Maßnahmenplänen diese Kooperationsgruppen entwickelt wurden. Da ist ja zum Beispiel eine für den Morsbach, und da bin ich zuletzt mit beigewesen, und da wurde dann auch in Gruppen vor den Plänen diskutiert. Das heißt also, da das [Planungsbüro], das Vertreter zu den Gesprächen gestellt hatte, die Pläne überall aufgehängt hatte und man konnte dann vor den Plänen mit diesen Vertretern des Planungsbüros die Dinge besprechen, das fand ich eigentlich sehr gut. Man konnte sich die Pläne ansehen und hatte dann vielleicht die lokalen Kenntnisse.” (Nature protection, #12:58#)	In one of the last meetings the programme of measures led to the development of the cooperation groups. For example, there is one for the Morsbach in which I was involved until the end and this is where the groups in front of these plans and maps. This means, the planning bureau sent representatives to the meetings and distributed the plans everywhere and this way, you could discuss the plans with representatives of the planning bureau, which I thought was a good thing. You could look at the plans and then maybe held the local knowledge.
#23	“Zur WRRL bin ich gekommen als Vertreter des [anonymisiert], und in diese Schiene kamen die Einladungen zum jeweils Runden Tischen - das ist ja eine Vielzahl mittlerweile, das kann ja ein Ehrenamt fast gar nicht mehr leisten.” (local agricultural association, #02:07#)	I came to the WRRL as a representative of [anonymised] and this is how we got the invitations to each round tables. There are so many by now, it is almost impossible to do it as a volunteer.
#24	„diesen Dachverband gibt es noch gar nicht so lange. Rund um die Hase gibt es einige Institutionen, die irgendwann mal gegründet worden sind, die auch teilweise schon sehr alt sind. Aber dieser Dachverband, also dieses Dach über den betroffenen Unterhaltungsverbänden ist wirklich zu Beginn der Wasserrahmenrichtlinie gegründet worden. Hatte am Anfang noch gar nicht so viel, böse gesagt, dämmerte ein bisschen vor sich hin, oder hat man erst mal nicht richtig wahrgenommen in seiner Funktion. Das hat sich geändert, seit dem es wirklich Maßnahmen gibt, wo eben dann auch die Trägerschaft ein Thema wurde. Und dann der Dachverband als Antragsteller aufgetaucht ist im Rahmen der Förderrichtlinie.“ (county 2-#1:16#)	This umbrella organisation hasn't been in place for so long. There are some institutions in the Hase area that are quite old but this umbrella organisation of maintenance organisations was founded right in the beginning of the Water Framework Directive. In the beginning it didn't do that much, its function hasn't really been obvious. But ever since measures were introduced this has changed, when the sponsorship and responsibility became a bigger topic. This is when the umbrella organisation emerged in the context of the directive.

Article [A3]:

Transforming European Water Governance? Participation and river basin management under the EU Water Framework Directive in 13 member states

Abstract

The EU Water Framework Directive (WFD) requires EU member states to produce and implement river basin management plans, which are to be designed and updated via participatory processes that inform, consult with, and actively involve all interested stakeholders. The assumption of the European Commission is that stakeholder participation, and institutional adaptation and procedural innovation to facilitate it, are essential to the effectiveness of river basin planning and, ultimately, the environmental impact of the Directive. We analysed official documents and the WFD literature to compare implementation of the Directive in EU member states in the initial WFD planning phase (2000-2009). Examining the development of participatory approaches to river basin management planning, we consider the extent of transformation in EU water governance over the period. Employing a mixed quantitative and qualitative approach, we map the implementation ‘trajectories’ of 13 member states, and then provide a detailed examination of shifts in river basin planning and participation in four member states (Germany, Sweden, Poland and France) to illustrate the diversity of institutional approaches observed. We identify a general tendency towards increased, yet circumscribed, stakeholder participation in river basin management in the member states examined, alongside clear continuities in terms of their respective pre-WFD institutional and procedural arrangements. Overall, the WFD has driven a highly uneven shift to river basin-level planning among the member states, and instigated a range of efforts to institutionalise stakeholder involvement - often through the establishment of advisory groups to bring organised stakeholders into the planning process.

Keywords: River basin management; participation; stakeholder engagement; integrated water resources management; institutional adaptation; mandated participatory planning.

Article

Transforming European Water Governance? Participation and River Basin Management under the EU Water Framework Directive in 13 Member States

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Abstract: The European Union (EU) Water Framework Directive (WFD) requires EU member states to produce and implement river basin management plans, which are to be designed and updated via participatory processes that inform, consult with, and actively involve all interested stakeholders. The assumption of the European Commission is that stakeholder participation, and institutional adaptation and procedural innovation to facilitate it, are essential to the effectiveness of river basin planning and, ultimately, the environmental impact of the Directive. We analyzed official documents and the WFD literature to compare implementation of the Directive in EU member states in the initial WFD planning phase (2000–2009). Examining the development of participatory approaches to river basin management planning, we consider the extent of transformation in EU water governance over the period. Employing a mixed quantitative and qualitative approach, we map the implementation “trajectories” of 13 member states, and then provide a detailed examination of shifts in river basin planning and participation in four member states (Germany, Sweden, Poland and France) to illustrate the diversity of institutional approaches observed. We identify a general tendency towards increased, yet circumscribed, stakeholder participation in river basin management in the member states examined, alongside clear continuities in terms of their respective pre-WFD institutional and procedural arrangements. Overall, the WFD has driven a highly uneven shift to river basin-level planning among the member states, and instigated a range of efforts to institutionalize stakeholder involvement—often through the establishment of advisory groups to bring organized stakeholders into the planning process.

Keywords: river basin management; participation; stakeholder engagement; integrated water resources management; institutional adaptation; mandated participatory planning

1. Introduction

The European Union (EU) Water Framework Directive (WFD), with its aim to protect and restore the European water environment via participatory and integrative river basin management, is widely regarded as the most ambitious and comprehensive piece of EU environmental legislation to date. Adopted by the European Parliament and Council in 2000, the WFD (Directive 2000/60/EC) sought to harmonize EU water policy, which was until then highly compartmentalized and had failed to safeguard aquatic ecosystems and water quality within the EU [1,2]. The WFD, one of a “new generation” of EU environmental directives [3], was seen by the European Commission and commentators alike as destined to transform the European water sector [4–6]. The Directive introduced the concept of “good status” (ecological and chemical for surface waters, and chemical and quantitative for groundwater), requiring that all water bodies reach good status by the end of 2015. To this end, the WFD set ambitious procedural requirements and means by which its goals should be achieved. Among other innovations, it requires that planning and implementation be carried out: (1) at the scale of hydrologically defined river basin districts (RBDs); and (2) in a participatory manner, encouraging the active involvement of “all interested parties”—including water users, other stakeholders, and the wider public. Together, these requirements have necessitated widespread institutional redesign and adaptation (albeit to differing degrees) among the member states, and thus resulted in a wide variety of experiences across the EU.

With the entering into force of the Directive, member states were required to identify RBDs and river basin authorities, and make legislative provisions for implementation by the end of 2003. Implementation then proceeds in six-year cycles, and involves the production and updating of river basin management plans (RBMPs) and programs of measures (PoMs) with the involvement of stakeholders and the public. Member states were required to have produced the first RBMPs and put in place PoMs by 2009. With the implementation of these first plans and the completion of the first management cycle (2009–2015), it appears timely to assess whether the WFD has actually lived up to expectations and led to institutional redesign as envisaged. Insofar as this “mandated participatory planning” approach to WFD implementation [7] requires specific deliverables and procedures, and imposes a common timeframe on member states, a broad comparative analysis of national-level experience across the EU can potentially provide valuable insight into how implementation is proceeding given the varied national contexts that the Directive encounters.

We focus in this article on the evolution of formal arrangements for participatory river basin management in 13 member states over the initial planning phase (2000–2009). Section 2 considers the river basin management and participation prescriptions of the WFD in light of the participatory environmental governance literature, and takes stock of prior comparative studies of WFD implementation. Section 3 outlines our methods, before Section 4 presents a mapping of “implementation trajectories” across the selected member states, and explores different experiences with WFD implementation, focusing on four member states (France, Germany, Poland and Sweden) for illustrative purposes. Section 5 draws conclusions and makes recommendations for further research.

2. EU Water Framework Directive: Key Requirements, Policy Innovations, and Assessments to Date

2.1. River Basin Management

In accordance with the Directive (WFD Art. 3), member states are required to assign all river basins within their territories to river basin districts, and make necessary institutional provisions—including the establishment of a competent authority—for application of the Directive within these RBDs. International basins are to be dealt with by member states in cooperation, although each member state is ultimately responsible for the portion of any basin within its territory. Accordingly, the EU has been divided into 128 RBDs, including 49 that span national borders. These new management units thereby transcend and intersect established jurisdictional boundaries at multiple levels, requiring cooperation among authorities and units that may not have shared responsibilities previously [8]. The extent to which this scalar shift has actually occurred is the subject of some debate [9–11], but such reorganization clearly implies an important transition in European water governance.

The river basin management approach adopted in the WFD can be attributed to a gradual paradigm shift towards more integrated resource management that has shaped European water governance over the last two decades [12,13]. The logic behind transitioning to a system of ecosystem-based water resources management in river basins lies in two basic, interrelated arguments. First, in line with the idea of spatial “fit” between the geographical extent of a natural resource and the territorial scope of responsible institutions [11,14], it is assumed that the management of water resources in river basins is most efficiently and effectively overseen by authorities organized at that scale. Second, according to principles of integrated water resources management (IWRM), sustainable management of water resources can only occur in the context of integrated and coordinated management of resources and the environment at large. Therefore, water policy in a given basin should take account of and be coordinated with policy in multiple other sectors, such as agriculture, conservation, fisheries, energy, and so on. Proponents of IWRM thus explicitly advocate for balancing social and ecological concerns in river basins, calling for “co-ordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems” [15] (p. 22). Both of these discourses shaped the WFD [16,17] and are clearly reflected in the text of the Directive (e.g., WFD Preamble (16); Art. 3 (2–5)).

It is worthwhile noting that water governance institutions on river basin scales are no panacea for effective and legitimate water resource management [18,19]. Empirical evidence on the performance of such institutions is still rare [20,21], and the appropriateness of hydrological units as the “natural” and “ideal” scale for water governance is increasingly questioned (e.g., [22–24]). In particular, IWRM and river basin management conflict to the extent that an integrative management approach may require addressing social and environmental processes and resources that do not conform to the boundaries of a given river basin. Hence, “fitting” institutions to water resources may create new misfits in other policy fields [11]. Delineating a hydrologically defined catchment or river basin for management purposes is a political decision [25], requiring trade-offs between environmental and social factors, and competing interests [23,24], whereas notions of river basins as the given “natural” units for management have been critiqued as depoliticizing water management [22,26].

2.2. Public Participation

A second notable innovation of the WFD is its requirement for stakeholder involvement in the river basin management planning process. The Directive stipulates timeframes and procedures for the provision of information and for consultation at key stages of the planning process, and requires that member states “encourage the active involvement of all interested parties in the implementation of this Directive, in particular in the production, review and updating of the river basin management plans” (WFD Art. 14 (1)). On the one hand, the intent of the Directive in this regard is clear, with participation being seen as essential for successful implementation (WFD Preamble (14)). On the other hand, the wording of the Directive is in some respects highly ambiguous, and leaves considerable room for interpretation as to who should be involved, at what stage, and how—especially around the “obligation to encourage” active involvement [27,28]. While public participation is strongly advocated in the Common Implementation Strategy (CIS) and associated guidance documents (e.g., [29]), these remain legally non-binding, and knowledge of such guidance documents among implementing bodies can be poor [30]. Despite the vision for participatory planning reflected in the CIS and implied in the preamble to the WFD, the actual legal requirements in Article 14 of the Directive focus mainly on information provision and consultation. Further, the advanced technical requirements of the Directive may restrict its compatibility with the provisions for participation [10], and may therefore serve to affirm business-as-usual expert-led consultative approaches.

The WFD provisions for participatory planning can be seen in terms of a codification and institutionalization of what has been labeled a “shift from government to governance” in the management of resources and the environment in Europe and beyond [17,31]. While its extent and nature are hotly debated, the idea of a shift to governance is supposed to capture a general decline over the last several decades in the expert-led managerial governing paradigm, and the increasing involvement of non-state actors—including organized stakeholders and the general public—in public decision-making [32]. This process has been driven both from “below” as citizens have demanded more say in the decisions that affect them, and from “above” as authorities have sought to realize certain benefits of involving stakeholders and the public in decision-making. In this sense, the rationale behind the statutory obligation for participation in the WFD is clearly a pragmatic and instrumental one [33,34], as the CIS guidance document on public participation spells out: “Public participation is not an end in itself but a tool to achieve the environmental objectives of the Water Framework Directive” [29] (p. vi).

While numerous definitions can be found in the literature, there is general agreement that participation is a fundamentally multi-dimensional concept. Following Fung [35] and Newig and Kvarda [36], participatory processes may be assessed by considering at least three dimensions: (1) participation may be more or less inclusive of relevant stakeholders and the public; (2) information exchange may be more or less intensive, ranging from simple one-way provision or elicitation of information, to intensive and repeated face-to-face dialogue and deliberation; and (3) power, in the form of process and decision control, may be delegated to participants to a greater or lesser extent, affording differing degrees of influence over the final plan or decision. The literature is replete with

hypotheses on the relationship between participation and environmental impact [37], but evidence is highly conflicting, with findings from numerous empirical studies supporting a variety of competing claims. Despite conflicting evidence, it is assumed that participation can improve the environmental quality of decisions through opening decision-making up to environmental concerns; incorporating environmentally relevant lay or local knowledge; fostering learning, innovation and creative solutions; and producing common-good oriented solutions and mutual gains (e.g., [32,38–40]). Furthermore, participation may improve implementation and compliance by producing more feasibly implementable decisions; generating acceptance among stakeholders; resolving stakeholder conflicts and conflicts of interest; and building trust and social capital relevant for implementation (e.g., [35,40–42]).

2.3. Assessments of WFD Implementation to Date

Research on WFD implementation has proliferated over the last decade. We focus in the following sections on developments relating specifically to the institutionalization of river basin management, and the adoption of participatory planning across the member states. Of course evidence in relation to these shifts is also mixed, and there is considerable (and arguably quite justified) skepticism as to the extent to which the Directive has brought about real change from business as usual [31,43–45]. While many critiques point to the experiences of single countries or particular case studies, there are fewer attempts to arrive at a broader comparative view. That said, several comparative studies have provided some valuable and relevant insights.

The European Commission itself is monitoring implementation of the Directive, and the first comprehensive implementation reports were required from the Commission in 2012. These comprised member state-specific assessments, as well as a “European overview” and a report to the European Parliament and the Council [46,47]. The 2012 assessment noted that 24 of 27 member states had submitted RBMPs, and that 124 of an expected 174 RBMPs had been received [46] (p. 4). Regarding legal and institutional adaptation and the development of appropriate governance structures for integrated river basin management, the report found that this had “not taken place in most Member States, where there is a continuation of the status quo” [46] (p. 8). Furthermore, the designation of hydrologically defined RBDs was found to have taken place in most cases, but with notable exceptions where administrative borders were taken to define RBDs [47]. Coordination among different authorities operating at the RBD scale was also found to be highly variable [47]. The report was less clear on public participation in the planning process, identifying good examples of mechanisms for stakeholder involvement, but also considerable difficulties in establishing the effectiveness and influence of these. Furthermore, the Commission reported having received complaints about participatory processes that have failed to facilitate meaningful input and involvement by stakeholders [47].

Aside from the Commission’s monitoring reports, which are based on member states’ own reporting, several studies have examined WFD implementation in comparative perspective. Analyzing consultation documents produced by all member states up to February 2009, Kampa *et al.* [48] assessed consultation processes around the identification of significant water management issues and the drafting of RBMPs. Regarding active involvement, they found that stakeholders participated in an advisory capacity via working groups in around half of all RBDs, and were involved in actual decision-making in approximately 20%. Working group composition, however, was found to vary depending on the administrative level at which the groups were convened, but overwhelmingly comprised government representatives. Also investigating consultation processes, Scheuer and Rouillard [49] surveyed experts and NGO representatives across Europe in an investigation of stakeholder consultation on significant water management issues and measures. They found that participation processes did not meet the expectations of environmental NGOs, who generally felt they were brought into the process too late and had insufficient influence over decisions. Hedin *et al.* [50] investigated the implications of WFD implementation for national spatial planning in eight Baltic Sea region member states plus Norway. Their detailed country reports showed that WFD implementation up to 2006 was in most cases adapted to prevailing institutional settings in water management, representing a “minimalist approach” to implementation, and rather limited institutional adaptation.

Focusing on the same region, Nielsen *et al.* [51] analyzed six member states. They found a high degree of centralization in the planning process, with less involvement of local authorities than expected. They also observed limited uptake of local knowledge, which they find obstructs integrated river basin management. Keessen *et al.* [52] compared legal provisions for WFD implementation in 11 member states, and concluded that the Directive leaves so much room for policy discretion by member states that it produces vastly different approaches to implementation—including in the realm of policy integration—and hampers comparative analyses of implementation. In their detailed analysis of five member states, Uitenboogaart *et al.* [53] also considered the degree of policy discretion member states have in implementing the Directive, comparing pre-WFD conditions, formal transposition, goal-setting, and policy integration to find widely varying degrees of ambition among the member states studied. Similarly, Bourblanc *et al.* [54], considered different levels of ambition for WFD implementation through an examination of political-institutional systems in four member states. Other studies have compared a variety of governance adaptations and approaches to participation in different member states (e.g., [55–58]).

Many of the studies mentioned above usefully adopt a “before and after WFD” approach, but most broadly comparative research does not cover the full initial planning phase. Further, more attention has been paid to legal adjustments and consultation processes at the earlier stages of the implementation process, than to actual institutional adaptation at the river basin level or the active involvement of stakeholders and the public. However, these studies clearly do provide valuable insights. Above all, the research suggests that progress towards meeting the substantive targets of the WFD has been varied, and fulfillment of its procedural requirements patchy. These diverse experiences are increasingly recounted in the burgeoning literature on WFD implementation, as standalone or small-n case studies. Below we report on our survey of this literature, and aim to structure the variety of experiences across 13 member states in terms of formal institutional shifts to river basin management and innovations in public and stakeholder participation. We chose these 13 states (Austria, Czech Republic, Denmark, England and Wales, France, Germany, Hungary, Ireland, Netherlands, Poland, Scotland, Spain, and Sweden) to reflect the variety of geographical conditions and political, and institutional experiences among the 28 EU member states (although Scotland is not an EU member state, it is handled separately in our analysis due to characteristics of its water management regime that set it apart from England and Wales). The availability and accessibility of sufficient information in scientific literature was also an important determining factor.

3. Materials and Methods

To allow for a structured analysis of WFD implementation across EU member states, we identified two basic parameters as the basis for cross-case comparison: public participation, and river basin-scale management. Regarding participation, we are interested in “active involvement” as provided for by the Directive (WFD Art. 14) and discussed above. Accordingly, our focus lies on activities and initiatives geared towards active involvement of stakeholders and the public in the river basin management planning phase. Building on multi-dimensional conceptualizations of participation as discussed in the previous section, we defined five characteristic dimensions:

- Accessibility of the process: The extent to which access to the process by stakeholders and the public was constrained (e.g., presence of barriers or selection processes that regulated the access of potential participants).
- Representation of interests: Degree to which the constellation of interests involved in the participatory process was representative of the underlying stakeholder field.
- Power delegation to participants: The extent to which participants were able to influence the decisions to be taken (degree of decision-control granted to participants).
- Communication and information sharing: The extent to which the process provided opportunities for participants to engage in communicative interactions with each other and the authorities (e.g., listen as spectator *vs.* deliberate and negotiate).

- Number of participatory processes: Number of separate process types comprising the participatory planning process.

The WFD requires preparation of RBMPs and PoMs on hydrological scales, but this prescription does not necessarily produce institutional adaptation and rescaling of planning competences. Therefore we assess the scalar position of main responsible actors—*i.e.*, whether they are established at hydrological or administrative scales—in the policy process, for which we defined four factors:

- Spatial planning reference: The scale serving as the main reference point for water resources management, either hydrological or administrative.
- Legal responsibility: The institution that is legally responsible for water resources management and designated as Competent Authority under the WFD.
- Planning responsibility: The actor or institution that drives and oversees the planning process.
- Implementation responsibility: The actor or institution with primary responsibility for implementation of measures.

The data basis for this analysis comprises various primary and secondary studies and documentary sources. The first step was a 2010 research workshop, involving the co-authors of this article, which compared the water governance regimes and experiences with WFD implementation in EU member states. In their capacity as country experts, workshop participants provided detailed information on the water management regime for their respective country, both prior to and after WFD implementation. In a second step, these standardized workshop reports were augmented with a thorough literature and document search on water resources management and WFD implementation in the countries of interest.

We chose to examine 13 countries, namely Austria, the Czech Republic, Denmark, England and Wales, France, Germany, Hungary, Ireland, the Netherlands, Poland, Scotland, Spain, and Sweden. This selection was made on analytical and practical grounds. It was our objective to cover a wide variety of environmental and political contexts; hence, we selected cases across most of the European regions. However, our research design also aimed at triangulation of data sources to maximize validity. Hence, we chose to rely only on those cases where the expert judgments of workshop participants could be complemented with sufficient additional information from primary and secondary sources. Scotland is treated separately from England and Wales, as responsibilities for water resource management, and hence the implementation of the WFD, are part of the devolution of competencies from Westminster to Scottish Government.

For each participation and river basin management factor mentioned above we compiled a qualitative assessment of the situation in each country, based on a thorough reading of the workshop reports and collected literature. To contrast post-WFD experiences with pre-WFD water resource management regimes, each factor was observed for two points in time: for the year 2000 (t0), representing the status quo before WFD implementation, and for post-2009 (t1), with completion of the initial planning phase and beginning of implementation of measures.

Based on these short written country descriptions we employed a coding procedure to translate the qualitative factors into quantitative variables. For those factors related to public participation (accessibility, representation, power delegation, communication) we used a 5-point Likert-like scale that measured the degree to which a given dimension of participation was present or absent (see Table S1 for further detail). The number of processes was simply counted. The factors for river basin management (spatial, reference, legal responsibility, planning, implementation) were quantified using a binary scale with 1 indicating planning on a hydrological scale (e.g., basin, sub-basin, and catchment) and 0 indicating political-territorial units (e.g., state, county, and municipality). All items were separately coded by one coder and results were later verified by co-authors with the respective expertise. See Table S1 for a detailed description of variables and measurement scales. A full list of literature coded is also provided in the Supplementary Material to this article.

This uniform data set (see Table S2) formed the basis for our subsequent analysis, reported in the following section. Analysis proceeded in two main steps. Initially, in order to map the water governance “trajectories” of each of the 13 countries studied, we calculated an aggregate index for public participation and river basin management. To this end, we standardized and aggregated the single variables (details in Supplementary Material), each measured for two points in time. This underpinned a mapping of the implementation “trajectories” of 13 member states, presented in the following Section 4.1. Next, we did a cluster analysis involving all single variables prior to and after WFD implementation, in order to categorize these transitions. We conducted a hierarchical cluster analysis for the 13 selected countries using Gower’s general dissimilarity coefficient, and Ward’s method of agglomeration. In so doing we take account of the different measurement scales, and aim to minimize within-group variance, while maximizing between-group dissimilarity. On the basis of this cluster analysis, we examine in-depth and compare for illustrative purposes four member states; one representing each cluster. In each case, we discuss pre-WFD water governance arrangements, and consider shifts in river basin management and participation upon completion of the initial planning phase to 2009.

While the WFD calls for the establishment of “competent authorities” at the river basin district level, our analysis here is at the national level for two reasons. First, as we elaborate below, institutional arrangements at the RBD level are not yet sufficiently advanced in most cases to support a comparative analysis. Second, given the lack of specific guidance in the WFD itself, the type and extent of participatory processes required in the formulation of RBMPs is largely determined at the national level, and member states are, after all, the liable parties in case of non-compliance. RBD-scale authorities may evolve in future WFD management cycles, in which case future analysis can focus on developments at this scale.

4. Results

We present the results of our analysis in two steps. First, we provide an overview of the “trajectories” of 13 EU member states according to institutional shifts in river basin management planning, and stakeholder participation in water governance over the period 2000 to 2009 (see Figure 1), and present the hierarchical cluster analysis (Figure 2). Second, we turn to the in-depth analysis of four illustrative cases to explore the different types of implementation experiences.

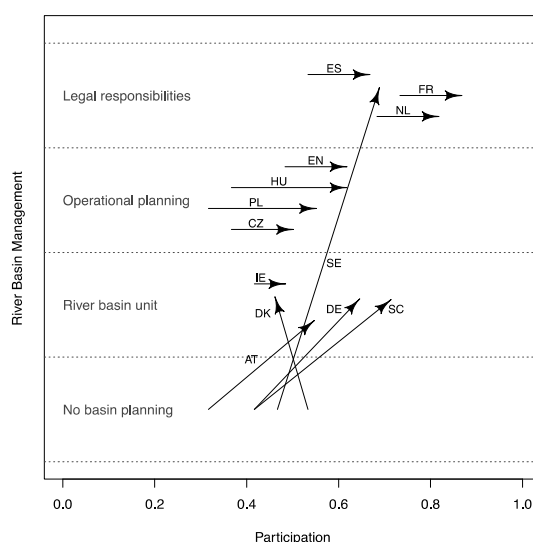


Figure 1. Trajectories of WFD-related governance change in 13 EU member states: AT = Austria; CZ = Czech Republic; DE = Germany; DK = Denmark; EN = England and Wales; ES = Spain; FR = France; HU = Hungary; IE = Ireland; NL = Netherlands; PL = Poland; SC = Scotland; and SE = Sweden. The x-axis is a four-dimensional “degree of participation” index, described in Section 3 and the Supplementary Material. The y-axis is not to be read as a continuous scale, and no distinction is to be made between the position of member states within a given stage or band on the y-axis (arrows have been spaced for presentation and ease of interpretation only).

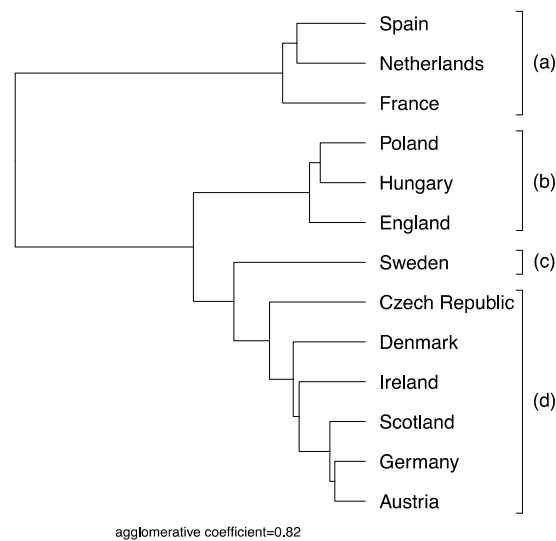


Figure 2. Dendrogram clustering 13 member states on WFD-related governance change. Agglomerative clustering, using nine previously described variables measured for two points in time (see Section 3 and Supplementary Material), Gower’s general dissimilarity coefficient, and Ward’s method of agglomeration.

4.1. River Basin Management and Participation Pre- and Post-WFD in 13 EU Member States

Figure 1 maps institutional shifts in 13 EU member states relating to river basin management planning and public and stakeholder participation. As outlined above, the values for each country represent an index derived from the single factors employed to characterize participation and river basin management in this study. It is important to note that the y axis shows four distinct and qualitatively different fields, which correspond to different stages of institutionalization of river basin management: (a) no river basin planning—water resources are managed according to political-territorial boundaries; (b) river basin unit—river basins are delimited as discrete management units, in accordance with the Directive; (c) operational planning—institutions and organizations for river basin management are established at the river basin level; and (d) legal responsibilities—river basin-level institutions have a legal mandate or formal authority to govern and manage within RBDs. The x-axis is a four-dimensional “degree of participation” index, as described in Section 3.

Figure 1 shows, first, that there is a basic tendency for member states to come into compliance with the procedural and institutional requirements of the Directive. All countries that did not employ river basin-scale planning have implemented this—albeit mostly to the legal minimum required (AT, DE, DK, and SC). Significant reforms have, however, been made in Sweden (SE), which has overhauled its water governance regime in terms of institutionalizing river basin management in line with the WFD. Second, all member states except one have increased the intensity of participation in river basin planning (see Table S3 for additional information). Shifts in this respect have varied, but seem to be slightly less pronounced among countries where river basin management is more entrenched (ES, FR, and NL), although it must be noted that these generally had more participatory approaches to begin with. Other countries, which have experienced more substantial increases in participation, began from relatively low starting positions (AT, CZ, DE, HU, PL, and SC). Ireland (IE) is peculiar in that it has only marginally increased participation in the planning process, despite its relatively low starting point, which is mainly due to the wider reforms in water resource management the country undertook in the late 1990s anticipating the WFD. Denmark (DK) is clearly also unique in our sample, in that it has implemented river basin-scale planning, but curtailed participation. This coincides with broader political shifts in Denmark over the period, which saw a narrowing of the scope for participation by civil society and the wider public in government generally [59].

Beyond these observations, Figure 1 appears to suggest a more general tendency for the persistence of the status quo in terms of participatory river basin management within the first management cycle. This is evident in terms of institutional arrangements for river basin planning: while non-complying member states have implemented the required changes, other, already compliant states do not appear to have shifted, but rather retained existing institutional arrangements (CZ, EN, ES, FR, HU, IE, NL, and PL). Regarding changes in participation, arguably all of the increases are rather modest, although, as noted above, this is less true for member states that had very low levels of participation pre-WFD, and thus perhaps sought to achieve a certain (if still modest) level to be seen to be implementing the Directive (e.g., AT and PL). Certainly these results can be interpreted as corroborating the findings of other studies that claim WFD implementation has not signaled a significant departure from business as usual in many member states (e.g., [46]).

Figure 2 shows four clusters of member states, clustered on “types of experiences” with WFD implementation (as outlined in Section 3). The clusters reflect the different implementation “trajectories” evident in Figure 1, and might tentatively be characterized as follows:

- (a) Water governance pioneers (ES, NL, and FR): Countries in this cluster are characterized by long histories of institutionalized river basin management, also including varying degrees of stakeholder participation, often targeted at particular users. Complying with the WFD therefore required rather minor adjustments for these states. In all three countries, existing structures were amended with additional fora for stakeholder involvement broadening the scope for the participation.
- (b) Water resource planners (PL, HU, and EN): Members of this cluster already had some established river basin structures in place, mainly aimed at hydrological planning and with only limited room for participation. The WFD therefore triggered a broadening of participation possibilities without fundamentally overriding the established planning traditions.
- (c) The leap-frog (SE): As Figure 1 illustrates, Sweden constitutes a special case, having introduced both far-reaching river-basin management and participatory provisions (see Section 4.2.3 for more detail).
- (d) Water resource governance adapters (CZ, DK, IE, DE, SC, and AT): This is the most diverse cluster, encompassing a number of experiences and governance structures. In most of these states the WFD required changes in both river basin management and participation. Only in the Czech Republic and Ireland were some river basin management structures already in place before the WFD.

Below, we explore for illustrative purposes the experiences of four member states—one drawn from each cluster—with respect to river basin planning and participation in water resources management pre- and post-WFD. While the method employed maximizes intra-group similarity, it is important to note that there is some variance between the members of each group. Hence, these clusters suggest a common trajectory, but one which may have evolved differently across cluster members. The Appendix contains tabular information for the four exemplary countries, summarizing their governance shifts (Tables A1 and A2). For additional detail on public participation under the WFD in all 13 member states see the Supplementary Material (Table S3).

4.2. River Basin Management and Participation Pre- and Post-WFD: Four Trajectories

In this section, we describe in detail four country trajectories, one from each cluster presented above: France, Poland, Sweden and Germany. We examine first adaptation to river basin management for each country and then provisions for participation before and after the Directive according the dimensions of accessibility, representation, communication and power delegation.

4.2.1. France: Water Governance Pioneer

France is illustrative of the member states in cluster (a), already meeting many of the structural and procedural provisions of the WFD with some further increases in public participation. France’s

long-standing river basin management tradition involves three levels of water governance: National, river basin, and municipality. The Ministry of Environment is responsible for water management legislation and coordination at the national level. River basin management was introduced early on by the Water Act 1964, which established six Water Agencies at the river basin level [60]. These function as intermediaries between the central state and municipalities [61], providing water-environment project financing to municipalities and other implementing actors through subsidies and a water user tax. Users are represented by a Basin Committee, functioning as a “basin parliament” [61], which sets the tax and subsidies by vote, and advise Water Agencies on basin-scale policy. The Water Act 1992 introduced important new planning tools following an integrative resource management approach: a “master management plan” (SDAGE), similar to a RBMP, developed by the Basin Committees supported by the Water Agencies for every basin, and the “water management plan” for actions compatible with the SDAGE on the sub-basin level [62]. Finally, a steering, coordinating and intermediary function is applied through the *Préfet*, a representative of the central government in every *département* that holds a seat in the Basin Committee and approves the SDAGE.

Given France’s already advanced river basin management regime, WFD implementation altered French water governance only slightly. The Water Act 2006, which transposed the WFD into French law, requires that apart from the Basin Committee voting on the budget for the SDAGE, the National Parliament must also ratify it [61]. A new national agency was established to oversee the organization of monitoring and communication activities. Despite these additions, prior arrangements endured. The *Préfets* were designated as competent authorities at the RBD level. Water Agencies and Basin Committees remained the central planning institutions, while various public- and private-sector actors are involved in implementation [60].

Within the pre-WFD French system, stakeholder participation was already important. The Basin Committees comprised users and non-state actors, local government actors, and state government actors in equal share according to the Water Act 1964 [61] (p. 14). The Water Agency boards of directors mirror this three-part structure, although members are chosen by the Basin Committees [62]. Another entry point for participation was via Local Water Commissions the local branch of the Basin Committees, where governmental and non-state actors held up to 25%, and local elected representatives at least 50%, of seats [60]. Both institutions had a formal planning mandate, since the Basin Committees and the Local Water Commissions developed their respective plans.

After the 2006 law change, the composition of Basin Committees changed in favor of more non-state actors and local government representatives (40% each) in comparison to state representatives (20%) [61] (p. 14). Regarding the Local Water Commissions, the *Préfet* was given greater leeway to compose these bodies [62].

4.2.2. Poland: Water Resource Planner

Poland broadly reflects the type of experience of member states in Figure 2, cluster (b), possessing established hydrological structures for water resource planning and having made a moderate increase in public participation in planning. A river basin management approach was introduced in the late 1980s, with the transformation of the political system [63]. In 1991, Regional Water Management Boards were created, corresponding essentially to sub-basin boundaries [50]. With further reform in 1999, these became responsible for planning and co-ordination among river basins. Provincial governments issue permits and regulate water use, while counties and municipalities manage waterworks and wastewater systems.

The legal framework for Polish water management at the time of Poland’s 2004 entry into the EU (the Water Law 2001), had been drafted in accordance with the WFD, and so required only minimal amendment [64]. While the seven Regional Water Management Boards remained, the Act replaced the sub-basin division with ten RBDs [50]. The role of competent authority was split between the Ministry of Environment through a National Water Management Authority (established 2006), and the Regional Water Management Boards [65]. The national Authority prepares and coordinates RBMPs,

while the Boards are responsible for reporting, providing information, and organizing consultation [50]. However, many water related issues are beyond the Ministry's jurisdiction [57]. This leads to a considerable degree of fragmentation of competences in the water management regime [51]. Implementation of measures remains split between the counties, provinces and municipalities.

Despite institutionalization of river basin management, there had been very little provision for stakeholder participation via the Polish Regional Water Management Boards [63]. Water Management Councils, created in the early 1990s, had no formal mandate, and served rather as information platforms [57], comprising representatives of water users and government. Apart from these mechanisms, some small pilot water management projects included participatory structures [57].

Within WFD implementation, participation has largely been understood as an information or consultation mechanism [66]. Nevertheless, the Water Law Act 2001 does provide for institutionalized participation at the national- and the RBD-level. The Regional Water Management Councils, formed by each of the Regional Water Management Boards, play a major role in this [63], incorporating additional stakeholders, such as environmental NGOs [57]. Further, a 30-person National Council of Water Management was introduced as an advisory board for the National Water Management Authority. Members include representatives of local governments, academics, and social, economic and environmental organizations [63].

4.2.3. Sweden: The Leap-Frog

Sweden is unique among the countries analyzed here, having made marked changes in institutionalizing river basin management and provisions for participation. Hence, Sweden can be characterized as a "leap-frog", occupying its own cluster (c) in Figure 2. Swedish water policy has traditionally been shaped by the central state as the regulatory authority, with municipalities being the main units for long-term water and land use planning [67]. The regional level was relatively less important in this regard [68]. Despite the dominance of municipal-level planning, some limited management activities did occur at the scale of waterways and catchments. For example, several Swedish municipalities formed voluntary joint water quality management associations at the catchment scale, although their activities were mainly limited to monitoring [69].

WFD implementation brought far-reaching change. A new administration for river basin management was established, in parallel with the relevant municipal structures [70]. Five RBDs were designated, and associated River Basin District Authorities assigned. This role is assumed by a County Board in the RBD, which takes on responsibility for coordinating water management between the counties in the basin [9]. Within each RBD, formal decision-making lies with a Water Board comprised of government-appointed experts [70]. The Swedish WFD system is thus mainly based on expert decision-making complemented by some participatory mechanisms (see below). Municipalities remain the supposed chief implementing actors. The overall system for water management in Sweden is therefore highly complex (overlapping administrative scales, mandates and modes of decision-making). With the strong emphasis on RBDs and regional counties, national co-ordination became rather weak and, as a consequence, a new national coordinating authority was set up in 2011 [51].

Public participation in Swedish water management had not been facilitated by formal procedures pre-WFD. However, the aforementioned joint water quality management associations did provide a coordinating mechanism between municipalities, and some opportunities for participation. Association membership included municipal officials and representatives of local businesses, agriculture, forestry and environmental groups [69]. Being focused on monitoring, these associations did not feed directly into local water resource planning [69].

The WFD introduced various mechanisms for public and stakeholder participation. While Swedish legislation does not specify the role of public participation, there are three entry-points for active involvement. First, the main instrument for participation is a system of Water Councils at the sub-basin level [70]. These can be created in a bottom-up manner by municipalities or water associations [9]. Their main purpose is to provide for ongoing involvement of interested parties [71].

Once established, the Water Councils function as sounding boards throughout the planning processes, with the aim of incorporating local knowledge, commenting on official proposals, and preparing and presenting their own proposals [9]. Second, representatives from the business sector and environmental groups can be appointed as experts to the Water Boards [69]. Third, Water Boards and Councils are complemented by open consultations and reference groups at the national and regional levels. Reference groups comprise relevant actors from the RBD, such as farmers associations, and forestry and water companies, and provide a platform for information exchange and discussion of policies [71].

4.2.4. Germany: Water Resource Governance Adapter

Germany is broadly illustrative of the experiences of countries in Figure 2, cluster (d), having adopted river basin planning and established various procedures to encourage stakeholder participation. Given Germany's federal system, WFD implementation has varied across the different federal states (*Länder*), but a degree of generalization is nevertheless possible. Prior to the WFD water resources management in Germany aligned almost exclusively with administrative rather than natural boundaries, and there was a strong tradition of state water policy and governance among the *Länder*. Administrative powers were, and still are, clearly divided between the federal government, which sets the general standards for planning and management through legislation (*i.e.*, the Federal Water Act), and the *Länder*, which have primary responsibility for water policy [50].

Despite this political-territorial regime, river basin management was a recognized approach in Germany, but it was practiced mainly in informal initiatives [72]. A joint working group of the *Länder* (and later the Federal Ministry of the Environment), called LAWA (*Länderarbeitsgemeinschaft Wasser*), was formed in 1956, and produced guidance documents for the harmonization of management of cross-state water resources. Institutionalized forms of river basin management also emerged, albeit rarely, on municipal and sub-basin levels [72].

The transposition of the WFD into German law did institute a river basin planning regime, but it did not result in a radical shift from the status quo, as river basin management arrangements remained almost entirely based on pre-existing administrative structures. Ten German RBDs were designated under the Directive, and the Federal Ministry of the Environment and the relevant state ministries—mainly the state environmental ministries—are the assigned competent authorities. The LAWA acted as an important coordinating body, providing guidelines for common procedures among the *Länder* (e.g., [73]) and thus opting for a co-ordination-based model over independent river basin authorities [74]. While this model envisaged close cooperation among *Länder* within RBDs, there are few joint RBMPs given the existence of shared basins. Instead, it was common for *Länder* to develop their own, separate contribution to a joint RBMP, which resulted in 35 plans covering the 10 RBDs [75].

There were established procedures for public participation in water resources planning in Germany prior to WFD implementation. However, these centered around formalized consultation with the public and affected stakeholders, and provided only very limited scope for active involvement. Public works and environmental impact assessment, for example, usually required public involvement, and public consultation in water resources management constituted an entry point for participation. Such processes were not, however, established in all *Länder*, and involvement usually did not surpass information and consultation in the final stages of decision-making [72].

As WFD implementation is primarily a federal state responsibility, there is no overarching framework or common procedure for participatory river basin management planning. Neither the amended Federal Water Act of 2002 nor the LAWA established special rules or harmonizing requirements. Nevertheless, a two-tier structure is rather common among the *Länder*. On the state level advisory boards, affiliated to the respective environmental ministries, were established in 12 of the 16 *Länder* [76]. Despite their diverse compositions, these boards generally serve as an information platform on WFD implementation procedures. On the local sub-basin level, stakeholder involvement in planning varies widely, ranging from active collaboration (e.g., in “water forums” and working groups) to relatively restricted information and consultation procedures. Overall, within this two-tier

consultative procedure, greater emphasis is usually on the local, sub-basin level. For the most part, it is organized stakeholders that are addressed in these procedures rather than the general public [72].

5. Discussion

The Water Framework Directive set bold targets for water quality across the EU, and also made ambitious procedural prescriptions—specifically regarding river basin management and participatory planning. The assumption, on the part of the European Commission, was that these procedural innovations would help achieve the substantive goals of the Directive. Whether these innovations have fostered implementation towards the Directive's water quality goals is questionable, however. A recent report of the European Commission found that implementation of more than 70% of measures is still ongoing or has not yet started [77]. Nonetheless, timely compliance with the Directive was rather high, as only four member states did not issue RBMPs on time in 2009 [46]. While it is perhaps too soon to draw overarching conclusions regarding implementation, it is useful and timely to examine from a comparative perspective procedural and planning adaptations that have taken place, and how the "transition" to participatory river basin management has played out across the member states. While academic debate continues over the conditions under which participatory governance and integrated water resources management can effectively be implemented [11,36,39], the potential for these policy innovations to produce better environmental impacts under certain circumstances compels us to explore how they are evolving in the context of European water governance.

Overall there is a shortage of comparative analysis of WFD implementation—especially relative to the number of single case studies available—but assessments suggest that institutional change and governance adaptations have been slow and irregular. In particular, transition away from pre-existing institutional structures and governance processes has been negligible in many cases, and even the EU's own monitoring has highlighted a tendency towards persistence of the status quo over the first planning cycle [46]. Exceptions exist, of course, and some notable shifts and transitions have taken place at national and local scales, but these are not necessarily typical. Here, we briefly discuss insights from our study, and consider implications for European environmental governance and further research on WFD implementation.

The WFD has driven a shift to river basin-level planning among the member states, but this shift has not been uniform (see Figure 1). Countries that did not have a river basin planning system prior to 2000 have come into compliance with this requirement of the Directive by designating RBDs, but have generally not exceeded their basic obligations under the Directive in this regard. This is reflected in the case of Germany (see Appendix A), which designated RBDs but appointed state-level environment ministries as competent authorities, essentially leaving water resources planning and implementation with the existing authorities. None of the countries that were already compliant increased the degree of institutionalization of river basin management. For some member states with more established river basin management regimes, such as France, yet greater institutionalization may not be feasible or necessary. However, for others like Poland, for example, there would be scope to further consolidate the roles of competent authorities. Substantial transformation of water governance structures has occurred, as demonstrated by the post-WFD reforms in Sweden, but certainly is not typical. As has been observed in other studies in environmental management (e.g., [78,79]), established institutional arrangements proved durable and were usually amended rather than replaced by new WFD-induced governance structures. Even in the Swedish example, the planning mandate of the municipalities did not vanish but coexists with the newly implemented water resource administration. These findings highlight the high costs and barriers facing member states adapting their governance systems, in particular if shifts include a scalar redistribution of competencies [80]. Nevertheless, it is notable that Poland, France and Sweden did strengthen national-level coordination with the establishment of new governance institutions and, in the case of Poland, even assigned river basin management competences at this level.

The introduction of arrangements for participatory river basin management planning across the EU has been mixed. Overall, it can be observed that there has been a general trend in the initial

implementation phase towards greater formal provision for public and stakeholder participation but, again, this has occurred in the context of very different baselines given varied political-cultural contexts from country to country. Similarly, broader processes of socio-political change may have shaped the shifts we observe here, and caution must be exercised in attributing change solely to the WFD. For example, it is possible that EU member states have been undergoing a broader “shift from government to governance” in all sectors, and would have increased active involvement of interested parties whether the WFD required it or not. By the same token, national political change can thwart or reverse the opening up of planning, as happened in the case of Denmark.

As discussed above, while the WFD is quite concrete about information provision and consultation procedures, it affords member states a great deal of discretion in relation to encouraging active involvement. Despite this, we do see initiatives to facilitate active involvement in most member states. As to convergence in terms of type and level of participation, we find some evidence that member states are tending towards active involvement through the establishment of advisory groups that bring organized stakeholders into the planning process. This can be seen in Poland with the creation of the National Council of Water Management, and in Germany with the two-tier system of advisory boards at the state level and the sub-basin level. In Sweden the Water Councils and Water Boards fulfill a similar function, although the former are more oriented towards incorporation of local knowledge than we see in most other countries. In France the established mechanisms for collaborative river basin management were not changed significantly, although the rules governing Basin Committees were adjusted to provide greater access for non-state actors.

6. Conclusions

The WFD has imposed common targets and a common timeline for implementation on the member states, and made particular procedural prescriptions. These, however, have encountered a diversity of political-cultural contexts and a variety of pre-existing institutional structures for the management of water resources. Naturally, this has meant a wide variety of experiences with implementation of the Directive at national and sub-national levels. A certain degree of legal and institutional adaptation has been required by all member states, but given the leeway afforded by the Directive, many have opted to retain existing structures and procedures as far as possible. Where the WFD did bring about institutional change, this occurred mainly on an operative level, without transferring real political responsibilities and power to new river basin bodies or the public. Only in countries with already established river basin management (plus Sweden) did political power reside with river basin authorities or participatory structures, also allowing for binding political (allocation) decisions. All other countries followed a rather managerial approach, seeing participation and river basin management structures as contributing to established routines of environmental decision-making. What the various adaptations will mean for the achievement of the substantive goals of the Directive, and for water quality in Europe, remains to be seen. Certainly the water quality target of “good status”, to be achieved by 2015, was too ambitious, and has not been achieved for all waters by any member state.

While broad engagement of “all interested parties”, including the general public, communities and stakeholders, at all stages of the planning process has not materialized, perhaps the emergent “advisory board” model and the selective involvement of organized stakeholders will prove to be the most feasible and effective means of stakeholder engagement for competent authorities. On the other hand, general failure to truly open up participation beyond business as usual could well hamper the identification of innovative measures and diminish the capacity of authorities to tackle new and emerging pressures on the water environment. Similarly, participation and involvement that does not afford participants real influence may serve to alienate stakeholders, further damage public trust in authorities, and undermine the legitimacy of resultant plans and measures. These questions are beyond the scope of this study, but certainly should be a focus of future research on WFD implementation. Indeed, we have largely set aside here unresolved debates as to whether public participation or

integrated river basin management are appropriate or potentially effective approaches for sustainable water resources management, but these remain crucial questions. How, and under what conditions such approaches can succeed in delivering good water status as well as other social and ecological gains, will require further empirical research and in-depth case studies of the kind we have drawn upon for this comparative analysis. Research should closely examine the functioning, legitimacy and actual effectiveness of the new institutions and procedures that have come into being as a result of the WFD. The cyclical nature of WFD implementation brings the opportunity for ongoing observational case study research and attention to processes of adaptation and learning in European water governance. Insofar as WFD implementation is “learning by doing” [81] (p. 233), research should continue to examine the experiences and trajectories of particular member states and river basin districts with a view to drawing lessons from progress and innovations in institutional adaptation for river basin management and participatory planning over future planning cycles. Further comparative research should both help track progress at the European level with respect to the implementation of the WFD, and provide potentially useful insights that might benefit “horizontal” governance learning across the EU member states.

Supplementary Materials: The following are available online at www.mdpi.com/2073-4441/8/4/156/s1, Table S1: Variable descriptions; Table S2: Raw and aggregate data of public participation and river basin management in 13 EU member states for t0 and t1; Table S3: Public Participation in 13 EU member states under the WFD; Text S1: Method of aggregation for indices used; Text S2: Literature drawn on in coding: European water resources management before and after EU Water Framework Directive implementation.

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Abbreviations

The following abbreviations are used in this manuscript:

AT	Austria
CIS	Common Implementation Strategy
CZ	Czech Republic
DE	Germany
DK	Denmark
EN	England and Wales
ES	Spain
EU	European Union
FR	France
HU	Hungary
IE	Ireland
LAWA	<i>Länderarbeitsgemeinschaft Wasser</i> , federal states working group for water resource management
NGO	Non-governmental organization
NL	The Netherlands
PL	Poland
PoM	Program of Measures
RBD	River Basin District
RBMP	River Basin Management Plan
SC	Scotland
SDAGE	<i>Schéma directeur d'aménagement et de gestion des eaux</i> , Water Management and Development Scheme
SE	Sweden
WFD	Water Framework Directive

Appendix A

Table A1. Institutional Arrangements for Water Resources Management and Participation before (f0) and after (f1) the WFD in Four Member States.

Water Resource Management	Germany		Sweden		Poland		France	
	f0	f1	f0	f1	f0	f1	f0	f1
Planning Unit	Administrative boundaries	River Basin Districts	Administrative boundaries	River Basin Districts	River basin level	River Basin Districts	River basin level	River Basin Districts
Responsible Actors	Shared responsibility between federal and state (<i>Länder</i>) level: Ministry of Environment and 16 <i>Länder</i>	Shared responsibility between federal and state (<i>Länder</i>) level: Ministry of Environment and 16 <i>Länder</i>	Central state level: through regulatory authority (Swedish Agency for Marine and Water Management)	River basin level: Water Authorities	Central state: Ministry of Environment	Central state and River basin level: National Water Management Authority (Ministry of Environment), Regional River Management Boards	Central state: Ministry of Environment	Central state and regional level: Ministry of Environment and its regional offices/river basin coordinators (<i>Préfet coordonnateur de bassin</i>)
Planning Competences	<i>Länder</i> level: State Ministries of Environment, District Governments	<i>Länder</i> level: State Ministries of Environment, District Governments	Local level: Municipalities	River basin level: Board of Governors of the Water Authorities	River basin level: Regional Water Management Boards	Central state and River basin level: National Water Management Authority, Regional Water Management Boards	River basin level: Water Agencies, Basin Committees	River basin level: Water Agencies, Basin Committees
Implementation Competences	Local level: Cities, Rural Districts, Municipalities	Local level: Cities, Rural Districts, Municipalities	Local level: Municipalities	Local level: Municipalities	Regional and local level: Provinces, Districts, Municipalities	Regional and local level: Provinces, Districts and Municipalities	Local level: Municipalities	Local level: Municipalities, Private contractors

Table A2. Institutional Arrangements for Participation before (t₀) and after (t₁) the WFD in Four Member States.

Participation	Germany		Sweden		Poland		France	
	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁	t ₀	t ₁
Status of participatory processes	Without formal mandate: Public planning	Formal mandate: Advisory bodies	Without formal mandate: Joint water quality management organizations	Formal mandate: Water Boards, reference groups and Water Councils	Without formal mandate: Regional Councils of Water Management	Formal mandate: National Council of Water Management, National Water Forum, Regional Councils of Water Management	Formal mandate: Basin Committees, Local Water Commissions	Formal mandate: Basin Committees, Local Water Commissions, Board of Water Agencies
Number of processes	One	Two: Federal state and mainly sub-basin/local level	One	Three: River basin and sub-basin level	One	Three: National and river basin district level	Two	Three: River basin and sub-basin level
Access	Limited	By invitation (except in two <i>Landes</i> with open access)	Limited	Open	Limited	By invitation (self-selection structures exist)	Wide access	Wide access (election of participants)
Representation	Not balanced	Certain balance	Not balanced	Highly balanced	Not balanced	Certain balance	Certain balance	Certain balance
Level of Participation	Information and some consultation	Consultation	Information	Involvement	Information	Consultation	Collaboration	Collaboration

References

1. Grimeaud, D. Reforming EU water law: Towards sustainability? *Eur. Environ. Law Rev.* **2001**, *10*, 41–51. [[CrossRef](#)]
2. Kallis, G.; Nijkamp, P. Evolution of EU water policy: A critical assessment and a hopeful perspective. *Z. Umweltpolit. Umweltr.* **2000**, *23*, 301–335.
3. Knill, C.; Lenschow, A. *Implementing EU Environmental Policy: New Directions and Old Problems*; Manchester University Press: Manchester, UK, 2000.
4. European Commission. *The Water Framework Directive: Tap into It!*; Office for Official Publications of the European Communities: Luxembourg City, Luxembourg, 2002.
5. Blöch, H. The European Union Water Framework Directive: Taking European water policy into the next millennium. *Water Sci. Technol.* **1999**, *40*, 67–71. [[CrossRef](#)]
6. Kaika, M. The Water Framework Directive: A new directive for a changing social, political and economic European framework. *Eur. Plan. Stud.* **2003**, *11*, 299–316. [[CrossRef](#)]
7. Newig, J.; Koontz, T.M. Multi-level governance, policy implementation and participation: The EU's mandated participatory planning approach to implementing environmental policy. *J. Eur. Public Policy* **2014**, *21*, 248–267. [[CrossRef](#)]
8. Jager, N.W. Transboundary cooperation in European water governance: A set-theoretic analysis of international river basins. *Environ. Policy Gov.* **2016**, in press.
9. Andersson, I.; Petersson, M.; Jarsjö, J. Impact of the European Water Framework Directive on local-level water management: Case study Oxunda catchment, Sweden. *Land Use Policy* **2012**, *29*, 73–82.
10. Junier, S.; Borowski, I.; Bouleau, G.; Interwies, E.; Mostert, E. Implementing the Water Framework Directive: Lessons for the second planning cycle. In *The Water Framework Directive: Action Programmes and Adaptation to Climate Change*; Quevauviller, P., Borchers, U., Thompson, K.C., Simonart, T., Eds.; RSC Publishing: Cambridge, UK, 2011; pp. 80–96.
11. Moss, T. Spatial fit, from panacea to practice: Implementing the EU Water Framework Directive. *Ecol. Soc.* **2012**, *17*, 1–12. [[CrossRef](#)]
12. Jaspers, F.; Gupta, J. Global water governance and river basin organisations. In *The politics of River Basin Organisations: Coalitions, Institutional Design Choices and Consequences*; Huitema, D., Meijerink, S., Eds.; Edward Elgar: Cheltenham, UK, 2015; pp. 38–66.
13. Molle, F. River-basin planning and management: The social life of a concept. *Geoforum* **2009**, *40*, 484–494. [[CrossRef](#)]
14. Folke, C.; Pritchard, L.J.; Berkes, F.; Colding, J.; Svedin, U. The problem of fit between ecosystems and institutions: Ten years later. *Ecol. Soc.* **2007**, *12*, 1–30.
15. GWP-TAC. *Integrated Water Resources Management: TAC Background Papers No. 4*; Global Water Partnership: Stockholm, Sweden, 2000.
16. Griffiths, M. *The European Water Framework Directive: An Approach to Integrated River Basin Management*; European Water Management Online, European Water Association: Hennef, Germany, 2002.
17. Page, B.; Kaika, M. The EU Water Framework Directive: Part 2—Policy innovation and the shifting choreography of governance. *Eur. Environ.* **2003**, *13*, 328–343. [[CrossRef](#)]
18. Meinzen-Dick, R. Beyond panaceas in water institutions. *PNAS* **2007**, *104*, 15200–15205. [[CrossRef](#)] [[PubMed](#)]
19. Ingram, H. Beyond universal remedies for good water governance. In *Water for Food in a Changing World*; Garrido, A., Ingram, H., Eds.; Routledge: London, UK, 2011; pp. 241–261.
20. Cohen, A.; McCarthy, J. Reviewing rescaling: Strengthening the case for environmental considerations. *Prog. Hum. Geogr.* **2015**, *39*, 3–25. [[CrossRef](#)]
21. Medema, W.; McIntosh, B.S.; Jeffrey, P.J. From premise to practice: A critical assessment of integrated water resources management and adaptive management approaches in the water sector. *Ecol. Soc.* **2008**, *13*, 1–18.
22. Graefe, O. River basins as new environmental regions? The depolitization of water management. *Procedia Soc. Behav. Sci.* **2011**, *14*, 24–27. [[CrossRef](#)]
23. Cohen, A.; Davidson, S. The watershed approach: Challenges, antecedents, and the transition from technical tool to governance unit. *Water Altern.* **2011**, *4*, 1–14.
24. Norman, E.S.; Cook, C.; Cohen, A. *Negotiating Water Governance: Why the Politics of Scale Matter*; Ashgate: Farnham, UK, 2015.

25. Schlager, E.; Blomquist, W. *Embracing Watershed Politics*; University Press of Colorado: Boulder, CO, USA, 2008.
26. Molle, F. Nirvana concepts, narratives and policy models: Insights from the water sector. *Water Altern.* **2008**, *1*, 131–156.
27. Ker Rault, P.A.; Jeffrey, P.J. Deconstructing public participation in the Water Framework Directive: Implementation and compliance with the letter or with the spirit of the law? *Water Environ. J.* **2008**, *22*, 241–249. [[CrossRef](#)]
28. Wright, S.A.L.; Fritsch, O. Operationalising active involvement in the EU Water Framework Directive: Why, when and how? *Ecol. Econ.* **2011**, *70*, 2268–2274. [[CrossRef](#)]
29. European Commission. *Common Implementation Strategy for the Water Framework Directive (2000/60/EC). Guidance Document No.8 on Public Participation in Relation to the Water Framework Directive*; European Commission: Brussels, Belgium, 2003.
30. Brouwer, S.; Rayner, T.; Huitema, D. Mainstreaming climate policy: The case of climate adaptation and the implementation of EU water policy. *Environ. Plan. C* **2013**, *31*, 134–153. [[CrossRef](#)]
31. Watson, N.; Deeming, H.; Treffny, R. Beyond bureaucracy? Assessing institutional change in the governance of water in England. *Water Altern.* **2009**, *2*, 448–460.
32. Beierle, T.C.; Cayford, J. *Democracy in Practice: Public Participation in Environmental Decisions*; Resources for the Future: Washington, DC, USA, 2002; p. 147.
33. Newig, J. Does public participation in environmental decisions lead to improved environmental quality? Towards an analytical framework. *Commun. Cooperation Particip.* **2007**, *1*, 51–71.
34. Reed, M.S. Stakeholder participation for environmental management: A literature review. *Biol. Conserv.* **2008**, *114*, 2417–2431. [[CrossRef](#)]
35. Fung, A. Varieties of participation in complex governance. *Public Adm. Rev.* **2006**, *66*, 66–75. [[CrossRef](#)]
36. Newig, J.; Kvarda, E. Participation in environmental governance: Legitimate and effective? In *Environmental Governance: The Challenge of Legitimacy and Effectiveness*; Hogg, K., Kvarda, E., Nordbeck, R., Pregernig, M., Eds.; Edward Elgar: Cheltenham, UK, 2012; pp. 29–45.
37. Newig, J.; Challies, E.; Jager, N.W.; Kochskämper, E.; Adzersen, A. How and under what circumstances does collaborative and participatory governance lead to better (or worse) environmental outcomes? A causal framework for analysis. *J. Public Adm. Res. Theory* **2016**. in review.
38. Baird, J.; Plummer, R.; Haug, C.; Huitema, D. Learning effects of interactive decision-making processes for climate change adaptation. *Glob. Environ. Chang.* **2014**, *27*, 51–63. [[CrossRef](#)]
39. Carr, G.; Blöschl, G.; Loucks, D.P. Evaluating participation in water resource management: A review. *Water Resour. Res.* **2012**, *48*, W11401. [[CrossRef](#)]
40. Smith, M.P. Finding common ground: How advocacy coalitions succeed in protecting environmental flows. *J. Am. Water Resour. Assoc.* **2009**, *45*, 1100–1115. [[CrossRef](#)]
41. Bulkeley, H.; Mol, A.P.J. Participation and environmental governance: Consensus, ambivalence and debate. *Environ. Values* **2003**, *12*, 143–154. [[CrossRef](#)]
42. Newig, J.; Fritsch, O. Environmental governance: Participatory, multi-level—And effective? *Environ. Policy Gov.* **2009**, *19*, 197–214. [[CrossRef](#)]
43. Cabezas, F. The European Water Framework Directive: A framework? *Int. J. Water Resour. Dev.* **2012**, *28*, 19–26. [[CrossRef](#)]
44. Fritsch, O.; Benson, D. Integrating the principles of integrated water resources management? River basin planning in England and Wales. *Int. J. Water Gov.* **2013**, *1*, 265–284. [[CrossRef](#)]
45. Woods, D. Stakeholder involvement and public participation: A critique of Water Framework Directive arrangements in the United Kingdom. *Water Environ. J.* **2008**, *22*, 258–264. [[CrossRef](#)]
46. European Commission. *Report from the Commission to the European Parliament and the Council on the Implementation of the Water Framework Directive (2000/60/EC): River Basin Management Plans*; European Commission: Brussels, Belgium, 2012.
47. European Commission. *Commission Staff Working Document. European Overview Accompanying the Document “Report from the Commission to the European Parliament and the Council on the Implementation of the Water Framework Directive (2000/60/EC): River Basin Management Plans”*; European Commission: Brussels, Belgium, 2012.

48. Kampa, E.; Dworak, T.; Grandmougin, B.; Cheung-Ah-Seung, E.; Mattheiß, V.; Strosser, P.; Campling, P. Active involvement in river basin management: Plunge into the debate. In Proceedings of the 2nd European Water Conference, Brussels, Belgium, 2–3 April 2009.
49. Scheuer, S.; Roullard, J. *Letting the Public Have Their Say on Water Management: A Snapshot Analysis of Member States' Consultations on Water Management Issues and Measures within the Water Framework Directive*; WWF, EEB: Brussels, Belgium, 2008.
50. Hedin, S.; Dubois, A.; Ikonen, R.; Lindblom, P.; Nilsson, S.; Tynkkynen, V.-P.; Viehauser, M.; Leisk, Ü.; Veidemane, K. *The Water Framework Directive in the Baltic Sea Region Countries: Vertical Implementation, Horizontal Integration and Transnational Cooperation*; Nordregio, Nordic Centre for Spatial Development: Stockholm, Sweden, 2007.
51. Nielsen, H.Ø.; Frederiksen, P.; Saarikoski, H.; Rytönen, A.-M.; Pedersen, A.B. How different institutional arrangements promote integrated river basin management: Evidence from the Baltic Sea region. *Land Use Policy* **2013**, *30*, 437–445. [[CrossRef](#)]
52. Keessen, A.M.; van Kempen, J.J.H.; van Rijswijk, M.; Robbe, J.; Backes, C.W. European river basin districts: Are they swimming in the same implementation pool? *J. Environ. Law* **2010**, *22*, 197–221. [[CrossRef](#)]
53. Uitenboogaart, Y.; van Kempen, J.J.H.; Wiering, M.A.; von Rijswijk, H.F.M.W. *Dealing with Complexity and Policy Discretion: A Comparison of the Implementation Process of the European Water Framework Directive in Five Member States*; Sdu Uitgevers: Den Haag, The Netherlands, 2009.
54. Bourblanc, M.; Crabbé, A.; Liefferink, D.; Wiering, M. The marathon of the hare and the tortoise: Implementing the EU Water Framework Directive. *J. Environ. Plan. Manag.* **2012**, *56*, 1449–1467. [[CrossRef](#)]
55. Hernández-Mora, N.; Del Moral, L. Evaluation of the Water Framework Directive Implementation Process in Europe: Project Report, Sustainable Water Action Network. Available online: http://swanproject.webhost.uits.arizona.edu/sites/default/files/Deliverable_3_2.pdf (accessed on 16 April 2016).
56. Hüesker, F.; Moss, T. The politics of multi-scalar action in river basin management: Implementing the EU Water Framework Directive (WFD). *Land Use Policy* **2015**, *42*, 38–47. [[CrossRef](#)]
57. Kowalczak, P.; Matczak, P.; Slavikova, L. Institutional evolution in water management in the Czech Republic and Poland. *Int. J. Water Gov.* **2013**, *1*, 307–322. [[CrossRef](#)]
58. Liefferink, D.; Wiering, M.; Uitenboogaart, Y. The EU Water Framework Directive: A multi-dimensional analysis of implementation and domestic impact. *Land Use Policy* **2011**, *28*, 712–722. [[CrossRef](#)]
59. Christensen, P.; Kørnøv, L.; Nielsen, E.H. Between governance and government: Danish EIA in uncharted waters. *J. Environ. Assess. Policy Manag.* **2012**, *14*, 1–18. [[CrossRef](#)]
60. Bouleau, G.; Barone, S.; Maurel, P.; Richard, A.; Abrami, G.; Cernesson, F.; Richard, S. *I-FIVE: Innovative Instruments and Institutions in Implementing the Water Framework Directive: French Case Study Report: Implementing the WFD on the Thau Basin. Research Report 2.3.*; Office International de l'Eau: Limoges, France, 2009.
61. Notte, O.; Keessen, A.M. *Quick Scan: WFD Implementation in France: Project Report*; Centre for Environmental Law and Policy, Utrecht University: Utrecht, The Netherlands, 2009.
62. Allain, S. Social participation in French water management: Contributions to river basin governance and new challenges. In *Social Participation in Water Governance and Management: Critical and Global Perspectives*; Berry, K., Mollard, E., Eds.; Earthscan: London, UK, 2010; pp. 95–115.
63. Blomquist, W.; Tonderski, A.; Dinar, A. *Institutional and Policy Analysis of River Basin Management: The Warta River Basin, Poland*; Policy Research Working Paper 3528; World Bank: Washington, DC, USA, 2005.
64. Tonderski, A. *Warta River Basin Case Study Poland*; World Bank Background Paper; World Bank: Washington, DC, USA, 2004.
65. European Commission. *Commission Staff Working Document. Member State: Poland. Accompanying the Document "Report from the Commission to the European Parliament and the Council on the Implementation of the Water Framework Directive (2000/60/EC): River Basin Management Plans"*; European Commission: Brussels, Belgium, 2012.
66. Huňka, A.; Palarie, T. WFD, institutional infrastructure, decision-making and stakeholders' participation in water risk management in Poland and Romania. In Proceedings of the EASY-ECO Vienna Conference, Vienna, Austria, 11–14 March 2008.

67. Hedelin, B. Potential implications of the EU Water Framework Directive in Sweden. A comparison of the Swedish municipalities' current water planning regime with the requirements of the EU's new Water Framework Directive. *Eur. J. Spat. Dev.* **2005**, *14*, 1–17.
68. Hammer, M.; Balfors, B.; Mörtberg, U.; Petersson, M.; Quin, A. Governance of water resources in the phase of change: A case study of the implementation of the EU Water Framework Directive in Sweden. *Ambio* **2011**, *40*, 210–220. [[CrossRef](#)] [[PubMed](#)]
69. Lundqvist, L.J. Integrating Swedish water resource management: A multi-level governance trilemma. *Local Environ.* **2004**, *9*, 413–424. [[CrossRef](#)]
70. Hedelin, B.; Lindh, M. Implementing the EU Water Framework Directive: Prospects for sustainable water planning in Sweden. *Eur. Environ.* **2008**, *18*, 327–344. [[CrossRef](#)]
71. European Commission. *Commission Staff Working Document. Member State: Sweden. Accompanying the Document "Report from the Commission to the European Parliament and the Council on the Implementation of the Water Framework Directive (2000/60/EC): River Basin Management Plans"*; European Commission: Brussels, Belgium, 2012.
72. Uitenboogaart, Y. *Quick Scan: WFD Implementation in Germany. Project Report*; Centre for Environmental Law and Policy, Utrecht University: Utrecht, The Netherlands, 2009.
73. Länderarbeitsgemeinschaft Wasser. *German Guidance Document for the Implementation of the EC Water Framework Directive. Updated version: 30.04.2003*; Länderarbeitsgemeinschaft Wasser (LAWA): Stuttgart, Germany, 2003.
74. Muro, M. *Zur Wirksamkeit der Öffentlichkeitsbeteiligung von wasserwirtschaftlichen Planungen in Deutschland*. Master's Thesis, Technische Universität Berlin, Berlin, Germany, 2002.
75. Albrecht, J.; Schmidt, C.; Stratmann, L.; Hofmann, M.; Posselt, S.; Wendler, W.; Roßner, D.; Wachs, A. *Die Wasserrahmenrichtlinie aus Sicht des Naturschutzes: Analyse der Bewirtschaftungsplanung 2009*; Bundesamt für Naturschutz: Bonn, Germany, 2012.
76. Leinweber, T. *Umsetzung der EU-Wasserrahmenrichtlinie in Deutschland: Bestandsaufnahme, Monitoring, Öffentlichkeitsbeteiligung und Wichtige Bewirtschaftungsfragen*; Sachverständigenrat für Umweltfragen: Berlin, Germany, 2008.
77. European Commission. *Commission Staff Working Document. Report on the Progress in Implementation of the Water Framework Directive Programmes of Measures. Accompanying the Document "The Water Framework Directive and the Floods Directive: Actions towards the "Good Status" of EU water and to reduce flood risks"*; European Commission: Brussels, Belgium, 2015.
78. Theesfeld, I.; Schleyer, C. Germany's light version of integrated water resources management. *Environ. Policy Gov.* **2013**, *23*, 130–144. [[CrossRef](#)]
79. Waylen, K.A.; Blackstock, K.L.; Holstead, K.L. How does legacy create sticking points for environmental management? Insights from challenges to implementation of the ecosystem approach. *Ecol. Soc.* **2015**, *20*, 1–13. [[CrossRef](#)]
80. Hooghe, L.; Marks, G. Types of Multi-Level Governance. *Eur. Integr. Online Pap. EIoP* **2001**, *5*, 11.
81. Wiering, M.A.; van Rijswijk, H.F.M.W.; Uitenboogaart, Y. General conclusions. In *Dealing with Complexity and Policy Discretion: A Comparison of the Implementation Process of the European Water Framework Directive in Five Member States*; Uitenboogaart, Y., Ed.; Sdu Uitgevers: Den Haag, The Netherlands, 2009; pp. 221–234.



Supplementary Materials: Transforming European Water Governance? Participation and River Basin Management under the EU Water Framework Directive in 13 Member States

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1. Introduction

The supporting information provides the variable descriptions and a detailed account of the data aggregation procedures employed during the analysis.

Further, the supporting information contains a list of literature sources consulted to elicit the data for this analysis.

Table S1. Variable descriptions.

Variable Name	Description	Scale
RBM Planning Reference (RBM_PR)	Which scale serves as the main reference point for water resources management?	0 = administrative, 1 = hydrological
RBM Legal Responsibility (RBM_CA)	At which scale is the actor with legal responsibility for water resources management (or the designated Competent Authority under the WFD) located?	0 = administrative, 1 = hydrological
RBM Planning Responsibility (RBM_PA)	At which scale is the actor responsible for operating the planning process located?	0 = administrative, 1 = hydrological
RBM Implementation Responsibility (RBM_IA)	At which scale is the actor with primary responsibility for implementing measures located?	0 = administrative, 1 = hydrological
PP Number (PP_NO)	How many separate process types make up the participatory planning process?	number
PP Power Delegation (PP_PD)	The extent to which participants were able to influence the decisions to be taken (degree of decision-control granted to participants).	0 = very low influence, 4 = very high influence (co-governing)
PP Accessibility (PP_AC)	The extent to which access to the process by stakeholders and the public was constrained (e.g., presence of barriers or selection processes that regulated the access of potential participants).	0 = very low, 4 = very high
PP Representation (PP_RE)	Degree to which the constellation of interests involved in the participatory process was representative of the underlying stakeholder field.	0 = very low (strongly biased), 4 = very high (balanced representation)
PP Communication (PP_CO)	The extent to which the process provided opportunities for participants to engage in communicative interactions with each other and the authorities (e.g., listen as spectator vs. deliberate and negotiate).	0 = very low (listen as spectator), 4 = very high (highly deliberative)

RBM: River basin management; PP: Participatory process.

Table S2. Raw and aggregate data of public participation and river basin management in 13 EU member states for t0 and t1.

	Austria	Czech Republic	Denmark	England	France	Germany	Hungary	Ireland	Netherlands	Poland	Scotland	Spain	Sweden
T0_RBM_PR	0	1	0	1	1	0	1	1	1	1	0	1	0
T0_RBM_CA	0	0	0	0	1	0	0	0	0	0	0	1	0
T0_RBM_PA	0	0	0	1	1	0	1	0	1	1	0	1	0
T0_RBM_IA	0	1	0	0	0	0	0	0	1	0	0	1	0
T0_PP_NO	1	1	2	2	2	1	1	1	2	1	1	2	1
T0_PP_PD	0	0	2	1	4	1	2	1	4	1	0	4	0
T0_PP_AC	2	2	2	2	1	2	1	2	1	2	2	1	3
T0_PP_RE	2	2	2	2	4	2	1	2	3	1	3	0	3
T0_PP_CO	1	2	2	2	3	2	2	2	3	1	2	3	2
T1_RBM_PR	1	1	1	1	1	1	1	1	1	1	1	1	1
T1_RBM_CA	0	0	0	0	1	0	0	0	0	0	0	1	1
T1_RBM_PA	0	0	0	1	1	0	1	0	1	1	0	1	1
T1_RBM_IA	0	1	0	0	0	0	0	0	1	0	0	1	0
T1_PP_NO	2	2	1	3	3	2	3	1	3	2	3	3	2
T1_PP_PD	2	2	2	3	4	3	2	2	4	2	3	4	3
T1_PP_AC	2	1	1	1	2	3	1	3	2	2	2	1	3
T1_PP_RE	2	2	3	2	4	2	3	1	3	2	3	1	2
T1_PP_CO	2	2	2	2	3	2	2	2	3	2	2	3	3
T0_RBM	0.000	0.500	0.000	0.500	0.750	0.000	0.500	0.250	0.750	0.500	0.000	1.000	0.000
T1_RBM	0.250	0.500	0.250	0.500	0.750	0.250	0.500	0.250	0.750	0.500	0.250	1.000	0.750
T0_PP	0.317	0.367	0.533	0.483	0.733	0.417	0.367	0.417	0.683	0.317	0.417	0.533	0.467
T1_PP	0.533	0.483	0.467	0.600	0.850	0.633	0.600	0.467	0.800	0.533	0.700	0.650	0.683

Table S3. Public Participation in 13 EU member states under the WFD.

Country	Venues	Access and Representation	Power Delegation and Communication
Austria	National roundtable; Local processes	Professional stakeholder selection, open locally; strong representation of nationally important interests	Consultative and informative function
Czech Republic	District level planning committees; Regional seminars	Stakeholder selection; strong representation of established professional interests	Consultative function
Denmark	Regional water and nature council	Closed, rather balanced, selection of sanctioned stakeholders	Consultative and informative function
England/Wales	National liaison panel; RBD liaison panels; Local catchment processes	Stakeholder selection; stronger representation of potential co-deliverers	Advice and recommendations
France	Basin committees; Local level processes; Broad public outreach	Access points for various interests and publics; elections	Development of preferences, strong influence in decisions
Germany	State level advisory councils; Local sub-basin processes	Stakeholder selection, more open locally; strong representation of organised interests and users	Advice and recommendations
Hungary	National water management council; District water management councils; Local councils	Restricted stakeholder selection; rather balanced between government, NGOs, users, and academia	Consultative and informative function
Ireland	Regional advisory councils	Application for membership based on criteria; strong representation of local authorities	Consultative and informative function
Netherlands	National interest group forum; Regional water boards, sounding boards; Local area processes	Closed selection, open locally; strong representation of organised interests	Development of preferences, strong influence in decisions
Poland	National water management forum; regional water management councils	Stakeholder selection; strong representation of users	Consultative and informative function
Scotland	National advisory group (NAG); Area advisory groups (AAG); AAG Forum	NAG/AAG: stakeholder selection, Forum open; representation according to local circumstances	Advice and recommendation
Spain	National water council; River basin and governing councils; Local working groups and workshops	Limited stakeholder selection and strong representation by users	Development of preferences, strong influence in decisions
Sweden	Regional water boards; Local water councils	Stakeholder selection, open locally; organised conservation interests under-represented	Advice and recommendations, provision of data and own proposals

Text S1. Method of Aggregation for Indices Used

Public participation (PP): To arrive at a single participation index, we standardised the five variables on a range between 0 and 1. To aggregate the single dimensions, we calculated the simple mean of the standardised variables for each country. The resulting participation index is shown on the x-axis of Figure 1.

Formula:

$$Participation_i = \frac{PP\ Legal\ Status_i + \frac{PP\ Number_i}{4} + \frac{PP\ Power\ Delegation_i}{4} + \frac{PP\ Accessibility_i}{4} + \frac{PP\ Representation_i}{4}}{5} \quad (1)$$

where i = country.

River basin management (RBM): As with public participation, we aggregated these variables per country by calculating their simple mean. The resulting river basin management index is depicted on the y-axis of Figure 1. Note, however, that there is—partly due to the binary nature of the variables and the logic of progressing institutionalisation beyond these variables—an inner logic and order. Therefore, the steps on this scale indicate qualitative difference in the institutionalisation of water resource management and planning on a hydrological scale.

In detail this means:

- | | |
|------|--|
| 0 | no basin planning |
| 0.25 | River basin unit (hydrological scale is the reference point for planning, prescribed by the WFD) |
| 0.5 | operational planning (actual operational planning and/or implementation is carried out by actors on river basin scale) |
| 0.75 | legal responsibilities (river basin actors are legally sanctioned) |

Text S2. Literature Drawn on in Coding: European Water Resources Management before and after EU Water Framework Directive Implementation

1. Albrecht, J.; Schmidt, C.; Stratmann, L.; Hofmann, M.; Posselt, S.; Wach, A.; Wendler, W. (Eds.) *Die Wasserrahmenrichtlinie aus Sicht des Naturschutzes: Analyse der Bewirtschaftungsplanung 2009. Abschlussbericht zum F&E-Vorhaben*; Bundesamt für Naturschutz: Bonn, Germany, 2012.
2. Allain, S. Social participation in French water management: Contributions to river basin governance and new challenges. In *Social Participation in Water Governance and Management: Critical and Global Perspectives*; Berry, K., Mollard, E., Eds.; Earthscan: London, UK, 2010; pp. 95–115.
3. Andersen, M.S. Denmark: The shadow of the green majority. In *European Environmental Policy: The Pioneers*; Andersen, M.S., Liefferink, D., Eds.; Manchester University Press: Manchester, UK, 1997; pp. 251–286.
4. Andersson, I.; Petersson, M.; Jarsjö, J. Impact of the European Water Framework Directive on local-level water management: Case study Oxunda Catchment, Sweden. *Land Use Policy* **2012**, *29*, 73–82.
5. Barraqué, B.; Berland, J.-M.; Cambon, S. Frankreich. In *Eurowater: Institutionen der Wasserwirtschaft in Europa. Band 1: Länderberichte*; Nunes Correia, F., Kraemer, R.A., Eds.; Springer: Berlin, Germany, 1997; pp. 190–328.
6. Barreira, A. The participatory regime of water governance in the Iberian Peninsula. *Water Int.* **2003**, *28*, 350–357.
7. Behagel, J. The politics of democratic governance: The implementation of the Water Framework Directive in the Netherlands. Ph.D. Thesis, Wageningen University, Wageningen, The Netherlands, 2012.
8. Behagel, J.; Turnhout, E. Democratic legitimacy in the implementation of the Water Framework Directive in the Netherlands: Towards participatory and deliberative norms? *J. Environ. Policy Plan.* **2011**, *13*, 297–316.
9. Behagel, J.; van der Arend, S. What institutions do: Grasping participatory practices in the Water Framework Directive. In *Forest and Nature Governance*; Arts, B., Behagel, J., van Bommel, S., de Koning, J., Turnhout, E., Eds.; Springer: Berlin, Germany, 2013; pp. 69–88.
10. Benson, D.; Fritsch, O.; Cook, H.; Schmid, M. Evaluating participation in WFD river basin management in England and Wales: Processes, communities, outputs and outcomes. *Land Use Policy* **2014**, *38*, 2132–222.
11. Blackstock, K.L.; Richards, C. Evaluating stakeholder involvement in river basin planning: A Scottish case study. *Water Policy* **2007**, *9*, 493–512.
12. Błaszczyk, P. *The Challenge of Implementing the Water Framework Directive in Poland*; United Nations Economic Commission for Europe: Geneva, Switzerland, 2002.
13. Blomquist, W.; Tonderski, A.; Dinar, A. *Institutional and Policy Analysis of River Basin Management: The Warta River Basin, Poland*; World Bank Policy Research Working Paper 3528; World Bank: Washington, DC, USA, 2005.
14. Bongaerts, J.C. European water law: Water policy and water resources management in France: The projet de loi sur l'eau (Part 1). *Eur. Environ. Law Rev.* **2002**, *11*, 239–244.
15. Bongaerts, J.C. European water law: Water policy and water resources management in France: The projet de loi sur l'eau (Part 2). *Eur. Environ. Law Rev.* **2002**, *11*, 260–270.
16. Bouleau, G.; Barone, S.; Maurel, P.; Richard, A.; Abrami, G.; I-FIVE: *Innovative Instruments and Institutions in Implementing the Water Framework Directive: French Case Study Report: Implementing the WFD on the Thau Basin*; Research Report 2.3; Office International de l'Eau: Limoges, France, 2009.
17. Bourblanc, M.; Crabbé, A.; Liefferink, D.; Wiering, M. The marathon of the hare and the tortoise: Implementing the EU Water Framework Directive. *J. Environ. Plan. Manag.* **2012**, *56*, 1449–1467.
18. Bruns, A. Governance im Küstenraum. Europäische Umweltpolitik im Wandel: Die Umsetzung des Integrierten Küstenzonenmanagements und der Wasserrahmenrichtlinie an der Westküste Schleswig-Holsteins. Ph.D. Thesis, Christian-Albrecht-Universität zu Kiel, Kiel, Germany, 2010.
19. Bruns, A.; Gee, K. From state-centered decision-making to participatory governance. *GAIA* **2009**, *18*, 150–157.

20. Bukowski, J. Spanish water policy and the National Hydrological Plan: An advocacy coalition approach to policy change. *South Eur. Soc. Politics* **2007**, *12*, 395–397.
21. Cate, F.M. River basin management in lower and upper Austria: Beginnings and future prospects. *Water Sci. Technol.* **1999**, *40*, 1851–1893.
22. Collins, A.; Ohandja, D.-G.; Hoare, D.; Voulvoulis, N. Implementing the Water Framework Directive: A transition from established monitoring networks in England and Wales. *Environ. Sci. Policy* **2012**, *17*, 496–501.
23. De Stefano, L.; Hernández-Mora, N. Water planning and management after the EU Water Framework Directive. In *Water, Agriculture and the Environment in Spain: Can We Square the Circle?* De Stefano, L., Llamas, M.R., Eds.; CRC Press: Boca Raton, FL, USA, 2012; pp. 35–44.
24. Department of the Environment, Heritage and Local Government. *Consultation Paper on Public Participation in River Basin Management*; Department of the Environment Heritage and Local Government: Dublin, Ireland, 2004.
25. Department of the Environment Heritage and Local Government. *Guidelines for the Establishment of River Basin District Advisory Councils*; Department of the Environment Heritage and Local Government: Dublin, Ireland, 2005.
26. Earle, R.; Blacklocke, S. Master plan for Water Framework Directive activities in Ireland leading to river basin management plans. *Desalination* **2008**, *226*, 134–142.
27. Enserink, B. Public participation in Dutch water management: Pragmatism in meeting EU requirements. In *Partizipation, Öffentlichkeitsbeteiligung, Nachhaltigkeit. Perspektiven der Politischen Ökonomie*; Feindt, P.H., Newig, J., Eds.; Metropolis-Verlag: Marburg, Germany, 2005; pp. 209–233.
28. Enserink, B.; Monnikhof, R.A.H. Information management for public participation in co-design processes: Evaluation of a Dutch example. *J. Environ. Plan. Manag.* **2003**, *46*, 315–344.
29. Enserink, B.; Kamps, D.; Mostert, E. *Public Participation in River Basin Management in the Netherlands: (Not) Everybody's Concern*; HarmoniCOP project report, WP4. RBA-Centre, Delft University of Technology, Delft, The Netherlands, 2003.
30. Environment Agency. *Water for Life and Livelihoods: A Framework for River Basin Planning in England and Wales*; Environment Agency: Bristol, UK, 2006.
31. Environmental Protection Agency. *Water Quality Management Planning in Ireland*; Environmental Protection Agency: Wexford, Ireland, 1999.
32. Ernst, A. *Empirische Untersuchung der Öffentlichkeitsbeteiligung an den Bewirtschaftungsplänen zur Umsetzung der EG-Wasserrahmenrichtlinie*; Bachelor's Dissertation, Universität Osnabrück, Osnabrück, Germany, 2009.
33. European Commission. *Communication from the Commission to the European Parliament and the Council: Towards Sustainable Water Management in the European Union*; European Commission: Brussels, Belgium, 2007.
34. European Commission. *Commission Staff Working Document. Member State: Poland. Accompanying the document "Report from the Commission to the European Parliament and the Council on the Implementation of the Water Framework Directive (2000/60/EC): River Basin Management Plans"*; European Commission: Brussels, Belgium, 2012.
35. European Commission. *Commission Staff Working Document. Member State: Sweden. Accompanying the document "Report from the Commission to the European Parliament and the Council on the Implementation of the Water Framework Directive (2000/60/EC): River Basin Management Plans"*; European Commission: Brussels, Belgium, 2012.
36. Feichtinger, J. *Politischer Wandel im Gewässermanagement: Die Implementation der EU-Wasserrahmenrichtlinie im Spannungsfeld von Wasserkraft und Gewässerschutz in Österreich und Bayern*. Ph.D. Thesis, Universität für Bodenkultur, Wien, Austria, 2013.
37. Flynn, B.; Kröger, L. Can policy learning really improve implementation? Evidence from Irish responses to the Water Framework Directive. *Eur. Environ.* **2003**, *13*, 150–163.
38. Fritsch, O.; Benson, D. Integrating the principles of Integrated Water Resources Management? River basin planning in England and Wales. *Int. J. Water Gov.* **2013**, *1*, 265–284.
39. Gayer, J. Public Participation in the Context of WFD Implementation in Hungary. In *Proceedings of the Europe INBO Conference, Rome, Italy, 7–9 November 2007*.

40. Gayer, J. WFD related public participation in Hungary. In Proceedings of the CIWEM/ASTEE/EWA Joint Conference, Lille, France, 29–30 September 2009.
41. Gooch, G.D.; Baggett, S. IWRM in the Swedish context: A voluntary move to IWRM principles or a legal necessity to comply with the European Union Water Framework Directive? *Int. J. Water Gov.* **2013**, *1*, 361–378.
42. Hammer, M.; Balfors, B.; Mörtberg, U.; Petersson, M.; Quin, A. Governance of water resources in the phase of change: A case study of the implementation of the EU Water Framework Directive in Sweden. *Ambio* **2011**, *40*, 210–220.
43. Hedelin, B. Potential implications of the EU Water Framework Directive in Sweden. *Eur. J. Spat. Dev.* **2005**, *14*, 1–17.
44. Hedelin, B.; Lindh, M. Implementing the EU Water Framework Directive: Prospects for sustainable water planning in Sweden. *Eur. Environ.* **2008**, *18*, 327–344.
45. Hedin, S.; Dubois, A.; Ikonen, R.; Lindblom, P.; Nilsson, S.; Tynkkynen, V.-P.; Veidemane, K. *The Water Framework Directive in the Baltic Sea Region Countries: Vertical Implementation, Horizontal Integration and Transnational Cooperation*; Nordregio, Nordic Centre for Spatial Development: Stockholm, Sweden, 2007.
46. Hernández-Mora, N.; Ballester, A. Public participation and the role of social networks in the implementation of the Water Framework Directive in Spain. *Ambient. SPI* **2011**, *2011*, 1–21.
47. Hödl, E. *Wasserrahmenrichtlinie und Wasserrecht*; Neuer Wissenschaftlicher Verlag: Wien, Austria, 2005.
48. Holda, A. An Analysis of the Environmental Management Elements of the Water Framework Directive and its Implementation Components. Master's dissertation, Technische Universität Hamburg-Harburg, Hamburg, Germany, 2005.
49. Howarth, W. Aspirations and realities under the Water Framework Directive: Proceduralisation, participation and practicalities. *J. Environ. Law* **2009**, *31*, 391–417.
50. Huřka, A. Towards Communicative River Management in Poland. Ph.D. Thesis, Radboud Universiteit Nijmegen, Nijmegen, The Netherlands, 2010.
51. Huřka, A.; Palarie, T. WFD, Institutional Infrastructure, Decision-making and Stakeholders' Participation in Water Risk Management in Poland and Romania. In Proceedings of the EASY-ECO Vienna Conference, Vienna, Austria, 11–14 March 2008.
52. Ioris, A.A.R. Water institutional reforms in Scotland: Contested objectives and hidden disputes. *Water Altern.* **2008**, *1*, 253–270.
53. Irvine, K.; Free, G.; De Eyto, E.; White, J.; Allott, N.; Mills, P. The EC Water Framework Directive and monitoring lakes in the Republic of Ireland. *Freshw. Forum* **2001**, *16*, 48–65.
54. Irvine, K.; O'Brien, S. Progress on stakeholder participation in the implementation of the Water Framework Directive in the Republic of Ireland. *Biol. Environ.* **2009**, *109*, 365–376.
55. Ison, R.; Watson, D. Illuminating the possibilities for social learning in the management of Scotland's water. *Ecol. Soc.* **2007**, *12*, 21.
56. Jirásek, V. River Basin Management Planning in the Czech Republic. In *River Basin Management: Progress Towards Implementation of the European Water Framework Directive*; Lawson, J., Ed.; Taylor & Francis: Leiden, The Netherlands, 2005; pp. 61–64.
57. Junier, S. I-FIVE: *Innovative Instruments and Institutions in Implementing the Water Framework Directive: Dutch Case Study*; Research Report 2.1; Office International de l'Eau: Limoges, France, 2010.
58. Junier, S.; Borowski, I.; Bouleau, G.; Interwies, E.; Mostert, E. Implementing the Water Framework Directive: Lessons for the second planning cycle. In *The Water Framework Directive: Action Programmes and Adaptation to Climate Change*; Quevauviller, P., Borchers, U., Thompson, K.C., Simonart, T., Eds.; RSC Publishing: Cambridge, UK, 2011; pp. 80–96.
59. Kálmán, P. Hungarian experiences in the implementation of WFD: Sharing experiences and meeting future challenges. In Proceedings of the European River Basin District Authorities Conference, Stockholm, Sweden, 20–21 August 2009.
60. Kastens, B.; Newig, J. The Water Framework Directive and agricultural nitrate pollution: Will great expectations in Brussels be dashed in Lower Saxony? *Eur. Environ.* **2007**, *17*, 231–246.
61. Kastens, B.; Newig, J. Will participation foster the successful implementation of the Water Framework Directive? The case of agricultural groundwater protection in North-West Germany. *Local Environ.* **2008**, *13*, 27–41.

62. Koontz, T.M.; Newig, J. Cross-level information and influence in mandated participatory planning: Alternative pathways to sustainable water management in Germany's implementation of the EU Water Framework Directive. *Land Use Policy* **2014**, *38*, 594–604.
63. Kowalczak, P.; Matczak, P.; Slavikova, L. Institutional evolution in water management in the Czech Republic and Poland. *Int. J. Water Gov.* **2013**, *1*, 307–322.
64. La Roca, F.; Ferrer, G. The Water Framework Directive observatory: An assessment of the WFD implementation process in Spain. *Ambient. SPI* **2010**, *2010*, 1–26.
65. Länderarbeitsgemeinschaft Wasser. *German Guidance Document for the Implementation of the EC Water Framework Directive*, Updated Version: 30.04; Länderarbeitsgemeinschaft Wasser (LAWA): Stuttgart, Germany, 2003.
66. Lebensministerium. *EU Wasserrahmenrichtlinie 2000/60/EG: Österreichischer Bericht über die Zuständigen Behörden*; Lebensministerium: Wien, Austria, 2004.
67. Lebensministerium. *Guter Zustand für unsere Gewässer: Die Umsetzung der europäischen Wasserrahmenrichtlinie*; Lebensministerium: Wien, Austria, 2007.
68. Lebensministerium. *Aktiv für unser Wasser: Lebende Flüsse, Saubere Seen*; Lebensministerium: Wien, Austria, 2009.
69. Lebensministerium. *Nationaler Gewässerbewirtschaftungsplan 2009—NGP 2009*; Lebensministerium: Wien, Austria, 2009.
70. Legutko, Ł. Public participation in implementation of the Water Framework Directive in Poland. In Proceedings of the 4th World Water Forum, Mexico City, Mexico, 22 March 2006.
71. Leinweber, T. *Umsetzung der EU-Wasserrahmenrichtlinie in Deutschland: Bestandsaufnahme, Monitoring, Öffentlichkeitsbeteiligung und Wichtige Bewirtschaftungsfragen*; SRU—Sachverständigenrat für Umweltfragen: Berlin, Germany, 2008.
72. Lieferink, D.; Wiering, M.; Uitenboogaart, Y. The EU Water Framework Directive: A multi-dimensional analysis of implementation and domestic impact. *Land Use Policy* **2011**, *28*, 712–722.
73. Lundmark, C.; Jonsson, G. Prospects for learning in river management: Exploring the initial implementation of the Water Framework Directive in a Swedish river basin. *Environ. Educ. Res.* **2014**, *20*, 161–176.
74. Lundqvist, L.J. Integrating Swedish Water Resource Management: A Multi-Level Governance Trilemma. *Local Environ.* **2004**, *9*, 413–424.
75. McGarrigle, M.L. Champ, W.S.T. Keeping pristine lakes clean: Loughs Conn and Mask, western Ireland. *Hydrobiologia* **1999**, *395–396*, 455–469.
76. Meijerink, S.; Wiering, M. River basin management in Europe: The “up- and downloading” of a new policy discourse. In *The Disoriented State: Shifts in governmentality, territoriality and governance*; Arts, B. Lagendijk, A.; Houtum, H.V., Eds.; Springer: Berlin, Germany, 2009; pp. 181–200.
77. Meyer, C.; Thiel, A. Institutional change in water management collaboration: Implementing the European Water Framework Directive in the German Odra river basin. *Water Policy* **2012**, *14*, 625–646.
78. Molnár, E.; Bardóczy, E.; Fehér, J. Tasks of stream revitalization in the light of the water framework directive in Hungary. In Proceedings of the Environmental Water Management (ENWAMA) project meeting, Belfast, UK, 2010.
79. Montoya-Hidalgo, J. Instruments of public participation in Aragon water policy: The Aragon Water Commission. *Water Resour. Dev.* **2007**, *23*, 41–50.
80. Mostert, E.; Pahl-Wostl, C.; Rees, Y.; Searle, B.; Tàbara, D.; Tippett, J. Social Learning in European River-Basin Management: Barriers and Fostering Mechanisms from 10 River Basins. *Ecol. Soc.* **2007**, *12*, 19–34.
81. Muro, M. Zur Wirksamkeit der Öffentlichkeitsbeteiligung von Wasserwirtschaftlichen Planungen in Deutschland. Master's Dissertation, Technische Universität Berlin, Berlin, Germany, 2002.
82. Murphy, K.; Glasgow, G. North-south coordination in Ireland's international river basin districts. *Biol. Environ.* **2009**, *109B*, 139–150.
83. River Basin Management Planning National Advisory Group (NAG). *Proposed National Contributions to Deliver Water Framework Directive Requirements*; River Basin Management Planning National Advisory Group (NAG): Edinburgh, UK, 2008.
84. Neef, A. Lost in translation: The participatory imperative and local water governance in North Thailand and Southwest Germany. *Water Altern.* **2008**, *1*, 89–110.

85. Newig, J. Die Öffentlichkeitsbeteiligung nach der EG-Wasserrahmenrichtlinie: Hintergründe, Anforderungen und die Umsetzung in Deutschland. *Z. Umweltpolit. Umweltr.* **2005**, *28*, 469–505.
86. Newig, J.; Challies, E.; Jager, N.W.; Kochskämper, E. What role for public participation in implementing the EU Floods Directive? A comparison with the Water Framework Directive, early evidence from Germany, and a research agenda. *Environ. Policy Gov.* **2014**, *24*, 275–288.
87. Nielsen, H.Ø.; Frederiksen, P.; Saarikoski, H.; Rytönen, A.-M.; Pedersen, A.B. How different institutional arrangements promote integrated river basin management: Evidence from the Baltic Sea Region. *Land Use Policy* **2013**, *30*, 437–445.
88. Näslund, C.; Langas, V.; Skuza, K. *Water Management in Lithuania, Poland and Sweden—Comparisons of the EU Water Framework Directive in Practice*; Report 5.3 (Vol. 8); Länsstyrelsen Blekinge Län: Karlskrona, Sweden, 2012.
89. Naturvårdsverket. *Samverkan om Vattenförvaltning: Information, Kommunikation och Samråd*; Naturvårdsverket: Stockholm, Sweden, 2006.
90. Notte, O. How does participation make accountability in the European water policies? Comparison between France and the Netherlands. In Proceedings of the 8th Congress of the European Sociological Association, Glasgow, UK, 3–6 September 2007.
91. Notte, O.; Keessen, A.M. *Quick Scan: WFD Implementation in France*; Centre for Environmental Law and Policy, Utrecht University: Utrecht, The Netherlands, 2009.
92. Nunes Correia, F.; Kraemer, R.A. *Eurowater: Institutionen der Wasserwirtschaft in Europa. Band 1: Länderberichte*; Springer: Berlin, Germany, 1997.
93. Orr, P.; Colvin, J.; King, D. Involving stakeholders in integrated river basin planning in England and Wales. *Water Resour. Manag.* **2007**, *21*, 331–349.
94. Perdok, P.J. Country reports: Netherlands. In *Eurowater: Institutionen der Wasserwirtschaft in Europa. Band 1: Länderberichte*; Nunes Correia, F., Kraemer, R.A., Eds.; Springer: Berlin, Germany, 1997; pp. 327–448.
95. Petersson, S. Experiences of uncertainty: Case study of the implementation of the EU Water Framework Directive in Sweden. Master's Dissertation, Linköpings Universitet, Linköping, Sweden, 2011.
96. Raadgever, G.T.; Dieperink, C.; Driessen, P.P.J.; Smit, A.A.H.; van Rijswijk, H.F.M.W. Uncertainty management strategies: Lessons from the regional implementation of the Water Framework Directive in the Netherlands. *Environ. Sci. Policy* **2011**, *14*, 64–75.
97. Rheine-Meuse Water Agency. *National Consultation on Water 2008, National Summary: Summary by Basin*; Rheine-Meuse Water Agency: Montpellier, France, 2009.
98. Richard-Ferroudji, A. L'animateur de bassin-versant Insuffler vie à une communauté de l'eau. *Cosmopolitique* **2008**, *17*, 139–152.
99. Ridder, D.; Interwies, E.; Borowski, I.; Gronemeier, K.; Grambow, C. *I-FIVE: Innovative Instruments and Institutions in Implementing the Water Framework Directive: The German Case Study*; Research Report 2.2; Office International de l'Eau: Limoges, France, 2010.
100. Scottish Environmental Protection Agency. *Consultation Responses to the Significant Water Management Issues Report for the Scotland RBD*; Scottish Environmental Protection Agency (SEPA): Edinburgh, UK, 2008.
101. Scottish Environmental Protection Agency. *River Basin Planning Strategy for the Scotland River Basin District*; Scottish Environmental Protection Agency (SEPA): Edinburgh, UK, 2005.
102. Stephan, U.; Gustafsson, J.-E. Vattenförvaltningen och Aktörsdeltagandet i Tyskland: Water management and public participation in Germany. *Vatten* **2005**, *60*, 201–214.
103. Slavíková, L.; Jílková, J. Implementing the Public Participation Principle into Water Management in the Czech Republic: A Critical Analysis. *Reg. Stud.* **2011**, *45*, 545–557.
104. Tonderski, A. *Warta River Basin Case Study Poland. World Bank Background Paper*; World Bank: Washington, DC, USA, 2004.
105. Turek, J.; Charvat, P. Implementation of the European Water Framework Directive in national legislation of the Czech Republic (progress to date). In *River Basin Management: Progress Towards Implementation of the European Water Framework Directive*; Lawson, J., Ed.; Taylor & Francis: Leiden, The Netherlands, 2005; pp. 3–6.
106. Uhlendahl, T.C. Partizipative Gewässerbewirtschaftung auf lokaler Ebene im Kontext der Wasserrahmenrichtlinie. Ph.D. Thesis, Albert-Ludwigs-Universität Freiburg, Freiburg im Breisgau, Germany, 2008.

107. Uitenboogaart, Y. *Quick Scan: WFD Implementation in Denmark*; Centre for Environmental Law and Policy Utrecht University: Utrecht, The Netherlands, 2009.
108. Uitenboogaart, Y. *Quick Scan: WFD Implementation in Germany*; Centre for Environmental Law and Policy, Utrecht University, Utrecht, The Netherlands, 2009.
109. Van der Heijden, J.; Ten Heuvelhof, E. The mechanics of virtue: Lessons on public participation from implementing the Water Framework Directive in the Netherlands. *Environ. Policy Gov.* **2012**, *22*, 177–188.
110. Van der Heijden, J.; ten Heuvelhof, E. Coping with mandated public participation: The case of implementing the EU Water Framework Directive in the Netherlands. *Perspect. Eur. Politics Soc.* **2013**, *14*, 403–417.
111. Van der Heijden, J.; ten Heuvelhof, E.; Broekmans, B.; van der Arend, S.; van Bueren, E.; Harteveld, C.; van Ruijven, T. Contrasting stories on overcoming governance challenges: The implementation of the EU Water Framework Directive in the Netherlands. *Local Environ.* **2013**, *19*, 318–333.
112. Vári, A. Hungarian experiences with public participation in water management. *Water Int.* **2004**, *29*, 329–337.
113. Vári, A.; Kisgyorgy, S. Public participation in developing water quality legislation and regulation in Hungary. *Water Policy* **1998**, *1*, 223–238.
114. Vattenmyndigheterna för Västerhavet och Södra Östersjön. Vattenråd—Södra: Teori och praktik. Östersjöns och Västerhavets vattendistrikt. Vattenmyndigheterna Västerhavet och Södra Östersjön. Available online: <http://www.vattenmyndigheterna.se/SiteCollectionDocuments/sv/sodra-ostersjon/publikationer/broschyr-vattenrad-teori-praktik.pdf> (accessed on 16 April 2016).
115. Verkerk, J.; van Buuren, A. Integrated water resources management in the Netherlands: Historical trends and current practices in the governance of integration. *Int. J. Water Gov.* **2013**, *1*, 427–451.
116. Vidékfejlesztési Minisztérium. *Implementing the Water Framework Directive in Hungary*; Vidékfejlesztési Minisztérium: Budapest, Hungary, 2010.
117. Watson, N.; Deeming, H.; Treffny, R. Beyond bureaucracy? Assessing institutional change in the governance of water in England. *Water Altern.* **2009**, *2*, 448–460.
118. Wiering, M.; Keessen, A. *Quick Scan: WFD Implementation in The Netherlands*; Centre for Environmental Law and Policy, Utrecht University: Utrecht, The Netherlands, 2009.
119. Woods, D. Stakeholder involvement and public participation: A critique of Water Framework Directive arrangements in the United Kingdom. *Water Environ. J.* **2008**, *22*, 258–264.
120. Wright, S.A.L.; Dubgaard, A. Participation in the Water Framework Directive in the UK and Denmark: Meaningful or tokenistic? In *Instruments and Institutions for Sustainable Water Management*; University of Copenhagen: Copenhagen, Denmark, 2010; pp. 114–132.
121. Wright, S.A.L.; Jacobsen, B.H. Combining active farmer involvement with detailed farm data in Denmark: A promising method for achieving water framework directive targets? *Water Sci. Technol.* **2010**, *61*, 2626–2633.
122. Zabrzeńska-Chaterera, M.; Imbierowicz, S.; Skrzypski, J.; Zbicinski, I. *Analysis of the Formation System of Management Plans and Water Resources Management*; WATERPRAXIS: Warsaw, Poland, 2010.

Workshop Reports

All reports delivered at the workshop: “Public participation and river basin management in WFD water planning”, Leuphana University of Lüneburg, Lüneburg, Germany, 1–3 September 2010.

1. Blackstock, K. *Public Participation and River Basin Management in WFD Water Planning: Scotland*; Leuphana University: Lüneburg, Germany, 2010.
2. Feichtinger, J. *Public Participation and River Basin Management in WFD Water Planning: Austria*; Leuphana University: Lüneburg, Germany, 2010.
3. Fritsch, O. *Public Participation and River Basin Management in WFD Water Planning: Denmark*; Leuphana University: Lüneburg, Germany, 2010.
4. Fritsch, O. *Public Participation and River Basin Management in WFD Water Planning: England and Wales*; Leuphana University: Lüneburg, Germany, 2010.
5. Hernández-Mora, N. *Public Participation and River Basin Management in WFD Water Planning: Spain*; Leuphana University: Lüneburg, Germany, 2010.
6. Huitema, D.; van der Arend, S. *Public Participation and River Basin Management in WFD Water Planning: The Netherlands*; Leuphana University: Lüneburg, Germany, 2010.

7. Irvine, K. *Public Participation and River Basin Management in WFD Water Planning: Republic of Ireland*; Leuphana University: Lüneburg, Germany, 2010.
8. Loupsans, D.; von Korff, Y. *Public Participation and River Basin Management in WFD Water Planning: France*; Leuphana University: Lüneburg, Germany, 2010.
9. Matczak, P. *Public Participation in River Basin Management in WFD Water Planning: Poland*; Leuphana University: Lüneburg, Germany, 2010.
10. Newig, J.; Feichtinger, J.; Ernst, A. *Public Participation in River Basin Management in WFD Water Planning: Germany*; Leuphana University: Lüneburg, Germany, 2010.
11. Páres, M. *Public Participation in River Basin Management in WFD Water Planning: Catalonia (Spain)*; Leuphana University: Lüneburg, Germany, 2010.

Article [A4]:

Transboundary cooperation in European water governance – a set-theoretic analysis of international river basins

Abstract

The pursuit of more integrated water resource management based on hydrological boundaries (i.e. river basins) poses significant challenges for domestic environmental governance, let alone in situations where rivers transcend national borders. This paper examines which conditions of governance (and beyond) favour cooperative transboundary river basin management practices under the European Water Framework Directive. This directive, with its detailed procedural provisions for (international) river basin management planning, offers an excellent test bed to investigate and assess the factors and mechanisms of transboundary river basin management. Postulates of neo-liberal theory of international cooperation, drawn from International Relations, help to identify relevant conditions for analysis, covering the two dimensions of state interests and transaction costs. Results of a qualitative comparative analysis show that transaction costs have a strong mitigating influence on the occurrence of cooperative river basin planning. However, reduced transaction costs alone do not suffice for states to enter into cooperation, but the latter have to be activated by a favourable incentive structure, i.e. high problem pressure, legal or domestic incentives. While these insights hold for most cooperative river basin districts, a few basins that follow a contradictory pattern without reduced transaction costs deserve further attention. The findings shed further light on the influence of contextual factors in shaping water governance.

Keywords: transboundary water resources; international cooperation; river basin management; Water Framework Directive; Qualitative Comparative Analysis (QCA); environmental governance.

Transboundary cooperation in European water governance – a set-theoretic analysis of international river basins

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Abstract

The pursuit of more integrated water resource management based on hydrological boundaries (i.e. river basins) poses significant challenges for domestic environmental governance, let alone in situations where rivers transcend national borders. This paper examines which conditions of governance (and beyond) favour cooperative transboundary river basin management practices under the European Water Framework Directive. This directive, with its detailed procedural provisions for (international) river basin management planning, offers an excellent test bed to investigate and assess the factors and mechanisms of transboundary river basin management. Postulates of neo-liberal theory of international cooperation, drawn from International Relations, help to identify relevant conditions for analysis, covering the two dimensions of state interests and transaction costs. Results of a qualitative comparative analysis show that transaction costs have a strong mitigating influence on the occurrence of cooperative river basin planning. However, reduced transaction costs alone do not suffice for states to enter into cooperation, but the latter have to be activated by a favourable incentive structure, i.e. high problem pressure, legal or domestic incentives. While these insights hold for most cooperative river basin districts, a few basins that follow a contradictory pattern without reduced transaction costs deserve further attention. The findings shed further light on the influence of contextual factors in shaping water governance.

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Introduction

In recent years the focus in water resource management has shifted towards more integrated approaches to address the predominant problems facing rivers in Europe and beyond (Hering and Ingold, 2012). This entails integrated action across policy sectors and among societal actors, and the holistic management of rivers according to their hydrological boundaries – i.e. within river basins. While this management paradigm poses significant challenges to domestic environmental policy and governance structures, matters become even more complex when river basins span national boundaries (Bernauer and Kalbhenn, 2010; Young, 2011). Solutions that have proven feasible in the domestic realm are not necessarily transferable to the international level given its distinct legal and structural context. Hence, the sustainable management of water resources is not only a technical or scientific challenge but often foremost a political one (Bernauer, 2002).

Responding to calls for more integration, the 2000 European Water Framework Directive (WFD) incorporates elements of integrated water resource management (Ingram, 2011). It adopted for the first time on a European scale the unit of the river basin as the basic reference point of the European water management regime. With the overarching aim of achieving good water status (Art. 1), the Directive requires that all rivers in the EU should be managed according to river basin districts. This explicitly includes those rivers that cross national borders, for whose management international or interregional structures are envisaged (Art.3, Preamble 35). However, the Directive remains vague in setting standards and prescribing concrete instruments for coordination, and it contains no mechanism to hold member states responsible for achieving results in transboundary basins (van Rijswick et al., 2009). Hence, the ambitious goals of river basin management on the basis of hydrological boundaries – like those of integrated water resource management in general – stand in contrast to the realities of often still nationally fragmented planning practices (Wiering et al., 2010), posing the question of factors and incentives for successful cooperation across national borders.

This paper picks up this question and investigates the conditions under which European countries cooperate in the management of their transboundary water resources under the WFD. The legal situation, mapped out by the provisions of the WFD, provides an excellent test bed for analysing these conditions for transboundary governance. The Directive prescribes a detailed procedural frame, leading to the production of a river basin management plan for each basin. Further, the Directive sets a uniform incentive for international coordination and, at the same time, remains sufficiently non-binding to allow member states enough discretionary space to themselves decide how they want to design management procedures. Given this setting of procedural standardisation and discretion concerning the scalar boundaries of planning, the WFD provides an excellent setting for comparative analysis. Due to the complexity in the set-up and conceptualisation of international cooperation in river basin management, involving interaction of many political and contextual conditions, and the medium-large number of international river basin districts governed under the WFD, the study lends itself exceptionally well to set-theoretic methods of empirical inquiry. I conduct a fuzzy-set qualitative comparative analysis (fsQCA) in order to explore the determinants of international cooperation in river basin management planning (Ragin, 2008; Rihoux and Ragin, 2009).

In section two I lay the theoretical basis for this study, reflecting on conceptual literature and identifying relevant explanatory factors. In section three the method employed is described together with an account of the data gathering and calibration. Section four presents the results of the QCA, before section five concludes the paper with a discussion of the findings, the methods employed, and scope for further research.

Conceptual background

Transboundary rivers provide a very particular (inter)dependency structure for their riparians, and can be characterised as common property resources (LeMarquand, 1977). Countries intersected by a river basin are bound together as the river is a medium for the transportation of externalities (e.g. pollution, flow regulation) from one country to another. These externalities may be positive or negative, unidirectional or reciprocal, and create complex situations of mutual vulnerabilities (LeMarquand, 1977; Dinar et al., 2013). Hence, cooperation among riparians in a transboundary river basin can be seen as a function of factors inherent to the river basin, and those stemming from the specific interacting institutional (national) contexts influencing interests and incentive structures of actors. In recent years a considerable body of conceptual and empirical literature has identified a rich set of political, economic and geographical conditions facilitating cooperation in transboundary river basins (e.g. Durth, 1996; Marty, 2001; Bernauer, 2002; Espey and Towfique, 2004; Gerlak and Grant, 2009; Tir and Ackerman, 2009; Verwijmeren and Wiering, 2007; Zawahri and Mitchell, 2011; Dinar et al., 2013; Bernauer and Böhmelt, 2014; for a review see: Bernauer and Kalbhenn, 2010). Drawing on insights from these studies, paired with arguments from International Relations theories of neo-liberalism (Keohane, 1984; Moravcsik, 1997), the framework adopted in this paper structures cooperative incentives according to factors of state interests and transaction costs (Zawahri and Mitchell, 2011). Factors identified here provide the basis for identification of conditions underpinning the subsequent comparative analysis. I will argue that it is – in the vein of causal complexity – various combinations of these different conditions that is expected to lead to transboundary cooperation. Put differently, each single factor is expected to be an insufficient but necessary part of a sufficient combination of conditions (Mahoney and Goertz, 2006).

Distinguishing this study from most others in the field is the embeddedness of the analysis in the EU legal context. The WFD introduced several innovations into the European water management regime, particularly concerning its goals, spatial settings and procedures (Page and Kaika, 2003; Newig and Koontz, 2013). The Directive sets the overall goal of a good water status as defined by a number of ecological, chemical and hydromorphological indicators. With this focus the Directive follows an ecosystem-based approach that addresses water quality in a comprehensive way, but without neglecting quantity aspects. However, it allows considerable procedural leeway when it comes to cooperation in international river basins (van Rijswijk et al., 2009), allowing member states a broad range of options ranging from de facto independent unilateral management to close practices of co-management. While this situation shares many characteristics of the wider international setting of river cooperation and conflict, the WFD introduces special incentive structures for its member states to cooperate. Procedurally, the WFD as the first of several European environmental directives introduces a mandated

participatory planning approach (Newig and Koontz, 2013), requiring EU member states to follow a prescribed six-year planning cycle – with input from relevant stakeholders and the public – to produce and implement river basin management plans (RBMP) and programmes of measures (with the first cycle plans due by 2009). These, in turn, serve as political programmes in themselves, stipulating and guiding river basin management and the implementation of measures in the respective river basin districts.

State interests

Neo-liberal theories assume states will enter into cooperation and realise joint gains if this is in their mutual interest (Hasenclever et al., 2002; Keohane, 1984). Under conditions of interdependence, as in the context of international rivers, grounds for cooperation are more pronounced as multilaterally coordinated action may be more efficient and effective than unilateral action (Dinar et al., 2013).

In the case of international rivers, state interest in cooperation arises in part from the extent to which the status of domestic water resources is considered problematic (Verwijmeren and Wiering, 2007). Most studies on international river management equate this *problem perception* with the availability or scarcity of freshwater resources (Giordano, 2003), with only few notable studies also considering water quality issues (e.g. Gerlak and Grant, 2009; Bernauer and Kuhn, 2010). However, in the European context water quality issues have been seen as the main driving force for establishing river basin institutions (Kliot et al., 2001). Water quality issues differ considerably from quantity issues, as relations for the former are rather reciprocal. While one country can effectively withdraw water and deprive its downstream neighbours, even upstream countries may suffer from their own pollution (Kalbhenn, 2011). This leads to the assumption that environmental degradation encourages joint efforts to address it (Dinar et al., 2013).

The WFD assesses the problem structure of European rivers in a very formalised way. Given its goal of good water status, the Directive relies on a number of indicators of the overall status of the aquatic ecosystem. These indicators give states a rather specific account of their problem structure, thereby shaping the overall problem perception of each member state. As these indicators go well beyond classical measurements of chemical water status or water quantity, the WFD alters the nature of interdependence among riparians, usually determined by their relative positioning in the basin, towards a more balanced setting. Requirements for ecological restoration (e.g. measures for fish passability) reverse classical upstream-downstream relations and lead to new dependencies on downstream countries, increasingly flattening dichotomies (Moellenkamp, 2007). Hence, I assume, irrespective of states' positions in a river basin district, that ecological problems will have a positive effect on international cooperation.

State interest in cooperation can also stem from overall (domestic) *environmental awareness and commitment*. International activities mirror in this sense domestic preferences (Moravcsik, 1997). Water policy can be perceived as an essential part of a country's overall environmental policy, and strong environmental commitment and awareness in the domestic realm will also influence the management of transboundary resources. However, insights from previous studies paint a mixed picture; while Bernauer and Kuhn (2010) found that domestic environmental policy stringency lead to less nitrate pollution in international rivers, others

could not support this finding (e.g. Gerlak and Grant, 2009). For the purposes of this study, I expect that higher levels of environmental commitment will also facilitate cooperative international protection efforts among co-riparians (Bernauer, 1997; Bernauer and Kalbhenn, 2010).

Transaction costs

Neo-liberal arguments (Keohane, 1984; Young, 1989) see international cooperation as a function of the underlying situation structure, determined by domestic and international institutional factors. These provide incentives increasing the likelihood that parties gain trust, and overall lower transaction costs to arriving at a mutually satisfying contract (Hasenclever et al., 2002). Transaction costs are here defined as all costs that “parties incur or expect to incur in the process of regime formation“ (Marty, 2001: 42). Generally, these costs are inversely related to the likelihood of cooperation with higher transaction costs making cooperation less probable (Keohane, 1984).

It is one of the main hypotheses of collective action theory that cooperation becomes more problematic to attain and sustain with an increasing *number of parties* involved (Olson, 1965). While in bilateral negotiations states can relatively easily assess preferences of their opponents, collect information, and identify and manage defecting behaviour, multilateral situations are much more complex. Difficulties with anticipating the behaviour of others, uncertainty, and free-riding increase with the number of players and diminish the chances of sustained cooperation (Oye, 1985). In the context of international river basin management, this leads to the assumption that basin-wide cooperation is less likely in river basins with more riparians. This is supported by a number of studies. Several authors established in their analyses that transaction costs play a greater role in multilateral settings than in bilateral negotiations (Espey and Towfique, 2004; Zawahri and Mitchell, 2011; Gerlak and Grant, 2009). Conversely, Kalbhenn (2011) and Bernauer and Böhmelt (2014) find a positive relationship between cooperation and the number of riparians in a basin.

Transaction costs are strongly influenced by the degree of integration between countries, both in the policy realm of concern and beyond (Bernauer, 1997). *Prior cooperation* and pre-existing cooperative frameworks serve as strong facilitators of future cooperation (Keohane, 1984). By increasing mutual transparency and trust, established and formalised cooperation shapes actors' expectations towards a common direction stimulating further cooperation. Once bound to such a framework, overall transaction costs of cooperation decrease while at the same time non-cooperation becomes more expensive, providing strong incentives for long-term cooperation (Keohane, 1984; Moravcsik, 1997). For international river basins, treaties are the most common form of established and formalised cooperation. The Transboundary Freshwater Dispute Database (TFDD)¹ counts more than 400 agreements between the early nineteenth century and 2007. Empirical insights on the influence of these for further cooperation are rather clear that the effect of previous treaties on subsequent cooperation is strong and positive (Gerlak and Grant, 2009; Brochmann, 2012).

¹ <http://www.transboundarywaters.orst.edu> [09.06.2015].

Beyond specifically water-related cooperation, the *wider political, economic and ecological integration* of states also provides important incentives for states to enter into cooperation. Some authors even suggest that the influence of other interest or cost related factors on the likelihood of cooperation is strongly mediated by the degree of underlying integration (Durth, 1996). Neo-liberal theories point in particular to the role of regional trade interdependence in mitigating transaction costs (Jervis, 1999). Established economic interdependence serves as a signal of trustworthiness for countries, and fosters a cooperative environment. Further, increased economic interaction between states also has positive effects on transaction costs in other realms of cooperation, as it facilitates monitoring and sanctioning and creates room for cross-issue linkages and side payments (Bernauer, 1997; Gartzke et al., 2001). Research in the context of international rivers largely supports these positive claims (e.g. Tir and Ackerman, 2009; Kalbhenn, 2011). Espey and Towfique (2004) find that strong trade ties increase the likelihood of treaty formation by around 20 per cent. Based on these conceptual and empirical findings, I assume that economic interdependence has a positive effect on cooperative relations between states in a river basin district.

Research design

The following section maps out the methodological approach followed in this study, describes the conditions used and the data preparation. The basic case unit is the international river basin district as delineated under the Water Framework Directive. Some districts with only a very minor international share (below 0.15%) have been excluded from the analysis². All data for the remaining 45 cases was collected for the timeframe of the first WFD planning cycle from 2003 to 2009.

Methods

I use set-theoretic methods of Qualitative Comparative Analysis (QCA) (Ragin, 2008; Rihoux and Ragin, 2009) to analyse the mechanisms that facilitate international cooperation in European river basin districts. QCA taps into the context and complexity of individual cases, while at the same time deploying formal, analytical and comparative tools provided by Boolean algebra. It thus provides researchers with a way to analyse complex causality, i.e. phenomena in which a given outcome may be the result of a number of complex combinations of causal conditions (equifinality, multivariate explanations) describing relations of necessity and sufficiency (Mahoney and Goertz, 2006; Rihoux and Ragin, 2009). A condition is necessary, if its presence is always required for a given outcome to occur, while a sufficient condition implies the observation of the outcome whenever the condition is present; the outcome can, however, occur also under different conditions (Schneider and Wagemann, 2012). Relying on these causal connections, the method is appropriate for the present research problem: as previous studies have shown (see above), international cooperation around transboundary rivers is subject to a number context-sensitive factors, such as the water problems at hand or the integration between states, related by various causal paths of

² Districts excluded were Dniester, Seine and Shannon. The districts Jarft and Swiezej have been dismissed because of incomplete data.

interaction (Wiering et al., 2010). The application of QCA, therefore, may provide valuable insight into the interlinkages and interdependencies between conditions leading to international cooperation.

In the fuzzy-set (fs) variant of QCA used for this analysis cases are assessed using fuzzy logic (Ragin, 2008). Fuzzy values, ranging from 0 to 1, give an indication of the degree to which a case is a member of a given set (e.g. the set of basins with intensive international cooperation), with 1 meaning full membership and 0 full non-membership. The value of 0.5 describes the cross-over point between cases that are more members and those that are rather non-members of a set. Consequently, the assignment of fuzzy values for each case's conditions and outcomes (i.e. their calibration) is of central importance for the analysis and results, and should be as transparent as possible (Ragin, 2008). Hence, calibration is explained separately in the online supplements.

Central to each (fs)QCA is the so-called truth table. It goes well beyond the single cases' codes, containing all ideal-typical configurations³ of conditions possible, hence representing the set of all potential sufficient conditions. Each case is assigned to the configuration it fits the most. The outcome specifies the degree to which each configuration or row in the table is sufficient for explaining the outcome, assessed on the basis of the empirical case material. This is evaluated relying on all cases by a measure of 'consistency' – or the degree to which a combination of conditions reflects the ideal-typical relationship between the conditions and the outcome. Only configurations that are consistent above a certain threshold (see Ragin, 2008) with the outcome are included in the subsequent analysis. The method simplifies configurations to arrive at a parsimonious combination of sufficient conditions implying the outcome. The resulting solution term is again evaluated using measures of consistency and also of 'coverage', which measures the empirical importance of a consistently sufficient condition (Ragin, 2008).

Conditions, data & calibration

For measuring cooperation in transboundary river basins most large-n studies rely on bilateral or multilateral treaty formation (e.g. Zawahri and Mitchell, 2011; Brochmann, 2012) or assessments of media-reported conflict or cooperation (e.g. Kalbhenn, 2011; Bernauer and Böhmelt, 2014). While all of these approaches provide good proxies for the measurement of cooperation, they all fall short in establishing a link between political intentions and actual water resource management (and implementation). Given its standardised procedures of river basin management with cyclical planning and implementation, the WFD offers a useful test-bed to address this gap.

As cooperation in river basin management planning (*RBMP*) is encouraged but not mandated under the Directive, it occurs to varying degrees. For reasons of data availability, in calibrating the outcome I follow the EU's own account of cooperation, which was used to assess the first cycle RBMPs (Zamparutti et al., 2012). The highest standards of cooperation are attained if countries draft and publish an international RBMP that covers the whole river basin district.

³ I.e. only full (non-)memberships are displayed, meaning only values 0 and 1 instead of fuzzy values.

For a more detailed account of the calibration procedure and the fuzzy values assigned, please consult the online supplements.

Table 1: Descriptions and calibration anchors for conditions and outcome

Condition/Outcome	Description	Assumed influence on outcome	Threshold non-full membership (0)	Crossover-point (0.5)	Threshold full membership (1)	Data Source
Collaborative river basin management planning (RBMP)	Degree of cooperation in river basin management planning	outcome	No formalised cooperation	Reification of cooperation through body	International RBMP	Zamparutti et al., 2012
Ecological status (ECOSTAT)	% of river basin with at least good ecological status	-	0	50	100	WFD WISE database*, vann-net.no, MUNL-SH, 2004
Environmental commitment (ENVCOM)	Score in EPI (ecosystem vitality only)	+	55	67	86	Esty et al., 2008
Number of riparians (RIPAR)	# of countries in the river basin district	-	2	2.5	5	Zamparutti et al., 2012; Economic Commission for Europe, 2011
Prior cooperation (PRICOOP)	# of treaties in the basin before WFD (2000)	+	0	3.5	12	TFDD; Zamparutti et al., 2012
Economic integration (ECONINT)	Total dyadic trade controlled for aggregate GDP	+	6	44	88	Gleditsch, 2002; Hausmann et al., 2011
Legal context (LEGAL)	Minimum legal bindingness of WFD for riparians	+	Includes non-EU countries	Legal obligation under the WFD	Only EU-member states	Nilsson et al., 2004

Note: Terms in brackets in the first (left) column specify the conditions' abbreviations for the analysis. Column 3 indicates the assumed influence of the respective condition on the outcome as established in the conceptual section; '+' assumes a positive, '-' a negative influence.

* http://www.eea.europa.eu/data-and-maps/data/wise_wfd [29.01.2015].

State interests, as outlined above, are measured by two conditions, problem pressure and environmental commitment. As a first step towards producing a RBMP under the WFD, member states must compile an inventory of current water status. This information, aggregated in the share of the river basin that is assigned good ecological status (*ECOSTAT*), is also used in this study. For environmental commitment (*ENVCOM*) I follow previous studies (Gerlak and Grant, 2009) and use the ecosystem vitality indicators of the Environmental Performance Index (EPI), which tracks the environmental performance of almost 150 nations around a core set of priority issues (see Esty et al., 2008).

The factor of transaction costs has been divided into three dimensions. The number of riparian countries (*RIPAR*) was calibrated along the main cleavage – bilateral versus multilateral coalition structures (Zawahri and Mitchell, 2011). Treaty data provided by the TFDD, which has proven a useful indicator for cooperation in previous studies (e.g. Espey and Towfique, 2004; Tir and Ackerman, 2009), serves as a basis for the condition of prior cooperation (*PRICOOP*) in the river basins. Finally, economic integration is assessed using a modified

version of established trade interdependence measures (Oneal and Russett, 1999) that highlights the importance of riparians' trade among each other to the regional economy.

Apart from these conditions, describing state interests and transaction costs, I also included the legal context (*LEGAL*) as a condition. The WFD is not equally binding or important for all countries that share river basins with the EU and hence offers different degrees of compulsion for action.

All conditions, their descriptions, sources and qualitative anchors are summarised in table 1⁴.

Comparative Analysis

In the procedures of QCA, the analysis of necessity precludes further analyses of sufficiency (Schneider and Wagemann, 2012). In this study, a detailed investigation of the conditions at hand revealed none to be consistently⁵ necessary for the presence of the outcome. This suggests that international cooperation in river basin management planning is not dependent upon any single condition at hand, but rather is achievable only in a variety of ways.

Table 2: Truth Table for the analysis of cooperative river basin management planning

ECOSTAT	ENVCOM	RIPAR	PRICOOP	ECONINT	LEGAL	RBMP	n	Cons	PRI
0	0	1	1	1	1	1	3	0.99	0.99
1	0	0	1	1	1	1	2	0.99	0.97
1	1	1	1	1	1	1	1	0.98	0.97
0	0	0	1	1	1	1	4	0.97	0.95
0	0	0	0	1	1	1	2	0.96	0.94
1	1	0	0	1	1	1	8	0.96	0.92
1	0	0	0	1	1	1	1	0.96	0.91
0	1	0	0	1	1	1	1	0.94	0.83
0	0	1	1	1	0	1	2	0.90	0.85
0	0	1	1	0	1	1	1	0.87	0.84
0	0	0	0	0	1	0	1	0.80	0.57
1	0	0	1	0	0	0	1	0.76	0.45
0	0	0	1	0	1	0	1	0.75	0.46
1	0	1	1	0	0	0	2	0.75	0.52
0	1	1	1	0	0	0	1	0.75	0.29
1	0	1	0	0	0	0	4	0.74	0.47
0	0	1	1	0	0	0	2	0.72	0.47
1	0	0	0	0	0	0	4	0.72	0.47
0	0	0	1	0	0	0	1	0.70	0.32
0	0	0	0	0	0	0	1	0.65	0.28
0	0	1	0	0	0	0	2	0.65	0.22

⁴ Detailed data table on all basins and their calibrated conditions and outcome can be accessed online.

⁵ Consistency threshold of 0.9.

Table 2 presents the truth table for the analysis of sufficient conditions for cooperative planning under the WFD⁶, with each case assigned to the ideal-typical configuration to which it best fits. The 45 cases observed can be displayed in 21 different configurations leaving 43 possible combinations without information (not displayed in table 2), a number of logical remainders that is not unusual (Schneider and Wagemann, 2006). I undertook all of the following analyses with R building on the “QCA” package (Thiem and Dusa, 2013) and some functions accompanying the instructions by Schneider and Wagemann (2012).

For the analysis of sufficiency QCA uses a truth table algorithm that minimises configurations consistently sufficient for the outcome, leading to a more parsimonious solution terms (Schneider and Wagemann, 2012). Given the substantial gap in the consistency values in the truth table, I used a threshold of 0.85 to delineate sufficient configurations⁷. For the discussion I consider the intermediate solution that only includes easy counterfactuals (Ragin, 2008), relying on targeted expectation about the effective direction of the conditions at hand (see table 1, column 3).⁸

The analysis of the truth table delivers four different paths that produce a positive outcome, as displayed in table 3 and figure 1, all of which are a combination of three or four single conditions. With a value of 0.92, the solution is highly consistent, and has a coverage of 0.63.

Table 3: Intermediate Solution

Intermediate solution:					
$\text{ripar}^*\text{ECONINT}^*\text{LEGAL} + \text{ecostat}^*\text{PRICOOP}^*\text{ECONINT} + \text{ENVCOM}^*\text{PRICOOP}^*\text{ECONINT}^*\text{LEGAL} + \text{ecostat}^*\text{RIPAR}^*\text{PRICOOP}^*\text{LEGAL} \rightarrow \text{RBMP}$					
No.	Prime implicants	Consistency	Raw Coverage	Unique Coverage	Cases Covered
1	ripar*ECONINT*LEGAL	0.92	0.47	0.21	Minho, Lima, Tagus, Ardour-Garonne/Cantabrico Oriental, Douro, Ems, Guadiana, Neagh Bann, North Western, Bothnian Bay, Bothnian Sea, Glomma, Nordland, Skagerrak & Kattegat, Troms, Troendelag, Venta; Koiva/Gauja; Lielupe
2	ecostat*PRICOOP*ECONINT	0.97	0.35	0.09	Elbe, Meuse, Scheldt, Ardour-Garonne/Cantabrico Oriental, Douro, Ems, Guadiana, Po, Rhine
3	ENVCOM*PRICOOP*ECONINT*LEGAL	0.98	0.20	0.01	Torne River
4	ecostat*RIPAR*PRICOOP*LEGAL	0.94	0.10	0.02	Elbe, Meuse, Scheldt, Odra
Total		0.92	0.63		

Note: in Boolean algebra * stands for a logical “AND”, + for a logical “OR”, capital letters indicate the presence, lower case letters the absence of a condition.

⁶ In this analysis, the negative outcome does not play a role. Further, the model does not provide a conclusive solution for non-cooperation, indicating a qualitative difference between cooperation and non-cooperation requiring separate conceptual groundwork.

⁷ Also a threshold of 0.9 may have been possible. I chose the lower threshold of 0.85 to include the case of the Odra, which added an extra, interesting solution path.

⁸ Information on the most complex and most parsimonious solutions can be found online.

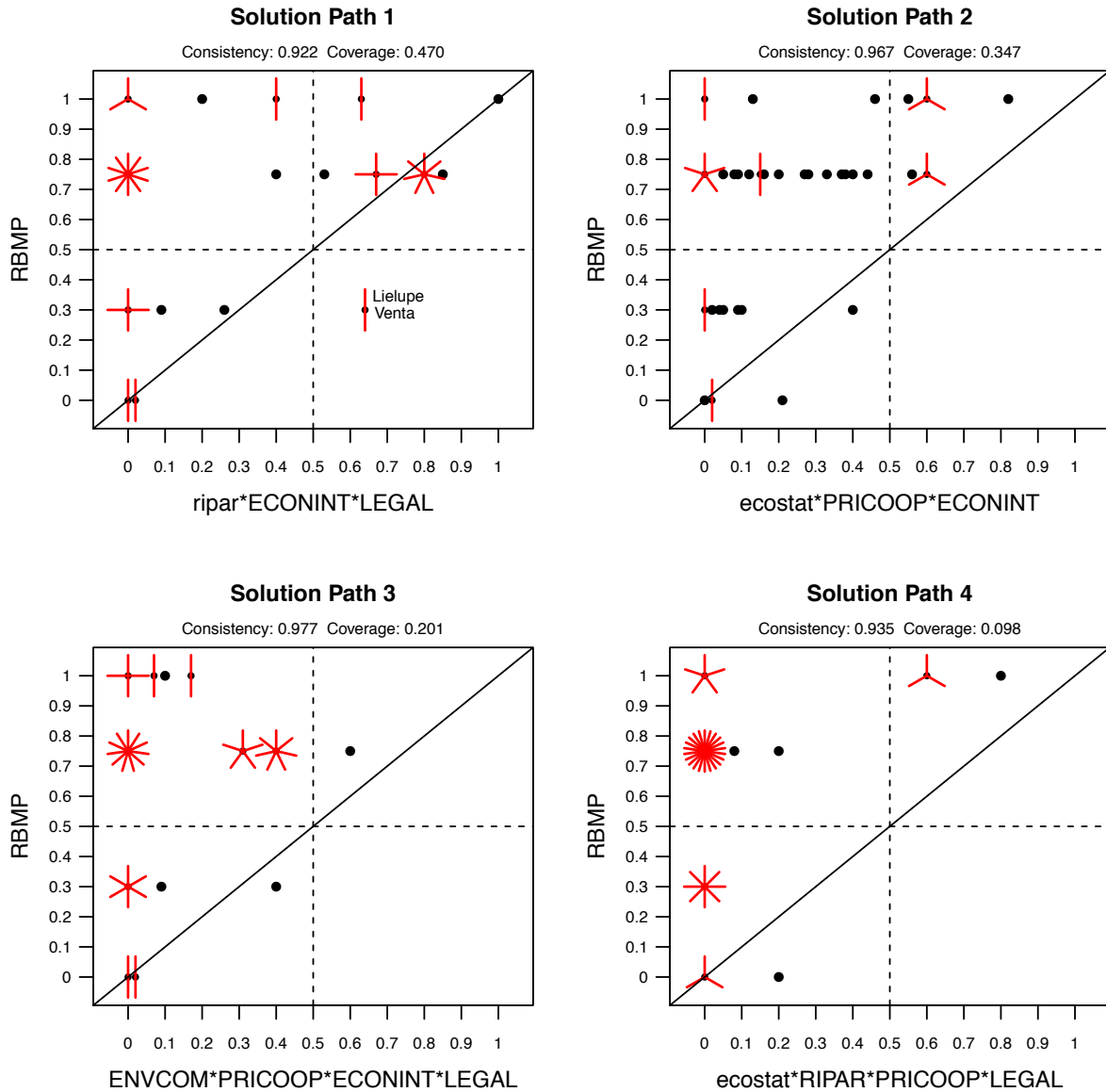


Figure 1: Sunflower plot for sufficient paths for cooperative river basin management planning.
Note: Multiple points are plotted as ‘sunflowers’ with multiple leaves visualising overplotting.

A first solution path consists of basin districts with only two riparians that are economically well integrated and legally bound by the WFD (ripar*ECONINT*LEGAL → RBMP), irrespective of the states’ interests, and of any previous experience of cooperation. With coverage of 0.47 this path has the widest coverage, capturing almost half of all cases.

Solutions two and three (PRICOP*ECONINT*(ecostat + ENVCOM*LEGAL) → RBMP) show two different ways in which integration in the water sector and economically may contribute to cooperative river basin planning. Integration alone is not sufficient, but must be supported by state interests and context factors. One way in which this leads to cooperative planning is through high problem pressure. If ecological status is problematic in more than half of the basin, economically integrated states with considerable prior cooperation in the management of their shared rivers engage in collaboration. The second sufficient path through which integrated basins may reach the outcome includes the interaction of environmental

commitment and a legal requirement for WFD planning. Under these circumstances, high domestic environmental commitment of integrated states is not sufficient for cooperative river basin planning, but must be legally supported by the Directive. Interestingly, in both of these paths the number of riparians does not play a role. This implies that basin districts may be managed through collaborative processes regardless of how many parties are involved, as long as they are integrated and have a state and/or legal interest.

Finally, a fourth path (ecostat*RIPAR*PRICOOP*LEGAL → RBMP), involving low ecological water status, more than two states, high previous cooperation and the legal obligations of the WFD, appears sufficient for the outcome to occur. Surprising about this solution is the inclusion of multilateral basin districts, which runs counter to the theoretically derived expectations. However, in combination with three other conditions, high problem pressure, considerable cooperative experience and legal provisions of the WFD, multilateral basins can enter into cooperative planning processes. Moreover, this solution is sufficient irrespective of the degree of wider economic integration of states involved.

Discussion

The results of this analysis correspond in large part to expectations on the basis of theory and previous research, but add new insights highlighting the contextuality of (transboundary) water governance. In this section I discuss the different solution paths, reflecting back on the actual cases in order to establish an understanding of the mechanisms at work.

The first part of the sufficient condition – two states, high economic integration, legal obligation – covers 19 of the 25 cases with a positive outcome in the truth table, 14 uniquely, and therefore can be attributed high explanatory relevance. Basins included are, among others, those shared between Sweden and Norway (Bothnian Bay, Bothnian Sea, Glomma, Nordland, Skagerrak & Kattegat, Troms, Troendelag), between Ireland and the UK (North Western, Neagh Bann), and those between Spain and Portugal (Minho Lima, Tagus, Douro, Guadiana). These country dyads, linked geographically and ecologically, exhibit overall strong bilateral ties and interact regularly in a variety of areas, which may often be rather informal. Before the WFD, for example, the Republic of Ireland and the UK (i.e. Northern Ireland) had limited, less structured and rather informal cooperation in the water sector. With the introduction of the WFD, an incentive was introduced to coordinate planning for transboundary rivers. This led to closely aligned management procedures between the Republic of Ireland and Northern Ireland via the North-South WFD Coordination Group, and eventually to the compilation of a common river basin management plan (Murphy and Glasgow, 2009).

These examples support the transaction cost arguments outlined above. The WFD imposed only low additional costs on these already integrated country dyads given the range and intensity of established interaction. Indeed, the new regulation created a window of opportunity to extend cooperation further in the realm of water resource management, where cooperation was previously rather weak. The voluntary adoption of the Directive by Norway, and the inauguration of a coordinative working group in the Gauja/Koiva basin between Estonia and Latvia (Zamparutti et al., 2012), can be understood as two other clear indications for this argument.

As figure 1 (top left) shows, there are two cases, the Venta and Lielupe basins shared between Latvia and Lithuania, that provide true contradictory cases⁹ (Schneider and Wagemann, 2012). Despite scoring high on all relevant conditions of this first solution path, the outcome does not occur, which stands in direct contradiction to the postulated causal hypothesis. Closer inspection of the case material however, shows that the theoretical principle still holds; the introduction of the WFD, similar to the activities in the Gauja/Koiva basin, led to an intensification of cooperative efforts with the signing of a technical protocol between these two economically well integrated Baltic states. Although cooperation in this case comprised little more than, ad-hoc meetings between working groups in the first planning cycle (Zamparutti et al., 2012) (leading to an outcome score below 0.5), cooperation did improve.

Solution paths two and three include a high degree of integration between riparians, both in the realm of water resources management and beyond. Path two combines these conditions with high problem pressure and covers all of the established instances of cooperation in Central Europe (Rhine, Meuse, Scheldt, Ems, Elbe, Po) and some on the Iberian Peninsula (Ardour-Garonne/Cantabrico Oriental, Douro, Guadiana). The Rhine serves as a prime example. Longstanding cooperation in the basin has its main institutional manifestation in the International Commission for the Protection of the Rhine (ICPR) founded (in 1963) in a time of overall political and economic integration between these states. Since then, and given the nature of water issues in the basin, water *quality* management has played a pivotal role in cooperation to date. Hence, WFD planning did not pose overly high costs for the basin's riparians, but meant another step in both, deepening and broadening cooperation to improve water quality (deepening, as the ICPR attained a coordinating role with new competences; and broadening, as WFD planning drew in states that are not members of the ICPR¹⁰) (Lindemann, 2008; Mostert, 2009). Similar experiences were also observed for the other basin districts covered by this solution path, while for those between Spain and Portugal, water *quantity* induced issues are of primary concern (Thiel, 2004).

Solution path three – high economic integration and intensive previous cooperation in the river basin, paired with high environmental commitment and a legal obligation to implement the WFD – covers only one basin, the Torne River shared between Sweden, Finland and Norway. Procedurally, WFD cooperation came about in the Torne basin in a similar way to in the previous paths: the states have a history of deep economic integration and considerable collaboration in the water realm, albeit focused on fisheries management and navigation. Again, the WFD posed an opportunity to deepen and strengthen ties, and extend them to the management of water quality (Nilsson and Langaas, 2006). The condition of high environmental commitment might give an indication as to why the Directive provided such a strong incentive for these states. Sweden, for example, was the sole EU member state to include the environmental quality standards of the WFD in its national legislation, making them legally binding (Andersson et al., 2012). Hence, the Directive fell on fertile ground in these states given their high environmental awareness and commitment.

The previously explained paths can be explained by a *transaction cost model* that highlights the favourable structural basis established by low transaction costs and their interaction with

⁹ In the diagram, true contradictory cases can be identified as they are located in the lower right sector of the chart.

¹⁰ Italy, Liechtenstein, Belgium.

other conditions incentivising cooperation. In that, the model builds on previous studies (Durth, 1996; Bernauer, 2002; Tir and Ackerman, 2009) that emphasise the moderating functions of transaction costs. It shows that the WFD, where it was superimposed onto existing structures of high economic or regional integration, was incorporated into these favourable structures deepening cooperation between riparians. However, drawing a more nuanced picture, a suitable transaction cost structure could not be explained by one condition alone. The solution paths of this analysis always contained a composition of two transaction cost conditions, combining high economic integration either with favourable bilateral negotiation structures or with strong previous cooperation in the water sector, emphasising the empirical complexity of this factor but also the significance of wider (economic) interdependencies. The model also highlights that low transaction costs may not suffice as an explanation for cooperation but serve rather as moderator with rather passive potential depending on the activation by modifications in the incentive structure. Here, the legal obligation for river basin management planning under the WFD as well as high problem pressure induced through poor water quality proved influential incentivising conditions, explaining cooperation in 23 cases. Environmental commitment only proved important together with legal obligation under the WFD, and only in the basin districts shared between Scandinavian states, indicating weaker potential of this condition and highlighting the special role it played in Scandinavia.

Counter to this explanatory model, solution path 4 – multilateral basins with a considerable history of cooperation in the water sector, high problem pressure and a legal obligation to implement the WFD – describes an alternative solution under conditions of higher transaction costs. It covers four basin districts located in Central Europe (Elbe, Meuse, Scheldt, Odra), with the Odra as a uniquely covered case being a prime example for the mechanism. The transaction cost structure in this basin is less favourable as it is shared between three states with limited economic interdependence. Yet despite this, the riparians took a similar approach to other Central European basins described in path 2, and made a commitment to cooperation in 1996, soon after the fall of the Iron Curtain, by establishing the International Commission on the Protection of the Odra against Pollution (ICPO). Again, the WFD provided an incentive to deepen and further institutionalise this cooperation, and saw the mandate to implement the Directive transferred to the ICPO (Schernewski et al., 2005; Viehhauser and Lindblom, 2007). This path and example suggests that even those basins without a favourable transaction cost structure may develop cooperative ties given sincere and strong commitment among the parties involved.

These findings support recent approaches to water governance that emphasise the role of context in the implementation of governance reforms and institutional performance (Ingram, 2011; Pahl-Wostl et al., 2012). Those contributions highlight the danger in generalising mechanisms that worked in one context to different locations with other ground conditions, and advocate for a better understanding and consideration of contextual factors. The paths presented here contribute to this by identifying configurations supporting transboundary cooperation in water governance. The results appear particularly valuable as they account for rather unique and rare contextual configurations describing only few cases (e.g. paths 3 and 4), that even contradict established hypotheses (as path 4 does). However, further research might detect additional contextual settings for cooperation that go beyond those identified here. The Danube, one of the most prominent cases of international cooperation in water management, is

a particularly noteworthy example of a case that could not be explained by the terms of the sufficient condition. This gives reason – beyond the Danube case – to pay more attention to the contextual differences and particularities of seemingly similarly structured cases in further analyses.

Despite these shortcomings the method of QCA employed here appears to be a valuable addition to the methodological toolbox for international water governance research. Its strengths lie particularly in mapping out the complex causal interrelations between (often qualitative) conditions that may, be hardly accessible to quantitative inquiry, and in accounting for outlying cases, which together support a more nuanced, context-sensitive account of the outcome. However, QCA, despite its increasing popularity, still lacks agreed standards of good practice (Schneider and Wagemann, 2010). Particularly in the calibration of conditions and the interpretation of results the method requires special attention. With this in mind, QCA may yield additional opportunities in the field of international water governance research and beyond, especially when it comes to complex interlinkages between contextual conditions.

Conclusion

This analysis has explored the conditions under which European river basins are managed cooperatively by their adjoining states, reflecting principles of integrated water resource management. The EC Water Framework Directive with its detailed procedural provisions for (international) river basin management planning served as a highly applicable thematic frame, allowing for a rigorous analysis of factors favourable for putting the principle of transboundary cooperation into practice. Neo-liberal theoretical approaches to international cooperation, borrowed from International Relations, helped to identify relevant conditions for analysis covering the two dimensions of state interests and transaction costs. The qualitative comparative analysis employed highlighted the complex interplay between these two dimensions. It showed that favourable transaction costs are a fundamental mediating factor for the establishment of cooperative planning structures. Results further emphasised that transaction costs alone form only part of the solution as they depend, as a passive structural factor, on an incentivising impulse. An interesting exception to this pattern is seen in the Odra basin, where, despite a less favourable transaction cost structure, cooperation between the three riparians was institutionalised.

The research opens up pathways for further investigation. As the identified solution does not cover all basins with cooperative structures (e.g. Danube), subsequent studies may inspect these basins in more detail to detect alternative mechanisms and conditions. However, the relationship between transaction costs and incentivising factors proved a valuable entry point for subsequent studies to analyse cooperation in other world regions, or concerning other international (environmental) issues, hence broadening the focus. In this vein, other European environmental directives characterised by mandated participatory planning, such as the Floods Directive or the Air Quality Directive, may offer similarly suitable legal frames for comparative analysis. Finally, future analyses should assess the merits of transboundary cooperation under the WFD beyond the production of a common RBMP. The mere plan development served here as a proxy for cooperation in water resource management, but it remains unclear just how these plans actually stimulate common practices on the ground, let

alone possible impacts on the environmental quality of water resources. The cyclical nature of the WFD may offer an appropriate empirical basis, given that the second planning and implementation cycle is currently under way, and likely to yield new insights into the activities initiated under the first round.

Literature

Andersson I, Petersson M, Jarsjö J. 2012. Impact of the European water framework directive on local-level water management: case study Oxunda catchment, Sweden. *Land use policy* 29: 73–82.

Bernauer T. 1997. Managing International Rivers. In *Global Governance. Drawing Insights from the Environmental Experience*, Young OR (ed). MIT Press: Cambridge; pp155–195.

Bernauer T. 2002. Explaining success and failure in international river management. *Aquatic Science* 64: 1–19.

Bernauer T, Böhmelt T. 2014. Basins at Risk: Predicting International River Basin Conflict and Cooperation. *Global Environmental Politics* 14: 116–138.

Bernauer T, Kalbhenn A. 2010. The Politics of International Freshwater Resources. In *The International Studies Encyclopedia*, Denmark R (ed). Wiley-Blackwell: Hoboken; pp5800–5821.

Bernauer T, Kuhn PM. 2010. Is there an environmental version of the Kantian peace? Insights from water pollution in Europe. *European Journal of International Relations* 16: 77–102.

Brochmann M. 2012. Signing River Treaties—Does It Improve River Cooperation? *International Interactions* 38: 141–163.

Dinar A, Dinar S, McCaffrey S, McKinney D. 2013. Bridges over Water. Understanding Transboundary Water Conflict, Negotiation and Cooperation. World Scientific: New Jersey.

Durth R. 1996. Grenzüberschreitende Umweltprobleme und regionale Integration: Zur Politischen Ökonomie von Oberlauf-Unterlauf-Problemen an internationalen. Nomos: Baden-Baden.

Economic Commission for Europe. 2011. Second Assessment of transboundary rivers, lakes and groundwaters. United Nations: New York.

Espey M, Towfique B. 2004. International bilateral water treaty formation. *Water Resources Research* 40: W05S05.

Esty DC, Levy MA, Kim CH, de Sherbinin A, Srebotnjak T, Mara V. 2008. 2008 Environmental Performance Index. New Haven.

Gartzke E, Li Q, Boehmer C. 2001. Investing in the Peace: Economic Interdependence and International Conflict. *International Organization* 55: 391–438.

Gerlak AK, Grant KA. 2009. The Correlates of Cooperative Institutions for International Rivers. In *Mapping the New World Order*, Volgy TJ, Šabič Z, Roter P, Gerlak AK (eds). Wiley-Blackwell: Chichester; pp114–147.

Giordano MA. 2003. Managing the quality of international rivers: Global principles and basin practice. *Natural Resources Journal* 43: 111–136.

- Gleditsch KS. 2002. Expanded Trade and GDP Data. *Journal Of Conflict Resolution* 46: 712–724.
- Hasenclever A, Mayer P, Rittberger V. 2002. Theories of international regimes. Cambridge University Press: Cambridge.
- Hausmann R, Hidalgo CA, Bustos S, Coscia M, Chung S, Jiminez J, Simoes A, Yildirim MA. 2011. The Atlas of Economic Complexity. Mapping Paths to Prosperity. Puritan Press: Cambridge.
- Hering JG, Ingold KM. 2012. Water management. Water resources management: what should be integrated? *Science* 336: 1234–5.
- Ingram H. 2011. Beyond Universal Remedies for Good Water Governance: A Political and Contextual Approach. In *Water for Food in a Changing World*, Garrido A, Ingram H (eds). Routledge: Oxford; pp241–261.
- Jervis R. 1999. Realism, Neoliberalism, and Cooperation: Understanding the Debate. *International Security* 24: 42–63.
- Kalbhenn A. 2011. Liberal peace and shared resources - A fair-weather phenomenon? *Journal of Peace Research* 48: 715–735.
- Keohane RO. 1984. After hegemony: Cooperation and discord in the world political economy. Princeton University Press: Princeton.
- Kliot N, Shmueli D, Shamir U. 2001. Development of institutional frameworks for the management of transboundary water resources. *International Journal of Global Environmental Issues* 1: 306–328.
- LeMarquand DG. 1977. International Rivers. The politics of cooperation. Westwater Research Centre: Vancouver.
- Lindemann S. 2008. Understanding Water Regime Formation — A Research Framework with Lessons from Europe. *Global Environmental Politics* 8: 117–141.
- Mahoney J, Goertz G. 2006. A Tale of Two Cultures: Contrasting Quantitative and Qualitative Research. *Political Analysis* 14: 227–249.
- Marty F. 2001. Managing international rivers: problems, politics and institutions. Peter Lang: Bern.
- Moellenkamp S. 2007. The “WFD-effect” on upstream-downstream relations in international river basins – insights from the Rhine and the Elbe basins. *Hydrology and Earth System Sciences Discussions* 4: 1407–1428.
- Moravcsik A. 1997. Taking Preferences Seriously: A Liberal Theory of International Politics. *International Organization* 51: 513–553.
- Mostert E. 2009. International co-operation on Rhine water quality 1945–2008: An example to follow? *Physics and Chemistry of the Earth, Parts A/B/C* 34: 142–149.

MUNL-SH [Ministerium für Umwelt, Naturschutz und Landwirtschaft Schleswig-Holstein]. 2004. Flussgebietseinheit Eider. Bericht über die Analysen nach Artikel 5 der Richtlinie 2000/60/EG. Kiel.

Murphy K, Glasgow G. 2009. North–South Coordination in Ireland’s International River Basin Districts. *Biology & Environment: Proceedings of the Royal Irish Academy* 109B: 139–150.

Newig J, Koontz TM. 2013. Multi-level governance, policy implementation and participation: the EU’s mandated participatory planning approach to implementing environmental policy. *Journal of European Public Policy* 21: 248–267.

Nilsson S, Langaas S. 2006. International River Basin Management under the EU Water Framework Directive: An Assessment of Cooperation and Water Quality in the Baltic Sea Drainage Basin. *AMBIO: A Journal of the Human Environment* 35: 304–311.

Nilsson S, Langaas S, Hannerz F. 2004. International River Basin Districts under the EU Water Framework Directive: Identification and Planned Cooperation. *European Water Management Online* 1–20.

Olson M. 1965. *The Logic of Collective Action: Public Goods and the Theory of Groups*. Harvard University Press: Cambridge.

Oneal JR, Russett B. 1999. Assessing the Liberal Peace with Alternative Specifications: Trade Still Reduces Conflict. *Journal of Peace Research* 36: 423–442.

Oye KA. 1985. Explaining Cooperation under Anarchy: Hypotheses and Strategies. *World Politics* 38: 1–24.

Page B, Kaika M. 2003. The EU Water Framework Directive: part 2. Policy innovation and the shifting choreography of governance. *European Environment* 13: 328–343.

Pahl-Wostl C, Lebel L, Knieper C, Nikitina E. 2012. From applying panaceas to mastering complexity: Toward adaptive water governance in river basins. *Environmental Science and Policy* 23: 24–34.

Ragin CC. 2008. *Redesigning Social Inquiry. Fuzzy Sets and Beyond*. University of Chicago Press: Chicago.

Rihoux B, Ragin CC. 2009. *Configurational comparative methods: qualitative comparative analysis (QCA) and related techniques*. SAGE: Los Angeles.

Van Rijswick M, Gilissen HK, Kempen J. 2009. The need for international and regional transboundary cooperation in European river basin management as a result of new approaches in EC water law. *ERA Forum* 11: 129–157.

Schernewski G, Löser N, Sekścińska A. 2005. Integrated Coastal Area and River Basin Management (ICARM): The Oder / Odra case study. *Coastline Reports* 6: 43–54.

Schneider CQ, Wagemann C. 2006. Reducing complexity in Qualitative Comparative Analysis (QCA): Remote and proximate factors and the consolidation of democracy. *European Journal of Political Research* 45: 751–786.

Schneider CQ, Wagemann C. 2010. Standards of Good Practice in Qualitative Comparative Analysis (QCA) and Fuzzy-Sets. *Comparative Sociology* 9: 1–22.

Schneider CQ, Wagemann C. 2012. Set-Theoretic Methods for the Social Sciences. Cambridge University Press: Cambridge.

Song J, Whittington D. 2004. Why have some countries on international rivers been successful negotiating treaties? A global perspective. *Water Resources Research* 40: W05S06.

Thiel A. 2004. Transboundary resource management in the EU: transnational welfare maximization and transboundary water sharing on the Iberian peninsula? *Journal of Environmental Planning and Management* 47: 331–350.

Thiem A, Dusa A. 2013. Qualitative Comparative Analysis with R: A User's Guide. Springer: New York.

Tir J, Ackerman JT. 2009. Politics of Formalized River Cooperation. *Journal of Peace Research* 46: 623–640.

Verwijmeren J, Wiering M (eds). 2007. Many Rivers to Cross. Cross Border Co-operation in River Management. Eburon: Delft.

Viehhauser M, Lindblom P. 2007. The Odra Commission as an example of successful international collaboration on water issues. In *Water Management and Assessment of Ecological Status in Transboundary River Basins*, Laita M (ed). Finnish Environment Institute; pp39.

Wiering M, Verwijmeren J, Lulofs, K, Feld C. 2010. Experiences in Regional Cross Border Co-operation in River Management. Comparing Three Cases at the Dutch–German Border. *Water Resources Management* 24: 2647–2672.

Young OR. 1989. The politics of international regime formation: managing natural resources and the environment. *International Organization* 43: 349.

Young OR. 2011. Effectiveness of international environmental regimes: existing knowledge, cutting-edge themes, and research strategies. *Proceedings of the National Academy of Sciences of the United States of America* 108: 19853–60.

Zamparutti T, Whalley P, Horn J, Dupont C, Vogel B. 2012. Comparative Study of Pressures and Measures in the Major River Basin Management Plans. Task 1 – Governance. Report prepared for DG Environment of the European Commission for the Comparative Study of Pressures and Measures in the Major River Basin Management Plans.

Zawahri NA, Mitchell SM. 2011. Fragmented Governance of International Rivers: Negotiating Bilateral versus Multilateral Treaties. *International Studies Quarterly* 55: 835–858.

Online Supplementary material for:

Transboundary cooperation in European water governance – a set-theoretic analysis of international river basins

Appendix 1: Conditions and Calibration

The process of calibration, i.e. the translation of raw data into fuzzy-set membership scores, is crucial to all set-theoretic methods as the researcher attaches qualitative meaning to the data (Ragin, 2008; Schneider and Wagemann, 2012). Hence, in order to make this step of the analysis transparent, the subsequent paragraphs will give a detailed account on the qualitative thresholds set for this analysis and the reasons behind these decisions.

In calibrating the outcome (cooperation, RBMP) I follow the EU's own four-step scale for measuring cooperation, which was used to assess the first cycle RBMPs (Zamparutti et al., 2012). The highest standards of cooperation are attained if countries draft and publish an international RBMP that covers the whole river basin district. These cases were assigned a value of 1. Further thresholds are the existence of an institutionalised cooperation body (0.75), and existence of a cooperation agreement, which was coded a value of 0.3. This asymmetrical calibration that deviates from the often used division by quartiles, was chosen as these cooperation agreements often already include basic procedural provisions for coordination or cooperative action increasing their cooperative character. Hence, a value of 0.3 rather than 0.25 was assigned. The cross-over point, where tendencies shift from non-membership to membership is set by the shift from an agreement to a cooperative body, such as a river commission and by that the concretisation and institutionalisation of the cooperation. The complete lack of any formal cooperation receives a value of 0.

State interests are divided into two conditions, problem pressure and environmental commitment. For the assessment of environmental problem pressure the WFD provides again a uniform information basis. As a first planning step, member states must compile an inventory of their current water status. This information, aggregated in the share of the river basin that is assigned at least good ecological status (*ECOSTAT*), is also used in this study. It is assumed that this measure represents the problem pressure in a direct manner; hence, qualitative anchors are set at 0% for the 0-value and 100% for 1. The cross-over point was set at 50%, with all scores in between assigned by an exponential transformational assignment (Thiem and Dusa, 2013).

For environmental commitment (*ENVCOM*) I followed previous studies (Gerlak and Grant, 2009) and used the Environmental Performance Index (EPI) that tracks the environmental performance of almost 150 nations around a core set of priority issues regarding human health and the vitality of ecosystems. However, I considered only those indicators under the objective of ecosystem vitality (see Esty et al., 2008), as these correspond most closely to motives of ecosystem conservation and environmental awareness. The country scores have been aggregated for every river basin district using the minimum value of all countries involved. This value was used because cooperation, being largely dependent on consent by every riparian, is seen as being determined by the least willing party. The calibration of the index values was based on theoretical considerations, the experiences of previous studies as well as natural clusters in the data structure (see figure A1). Gerlak and Grant (2009) established in their international comparison of river basin cooperation a threshold of 80 for countries with high environmental awareness. However, given the rather high values European countries attain on

the EPI, the value of 86 was chosen as the upper anchor indicating full membership in the set of basins with highly environmentally committed countries. The other qualitative anchors were set at 55 (for 0), and 76 points (crossover-point), with calibration, again, based on a transformative assignment.

The factor of transaction costs has been divided into three dimensions. The number of riparian countries (*RIPAR*) was calibrated along the main cleavage – bilateral versus multilateral coalition structures (Zawahri and Mitchell, 2011). Only those river basin districts with two riparians were classed as predominantly non-members of this condition, and assigned a 0¹¹. All other constellations were seen as having somewhat strong membership in the set of multilateral basins and consequently assigned values above 0.5; basins with three countries were given a code of 0.6, with 4 riparians 0.8, and 5 served as the upper anchor (see table A1).

Table A1: Calibration scheme for conditions number of riparian countries (*RIPAR*), prior cooperation (*PRICOOP*) and legal requirement (*LEGAL*).

Fuzzy value	RIPAR	PRICOOP	LEGAL
0	2	0	Non EU-member
0.2		1	EU candidate country
0.4		2 – 3	
0.6	3	4 – 6	
0.8	4	7 – 14	WFD member
1	5 – 14	15 – 45	EU-member

For the condition of prior cooperation (*PRICOOP*) in the river basins I also rely on the treaty data provided by the TFDD¹², which has proven a useful indicator for cooperation before, amended by some information from EU sources (Zamparutti et al., 2012). The data shows that there are only five cases with no prior agreement at all (0-value) while many basins are subject to one or two treaties. A closer inspection of these cases reveals that the agreements are of a narrow scope, often focussing on single, limited issues such as border demarcation or water extraction, without further provisions for sustained or deeper cooperation (see also Lindemann, 2008). Hence, the mere presence of a single treaty is not considered sufficient for high membership. Instead, I use the value of three treaties as crossover-point, assuming that this value may serve as a sensible proxy for a first manifestation of sustained cooperation. These theoretical considerations correspond to the data structure, which displays a gap at the value of three indicating a natural cluster here. For the upper qualitative anchor a number of 15 treaties was assigned, beyond which the large differences between basins appear less important.

Further Economic integration is operationalised using a modified version of established trade interdependence measures (Oneal and Russett, 1999). Instead of focussing on country dyads, I measure the amount of dyadic trade between all countries in the river basin district, controlled for the total aggregate GDP of the basin’s riparians (Gerlak and Grant, 2009). With this index, the importance of trade to the regional economy of the basins’ riparians can be calculated. For illustrative purposes I normalised the index between zero and 100. As the resulting index is rather abstract, I relied on obvious clusters and gaps in the data for calibration (see figure A1). Thus, 6 served as anchor for the 0-value and 88 as threshold for 1, with the crossover-point set at 44.

Owing to the thematic framing in the context of the WFD, I also included the legal context (*LEGAL*) as a condition. The WFD is not equally binding or important for all countries that

¹¹ Minimum share to be considered a riparian was set at 0.15%.

¹² Additional information about the TFDD can be found at: <http://www.transboundarywaters.orst.edu>.

share river basins with EU members and hence offers different degrees of compulsion for action. For calibration generally, the lowest legal obligation of all riparians is considered. While all EU member states¹³ are bound by the Directive at least to engage in domestic river basin management planning, Norway voluntarily subscribed to the WFD (Naustdalslid, 2014) and is, thus, assigned a value of 0.8. The crossover-point for this condition is not membership in the EU but rather the legal adoption of the WFD, leaving river basin districts with candidate countries (0.2) and non-EU members (0) well below the 0.5 anchor.

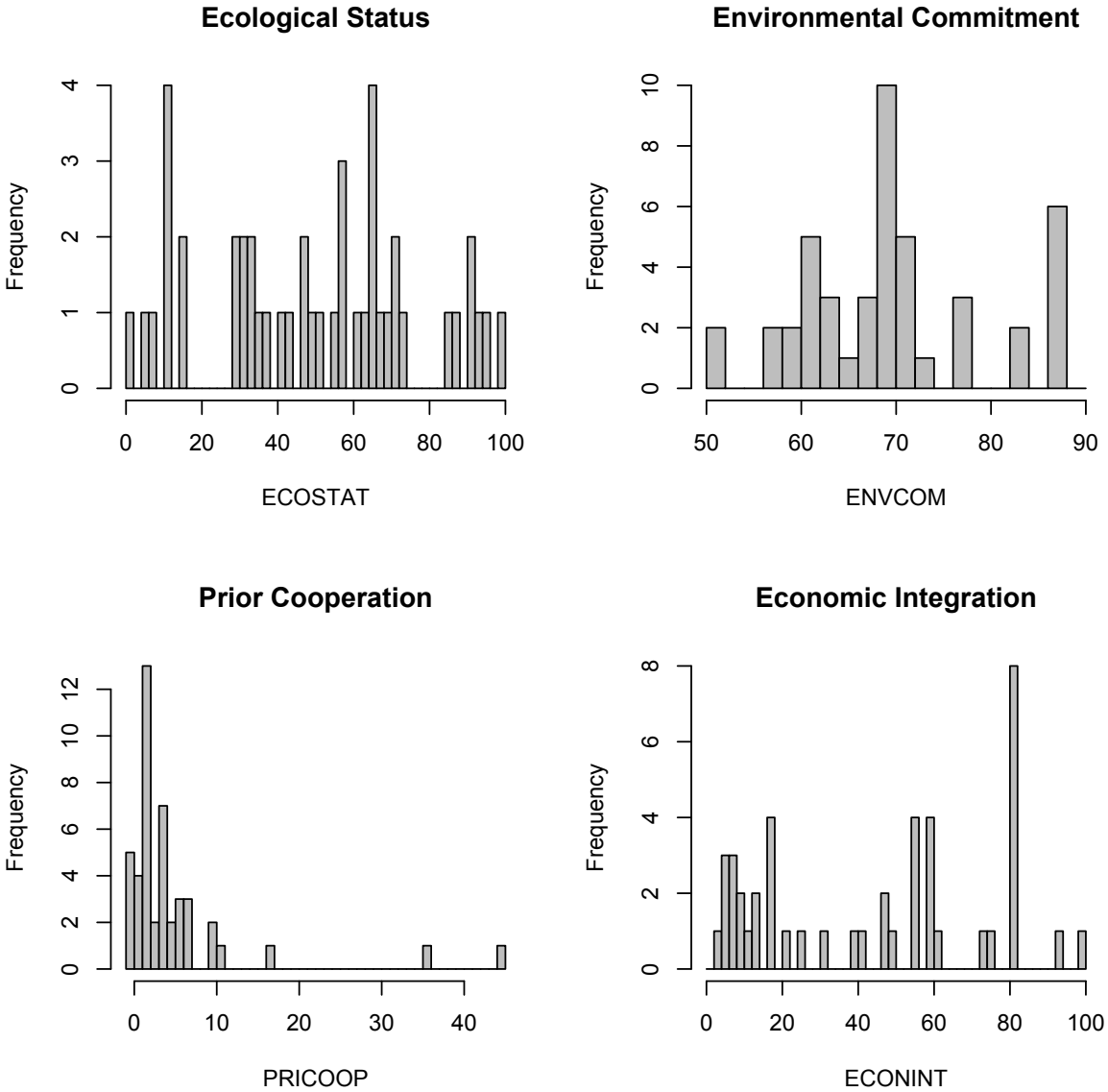


Figure 2: Distribution of raw data for conditions ecological status (ECOTAT), environmental commitment (ENVCOM), prior cooperation (PRICOOP) and economic integration (ECONINT)

¹³ Due to the timeframe of the first planning cycle (2003-2009), Croatia, EU member state since 2013, is counted as a candidate country.

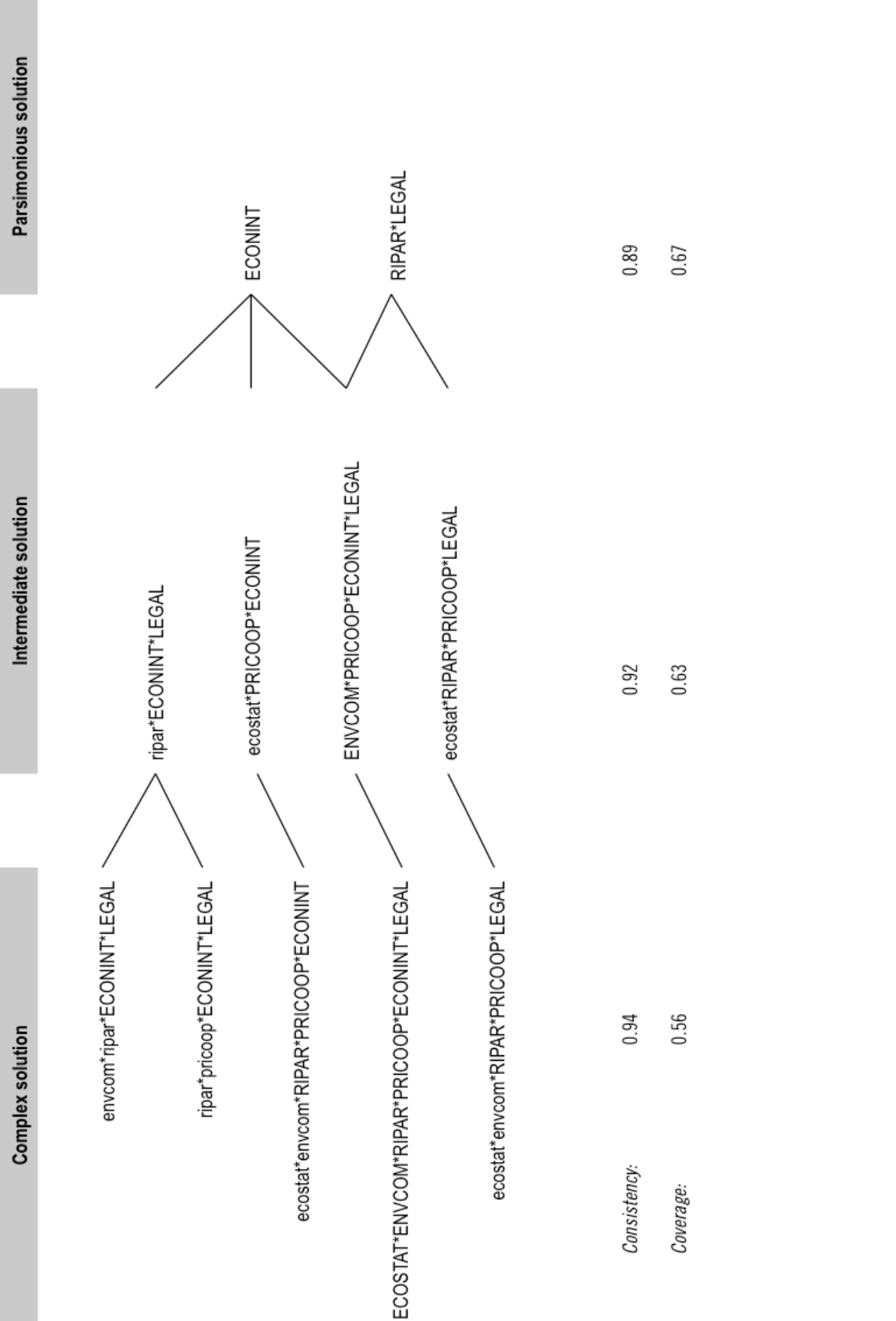
References

- Esty DC, Levy MA, Kim CH, de Sherbinin A, Srebotnjak T, and Mara V. 2008. 2008 Environmental Performance Index. New Haven
- Gerlak AK, and Grant KA. 2009. The Correlates of Cooperative Institutions for International Rivers. In *Mapping the New World Order*, Volgy TJ, Šabič Z, Roter P, and Gerlak AK (eds). Chichester; pp114–147.
- Lindemann S. 2008. Understanding Water Regime Formation — A Research Framework with Lessons from Europe. *Global Environmental Politics* 8: 117–141.
- Naustdalslid J. 2014. Multi-level water governance – the case of the Morsa River Basin in Norway. *Journal of Environmental Planning and Management* 58: 913–931.
- Oneal JR, and Russett B. 1999. Assessing the Liberal Peace with Alternative Specifications: Trade Still Reduces Conflict. *Journal of Peace Research* 36: 423–442.
- Ragin CC. 2008. *Redesigning Social Inquiry. Fuzzy Sets and Beyond*. University of Chicago Press: Chicago & London
- Schneider CQ, and Wagemann C. 2012. *Set-Theoretic Methods for the Social Sciences*. Cambridge University Press: Cambridge et al.
- Thiem A, and Dusa A. 2013. *Qualitative Comparative Analysis with R: A User's Guide*. Springer: New York et al.
- Zamparutti T, Whalley P, Horn J, Dupont C, and Vogel B. 2012. Comparative Study of Pressures and Measures in the Major River Basin Management Plans. Task 1 – Governance
- Zawahri NA, and Mitchell SM. 2011. Fragmented Governance of International Rivers: Negotiating Bilateral versus Multilateral Treaties. *International Studies Quarterly* 55: 835–858.

Appendix 2: Calibrated Data Set

	ECOSTAT	ENVCOM	RIPAR	PRICOOP	ECONINT	LEGAL	RBMP
Adour Garonne/Cantabrio Oriental	0.38	0.31	0	0.6	0.85	1	0.75
Black Sea	0.51	0.13	0	0.2	0.02	0.2	0
Bothnian Bay	0.63	0.92	0	0.4	0.92	0.8	0.75
Bothnian Sea	0.62	1	0	0.4	0.92	0.8	0.75
Central Macedonia	0.56	0.19	0	0.4	0	0.2	0
Danube	0.41	0	1	1	0.13	0	1
Daugava	0.68	0.25	0.8	0.6	0.1	0	0.3
Douro/Duero	0.30	0.31	0	0.6	0.67	1	0.75
EastAegean/Thrace	0.30	0.14	0.6	0.4	0.02	0.2	0
Eastern Alps/Adriatic	0.65	0.35	0.6	0.4	0.21	0	0
Eastern Estonia	0.66	0.39	0.6	0.4	0	0	0.75
Ebro	0.57	0.31	0.6	0.2	0.42	0	0.75
Elbe	0.05	0.17	0.8	0.8	0.55	1	1
Ems	0.05	0.1	0	0.6	1	1	1
Epirus	0.93	0.19	0	0.2	0	0.2	0.75
Glomma	0.72	1	0	0.4	0.92	0.8	0.75
Guadiana	0.29	0.31	0	0.6	0.67	1	0.75
Kemijoki	0.91	0.39	0	0.4	0.15	0	0.75
Koiva/Gauja	0.72	0.42	0	0	0.53	1	0.75
Lielupe	0.07	0.58	0	0.4	0.64	1	0.3
Meuse	0.30	0.07	1	0.6	0.92	1	1
Minho Lima	0.73	0.31	0	0.6	0.67	1	0.75
Neagh Bann	0.16	0.26	0	0	0.63	1	1
Nemunas	0.47	0.58	0.6	0.8	0.02	0	0.3
Nordland	0.88	1	0	0.4	0.92	0.8	0.75
North Western	0.33	0.26	0	0	0.63	1	1
Odra	0.11	0.17	0.6	0.8	0.46	1	1
Oulujokijoki	0.49	0.39	0	0.2	0.15	0	0.75
Po	0.34	0.35	0.6	0.8	0.56	0	0.75
Pregolya	0.44	0.3	0.6	0.4	0.05	0	0.3
Rhine	0.15	0.1	1	1	0.82	0	1
Rhone	0.46	0.35	0	1	0.33	0	0.75
Scheldt	0.11	0.07	0.6	0.6	1	1	1
Skagerrak & Kattegat	0.57	1	0	0.4	0.92	0.8	0.75
Tagus	0.56	0.31	0	0.6	0.67	1	0.75
Teno Naatamajoki Paatsjoki	1.00	0.39	0.6	0.8	0.07	0	0.75
Tornionjoki/Tornealv	0.92	0.92	0.6	0.6	0.7	0.8	0.75
Troms	0.95	1	0	0.4	0.92	0.8	0.75
Trondelag	0.84	1	0	0.4	0.92	0.8	0.75
Venta	0.65	0.58	0	0	0.64	1	0.3
Vidaa-Krusaa	0.11	0.33	0	0	0.26	1	0.3
Vistula	0.12	0	0.8	0.6	0.04	0	0.3
Vuoksi	0.66	0.39	0	0.6	0.15	0	0.75
West Aegean/Eastern Macedonia	0.36	0.17	0	0.8	0.09	1	0.3
Western Macedonia	0.65	0.19	0.6	0.4	0	0.2	0.75

Appendix 3: Complex, intermediate and most parsimonious solutions



Article [A5]:

Führt Bürgerbeteiligung in Umweltpolitischen Entscheidungsprozessen zu mehr Effektivität und Legitimität? Erste Ergebnisse einer Metaanalyse von 71 Wasserpolitischen Fallstudien.

[Does public participation in environmental decision making lead to more effectiveness and legitimacy?]

Abstract

Participation of citizens and organised interests in political and administrative decision making is widely perceived as an important means to enhance the effectiveness and legitimacy of public environmental governance. Yet, these claims are not uncontested and lack a sound empirical basis. With this contribution we address some of the important questions around the implications of public participation in environmental decision making. We present early results of a larger meta-analysis on 71 published water-related case studies, each of these coded independently by three researchers using a comprehensive, theoretically informed coding scheme. Statistical analysis shows a positive relationship between the employment of participatory processes and the acceptance of environmental decisions. The findings further suggest that open, information-intensive procedures positively influence the environmental standards of policy outputs. Here, particularly the environmental preferences of stakeholders serve as an important predictor for process outputs.

Führt Bürgerbeteiligung in umweltpolitischen Entscheidungsprozessen zu mehr Effektivität und Legitimität?

Erste Ergebnisse einer Metaanalyse von 71 wasserpolitischen Fallstudien*

Jens Newig, Nicolas Jager und Edward Challies

Kurzfassung

Der Beteiligung von Bürgern und zivilgesellschaftlichen Akteuren an politisch-administrativen Entscheidungsprozessen jenseits von Wahlen und Referenden wird vielfach ein hohes Potenzial zur Stiftung von Legitimität und Effektivität umweltpolitischer Entscheidungen beigemessen. Jedoch ist diese umfassende Kompetenzzuschreibung an partizipative Verfahren nicht unumstritten und darüber hinaus auch empirisch nur unzureichend untersucht. Unser Ziel ist es, mit der vorliegenden Analyse erste Antworten auf diese Frage nach der politischen Performanz von Partizipation zu geben. Dazu präsentieren wir erste Ergebnisse einer größer angelegten Metaanalyse von 71 Fallstudien wasserbezogener Entscheidungsverfahren. Unter Verwendung der Case-Survey-Methode wurde jede dieser 71 Fallstudien unabhängig von drei Wissenschaftlern anhand eines theoriegestützten Kodierschemas kodiert, die resultierenden Daten wurden mit statistischen Verfahren analysiert. Die so gewonnen Erkenntnisse zeigen einen positiven Zusammenhang zwischen Partizipation und der Akzeptanz umweltpolitischer Entscheidungen. Daneben deuten die Ergebnisse darauf hin, dass offene Verfahren mit intensivem Informationsaustausch die Umweltstandards von Prozessoutputs positiv beeinflussen. Dabei erweisen sich insbesondere die umweltpolitischen Präferenzen der beteiligten Akteure als überaus wichtige Determinante der Prozessergebnisse.

1. Einführung: Ungesicherte und widersprüchliche Erkenntnislage zu den Wirkungen von Beteiligung

Unkonventionelle Formen der Beteiligung von Bürgern und organisierten Interessen jenseits von Wahlen und bindenden Volksabstimmungen sind vielfach mit bestimmten Erwartungen behaftet. Während im Zuge der Bürgerbewegungen der 1960er und 1970er Jahre vor allem emanzipatorische und demokratisierende Bestrebungen im Mittelpunkt standen, werden diese heute zusätzlich durch Erwartungen gesteigerter Performanz ergänzt (Newig/Kvarda 2012). In dieser Hinsicht steht gerade im Bereich der Umweltpolitik – sowohl der praktischen Debatte wie auch in akademischen Diskursen – die Beteiligung von Bürgern und organisierten

* Eine frühere Fassung dieses Artikels wurde auf dem österreichischen Tag der Politikwissenschaft am 30. November 2012 in Graz vorgestellt. Die Autoren danken den Teilnehmern des Panels „Unkonventionelle Partizipationsformen auf dem Prüfstand. Zur Legitimität politischer Beteiligung jenseits institutionalisierter Arenen“ sowie den beiden anonymen Gutachtern für wertvolle Hinweise zur Verbesserung des Manuskripts.

Interessen weit oben auf der Agenda.¹ Dabei herrscht vielfach die Annahme vor, dass partizipative Formen der umweltpolitischen Entscheidungsfindung zu einer Steigerung der Legitimität sowie einer Verbesserung der sozialen wie ökologischen Effektivität und somit zu einer größeren Nachhaltigkeit der Ergebnisse führen.² Diese umfassende Kompetenzzuschreibung an politische Partizipation ist wissenschaftlich jedoch nicht unumstritten. Die Annahmen, insbesondere über die instrumentellen Funktionen zur Erreichung nachhaltiger Umweltpolitik, werden sowohl von theoretischer wie auch von empirischer Seite stark in Zweifel gezogen (Delli Carpini/Cook/Jacobs 2004; Innes/Booher 2004; Papadopoulos/Warin 2007). Viele der in der Literatur genannten Vorzüge und Schwächen von Partizipation beruhen auf ungesicherten Annahmen. Nach wie vor liegt ein akuter Mangel an verlässlichen wissenschaftlichen Belegen zur Wirkungsweise von Partizipation in umweltpolitischen Entscheidungsprozessen vor.

Ein größer angelegtes Forschungsvorhaben³ möchte einen substanziellen Beitrag zur Verbesserung der Erkenntnislage zu den Wirkungsweisen von Partizipation liefern. Es verfolgt einen *Mixed-Methods*-Ansatz mit einer Methodentrias aus (1) Fallstudien-Metaanalyse, (2) eigenen Fallstudien sowie (3) einem Feldexperiment. In diesem Beitrag sollen erste Ergebnisse aus der Fallstudien-Metaanalyse vorgestellt werden. Im Mittelpunkt steht dabei die Frage ob und durch welche Faktoren Partizipation die sozialen und ökologischen Ergebnisse von politischen Umweltentscheidungen beeinflusst.

Die Fallstudien-Metaanalyse im Sinne der Case-Survey-Methode (Yin/Heald 1975; Larsson 1993; Newig/Fritsch 2009a) berücksichtigt 71 Fallstudien von öffentlichen Entscheidungsprozessen im Bereich Wasserpolitik. Erste Ergebnisse der Untersuchung werden im Folgenden nach einer kurzen Erläuterung der konzeptionellen und methodischen Grundlagen vorgestellt.

2. Konzeptionelle Grundlagen

Die Haupthypothese, die dieser Analyse zugrunde liegt und die überprüft wird, ist, dass Partizipation von Bürgern und organisierten Interessen die Performanz von Umweltpolitik verbessert. Partizipation soll hier verstanden werden im Sinne des ‚participatory governance‘ Diskurses. Partizipation umfasst dabei alle Formen von öffentlicher Entscheidungsfindung, bei der nichtstaatliche Akteure, die nicht regulär an politischen Entscheidungsprozessen teilnehmen, einen substanziellen Einfluss auf eine kollektiv-verbindliche Entscheidung nehmen (Renn/Webler/Wiedemann 1995). Unter diese Definition fallen eine Vielzahl verschiedener Partizipations- und Entscheidungsformen wie etwa Runde Tische,

¹ Siehe Dryzek 1997, Grote/Gbikpi 2002, Delli Carpini/Cook/Jacobs 2004, Lovan/Murray/Shaffer 2004, sowie Busenberg 2007.

² Vergleiche Randolph/Bauer 1999, Beierle/Cayford 2002, Heinelt u. a. 2002 oder Koontz/Thomas 2006.

³ Gefördert mit Mitteln des Europäischen Forschungsrates als ERC Starting Grant „EDGE“ (Evaluating the Delivery of Environmental Governance using an Evidence-based Research Design) mit einer Laufzeit von 2011 bis 2016 sowie mit Mitteln der Deutschen Forschungsgemeinschaft über das DFG-Projekt „ECOPAG“ (Environmental Consequences of Participatory Environmental Governance), Laufzeit 2009 bis 2012.

Planungszellen, Konsultations- und Mediationsverfahren oder Bürgerbeiräte (vor allem in den USA). Davon ausgeschlossen allerdings werden Phänomene wie etwa pures Lobbying, Meinungs- und Visionsbildungsprozesse ohne bindende Entscheidungen (wie etwa Lokale Agenda 21) oder die demokratische Teilhabe in Wahlen oder Plebisziten, da hier den Teilnehmenden nur ein stark eingeschränkter Gestaltungsspielraum bleibt. Beteiligte in diesem Sinne können sowohl organisierte Akteure aus Zivilgesellschaft oder Privatwirtschaft sein, wie beispielsweise Nichtregierungsorganisationen (NRO), Firmen oder Wirtschaftsverbände, als auch einzelne Bürger, die sich ad hoc und problemspezifisch einbringen.

Verschiedene Formen der unkonventionellen Beteiligung von Bürgern und organisierten Interessen unterscheiden sich mitunter erheblich in ihrem ‚Partizipationsgehalt‘. Um diesen zu charakterisieren und einzuschätzen, soll an dieser Stelle über das von Arnstein (1969) vorgeschlagene Kriterium der Machtdelegation hinausgegangen und zwei weitere, fundamentale Dimensionen in die Betrachtung mit einbezogen werden: die Offenheit und Inklusivität der Teilnahme am Entscheidungsprozess, sowie der Modus der Kommunikation und Informationsweitergabe (Fung 2006; Newig/Kvarda 2012). Diese dreidimensionale Konzeptionalisierung von Partizipation erlaubt eine differenzierte und aufschlussreiche Charakterisierung unterschiedlicher Formen partizipativer und nicht oder kaum partizipativer politisch-administrativer Entscheidungsfindung.

Über die Leistungsfähigkeit von Partizipation in ihren unterschiedlichen Ausformungen und im Allgemeinen besteht eine Reihe von theoretischen Annahmen und normativen Behauptungen (ausführlicher Lafferty/Meadowcroft 1996; Reed 2008), welche verschiedene Erklärungen für den instrumentellen Wert von Partizipation zu geben versuchen. Vereinfacht lässt sich dieser Diskurs in zwei argumentative Stränge unterteilen:

- *Partizipation verbessert die ökologische Qualität von politischen Entscheidungen (Outputs):* Durch die Öffnung bestehender Entscheidungszirkel von Politik, Administration und Wirtschaft können auch ökologisch orientierte Interessen Einzug in Entscheidungsprozesse halten und diese in ihrem Sinne beeinflussen (Smith 2003; Kastens/Newig 2007); dieser Effekt wird allerdings umgekehrt, falls Prozessteilnehmer weniger ökologische Ziele verfolgen (Layzer 2008). Darüber hinaus wird angenommen, dass durch Beteiligungsmechanismen weitere Quellen von Informationen und kontextuellem Wissen in den Prozess eingebracht werden, die sich positiv auf die Umweltverträglichkeit von Entscheidungen auswirken (Berkes/Folke 2002; Pellizzoni 2003). Mechanismen sozialen Lernens und von Deliberation ermöglichen die Findung kreativer Problemlösungen und den Abbau von Konflikten (Webler/Kastenholz/Renn 1995; Sabatier u.a. 2005). Dem allerdings halten Kritiker unter Rückgriff auf Rational-Choice-Ansätze entgegen, dass Partizipation sich Situationen sozialer Dilemmata gegenüber sieht (Hardin 1968). Diese verlangen nach Institutionen von großer Reichweite, um negative Externalitäten zu internalisieren, wohingegen partizipative Entscheidungsprozesse zumeist auf lokalen, kleinräumigen Ebenen stattfinden (demokratisches Dilemma; Dahl 1994).
- *Partizipation fördert die effektive Umsetzung politischer Entscheidungen (Outcome):* Die Beteiligung von Bürgern und organisierten Interessen im politischen Prozess kann dabei

helfen, bestehende Implementationsdefizite (Jordan 2002) zu überwinden, indem auf diese Weise die Akzeptanz von Teilnehmenden und weiterer sozialer Akteure für das Vorhaben gesteigert wird (Bulkeley/Mol 2003). Dies träfe sogar in den Fällen zu, in denen die Entscheidungen nicht den Präferenzen der Teilnehmenden entsprechen, sofern der Prozess als solcher als fair wahrgenommen wurde (Lind/Tyler 1988). Diese Argumentation findet sich auch bereits in der deutschsprachigen Debatte der 1990er Jahre wieder, die sich um die Modernisierung der Demokratie mit besonderem Augenmerk auf die Umweltpolitik rankte (Hesse 1990; Jänicke 1993; Zilleßen 1993). Im Angesicht limitierter staatlicher Handlungspotenziale wurde hier ein kooperativer, inklusiver Politikstil als adäquates Mittel zur integrierten Durchsetzung politischer Ziele (Jänicke 1993), sowie zur Integration von Partikularinteressen und –rationalitäten (Zilleßen 1993) aufgefasst. Gegenargumente dazu finden sich in der Implementationsforschung. Hier wird Partizipation zumeist als ein Hindernis funktionaler Implementation aufgefasst, da dadurch die Anzahl von ‚clearance points‘ (Pressman/Wildavsky 1984) und Veto-Spielern (Tsebelis 1995) künstlich gesteigert wird.

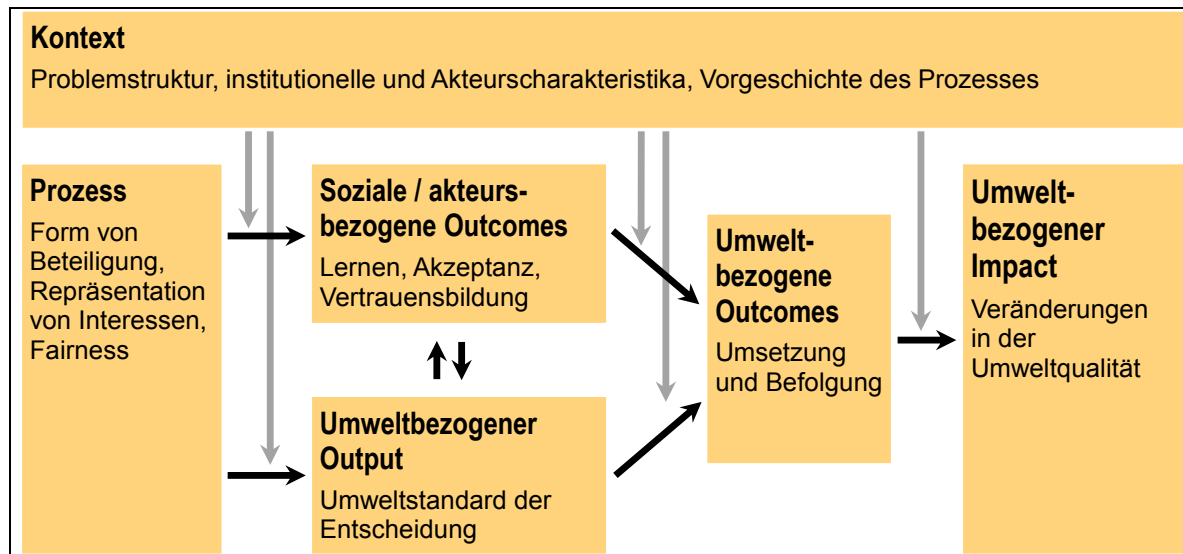
Erst seit kürzerer Zeit wird die Kontext-Gebundenheit der Wirkungen von Partizipation thematisiert. Hier steht die folgende Frage im Vordergrund: Unter welchen *Umständen* wirkt sich die Beteiligung von Bürgern und organisierten Interessen positiv auf Umweltentscheidungen aus (Delli Carpini/Cook/Jacobs 2004; Lejano u. a. 2007; Newig/Fritsch 2009b)?

Um dieser Diversität von Aussagen und Hypothesen gerecht zu werden und sie analytisch überprüfbar zu machen, wird auf ein umfassendes Analyseschema („SCAPE“)⁴ zurückgegriffen. Abbildung 1 gibt einen schematischen Überblick. Ausgangspunkt bildet die analytische Einheit des Entscheidungsprozesses. Zusammen mit seinem gesellschaftlichen und umweltbezogenen Kontext sowie seinen gesellschaftlichen und umweltbezogenen Ergebnissen (Outputs, Outcomes und Impacts) grenzt er die Untersuchungseinheit einer Fallstudie ab. Ein Entscheidungsprozess wird hier definiert als ein Prozess mit dem Ziel, kollektiv verbindliche Entscheidungen zu einem gegebenen Umweltproblem zu treffen. Dies kann auf klassisch hoheitliche Weise geschehen oder auch unter Beteiligung privater und nichtstaatlicher Akteure.

Nicht nur der Zusammenhang zwischen partizipativen Entscheidungsprozessen und deren Outputs, sondern auch akteursbezogene und soziale Wirkungen und letztlich deren konkrete Umweltauswirkungen werden mit in die Betrachtung einbezogen, wobei auch der Untersuchung von Kontextfaktoren eine wichtige Rolle zukommt. SCAPE umfasst insgesamt mehr als 300 Variablen zu Kontext, Prozess und Ergebnissen, die aus unterschiedlichen Literatursträngen zu Föderalismus und Multi-Level Governance, Demokratietheorie, Soziologie, Politikimplementierung und Partizipationsforschung destilliert wurden (Newig u. a. 2013).

⁴ Dieses „Scheme for the Comparative Analysis of Public Environmental Decision-Making“ (SCAPE) wird in Newig u. a. 2013 detailliert dokumentiert.

Abbildung 1: Vereinfachtes konzeptionelles Verständnis des Politikprozesses



Anmerkung: Eigene Darstellung nach nach Newig 2008.

Performanzkriterien umfassen akteursbezogene und soziale Outcomes (Akzeptanz, Konfliktlösung u. a.) sowie umweltbezogene Outputs, Outcomes und Impacts. Diese Kriterien zur Einschätzung von Umweltwirkungen werden in Anlehnung an Mitchell (2008) auf dreierlei Weise konzeptionalisiert: Als Evaluationsmaßstäbe fungieren dabei (1) das Umweltziel der zuständigen staatlichen Stelle, (2) die Umweltziele gesetzgeberischer Vorgaben, (3) ein hypothetisches Optimalszenario als Globalmaßstab. „Umweltqualität“ wird zudem in die drei Kategorien Gesundheitsschutz, Ressourcenschutz und Schutz der natürlichen Umwelt differenziert.

Die Unterscheidung in Outputs, Outcomes und Impacts folgt einer an den Politikzyklus angelehnten Tradition. Am leichtesten zugänglich sind die Umweltstandards von Outputs als politische Entscheidungen (Übereinkünfte, Pläne, Richtlinien u. a.), zu denen in allen untersuchten Fallstudien Informationen vorliegen. In Bezug auf die Umsetzung und Befolgung (Outcomes) und deren tatsächliche umweltbezogene Wirkungen (Impacts) ist die Datenlage naturgemäß dünner und mit stärkeren Unsicherheiten behaftet, da einerseits Fallstudien häufig mit dem Zeitpunkt einer Übereinkunft enden, andererseits da tatsächliche Umweltwirkungen von Politik-Entscheidungen angesichts einer Vielzahl von intervenierenden Variablen häufig kausal schwer zuzurechnen sind.

3. Methoden

Empirische Forschungen zu Beteiligungsprozessen und deren Ergebnissen liegen in einer Fülle von Einzelfallstudien vor; gelegentlich werden vergleichende Studien mit meist sehr kleinen Fallzahlen durchgeführt. Insgesamt ist der Bestand an empirischen Forschungen extrem zersplittert, und es fehlt an übergreifenden, vergleichenden Studien, die eine Synthese des reichhaltigen empirischen Materials erlauben würden (Newig/Fritsch 2009b). Eine systematische Aggregation und Integration von qualitativen, fallbasierten Forschungsarbeiten

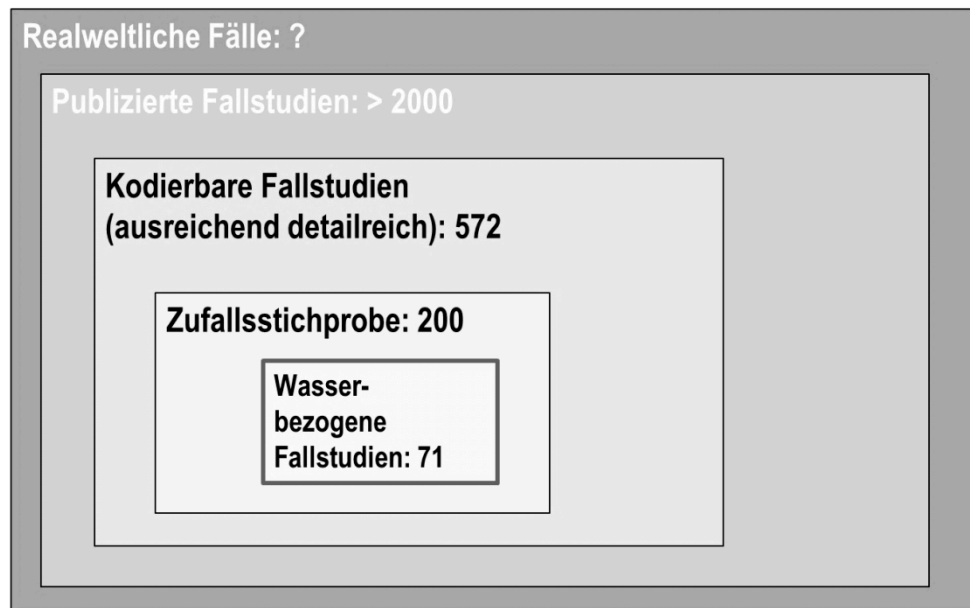
bietet enorme Potenziale zur Generierung neuer Einsichten – „an intellectual goldmine awaiting discovery“ (Jensen/Rodgers 2001).

Die Case-Survey-Methode (Yin/Heald 1975; Larsson 1993; Newig/Fritsch 2009a) stellt eine besondere Form der *large-n*-Metaanalyse dar. Anders als klassische Metaanalysen bilden hier nicht quantitative Studien den Ausgangspunkt, sondern qualitative Einzelfallstudien. Eine *case survey* transformiert fallbasierte, qualitative Narrative in (semi-) quantitative Daten. Dazu wird ein detailliertes Kodierschema angefertigt, anhand dessen mehrere Kodierer den Fall bewerten und in quantitative Daten überführen. Der daraus resultierende Datensatz kann mit üblichen Methoden analysiert werden. Auf diese Weise nutzt die Case-Survey-Methode die analytische Tiefe, Diversität und interne Validität von fallstudienbasierter Forschung und vereint sie mit der externen Validität und Generalisierbarkeit quantitativer Methoden (Newig/Fritsch 2009a).

Die Ausführung einer Case-Survey-Metaanalyse folgt im Wesentlichen vier Schritten: „(1) select a group of existing case studies relevant to the chosen research question, (2) design a coding scheme for systematic conversion of the qualitative case descriptions into quantified variables, (3) use multiple raters to code the cases and measure their interrater reliability, and (4) statistically analyse the coded data.“ (Larsson 1993:1516 f.) Diese Schritte sollen nun im Folgenden für unsere Untersuchung nachgezeichnet werden.

(1) *Identifizierung der Untersuchungseinheiten.* Entsprechend der vorliegenden forschungsleitenden Fragestellung bilden für diese Untersuchung Narrative (mehr oder weniger) partizipativer Prozesse der umweltpolitischen Entscheidungsfindung die grundlegenden Untersuchungseinheiten. Zur Identifizierung der Grundgesamtheit dieser Narrative wurden in einem aufwändigen Verfahren eine Vielzahl von wissenschaftlichen Datenbanken verschiedener Disziplinen wie auch Online-Suchmaschinen nach publizierten Fallstudien umweltbezogener Entscheidungsprozesse aus Europa, Nordamerika, Australien und Neuseeland durchsucht. Um eine Verzerrung – bedingt durch die Wahl einer bestimmten Publikationsform – möglichst zu umgehen, schlossen wir neben begutachteten Zeitschriftenpublikationen auch Beiträge aus Sammelbänden, Arbeits- und Forschungspapiere, Konferenzpublikationen und auch sonstige Formen grauer Literatur mit ein, sofern diese öffentlich zugänglich waren. Aus dieser Suche konnten wir mehr als 2.000 Fälle, beschrieben in über 2.500 Einzeltexten, gewinnen. Wenngleich sich auch für diese Menge an Fallmaterial keine Vollständigkeit reklamieren lässt, so gehen wir doch davon aus, den weitaus überwiegenden Teil der öffentlich verfügbaren, publizierten Fallstudien umweltbezogener Entscheidungsprozesse abgedeckt zu haben.

Abbildung 2: Such- und Selektionsprozess der Metaanalyse



Quelle: Eigene Darstellung.

Abbildung 2 stellt den Such- und Selektionsprozess schematisch dar. Die „Grundgesamtheit“ der 2.000 Fallstudien wurde einem Selektionsprozess unterzogen, der solche Fälle ausschloss, die methodisch oder inhaltlich nicht den Anforderungen der Untersuchung genügten. Hauptkriterien waren dabei eine ausreichende Dichte valider Informationen zu den zuvor erläuterten Prozesskomponenten, vor allen Dingen zum Prozess selbst, seinen ökologischen und sozialen Outputs sowie zum Kontext. Am Ende des Selektionsprozesses nach den genannten Kriterien stand schließlich die Datenbank der auswertbaren umweltpolitischen Entscheidungsprozesse, die 572 Einzelfälle umfasst. Angesichts begrenzter Forschungsmittel wurde zunächst eine Zufallsstichprobe von 200 Fällen gezogen. Die vorliegende Studie basiert wiederum auf einem Sub-Sample aus dieser Stichprobe, das nur süßwasserbezogene Fallstudien enthält. Darunter fallen etwa Themen wie Flussgebietsrestaurierung und -management, Infrastrukturprojekte wie Dammbau und -rückbau oder Hochwasserrisikomanagement. Im Anhang befindet sich eine Auflistung dieser 71 wasserbezogenen Fälle.

Trotz des dargestellten systematischen Vorgehens kann diese Studie keine allgemeine Repräsentativität beanspruchen. Grund dafür ist in erster Linie die Diskrepanz zwischen der Gesamtheit der realweltlich existierenden Fälle umweltbezogener Entscheidungsprozesse und derer, die wissenschaftlich behandelt und kommuniziert wurden. Es ist anzunehmen, dass hier trotz unserer breit angelegten Suchstrategie durchaus ein Publikations-Bias besteht, über dessen Ausprägung und Wirkung allerdings Unklarheit besteht und der keineswegs notwendig in Richtung „erfolgreicher“ Fälle gedeutet werden kann (Beierle/Cayford 2002). Gleichwohl können die erzielten Ergebnisse durchaus als aussagekräftig angesehen werden, nicht zuletzt durch die analytisch stringente Such- und Selektionsprozedur und das große Spektrum verschiedener Kontexte, das sie abdecken.

(2) *Erarbeitung eines Kodierschemas*: Grundlage der Transformation qualitativen Textes in quantitative Daten ist ein detailliertes Kodierschema. Den analytischen Rahmen dazu bildet das zuvor erläuterte Prozessmodell, das neben einer Charakterisierung des (partizipativen) Entscheidungsprozesses und dessen Outputs auch seine sozialen Wirkungen, die Implementation und Umsetzung sowie Kontextfaktoren berücksichtigt. Ausgangspunkt für die Ausarbeitung des Schemas waren die bereits zuvor skizzierten theoretischen und konzeptionellen Annahmen über den Zusammenhang von Partizipation und der Performanz umweltpolitischer Entscheidungen. Ausgehend von diesen Hypothesen, wie sie sich in verschiedenen Strängen der sozialwissenschaftlichen Literatur finden lassen, wird dazu der politische Entscheidungsprozess in seine einzelnen Komponenten aufgeteilt, um diese dann in Einzelvariablen zu erfassen.

Das Kodierschema, das dieser Untersuchung zugrunde liegt, wurde in einem mehrjährigen Verfahren entwickelt und umfangreich anhand zahlreicher Beispiel-Fälle auf Anwendbarkeit, innere Stringenz und Auswertbarkeit getestet. Es umfasst 343 Variablen aus den Bereichen Kontext, Prozess, ökologische und soziale Outputs, Implementierung, Umweltwirkung, sowie einige generelle Informationen (Newig u. a. 2013). Damit reflektiert das Kodierschema unmittelbar das oben beschriebene Prozessverständnis und erlaubt die Überprüfung der bestehenden Hypothesen. Jede Variable verfügt über eine eigene, präzise Definition, welche den Erkenntnisstand verschiedenster sozialwissenschaftlicher Diskurse reflektiert, darunter beispielsweise Governance-Forschung, humangeographische Raumforschung, politische Psychologie und politische Kommunikation, Implementationsforschung oder Institutionalismus. Bei dem überwiegenden Teil der Variablen wird eine fünfstufige quantitative Skala mit Variablenwerten zwischen null und vier verwandt. Neben dem eigentlichen Variablenwert erhält jede Variable zusätzlich einen Reliability-Wert, der die Verlässlichkeit der aus den Fallstudien gewonnen und kodierten Information angibt.

Ein Großteil des Kodierschemas umfasst Variablen im klassischen Sinne, die unter anderem statistisch ausgewertet werden. Zusätzlich werden rund zwei Dutzend *kausale Mechanismen*, wie sie in Form von Hypothesen aus der Literatur destilliert (und, darauf aufbauend, teils neu oder re-formuliert) wurden, quantitativ erfasst. Diese Form der Quantifizierung geht über die Kodierung einzelner relevanter Variablen hinaus, da hier nicht nur die *tatsächlichen* Eigenschaften der Fallstudie betrachtet werden, sondern zusätzlich dazu auch *kontrafaktische Szenarien* miteinbezogen werden. Diese Betrachtungsweise erlaubt es, Hypothesen nicht allein über die Korrelationen verschiedener Variablen zu testen, sondern darüber hinaus kausale Vorgänge direkt fallbasiert zu erfassen und zu untersuchen.

(3) *Kodieren der Fälle durch mehrere Kodierer*: Jeder der 200 Fälle der Zufallsstichprobe wird von drei Kodierern (ein wissenschaftlicher Mitarbeiter plus zwei studentische Hilfskräfte) unabhängig voneinander gelesen und bewertet und in eine MySQL-basierte Onlinedatenbank eingegeben. Anschließend kommen die drei Kodierer zusammen, um in einer Diskussion etwaige Diskrepanzen untereinander zu erörtern.

Die Bewertung jedes Falls durch mehrere Personen und die anschließende Diskussion ist aus zweierlei Gründen besonders wichtig: Zunächst werden auf diese Weise schlichte Kodierfehler leicht sichtbar, wie sie etwa durch Überlesen einzelner Informationen oder

Eingabefehler entstehen können. Darüber hinaus gibt die mehrfache Bewertung Raum für unterschiedliche Interpretationen. Bei der Case-Survey-Metaanalyse werden Narrative von Einzelpersonen gelesen, verarbeitet und in quantitative Werte umgewandelt, was an sich schon einen interpretativen, subjektiven Prozess darstellt. Durch mehrere Kodierer wird einerseits ein gewisses Maß an Intersubjektivität hergestellt. Zum anderen werden die mitunter vielschichtigen Interpretationsmöglichkeiten, die Fallstudien bieten, für die Analyse nutzbar gemacht. Daher ist es das Ziel der Kodier-Diskussion, Diskrepanzen aufzudecken und zu erörtern, nicht aber, diese um jeden Preis zu beseitigen, um zu einer uniformen Bewertung eines Falls zu gelangen.

(4) Statistische Analyse der gesammelten Daten: Dieser Beitrag kommuniziert erste Ergebnisse aus der statistischen Analyse der 71 wasserpolitischen Fallstudien. Dazu wurden pro Fall und Variable die Codes der drei einzelnen Kodierer gemäß der Verlässlichkeit (Reliability) der zugrunde liegenden Information gewichtet und ein gewichteter Mittelwert gebildet. Als Maß für Korrelation wurde Spearmans Rho verwendet. Daneben wurden die Bewertungen der Kodierer für die einzelnen kausalen Hypothesen und Mechanismen untersucht. Hierzu wurde das wiederum nach Reliabilität der Fallstudienbeschreibungen gewichtete arithmetische Mittel über alle Kodierer und Fälle gebildet und normiert. Eine 0 bedeutete somit die komplette Abwesenheit einer Hypothese in allen Fällen, wohingegen eine 1 für den betreffenden Mechanismus in jedem der Fälle starke kausale Implikationen bedeuten würde.

Wenngleich die hier angewandte Methode der Fallstudien-Metaanalyse durch die Integration qualitativer und quantitativer methodischer Ansätze wie dargestellt eine Reihe von Vorteilen bietet, so unterliegt sie doch einigen Limitationen. Neben dem bereits zuvor angeführten Publikations-Bias ist die Qualität der kodierten Fallstudien von entscheidender Bedeutung für die Validität der Untersuchungsergebnisse. Neben der Sicherstellung eines gewissen wissenschaftlichen Mindeststandards, der durch den systematischen Selektionsprozess erreicht werden soll, erscheint gerade der Vergleich von Daten unterschiedlicher Qualität als kritisch. Dieses Problem erscheint hier besonders evident, da die zugrunde liegenden Fallstudienbeschreibungen in der Regel nicht für diese Art der Untersuchung veröffentlicht wurden, sondern eigene wissenschaftliche Fragestellungen verfolgen. Um dem zu begegnen, greifen wir neben dem stringenten Selektionsprozess vor allem auf die Bewertung der Verlässlichkeit der Datengrundlage in eigenen Reliabilitätswerten zurück. Letztlich bleibt jedoch stets zu beachten, dass es sich bei der Case Survey trotz der Sicherstellung einer möglichst stringenten wissenschaftlich-methodischen Arbeitsweise um die Interpretation einer Interpretation handelt (Larsson 1993).

4. Ergebnisse

Die Diskussion der Ergebnisse wird im Folgenden entlang von vier verschiedenen Fragestellungen erfolgen. Während die ersten beiden vor allem die sozialen Konsequenzen partizipativer wasserpolitischer Entscheidungen beleuchten (Akzeptanzgenerierung, Konfliktlösung), beschäftigt sich der dritte Teil direkt mit dem Einfluss von Partizipation auf

den substanziellen Prozess-Output. Abschließend analysieren wir die Reichweite und Wirksamkeit der einzelnen Hypothesen in den Fallstudien.

a) Wovon hängt die Akzeptanz von Entscheidungen ab?

Eine der Haupthypothesen zur Wirkung von Beteiligungsmechanismen lautet, dass diese die Akzeptanz von politischen Entscheidungen erhöhen, selbst in solchen Fällen, in denen der Inhalt der Entscheidung nicht den Präferenzen der Teilnehmer entspricht.

Tabelle 1 zeigt, inwieweit die Akzeptanz der gefundenen Entscheidung seitens der Bürger bzw. zivilgesellschaftlicher Akteure (im Sinne organisierter, nicht-staatlicher Non-Profit-Organisationen) mit verschiedenen Prozessfaktoren⁵ korreliert. Offenbar ist es für Bürger zentral, im Prozess sowohl adäquat repräsentiert zu sein, als auch tatsächlichen Einfluss auf Prozess und Output zu nehmen. Für zivilgesellschaftliche Akteure zeigt sich ein etwas anderes Bild: Für sie zählt insbesondere die Möglichkeit der Einflussnahme, ihre Repräsentation dagegen weist keine nennenswerten Effekte bezüglich ihrer Akzeptanz auf. Diese Erkenntnisse sind insofern sehr interessant, als sie zeigen, dass für verschiedene Formen der Öffentlichkeit und der Beteiligung unterschiedliche Mechanismen gelten und Hypothesen in unterschiedlichem Maße zutreffen.

Bei mehreren Prozessfaktoren verhalten sich die Daten sowohl für Bürger als auch organisierte zivilgesellschaftliche Akteure ähnlich. Für verschiedene Kommunikationsformen und –eigenschaften wie dialogische Verfahren, diskursive Fairness und Deliberation im Sinne eines ‚rationalen‘ Diskurses zeigen sich schwache bis mittelstarke Effekte unterschiedlicher Signifikanz. Dabei steht für die Akzeptanz der zivilgesellschaftlichen Akteure eher die Möglichkeit eines wechselseitigen Dialogs im Vordergrund, während für Bürger darüber hinaus auch als fair wahrgenommene Verfahren mit der Akzeptanz korrelieren. Für beide Gruppen zeigt sich, dass Informationen eine gewisse Rolle spielen. Interessant ist hierbei, dass im Falle der Bürger weniger die verständliche Aufbereitung der Informationen als vielmehr deren simple Bereitstellung einen Einfluss auf die Akzeptanz der Entscheidung hat. Der größte Effekt für beide Gruppen zeigt sich allerdings bei der Korrelation von einem adaptiven Prozessdesign, das sich entsprechend verändernder Gegebenheiten und Bedürfnissen anpassen lässt, mit der Akzeptanz der Entscheidung. Diese Erkenntnis erlaubt die These, dass gerade auf die Bedürfnisse der Teilnehmer zugeschnittene Prozesse die am weitesten akzeptierten Outputs hervorbringen.

⁵ Für detaillierte Variablenbeschreibungen siehe Newig u. a. 2013.

Tabelle 1: Korrelationen zwischen Partizipation und Akzeptanz durch Bürger und zivilgesellschaftliche Akteure

	Akzeptanz von Bürgern	Akzeptanz zivilgesellschaftlicher Akteure
Repräsentation Bürgern	0,42** (0,002)	0,29* (0,025)
Repräsentation zivilgesellschaftlicher Akteure	0,18 (0,218)	0,16 (0,238)
Einflussmöglichkeiten	0,41** (0,003)	0,40** (0,002)
Dialogisches Verfahren	0,35* (0,011)	0,39** (0,002)
Diskursive Fairness	0,35* (0,011)	0,27* (0,045)
Deliberation	0,31* (0,029)	0,28* (0,045)
Informationen für Laienpublikum	0,25 (0,109)	0,32* (0,028)
Informierung der Beteiligten	0,28* (0,048)	0,28* (0,035)
Adaptives Prozessdesign	0,46** (0,001)	0,43** (0,001)

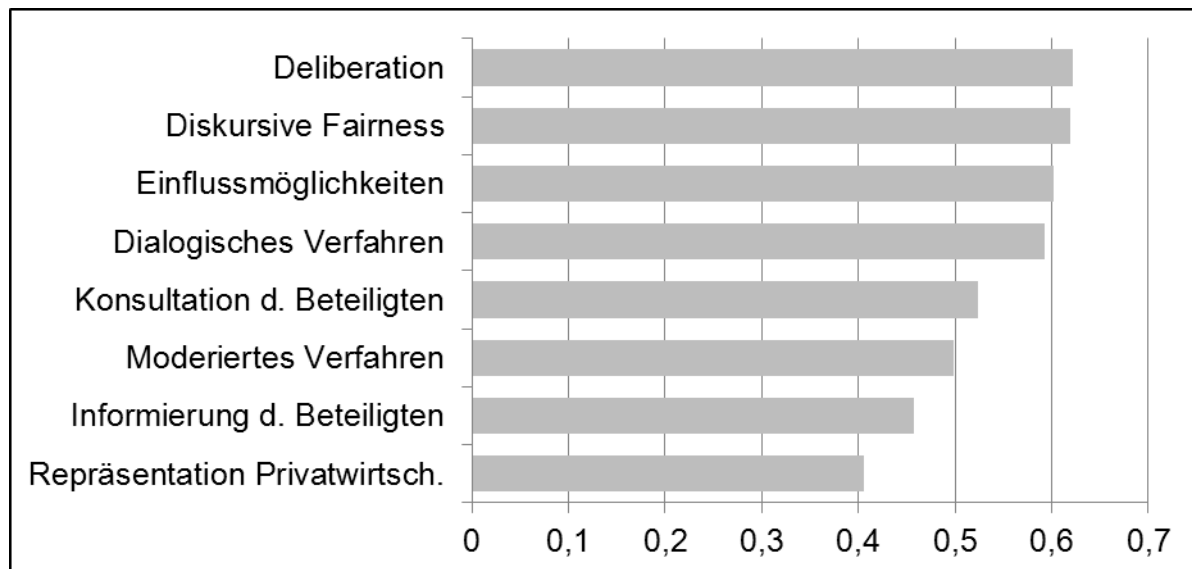
Anmerkung: Spearmans Rho; in Klammern jeweils das Signifikanzniveau p (Irrtumswahrscheinlichkeit); * = $p < 0,05$, ** = $p < 0,01$; n=71.

Bei der Untersuchung des Zusammenhangs zwischen der Akzeptanz einer wasserpolitischen Entscheidung und verschiedenen Prozessfaktoren lässt sich durchaus ein Bild zeichnen, wie es die zuvor genannten Hypothesen vermuten lassen. Repräsentation beziehungsweise die Möglichkeit der Einflussnahme korreliert signifikant mit der Akzeptanz der Entscheidung. Dabei sind es gerade die Prozesse, die fair, dialogisch und auf die Bedürfnisse der Teilnehmenden zugeschnitten sind, die am ehesten Akzeptanz generieren. Diese Befunde deuten durchaus auf die Validität von Annahmen der Procedural Justice-Ansätze (Lind/Tyler 1988; Sabatier u. a. 2005).

b) Wovon hängt die Konfliktlösung in umweltpolitischen Entscheidungsverfahren ab?

Neben der Generierung von Akzeptanz für die eigentliche Entscheidung zählt die Lösung bestehender Konflikte zu den sozialen Hauptkompetenzen, die unkonventionellen Beteiligungsverfahren zugesprochen werden (Sabatier u. a. 2005).

Abbildung 3: Korrelation der Variable ‚Konfliktlösung‘ mit verschiedenen Prozessfaktoren



Anmerkung: Spearmans Rho; Signifikanzniveau p für alle $< 0,01$; $n=71$.

Abbildung 3 stellt den statistischen Zusammenhang zwischen verschiedenen Prozessfaktoren und dem Maß an Konfliktlösung graphisch dar. Auffällig ist dabei, dass die Effekte einerseits mitunter sehr stark sind und andererseits stets von äußerst geringer Irrtumswahrscheinlichkeit von $p < 0,01$. Es zeigt sich, dass die Intensität von Deliberation, diskursiver Fairness und eines dialogischen Verfahrens mit der Konfliktlösung stark korreliert. Es sind also wiederum besonders faire, rational geführte Dialoge, die zur Lösung von Konflikten beitragen. Wie schon bei der Akzeptanz der Entscheidung, kommt zudem gerade den Mitsprachemöglichkeiten in einem Verfahren eine große Bedeutung zu.

Weitere Faktoren, die positiv auf die Konfliktlösungskompetenz partizipativer wasserpolitischer Entscheidungsprozesse wirken, sind die Möglichkeit der Informationsweitergabe für Teilnehmer (Konsultation), ein moderiertes Verfahren sowie die Informierung der Beteiligten. Auch die Teilnahme und Repräsentation privatwirtschaftlicher Vertreter als eine der generell häufigsten Konfliktparteien korreliert positiv mit der Lösung von Konflikten.

So lässt sich feststellen, dass partizipativen Entscheidungsprozessen ein überaus hohes Konfliktlösungspotenzial innewohnt. Dabei scheinen gerade solche Verfahren, die sich durch fairen, rationalen Dialog auszeichnen und umfangreiche Kompetenzen an die Teilnehmenden delegieren, also gerade intensive partizipative Verfahren, zu einer effektiven Beilegung von Konflikten zu führen.

c) Fördert zivilgesellschaftliche Beteiligung die ökologische Qualität politischer Entscheidungen?

Hauptgegenstand dieser Untersuchung ist, inwieweit Partizipation eine instrumentelle Funktion auf dem Weg hin zu ökologisch besseren, nachhaltigen umweltpolitischen Entscheidungen erfüllt. Erste Befunde aus der statistischen Analyse sind zusammengefasst in Tabelle 2 dargestellt. Dabei wird unterschieden einerseits zwischen Umweltqualität im Sinne

des Umweltschutzes (Schutz und Erhalt der natürlichen Umwelt) und im Sinne des Schutzes des menschlichen Lebens und der Gesundheit (beispielsweise Lärmbelästigung, Luftverschmutzung, akute Bedrohungssituation durch Hochwasser etc.). Als Outputmaßstab fungieren hierbei die in den untersuchten politischen Entscheidungen enthaltenen Umweltimplikationen gemessen gegenüber einem hypothetischen Optimalszenario (Underdal 2002). Generell offenbart Partizipation mit Blick auf die Darstellung, mit nur wenigen Ausnahmen, einen größeren Zusammenhang mit dem Umweltschutz als mit Belangen des Gesundheitsschutzes.

Tabelle 2: Korrelation Prozessfaktoren und Umweltqualität des Prozessoutput

	Gesundheitsschutz- Niveau	Umweltschutz- Niveau
Repräsentation pro-Umweltschutz	0,42** (0,000)	0,5346** (0,000)
Repräsentation pro-Gesundheitsschutz	0,62** (0,000)	0,36** (0,003)
Repräsentation von Bürgern	0,26* (0,035)	0,30* (0,014)
Repräsentation zivilgesellschaftlicher Akteure	0,23 (0,066)	0,30* (0,015)
Akzeptanz zivilgesellschaftlicher Akteure	0,21 (0,122)	0,45** (0,000)
Akzeptanz von Bürgern	0,18 (0,224)	0,42** (0,003)
Diskursive Fairness	0,21 (0,096)	0,30* (0,018)
Deliberation	0,16 (0,207)	0,33** (0,007)
Dialogisches Verfahren	0,09 (0,495)	0,31* (0,010)
Informierung der Beteiligten	0,35** (0,005)	0,45** (0,000)
Externe Transparenz	0,32* (0,012)	0,39** (0,002)
Dauer des Beteiligungsverfahrens	0,53** (0,000)	0,39** (0,003)

Anmerkung: Spearmans Rho; in Klammern jeweils das Signifikanzniveau p (Irrtumswahrscheinlichkeit); * = $p < 0,05$, ** = $p < 0,01$; $n=71$.

Wie aus Tabelle 2 außerdem ersichtlich wird, hat insbesondere die Repräsentation verschiedener Interessen im Entscheidungsverfahren einen hohen Einfluss auf die Gestalt der Entscheidung selbst. So korreliert die Repräsentation von Interessen des Umweltschutzes und des Gesundheitsschutzes stark und signifikant mit deren Berücksichtigung im Output. Diese Erkenntnis scheint auf den ersten Blick trivial, verdeutlicht aber doch, dass die Zusammensetzung der Akteure und ihrer Interessen in hohem Maße mit der Ausgestaltung der Entscheidung zusammenhängt. Dieser Befund bestätigt sich allerdings nicht, falls man die bloße Repräsentation nicht-staatlicher Akteure untersucht. Hierbei zeigt sich, dass die Repräsentation von Bürgern und zivilgesellschaftlichen organisierten Gruppen allein nur weniger Aussagekraft über den Inhalt und die ökologische Qualität des Outputs hat. Hingegen stärker und signifikant korreliert sind die Qualität der Entscheidung – insbesondere Umweltschutz – mit der Akzeptanz durch Bürger und zivilgesellschaftliche Akteure. Dies verleitet zu der Annahme, dass diese Akteure zwar durchaus positiv dem Umweltschutz gegenüberstehen, ihre bloße Einbindung allerdings kein Allheilmittel zur Erreichung umweltgerechter Entscheidungen sein kann.

Bei Betrachtung verschiedener Prozessfaktoren zeigt sich, dass insbesondere die Faktoren der Herstellung externer Transparenz und der Informierung der Beteiligten positiv und signifikant mit der Qualität der Entscheidung zusammenhängen. Weniger starke Effekte lassen sich hingegen für die Faktoren eines fairen Dialogs beobachten. Diese Befunde deuten in die Richtung, dass gerade diejenigen Prozessfaktoren stärker positiv mit dem Umweltstandard des Outputs korrelieren, bei denen die Teilnehmenden eher passiv bleiben, wie etwa bei dem Empfang von Informationen oder der Möglichkeit der Verfolgung eines transparenten Prozesses. Interessanterweise zeigt sich hingegen eine überaus starke Korrelation zwischen der Qualität des Output und der Dauer des Verfahrens. Die Interpretation dessen erscheint nicht besonders offensichtlich, deutet jedoch darauf hin, dass sich ein langer Atem für die Verfechter umweltpolitischer Ziele lohnen kann.

Bei der Beantwortung der Frage nach dem positiven Zusammenhang zwischen der Beteiligung von Bürgern und organisierten Interessen und der ökologischen Qualität umweltpolitischer Entscheidungen lassen sich bestimmte Muster erkennen. Die Repräsentation von Bürgern und zivilgesellschaftlichen Akteuren allein erscheint dabei weniger relevant. Zugleich steht die Zusammensetzung der Teilnehmenden in starkem Zusammenhang mit dem Gehalt des Outputs; dabei ist aber weniger die Akteurskategorie als vielmehr deren Interessenposition entscheidend. Daneben korrelieren gerade die Faktoren der passiven Teilnahme mit dem ökologischen Standard der Entscheidung.

d) Inwieweit lassen sich hypothesenbezogene kausale Mechanismen in den Fällen wiederfinden?

Hypothesen zum Zusammenhang zwischen Prozesseigenschaften und umweltbezogener Effektivität wurden in vier Clustern untersucht: Hypothesen zur Frage, inwieweit Partizipation die umweltbezogene Qualität von Entscheidungen verbessert (1) bzw. verschlechtert (2) und Hypothesen zur Frage, inwieweit Partizipation die Umsetzung von Entscheidungen verbessert (3) bzw. verschlechtert (4). Dazu sollten die Kodierer anhand des verfügbaren Fallmaterials unter Berücksichtigung kontrafaktischer Überlegungen einschätzen,

wie stark Prozesscharakteristika mutmaßlich das Zustandekommen von Outputs und Outcomes beeinflusst haben. Stärker als bei der Variablenkodierung lässt sich bei der Kodierung von Hypothesen nicht ausschließen, dass die Kodierer eigene Plausibilitätsannahmen in den Fall hineininterpretieren, was man als „Plausibilitäts-bias“ bezeichnen könnte. Selbst bei jeweils drei unabhängigen Kodierungen pro Fall und Variable sollten die Ergebnisse entsprechend mit Vorsicht interpretiert werden.

Normiert auf den Wertebereich 0 bis 1, geben die Tabellen 3 und 4 die mittleren kodierten Einflussstärken einer Hypothese über alle 71 Fälle wieder. Ein Wert von 0,5 lässt sich so interpretieren, dass beispielsweise in der Hälfte aller Fälle eine Hypothese eine maximale Gültigkeit von 1 erhalten hat oder dass für die Hypothese in allen Fällen eine mittlere Gültigkeit kodiert wurde.

Tabelle 3: Hypothesen zu Partizipation und Umweltqualität der Entscheidungen

Wirkrichtung	Reichweite/Intensität
Hypothese	
+ Öffnung von Entscheidungsprozessen für Umweltgruppen → stärkere Berücksichtigung von Umweltbelangen in Entscheidungen	0,44
+ Einbezug von Nutzern und anderen Betroffenen → bessere Informationsbasis und... ... damit auch im Umweltsinne sachgerechtere Entscheidungen	0,41 0,25
+ faire und deliberative Kommunikation → rationalere Entscheidungen im Sinne des Allgemeinguts und... ... damit bessere Umweltstandards des Outputs	0,43 0,42
+ intensive Kommunikation und Verhandeln → Identifizierung von Synergiepotenzialen und optimierten Verteilungen und... ... damit bessere Umweltstandards des Outputs	0,46 0,31
– Öffnung von Entscheidungsprozessen als Einfallstor für Akteure mit hoher Ressourcenausstattung → geringere Berücksichtigung von Umweltbelangen in Entscheidungen	0,05
– Partizipation → Kooptation von Umweltgruppen	0,07
– konsensuale Verfahren führen zu weniger sachgerechten Entscheidungen auf dem kleinsten gemeinsamen Nenner	0,18

Anmerkung: Angegeben sind arithmetische Mittel über alle 71 Fälle zur Gültigkeit einer Hypothese in einem bestimmten Fall.

Bei Betrachtung der hypothetischen Wirkmechanismen zwischen der Beteiligung von Bürgern und organisierten Interessen und der Qualität von umweltpolitischen Entscheidungen (Tabelle 3) zeigt sich, dass solche, die einen positiven Zusammenhang annehmen, in weitaus höherer Intensität und Reichweite in unserem Sample vorzufinden waren. Einschränkend wird allerdings auch deutlich, dass tendenziell die bloße Einbeziehung von Betroffenen zwar die Informationsbasis erweitert, aber damit nicht auch automatisch zu sachgerechteren Entscheidungen im Umweltsinne führt. Dies bestätigt die oben genannte Vermutung, dass sich die Einbeziehung gerade von Umweltinteressen positiv auf die Berücksichtigung dieser Interessen im Prozess auswirkt. Daneben zeigt sich, dass deliberative Verfahren durchaus einen positiven Einfluss auf den Gehalt der umweltpolitischen Entscheidung haben können, weil hierdurch aus Umweltsicht rationaler entschieden wird. Daneben wird aber auch deutlich, dass Verhandlungen zwar durchaus zur verbesserten Nutzung von Synergiepotenzialen und der Realisierung von Win-Win-Potenzialen beitragen, die Umweltstandards des Outputs aber davon nur eingeschränkter profitieren.

Gegenhypothesen, die Partizipation mitunter als Bedrohung oder Hindernis für effektive Umweltpolitik sehen, finden nur in geringem Maße Widerhall in den Befunden. So werden nur in sehr wenigen Fällen im Zuge der Beteiligung von Bürgern und zivilgesellschaftlichen Gruppen Umweltbelange weniger in den Entscheidungen berücksichtigt, sei es durch die Kooption von Umweltgruppen oder den Einfluss ressourcenstarker Akteure mit umweltschädlichen Präferenzen. Einzig ein konsensualer Entscheidungsmodus erscheint den Beschluss umweltgerechter Prozessoutcomes zu erschweren, da hier durch eine hohe Anzahl von Veto-Spielern oftmals nur Entscheidungen auf dem kleinsten gemeinsamen Nenner ermöglicht werden.

Tabelle 4: Hypothesen zu Partizipation und der Umsetzung umweltpolitischer Entscheidungen

Wirkrichtung	Hypothese	Reichweite/Intensität
+	Partizipation erleichtert Konfliktlösung und damit verbesserte Akzeptanz und Umsetzung von Entscheidungen	0,46
+	Einbezug von Betroffeneninteressen verbessert Akzeptanz und Umsetzung von Entscheidungen	0,42
+	Frühzeitige Einbindung und Informierung von Adressaten verbessert Umsetzung von Entscheidungen	0,35
+	Partizipation ermöglicht die Bildung von Netzwerken..., ... die förderlich für die Umsetzung von Entscheidungen sind	0,39 0,27
-	Partizipation weckt „schlafende Hunde“ und erhöht den Widerstand bei Betroffenen und behindert damit die Umsetzung von Entscheidungen	0,05

Anmerkung: Angegeben sind arithmetische Mittel über alle 71 Fälle zur Gültigkeit einer Hypothese in einem bestimmten Fall.

Tabelle 4 gibt Auskunft über die Intensität und Reichweite kausaler Hypothesen zum Zusammenhang zwischen Partizipation und der Implementation umweltpolitischer Entscheidungen. Analog zu den gerade erläuterten Hypothesen scheinen auch in diesem Fall die hypothetisch positiven Wirkzusammenhänge im vorliegenden Sample weitaus stärker evident als die negativen Hypothesen. So zeigt sich, wie bereits zuvor in der Korrelationsanalyse, dass die Beteiligung von Bürgern und organisierten Interessen besonders positiv die sozialen Prozessoutcomes beeinflusst, wie etwa die Akzeptanz der Entscheidung, sowie die Lösung von Konflikten. Dies wiederum wirkt sich sodann förderlich auf die Umsetzung gegebener Outputs aus und hat somit auch indirekt positive Auswirkungen auf die Umwelt.

Kaum relevant für die 71 wasserbezogenen Fallstudien war die Hypothese, dass Partizipation Aufmerksamkeit bei Betroffenen schafft, die zuvor umweltpolitisch inaktiv waren, und sich dadurch deren Widerstand weckt. Auch dies deckt sich wiederum mit den zuvor gewonnenen Erkenntnissen, wonach beteiligte Bürger und zivilgesellschaftliche Akteure dem Umweltschutz durchaus positiv zugetan waren.

So lässt sich behaupten, dass positive Wirkzusammenhänge zwischen Partizipation einerseits und dem Umweltstandard einer wasserpolitischen Entscheidung bzw. deren Umsetzung in dem untersuchten Sample weitaus stärker anzutreffen sind und über eine größere Reichweite verfügen als ihre Gegenhypothesen. Dies ergänzt gleichsam die zuvor aus den Korrelationsanalysen gewonnenen Erkenntnisse und spezifiziert sie nochmals weiter in Bezug auf ihre genaueren kausalen Wirkmechanismen.

5. Fazit

Die hier dargestellten Ergebnisse zu den Zusammenhängen zwischen (partizipativer) Gestaltung von umweltbezogenen Entscheidungsprozessen einerseits und Wirkungen in Bezug auf Umweltstandards der erzielten Outputs, Akzeptanz, Konfliktlösung und Implementation andererseits sind vorläufiger Natur. Detaillierte Analysen zu den Kontextbedingungen, unter denen angenommene kausale Mechanismen am Werk sind (Drittvariablenkontrolle), stehen noch aus. Gleichwohl lassen diese ersten Ergebnisse einige Schlussfolgerungen zu:

- Der Tendenz nach hat „mehr“ bzw. „bessere“ Partizipation (gemessen unter anderem an der Repräsentation und den Einflussmöglichkeiten nichtstaatlicher Akteure) in den untersuchten Fällen zu besser akzeptierten Prozessergebnissen gegenüber „weniger partizipativen“ Verfahren geführt, wobei aufschlussreiche Unterschiede in der Wirkungsweise von Prozesscharakteristika bestehen, je nachdem, ob Bürger oder zivilgesellschaftliche Akteure betroffen sind.
- Neben den Einflussmöglichkeiten stehen eine Reihe von Prozesseigenschaften wie Deliberation, Dialog oder Fairness im Zusammenhang mit der Lösung von Konflikten in Entscheidungsprozessen.
- Das erreichte Umweltschutzniveau von Entscheidungen hängt (bis auf wenige Ausnahmen) weniger von Prozesscharakteristika oder der allgemeinen Einbindung nichtstaatlicher Akteure, sondern von der Repräsentation umweltbezogener Interessen ab.

Dies bestätigt frühere Befunde, nach denen in erster Linie das Interessenspektrum der Beteiligten ausschlaggebend für die Ergebnisse von Beteiligungsprozessen sind (Newig/Fritsch 2009b).

Methodisch betritt die noch laufende Studie, aus der wir hier berichten, in mehrfacher Hinsicht Neuland: Bisher wurde keine Fallstudien-Metaanalyse (Case Survey) mit vergleichbarem Detailgrad im Bereich der Governance- und Partizipationsforschung durchgeführt. Die Vielzahl erhobener Variablen und die konsequente Kodierung durch drei Personen lässt differenzierte Aussagen zu den Bedingungen, unter denen bestimmte (partizipative) Entscheidungsverfahren zu bestimmten Ergebnissen führen, erwarten. Der Versuch, die Gültigkeit von Hypothesen mittels kontrafaktischer Überlegungen am einzelnen Fall zu quantifizieren, wurde unseres Wissens noch nirgendwo unternommen und kann nach der ersten Analyse als geglückt bezeichnet werden.

Wir hoffen, mit diesen ersten Ergebnissen Impulse für die weitere Diskussion der Bedingungen, unter denen unterschiedliche „partizipative“ Prozesse zu legitimer und effektiver Umweltpolitik führen, geben zu können.

Literatur

Arnstein, Sherry R., 1969: A Ladder of Citizen Participation, in: Journal of the American Institute of Planners 35 (4), 216-224.

Beierle, Thomas C./Cayford, Jerry, 2002: Democracy in Practice. Public Participation in Environmental Decisions, Washington D.C.

Berkes, Fikret/Folke, Carl, 2002: Back to the Future: Ecosystem Dynamics and Local Knowledge, in: Lance H. Gunderson/Crawford S. Holling (Hrsg.), Panarchy. Understanding Transformations in Human and Natural Systems, Washington D.C./Covelo/London, 121-146.

Bulkeley, Harriet/Mol, Arthur P.J., 2003: Participation and Environmental Governance: Consensus, Ambivalence and Debate, in: Environmental Values 12 (2), 143-154.

Busenberg, George, 2007: Citizen Participation and Collaborative Environmental Management in the Marine Oil Trade of Coastal Alaska, in: Coastal Management 35, 239-253.

Dahl, Robert A., 1994: A Democratic Dilemma: System Effectiveness versus Citizen Participation, in: Political Science Quarterly 109 (1), 23-34.

Delli Carpini, Michael X./Cook, Fay Lomax/Jacobs, Lawrence R., 2004: Public Deliberation, Discursive Participation, and Citizen Engagement: A Review of the Empirical Literature, in: Annual Review of Political Science 7, 315-344.

Dryzek, John S., 1997: The Politics of the Earth. Environmental Discourses. 2nd Edition. Oxford, Oxford University Press.

Fung, Archon, 2006: Varieties of Participation in Complex Governance, in: Public Administration Review 66 (Special Issue), 66-75.

Grote, Jürgen R./Gbikpi, Bernard (Hrsg.), 2002: Participatory Governance. Political and Societal Implications, Opladen.

Hardin, Garrett, 1968, The Tragedy of the Commons, in: Science 162, 1243-1248.

- Heinelt, Hubert*, 2002: Achieving Sustainable and Innovative Policies through Participatory Governance in a Multi-level Context, in: Hubert Heinelt/Philippe C. Schmitter/Randall Smith/Erik Swyngedouw/Panagiotis Getimis/Grigoris Kafkalas (Hrsg.), Participatory governance in multi-level context: concepts and experience, Opladen, 17-32.
- Hesse, Joachim J.*, 1990: Staat der Zukunft – Zukunft des Staates. Zur Modernisierung öffentlicher Einrichtungen, in: Joachim J. Hesse/Christoph Zöpel (Hrsg.), Der Staat der Zukunft, Baden-Baden, 13-27.
- Innes, Judith E./Booher, David E.*, 2004: Reframing public participation: Strategies for the 21st century, in: Planning Theory and Practice 5 (4), 419-436.
- Jänicke, Martin*, 1993: Ökologische und politische Modernisierung in entwickelten Industriegesellschaften, in: Volker von Prittitz (Hrsg.), Umweltpolitik als Modernisierungsprozeß. Politikwissenschaftliche Umweltforschung und -lehre in der Bundesrepublik, Opladen, 15-29.
- Jensen, Jason L./Rodgers, Robert*, 2001: Cumulating the Intellectual Gold of Case Study Research, in: Public Administration Review 61 (2), 235-246.
- Jordan, Andrew*, 2002: The Implementation of EU Environmental Policy: A Policy Problem without a Political Solution?, in: Andrew Jordan (Hrsg.), Environmental Policy in the European Union: Actors, Institutions and Processes, London, 301-328.
- Kastens, Britta/Newig, Jens*, 2007: The Water Framework Directive and Agricultural Nitrate Pollution: Will Great Expectations in Brussels be Dashed in Lower Saxony?, in: European Environment 17, 231-246.
- Koontz, Tomas M./Thomas, Craig W.*, 2006: What Do We Know and Need to Know about the Environmental Outcomes of Collaborative Management?, in: Public Administration Review 66: 111-121.
- Lafferty, William M./Meadowcroft, James (Hrsg.)*, 1996: Democracy and the Environment. Problems and Prospects, Cheltenham, Lyme.
- Larsson, Rikard*, 1993: Case Survey Methodology: Quantitative Analysis of Patterns across Case Studies, in: The Academy of Management Journal 36 (6): 1515-1546.
- Layzer, Judith*, 2008: Natural Experiments: Ecosystem-Based Management and the Environment, Cambridge, Mass.
- Lejano, Raul P./Ingram, Helen M./Whiteley, John M./Torres, Daniel/Agduma, Sharon J.*, 2007: The Importance of Context: Integrating Resource Conservation with Local Institutions, in: Society & Natural Resources 20 (2), 177-185.
- Lind, Edgar Allen/Tyler, Tom R.*, 1988: The Social Psychology of Procedural Justice, New York/London.
- Lovan, W. Robert/Murray, Michael/Shaffer, Ron (Hrsg.)*, 2004: Participatory Governance. Planning, Conflict Mediation and Public Decision-Making in Civil Society, Aldershot, Burlington.
- Mitchell, Ronald B.*, 2008: Evaluating the Performance of Environmental Institutions: What to Evaluate and How to Evaluate it?, in: Oran R. Young/ Leslie A. King/Heike Schroeder (Hrsg.), Institutions and Environmental Change. Principal Findings, Applications and Research Frontiers, Cambridge, Mass., 79-114.
- Newig, Jens*, 2008: Environmental Governance im Lichte von Partizipation und Effektivität. Habilitationsschrift, Universität Osnabrück.

- Newig, Jens/Adzersen, Ana/Challies, Edward/Fritsch, Oliver/Jager, Nicolas*, 2013: Comparative analysis of public environmental decision-making processes – a variable-based analytical scheme, INFU Discussion Papers 37/13, Lüneburg, <http://nbn-resolving.de/urn:nbn:de:0168-ssoar-333641> (Stand 20.3.2013).
- Newig, Jens/Fritsch, Oliver*, 2009a: The case survey method and applications in political science. APSA 2009 Paper, <http://ssrn.com/abstract=1451643> (Stand 20.4.2013).
- Newig, Jens/Fritsch, Oliver*, 2009b: Environmental Governance: Participatory, Multi-Level – And Effective?, in: *Environmental Policy and Governance* 19 (3): 197-214.
- Newig, Jens/Kvarda, Eva*, 2012: Participation in environmental governance: legitimate and effective?, in: Karl Hogl/Eva Kvarda/ Ralf Nordbeck/Michael Pregernig (Hrsg.), *Environmental Governance. The Challenge of Legitimacy and Effectiveness*, Cheltenham, UK/Northampton, MA: 29-45.
- Papadopoulos, Yannis/Warin, Philippe*, 2007: Are innovative, participatory and deliberative procedures in policy making democratic and effective?, in: *European Journal of Political Research* 35: 445-472.
- Pellizzoni, Luigi*, 2003: Uncertainty and Participatory Democracy, in: *Environmental Values* 12 (2): 195-224.
- Pressman, Jeffrey L./Wildavsky, Aaron*, 1984: Implementation: how great expectations in Washington are dashed in Oakland, Berkeley u. a. [zuerst 1973].
- Randolph, John/Bauer, Michael*, 1999: Improving Environmental Decision-Making Through Collaborative Methods, in: *Policy Studies Review* 16 (3-4): 168-191.
- Reed, Mark S.*, 2008: Stakeholder Participation for Environmental Management: A Literature Review, in: SRI Papers, Sustainability Research Institute, Leeds University.
- Renn, Ortwin/Webler, Thomas/Wiedemann, Peter (Hrsg.)*, 1995: Fairness and Competence in Citizen Participation. Evaluating Models for Environmental Discourse. *Technology, Risk, and Society*, Dordrecht, Boston, London.
- Sabatier, Paul A./Leach, William D./Lubell, Mark/Pelkey, Neil W.*, 2005: Theoretical Frameworks Explaining Partnership Success, in: Paul A. Sabatier/Will Focht/Mark Lubell/Zev Trachtenberg/Arnold Vedlitz/Marty Matlock (Hrsg.), *Swimming Upstream. Collaborative Approaches to Watershed Management*, Cambridge/London: 173-199.
- Smith, Graham*, 2003: *Deliberative Democracy and the Environment*. London.
- Tsebelis, George*, 1995: Decision Making in Political Systems: Veto Players in Presidentialism, Parliamentarism, Multicameralism and Multipartism, in: *British Journal of Political Science* 25 (3): 289-325.
- Underdal, Arild*, 2002: One Question, Two Answers, in: Edward L. Miles/Arild Underdal/Steinar Andresen/Jørgen Wettestad/Jon Birger Skjærseth/Elaine M. Carlin (Hrsg.), *Environmental regime effectiveness: confronting theory with evidence*, Cambridge/London.
- Webler, Thomas/Kastenholz, Hans/Renn, Ortwin*, 1995: Public Participation in Impact Assessment: A Social Learning Perspective, in: *Environmental Impact Assessment Review* 15: 443-463.
- Yin, Robert K./Heald, Karen A.*, 1975: Using the Case Survey Method to Analyze Policy Studies, in: *Administrative Science Quarterly* 20: 371-381.
- Zilleßen, Horst*, 1993: Die Modernisierung der Demokratie im Zeichen der Umweltproblematik, in: ders. (Hrsg.), *Die Modernisierung der Demokratie. Internationale Ansätze*, Opladen, 17-39.

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Anhang

Liste der untersuchten Fallstudien (in zeitlich aufsteigender Reihenfolge)

Fallname	Land	Jahr	Referenz
Grand Coulee Dam	US	1918	Pitzer 1994; Patten 2006
Hells Canyon Dam	US	1947	Sterne 1998; Brooks 2006
Spoel Dam	CH	1955	Werenfels/Meylan 1973
Tellico Dam	US	1963	Plater 1981
Allerton Park	US	1966	Caldwell/Hayes/Mac Whirter 1976; Harris 1976
Bell Power Station	US	1967	Nelkin 1979
Obed River	US	1967	Caldwell/Hayes/Mac Whirter 1976
Okanagan Basin Study	CA	1969	O'Riordan 1976
Laclu Farm Trailer Park	CA	1970	Wilkinson 1976
Three Rivers Watershed	US	1971	Mazmanian 1979
Snoqualmie Fishbowl Planning	US	1972	Mazmanian 1979
Snoqualmie Mediation	US	1974	Mazmanian 1979; Cormick/Patton 1980; Dembart/Kwartler 1980; Mernitz 1980
208 Water Quality Planning	US	1976	Godschalk/Stiftel 1980
Swan Lake Conflict	US	1979	O'Connor 1980; Talbot 1983; Bingham 1986
Arizona Groundwater Management	US	1980	Schlager 1995
Pig's Eye Lake Mediation	US	1980	Nelson 1990
Lees Lane Landfill	US	1982	Church/Nakamura 1993
Winchester Dam Controversy	US	1982	Blumm/Kloos 1986
Harvey and Knott Drum Cleanup	US	1983	Church/Nakamura 1993
Manistique RAP 1	US	1986	Gould 1991 International Joint Commission 1998
Saginaw River/Bay RAP	US	1986	Landre/Knuth 1990; MacKenzie 1996
Albemarle-Pamlico CCMP	US	1987	Koontz u. a. 2004; Lurie 2007
Cook County Local wetland watchers	US	1987	Gould/Schnaiberg/Weinberg 1996
Kuskokwim Fishery Co-Management	US	1987	Albrecht 1990; Albrecht 1992; Ebbin 2004
San Francisco Estuary Project	US	1987	McCreary/Tietke 1993; Tuohy 1993; Innes/Connick 1999

Sechelt Inlet	CA	1987	McMullen 1994
Ashtabula RAP	US	1988	Letterhos 1992; U.S. Environmental Protection Agency 2003
Bormida Valley	IT	1988	Bobbio 1993
Collingwood Harbor RAP	CA	1988	Landre/Knuth 1990; Hartig/Dolan 1995; Gurtner-Zimmermann 1996; Krantzberg 1996; Krantzberg 2003
Delaware Inland Bays	US	1989	Imperial 2000
Ignace Fisheries	CA	1989	Reed 1994; Reed 1995
Rochester Embayment RAP	US	1989	Landre/Knuth 1990; Kellogg 1993
Central Valley Project Improvement Act	US	1990	Fischhendler/Zilberman 2005
Great Whale River Hydro	CA	1990	Maxwell u. a. 1997; Jenson/Papillon 2000; Cooren 2001; Mulvihill/Baker 2001
San Francisco Bay Boatyards TBT	US	1990	Malecha/Moffet/Zalkin 1993
Tampa Bay	US	1990	Khator 1999; Imperial 2001
Washington Chelan Agreement	US	1990	Call 2005
Chilko Lake Study	CA	1991	Benton 1995
Clark Fork Water Management Plan	US	1991	Snow 2001
Lake Champlain Basin Program	US	1991	Bulmer/Cohn/Cousins 1999; Steppacher/Perkins 1999; Cowie 2000; Stickney/Hickey/Hoerr 2001
Santa Fe Summit	US	1991	Lampe/Kaplan 1999
Skeena Watershed	CA	1991	Pinkerton/Weinstein 1995; Pinkerton 1996
Umatilla Basin Project Mediation	US	1991	Neuman 1996
Aspen-Snowmass Creek	US	1992	Crandall 2004
Water of Leith	UK	1992	Edwards-Jones 1997
Bay-Delta Accord	US	1993	Rieke 1996; California Water Clearinghouse o. J.
Guelph Landfill Site	CA	1993	Ali 1997; Ali 1999
Robson Valley LRMP	CA	1993	Watchorn 1998
Sacramento Area Water Forum	US	1993	Connick/Innes 2003; Wiesenfeld/Orton 2004; Connick 2006
Sugarbush Water Withdrawal Mediation	US	1993	Fitzhugh/Dozier 1996; McGrory Klyza/Savage/Isham 2004
Lake Päijänne Regulation	FI	1994	Kyllönen u. a. 2006; Marttunen/Hämäläinen

Development			2008
Lahontan Wetlands	US	1994	Chisholm 1996
West Ox Pasture Dwelling Area	US	1994	Lampe/Kaplan 1999
Indian Ford Creek	US	1995	Lampe/Kaplan 1999
Apalachicola-Chattahoochee-Flint Water Allocation	US	1997	Leitman 1993; Leitman 2005
Matarrana Basin	ES	1997	Subirats/Font/Costejà 2002; Costejà/Font/ Subirats 2004; Aranda-Martín 2007; Montoya-Hidalgo 2007
Zaragoza Water Saving	ES	1997	Shirley-Smith/Cheeseman/Butler 2008
Zwolle Storm Surge Barrier	NL	1997	Kolkman 2005
Brent River Restoration	UK	1998	Eden/Tunstall 2006
Flaz Flood Protection	CH	1998	Junker/Buchecker 2004; Junker/Buchecker/Müller-Böker 2007
Galacho de Juslibol	ES	1998	Bermejo Garcia u. a. o. J.
Ohio Anti-degradation EAG	US	1998	Wiethoff/Lewicki/Davis 2003
Warren Dam Removal	US	1998	Levesque 2004
Montreal Harbour Decontamination	CA	1999	Lepage/Gauthier/Champagne 2003
Botany HCB	AU	2000	Benn/Brown/North-Samardzic 2009; Carson 2009; James 2009
Munich Isar Plan	DE	2002	Ahn 2007
Daly River Resource Management	AU	2003	Jackson 2006
Gulf of Carpentaria	AU	2003	Mackenzie 2008
Beuningen/Ewijk Floodplain	NL	2004	Vreugdenhil u. a. 2010
Szetgál Regional Landfill	HU	2004	Handler u. a. 2007
Upper Columbia Salmon Recovery	US	2005	Peterson 2006

Einzelnachweise

Ahn, Susann Valerie, 2007: Freiraum München: Perspektive, Plan und Praxis. Beteiligungskultur und Beteiligungsverständnis in München, Landschaftsarchitektur und Landschaftsplanung, Universität München, Freising.

Albrecht, Daniel E., 1990: Transactions between State Managers and Native Fishermen: Co-management on the Kuskokwim River, Alaska, Designing Sustainability on the Commons, the First Biennial Conference of the International Association for the Study of Common Property, Durham, NC.

Albrecht, Daniel E., 1992: Co-management as transaction: The Kuskokwim River Salmon Management Working Group (Alaska), Anthropology Department, McGill University, Montreal.

Ali, Syed Harris, 1997: Trust, Risk, and the Public: The Case of the Guelph Landfill Site, in: Canadian Journal of Sociology 22 (4), 481-504.

Ali, Syed Harris, 1999: The Search for a Landfill Site in the Risk Society, in: Canadian Review of Sociology & Anthropology 36 (1), 1-19.

Aranda-Martín, José Francisco, 2007: The Aragon Water Commissions: A Practical Experience, in: Water Resources Development 23 (1), 51-61.

Benn, Suzanne/Brown, Paul/North-Samardzic, Andrea, 2009: A commentary on decision-making and organisational legitimacy in the Risk Society, in: Journal of Environmental Management 90 (4): 1655-1662.

Benton, Scott, 1995: A Tale of Taseko and Ts'ylos. 14th Annual General Meeting of the Canadian Council on Ecological Areas, Calgary.

Bermejo Garcia, Andrés/Aymemi i González, Anton/Morales Bailón, Blanca/Torres, Efrén Feliú/Forcada i Irla, Elenal/Garcia, Fredericol/Martinez Huerta, Joseba/Gómez Soto, Juan/Lecumberri Beloqui, Lupe/Sintes Zamanillo, María/Rubio, Marisol Mena/Palau i Casanovas, Miquel/Conde Campos, Olga/Heras Hernández, Paco/Camacho Ríos, Pedro/Laín, Pepe Astiaso/Carabias, Raquel Bustos/Campos Fernández de Piérola, Santiago/Canales Arronte, Santiago/Barrasa García, Sara/Dunyó i Esteve, Sebastiá/Casadesús, Xavier Carbonell/Oliver i Martinez-Fornés, Xavier/Sampedro Ortega, Yolanda, o.J.: Once historias sobre participación ambiental. Y algunas reflexiones compartidas, Seminario sobre Educación Ambiental y Participación. Naturaleza y Parques Nacionales, Serie Educación Ambiental.

Bingham, Gail, 1986: Resolving Environmental Disputes. A Decade of Experience, Washington D.C.

Blumm, Michael C./Kloos, Bill, 1986: Small Scale Hydropower and Anadromous Fish: Lessons and Questions from the Winchester Dam Controversy, in: Environmental Law 16 (3), 583-638.

Bobbio, Luigi, 1993: Die Sanierung eines umweltverschmutzten Gebietes. Das Bormida-Tal, in: Horst Zilleßen/Peter C. Dienel/Wendelin Strubelt (Hrsg.), Die Modernisierung der Demokratie. Internationale Ansätze, Opladen, 193-201.

Brooks, Karl Boyd, 2006: Public Power, Private Dams. The Hells Canyon High Dam Controversy, Seattle.

Bulmer, Susan/Cohn, Art/Cousins, Ann, 1999: Lake Champlain Cultural and Social Resource Management in the 1990s: You Can't Get Where You're Going Until You Know Where You've Been, in: Thomas O. Manley/Patricia L. Manley (Hrsg.), Lake Champlain in Transition. From Research Toward Restoration, Washington D.C., 389-396.

- Caldwell, Lynton K./Hayes, Lynton R./MacWhirter, Isabel M., 1976: Citizens and the environment. Case studies in popular action, Don Mills, Ontario.*
- California Water Clearinghouse o.J.: The Bay-Delta Accord of 1994, <http://www.bay-delta.org/done/accord.html> (Stand 25.4.2012).*
- Call, Roma, 2005: Collaborative Processes: Lessons Learned From the Timber Fish Wildlife, Chelan, and Forest & Fish Agreements, University of Washington, 88.*
- Carson, Lyn, 2009: Deliberative public participation and hexachlorobenzene stockpiles, in: Journal of Environmental Management 90 (4), 1636-1643.*
- Chisholm, Graham, 1996: Tough Towns: The Challenge of Community-Based Conservation, in: Philip D. Brick/McGreggor R. Cawley (Hrsg.), A Wolf in the Garden. The Land Right Movement and the New Environmental Debate, London, 272-292.*
- Church, Thomas W./Nakamura, Robert T., 1993: Cleaning Up The Mess. Implementation Strategies in Superfund, Washington D.C.*
- Connick, Sarah, 2006: The Sacramento Area Water Forum: A case Study, IURD Working Paper Series, Institute of Urban and Regional Development, University of California, Berkley.*
- Connick, Sarah/Innes, Judith E., 2003: Outcomes of Collaborative Water Policy Making: Applying Complexity Thinking to Evaluation, in: Journal of Environmental Planning and Management 46 (2), 177-197.*
- Cooren, François, 2001: Translation and articulation in the organization of coalitions: the Great Whale River case, in: Communication Theory 11 (2), 178-200.*
- Cormick, Gerald W./Patton, Leota K., 1980: Environmental Mediation: Defining the Process through experience, in: Laura M. Lake (Hrsg.), Environmental Mediation: The Search for Consensus, Boulder, Colorado, 76-97.*
- Costejà, Meritxell/Font, Nuria/Subirats, Joan, 2004: Redistributing Water Uses and Living with Scarcity. The Matarrana and the Mula in Spain, in: Hans Bressers/Stefan Kuks (Hrsg.), Integrated governance and water basin management: conditions for regime change and sustainability.*
- Cowie, Gail, 2000: Stakeholder Involvement and Decision Quality: Cases of Interstate Basin Management. Watershed Management 2000 Conference, Vancouver.*
- Crandall, Kristine, 2004: The Snowmass Creek Case. High Country Tradeoffs, in: Tamara Pearson d'Estrée/Bonnie G. Colby (Hrsg.), Braving the Currents. Evaluating Environmental Conflict Resolution in the River Basins of the American West, Boston/Dordrecht/London, 177-203.*
- Dembart, Lee/Kwartler, Richard, 1980: The Snoqualmie River Conflict: Bringing Mediation into Environmental Disputes, in: Robert B. Goldmann (Hrsg.), Roundtable Justice. Case studies in conflict resolution, Boulder, 39-58.*
- Ebbin, Syma A., 2004: The anatomy of conflict and the politics of identity in two cooperative salmon management regimes, in: Policy Sciences 37, 71-87.*
- Eden, Sally/Tunstall, Sylvia, 2006: Ecological versus social restoration? How urban river restoration challenges but also fails to challenge the science – policy nexus in the United Kingdom, in: Environment and Planning C: Government and Policy 24 (5), 661-680.*
- Edwards-Jones, Emma S., 1997: The River Valleys Project: A Participatory Approach to Integrated Catchment Planning and Management in Scotland, in: Journal of Environmental Planning and Management 40 (1), 125-142.*

- Fischhendler, Itay/Zilberman, David D.* 2005: Packaging policies to reform the water sector: The case of the Central Valley Project Improvement Act, in: *Water Resources Research* 41 (7).
- Fitzhugh, John H./Dozier, Daniel P.*, 1996: Finding the Common Good. Sugarbush Water Withdrawal, Montpelier.
- Godschalk, David R./Stiftel, Bruce*, 1980: Public Participation in Statewide 208 Water Quality Planning in North Carolina: An Evaluation, Center for Urban and Regional Studies, Department of City and Regional Planning, University of North Carolina, Chapel Hill.
- Gould, Kenneth A.*, 1991: Money, Management, and Manipulation: Environmental Mobilization in the Great Lakes Basin, St. Lawrence University in Canton, New York.
- Gould, Kenneth A./Schnaiberg, Allan/Weinberg, Adam S.*, 1996: Local environmental struggles: citizen activism in the treadmill of production, Cambridge/New York/Melbourne.
- Gurtner-Zimmermann, Arnold*, 1996: Analysis of Lower Green Bay and Fox River, Collingwood Harbour, Spanish Harbour, and the Metro Toronto and Region Remedial Action Plan (RAP) Processes, in: *Environmental Management* 20 (4), 449-459.
- Handler, Martina/Purker, Lisa/Romanescu, Dana Carmen/Tingas, Kaidi*, 2007: Promoting Environmental Mediation as a Tool for Public Participation and Conflict Resolution. A comparative analysis of case studies from Austria, Germany and CEE countries, Wien.
- Harris, Britta B.*, 1976: The drama of Oakley Dam: To build or not to build, that was the question, in: *Illinois Issues* 2, 3-7.
- Hartig, John H./Dolan, David M.*, 1995: Successful Application of an Ecosystem Approach – the Restoration of Collingwood Harbour, in: *International Association for Great Lakes Research* 21 (3), 285-286.
- Imperial, Mark T.*, 2000: The Delaware Inland Bays Estuary Program: Using a Nonprofit Organization to Implement a CCMP, A technical report prepared to support a final report to the National Academy of Public Administration as part of their Learning from Innovations in Environmental Protection Project, National Academy of Public Administration, Washington, DC.
- Imperial, Mark T.*, 2001: Collaboration as an Implementation Strategy: An Assessment of Six Watershed Management Programs. School of Public and Environmental Affairs, Indiana University, Bloomington.
- Innes, Judith E./Connick, Sarah*, 1999: San Francisco Estuary Project, in: Lawrence Susskind/Sarah McKernan/Jennifer Thomas-Larmer (Hrsg.), *The Consensus Building Handbook*, Thousand Oaks, 801.
- International Joint Commission*, 1998: Beacons of Light: Successful Strategies Toward Restoration in Areas of Concern under the Great Lakes Water Quality Agreement, International Joint Commission, Detroit.
- Jackson, Sue*, 2006: Compartmentalising culture: The articulation and consideration of Indigenous values in water resource management, in: *Australian Geographer* 37 (1): 19-31.
- James, Peggy*, 2009: The supervision of environmental risk: The case of HCB waste or Botany/Randwick?, in: *Journal of Environmental Management* 90 (4), 1576-1582.
- Jenson, Jane/Papillon, Martin*, 2000: Challenging the Citizenship Regime: The James Bay Cree and Transnational Action, in: *Politics & Society* 28 (2), 245-264.

- Junker, Berit/Buchecker, Matthias*, 2004: Social Science Contributions to the Participatory Planning of Water Systems – Results from Swiss Case Studies, IFAC Workshop on Modelling and Control for Participatory Planning and Managing Water Systems, Venice.
- Junker, Berit/Buchecker, Matthias/Müller-Böker, Ulrike*, 2007: Objectives of public participation: Which actors should be involved in the decision making for river restorations?, in: *Water Resources Research* 43 (10), Article number W10438.
- Kellogg, Wendy*, 1993: The Rochester Embayment Remedial Action Plan, in: Wendy Kellogg (Hrsg.), *Connecting Channel Areas of Concern: Strategies for Implementing Remedial Action Plans*, Buffalo.
- Khator, Renu*, 1999: Networking to achieve alternative regulation: Case studies from Florida's national estuary programs, in: *Policy Studies Review* 16 (1), 65.
- Kolkman, Marinus Johannes*, 2005: *Controversies in Water Management: Frames and Mental Models*, Universiteit Twente, 232.
- Koontz, Tomas M./Steelman, Toddi A./Carmin, JoAnn/Korfmacher, Katrina Smith/Moseley, Cassandra/Craig, Thomas W.*, 2004: Science-based Collaborative Management: The Albemarle-Pamlico Estuarine Study, in: Thomas M. Koontz/Toddi A. Steelman/JoAnn Carmin/Katrina Smith Korfmacher/Cassandra Moseley/Thomas W. Craig (Hrsg.), *Collaborative Environmental Management: What Roles for Government?*, Washington D.C., 103-125.
- Krantzberg, Gail*, 1996: The Remedial Action Plan that Led to the Cleanup and Delisting of Collingwood Harbour as an Area of Concern, in: *Journal of Great Lakes Research* 22 (2), 469-483.
- Krantzberg, Gail*, 2003: Keeping Remedial Actions Plans On Target: Lessons Learned from Collingwood Harbour, in: *Journal of Great Lakes Research* 29 (4), 641-651.
- Kyllönen, Simo/Colpaert, Alfred/Heikkinen, Hannu/Jokinen, Mikko/Kumpula, Jouko/Marttunen, Mikal/Muje, Kari/Raitio, Kaisa*, 2006: Conflict Management as a Means to the Sustainable Use of Natural Resources, in: *Silva Fennica* 40 (4), 687-728.
- Lampe, David/Kaplan, Marshall*, 1999: *Resolving Land-Use Conflicts Through Mediation: Challenges and Opportunities*, Lincoln Institute of Land Policy, Denver.
- Landre, Betsy Kiernan/Knuth, Barbara A.*, 1990: *Public Participation in Great Lakes Remedial Action Planning. Final Report*, New York Sea Grant Extension, New York.
- Leitman, Steve*, 1993: Fallstudie über den Einfluss einer nichtstaatlichen, umweltpolitischen Organisation auf Fragen der Wasserwirtschaft, in: Horst Zilleßen/Peter C. Dienel/Wendelin Strubelt (Hrsg.), *Die Modernisierung der Demokratie. Internationale Ansätze*, Opladen: 268-279.
- Leitman, Steven*, 2005: Apalachicola-Chattahoochee-Flint Basin. Tri-State Negotiations of a Water Allocation Formula, in: John T. Scholz/Bruce Stiftel (Hrsg.), *Adaptive Governance and Water Conflict*, 74-88.
- Lepage, Laurent/Gauthier, Mariol/Champagne, Patrick*, 2003: Le projet de restauration du fleuve Saint-Laurent: de l'approche technocratique à l'implication des communautés riveraines, in: *Sociologies Pratiques* 7, 65-86.
- Letterhos, Julie A.*, 1992: Dredging Up the Past: The Challenge of the Ashtabula River Remedial Action Plan, in: John H. Hartig/Michael A. Zarull (Hrsg.), *Under RAPs. Toward Grassroots Ecological Democracy in the Great Lakes Basin*, Ann Arbor, 121-138.
- Levesque, Vanessa R.*, 2004: *Values, Science and Watershed Planning in Dam Removal Debates*, University of Vermont.

- Lurie, Lisa M.*, 2007: Evaluating Participatory Watershed Management: A Case Study of the Albemarle Pamlico National Estuary Program, Nicholas School of the Environment and Earth Sciences, Duke University, 78.
- Mackenzie, John*, 2008: Collaborative Water Planning: Retrospective Case Studies, Volume 4.1: Water planning in the Gulf of Carpentaria, Darwin, TRaCK – Tropical Rivers and Coastal Knowledge.
- MacKenzie, Susan Hill*, 1996: Integrated Resource Planning and Management. The Ecosystem Approach in the Great Lakes Basin, Washington D.C.
- Malecha, Lorena Bark/Moffet, John/Zalkin, Natasha*, 1993: San Francisco Bay Area Boatyards: A Case Study in Regulating Small Polluters, in: Boston College Environmental Affairs Law Review 20 (3), 453-478.
- Marttunen, Mika/Hämäläinen, Raimo*, 2008: The Decision Analysis Interview Approach in the Collaborative Management of a Large Regulated Water Course, in: Environmental Management 42 (6), 1026-1042.
- Maxwell, James/Lee, Jennifer/Briscoe, Forrest/Stewart, Ann/Suzuki, Tatsujiru*, 1997: Locked on Course: Hydro-Quebec's Commitment to Mega-Projects, in: Environmental Impact Assessment Review 17 (1), 19-38.
- Mazmanian, Daniel A.*, 1979: Can Organizations Change? Environmental Protection, Citizen Participation, and the Corps of Engineers, Washington D.C.
- McCreary, Scott T./Tietke, Cornelia*, 1993: A First Look Back at the San Francisco Estuary Project, CONCUR, CONCUR Working Paper 93-02.
- McGrory Klyza, Christopher/Savage, Andrew/Isham, Jonathan*, 2004: Local Environmental Groups, the Creation of Social Capital, and Environmental Policy: Evidence from Vermont, Middlebury College Economics Discussion Paper, Department of Economics 04-07, Middlebury, Vermont.
- McMullen, Mark E.*, 1994: Regional conservation Planning Strategies for British Columbia – The Case of the Sunshine Coast, Faculty of Graduate Studies, University of British Columbia.
- Mernitz, Scott*, 1980: Mediation of Environmental Disputes. A Sourcebook, New York.
- Montoya-Hidalgo, José*, 2007: Instruments of Public Participation in Aragon Water Policy: the Aragon Water Commission, in: Water Resources Development 23 (1), 41-50.
- Mulvihill, Peter R./Baker, Douglas C.*, 2001: Ambitious and restrictive scoping: Case studies from Northern Canada, in: Environmental Impact Assessment Review 21 (4), 363-384.
- Nelkin, Dorothy*, 1979: Nuclear Power and its Critics: a Siting Dispute, in: Dorothy Nelkin (Hrsg.), Controversy. Politics of Technical Decisions, Beverly Hills, 49-68.
- Nelson, Kristen C.*, 1990: Pig's Eye Attempted Mediation, in: James E. Crowfoot/Julia M. Wondolleck (Hrsg.), Environmental disputes: community involvement in conflict resolution, Washington D.C./Covelo, 209-225.
- Neuman, Janet C.*, 1996: Run, river, run: mediation of a water-rights dispute keeps fish and farmers happy – for a time, in: University of Colorado Law Review 67 (2), 259-340.
- O'Connor, David*, 1980: The Use of Mediation to Resolve the Dispute over Low-Head Hydroelectric Development at Swan Lake, The New England Environmental Mediation Project, U.S. Department of Energy, Boston, Mass.
- O'Riordan, Jon*, 1976: The public involvement program in the Okanagan basin study, in: Natural Resources 16, 177-196.

- Patten, Ryan*, 2006: The Washinton Department of Fish and Wildlife's Paradigm Shift: A grounded Theory Analysis of Law Enforcement Officers Receptivity Toward Collaborative Problem Solving, Washington State University.
- Peterson, Todd*, 2006: Upper Columbia Salmon Recovery Plan Policy Forums – Final Report.
- Pinkerton, Evelyn*, 1996: The Contribution of Watershed-Based Multi-Party Co-management Agreements to Dispute Resolution: The Skeena Watershed Committee, in: *Environments* 23 (2), 51-68.
- Pinkerton, Evelyn/Weinstein, Martin*, 1995: Fisheries That Work: Sustainability Through Community-Based Management, David Suzuki Foundation, Vancouver.
- Pitzer, Paul C.*, 1994: Grand Coulee. Harnessing A Dream, Washington D.C.
- Plater, Zygmunt J. B.*, 1981: Reflected in a River: Agency Accountability and the TVA Tellico Dam Case, in: *Tennessee Law Review* 49, 747-787.
- Reed, Maureen G.*, 1994: Locally responsive environmental planning in the Canadian Hinterland: A case study in Northern Ontario, in: *Environmental Impact Assessment Review* 14 (4), 245-269.
- Reed, Maureen G.*, 1995: Cooperative Management of Environmental Resources: A Case Study from Northern Ontario, Canada, in: *Economic Geography* 71 (2), 132-149.
- Rieke, Elizabeth Ann*, 1996: The Bay-Delta Accord: A Stride Toward Sustainability, in: *University of Colorado Law Review* 67, 341-369.
- Schlager, Edella*, 1995: State-centered Management and Local Level Revolt: The Case of Arizona Groundwater Management, Reinventing the Commons, the Fifth Biennial Conference of the International Association for the Study of Common Property, Bodoe, Norway.
- Shirley-Smith, Chris/Cheeseman, Chris/Butler, David*, 2008: Sustainability of water management in Zaragoza City, in: *Water and Environment Journal* 22, 287-296.
- Snow, Donald*, 2001: Montana's Clark Fork: A New Story for a Hardworking River, in: Philip Brick, P./Donald Snow/Sarah van de Wetering (Hrsg.), *Across the Great Divide. Explorations in Collaborative Conservation and the American West*, Washington D.C./Covelo, 91-101.
- Steppacher, Lee/Perkins, Eric*, 1999: Watershed Management at a Cossroads: Lessons Learned and New Challenges Following Seven Years of Cooperation through the Lake Champlain Basin Program, in: Thomas O. Manley/Patricia L. Manley (Hrsg.), *Lake Champlain in Transition. From Research Toward Restoration*, Washington D.C., 419-434.
- Sterne, Jack K.*, 1998: One Hell of a Grand Idea: Applying the Lessons of the Grand Grand Canyon Experiment to FERC's Relicensing of the Hells Canyon Complex, in: *Environmental Law* 28, 1055-1098.
- Stickney, Michaela/Hickey, Colleen/Hoerr, Roland*, 2001: Lake Champlain Basin Program: Working together today for tomorrow, in: *Lakes & Reservoirs: Research and Management* 6 (3), 217-223.
- Subirats, Joan/Font, Nuria/Costejà, Meritxell*, 2002: Case Study 1: Matarranya River Basin, Universitat Autònoma de Barcelona (UAB) Departament de Ciència Política i de Dret Públic and EUWARENESS, Bellaterra (Barcelona).
- Talbot, Allan R.*, 1983: Hydro Power at Swan Lake, in: Allan R. Talbot (Hrsg.), *Settling Things: Six Case Studies in Environmental Mediation*, Washington D.C., 41-54.
- Tuohy, William S.*, 1993: Characterizing the San Francisco Estuary: A Case Study of Science Management in the National Estuary Program, in: *Coastal Management* 21, 113-129.

U.S. Environmental Protection Agency, 2003: Ashtabula River Area of Concern, Ashtabula.

Vreugdenhil, Heleen/Slinger, Jill/Kater, Emiel/Thissen, Wil, 2010: The influence of scale preferences on the design of a water innovation – a case in Dutch river management, in: Environmental Management 45 (7).

Watchorn, Elizabeth Mary, 1998: Collaborative Planning and Tourism: A Case Study of the Robson Valley Land & Resource Management Planning Process, School of Community and Regional Planning, University of British Columbia, Vancouver.

Werenfels, Lucas/Meylan, Pierre, 1973: Water development: A European Experience, in: Charles R. Goldman/James McEvoy III/Peter J. Richerson (Hrsg.), Environmental quality and water development, San Francisco, 454-465.

Wiesenfeld, Ramsey/Orton, Mary, 2004: A Retrospective View of a Collaborative, Antioch University McGregor, Capstone.

Wiethoff, Carolyn/Lewicki, Roy J./Davis, Craig B., 2003: Portraits of Self and Others: State-Level Conflict over Water Regulation in Ohio, in: Roy J. Lewicki/Barbara Gray/Michael Elliott (Hrsg.), Making Sense of Intractable Environmental Conflicts. Frames and Cases, Washington D.C./Covelo/London, 225-253.

Wilkinson, Paul, 1976: Public Participation in Environmental Management: a Case Study, in: Natural Resources Journal 16, 117-135.

Article [A6]:

Participation for effective environmental governance? Evidence from Water Framework Directive implementation in Germany, Spain and the United Kingdom

Abstract

Effectiveness of participation in environmental governance is a proliferating assertion in literature that is also reflected in European legislation, such as the European Water Framework Directive (WFD). The Directive mandates participatory river basin management planning across the EU aiming at the delivery of better policy outputs and enhanced implementation. Yet, the impact of this planning mode in WFD implementation remains unclear, though the first planning phase was completed in 2009 and the first implementation cycle by the end of 2015. Notwithstanding the expanding body of literature on WFD implementation, a rather scattered single case study approach seems to predominate. This paper reports on implementation of the WFD in three case studies from Germany, Spain and the United Kingdom, reflecting three substantially different approaches to participatory river basin management planning, on the basis of a comparative case study design. We ask if and how participation improved the environmental standard of outputs and the quality of implementation. We found an increasing quality of outputs with increasing intensity of local participation. Further, social outcomes such as learning occurred within dialogical settings, whereas empowerment and network building emerged also in the case characterized mainly by one-way information. Finally, one important finding deviant from the literature is that stakeholder acceptance seems to be more related to processes than to outputs.

Keywords: stakeholder engagement; Water Framework Directive; mandated participatory planning; water governance; active involvement; collective learning.

Participation for effective environmental governance? Evidence from Water Framework Directive implementation in Germany, Spain and the United Kingdom

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Abstract

Effectiveness of participation in environmental governance is a proliferating assertion in literature that is also reflected in European legislation, such as the European Water Framework Directive (WFD). The Directive mandates participatory river basin management planning across the EU aiming at the delivery of better policy outputs and enhanced implementation. Yet, the impact of this planning mode in WFD implementation remains unclear, though the first planning phase was completed in 2009 and the first implementation cycle by the end of 2015. Notwithstanding the expanding body of literature on WFD implementation, a rather scattered single case study approach seems to predominate. This paper reports on implementation of the WFD in three case studies from Germany, Spain and the United Kingdom, reflecting three substantially different approaches to participatory river basin management planning, on the basis of a comparative case study design. We ask if and how participation improved the environmental standard of outputs and the quality of implementation. We found an increasing quality of outputs with increasing intensity of local participation. Further, social outcomes such as learning occurred within dialogical settings, whereas empowerment and network building emerged also in the case characterized mainly by one-way information. Finally, one important finding deviant from the literature is that stakeholder acceptance seems to be more related to processes than to outputs.

Keywords: stakeholder involvement; water governance; mandated participatory planning; learning, public policy, implementation.

1 Introduction

Claims abound that collaboration and participation¹ in environmental governance can improve environmental outcomes (Koontz and Thomas, 2006). Yet after decades of research and practice in participatory environmental governance, there is still a lack of understanding of just how and under what conditions this should occur (Gerlak et al., 2013; Newig and Fritsch, 2009; Young, et al., 2013). This paper seeks to contribute to the growing body of evidence on the effectiveness of participatory governance. We study the implementation of the European Water Framework Directive (WFD)², which mandates that European member states produce planning documents that detail how ‘good water status’ will be reached. Citizen and stakeholder participation is required in the preparation and updating of these plans in six-year cycles. This ‘mandated participatory planning’ approach (Newig and Koontz, 2014) and common timeframe for WFD implementation across the EU provides an excellent test bed for comparative investigation of the effectiveness of participatory environmental governance (De Stefano, 2010; Jager et al., forthcoming). Comparing different participatory processes across Europe with respect to their effectiveness in delivering environmentally beneficial outcomes, we shed light on the relation between (participatory) policy processes and outcomes.

We report on three local participatory planning processes from Germany, Spain and the United Kingdom, asking whether and, if so, how participation improved the environmental standard of outputs and the quality of implementation. In particular, we trace how processes incorporated and integrated knowledge, how they fostered deliberation and acceptance, and whether and how this improved substantive environmental outputs and/or social outcomes such as collective learning, trust and network building.

The paper proceeds as follows: Section 2 presents our conceptual framework in the form of four principal causal mechanisms derived from the literature linking participatory governance and environmental outcomes. Section 3 introduces the WFD as an example of mandated participatory planning, outlines our methodology, and describes the case study sites and respective planning processes. In section 4, we systematically compare outputs and outcomes in the cases, and analyze whether any of the mechanisms described in section 2 account for these results. Section 5 reflects on the insights gained from this study for the broader field of environmental governance.

2 Conceptual framework: Participation and effectiveness in environmental governance

Following Fung (2006), Newig and Kvarda (2012) and others, we understand participation as a multi-dimensional concept. Participation can hence be more or less ‘intensive’ in each of the following dimensions:

1. *Involvement of stakeholders*: The range of parties included in the process (e.g. selected experts vs. a broad range of stakeholders and the public).
2. *Communication and collaboration*: The manner, direction and intensity of information flows (e.g. one-way information provision vs. collaborative development of preferences).

¹ Throughout the paper, we use the terms ‘participation’ and ‘participatory governance’ due to their better compatibility with the European approach, but we acknowledge that there is considerable overlap with the concepts of ‘collaboration’ and ‘collaborative governance’, which are more common in the North American context.

² ‘Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000, establishing a framework for Community action in the field of water policy’.

3. *Power delegation to participants*: The extent to which participants may influence the decisions to be taken.

Drawing on the available literature and recent syntheses (Drazkiewicz et al., 2015; Gerlak et al., 2013; Fritsch and Newig, 2012; Newig et al., 2013; Newig et al., submitted; Reed, 2008), we present in the following key mechanisms specifying potential (positive and negative) effects of participation on the environmental quality of governance outcomes.

Mechanism 1: Opening up of decision-making to environmental concerns

It has been argued that inclusion of environmental concerns in participatory decision-making processes (DMP) leads to more environmentally beneficial decisions (Brody, 2003; Dryzek, 2005; Smith, 2003). The key argument is that environmental groups or other actors pursuing environmental concerns will have a strong incentive to participate in a DMP on environmental matters, and thus be rather strongly represented (Binder and Neumayer, 2005; Larson and Lach, 2008). Beyond increased representation in numbers, the particular values and arguments brought forth by environmental groups can re-direct established approaches, shift actors' policy positions, and enhance the environmental quality of outputs (Brody, 2003; Smith, 2003).

On the other hand, in participatory settings environmental groups may be co-opted by more powerful interests, and/or be deprived of effective means of pursuing environmental goals outside of such settings (Berry, 1981; Whelan and Lyons, 2005). Cordial relationships developed among parties in collaborative processes may lead to the 'pacification' or 'seduction' of environmental groups (Amy, 1987). The expectation that participants act 'reasonably' can be used to suppress actors' expression of objection and frustration, then seen as irrational or non-constructive. Professional third-party facilitation or mediation, along with clear rules and procedures, can help avoid co-optation of (environmental) groups (Amy, 1987; Cooke, 2001). Further, actors may opt out of a collaborative process if they can more effectively pursue their concerns elsewhere (Susskind and McMahon, 1985).

Mechanism 2: Incorporation of additional environmental knowledge

Participation has been credited with furnishing factual information that would otherwise not be available to decision makers – especially in relation to localized issues. The involvement of informed stakeholders may provide detailed or specialized local knowledge (Brody, 2003; Pellizzoni, 2003). This knowledge may be more *accurate* or *specific* than knowledge normally available to decision-makers, e.g. complementing or scrutinizing existing scientific models (Wynne, 1992). Therefore, participants' knowledge can contribute to improving both the environmental standard and the implementability of decisions.

In other cases, different knowledge types (e.g. local and expert knowledge) can complement each other through critical exchange, fostering improved understanding of other participants' perspectives and the problem at hand and/or a transformation of views and values via critical reflection (Armitage et al., 2008; Connick and Innes, 2003).

Apart from a process design that allows for open and fair dialogue, facilitation of group processes and sufficient time are held to be conducive to effective knowledge exchange (Raymond et al., 2010). However, a certain political will to draw on knowledge made available in a DMP – both by decision-makers and by interested stakeholders – is a crucial precondition for the incorporation of additional environmental knowledge (Flynn, 2008).

Mechanism 3: Dialogical interaction

Decision-making processes characterized by dialogue and intensive two-way interaction among participants are hypothesized to produce more environmentally beneficial outputs and outcomes. Depending on the type of dialogical interaction (negotiation or deliberation), different types of benefits (mutual gains, and common good orientation) are anticipated.

For conflictual issues, participatory processes involving intensive interaction are expected to create spaces for negotiation and bargaining (Elster, 2000). By developing understanding of each other's capabilities, needs, demands and preferences, participants are more likely to arrive at solutions that maximize mutual gains, including benefits for the environment (Ansell and Gash, 2008; Brody, 2003; Delli Carpini et al., 2004).

Intensive dialogue can also foster deliberation among participants, and enable rational arguing (as opposed to bargaining or negotiation). In this context, deliberation approaches an ideal communicative situation wherein rational discussion and the 'weight of the better argument' prevail (Elster, 2000). A (re)orientation of participants' views towards the common good implies moving beyond personal interests in pursuit of solutions to the problem at hand (rather than personal gains) and outputs that benefit the community and the environment (Webler and Tuler, 2000).

Mechanism 4: Acceptance, implementation and compliance

Participatory environmental decision-making is argued to foster acceptance of a decision among policy addressees and stakeholders via representation of a wide variety of interests. Acceptance may derive from stakeholders' satisfaction with the decision itself, or with the nature of the process, and is assumed to be positively related with implementation and compliance (Bulkeley and Mol, 2003; Macnaghten and Jacobs, 1997). First, it is assumed that inclusion of actors, and consideration of their positions and preferences, will enhance their acceptance and aid implementation and compliance, simply because the decision reflects their interests (Papadopoulos and Warin, 2007). Second, a procedure that is perceived as fair and legitimate can increase stakeholders' acceptance of a decision, even if that decision runs counter to their interests (Lind and Tyler, 1988). However, legitimacy of participatory processes is linked to a variety of factors, including transparency, open and egalitarian modes of communication, early participation at all stages of policy-making, and effective moderation and facilitation (Susskind et al., 1983; Webler, 1995). Actual influence in the decision-making is stressed as a necessary condition (Webler and Tuler, 2000).

3 Local participation in Water Framework Directive implementation in Germany, Spain, and the United Kingdom

3.1 The Water Framework Directive as an instance of mandated participatory planning

The WFD arguably is the single most important piece of recent European legislation in the water field (Hering et al., 2010). It aims to achieve 'good water status' in all European water bodies by 2015 and at the latest 2027. 'Good water status' refers to both water quantity and quality, measured in ecological and chemical terms, in ground, surface and coastal waters, following a holistic environmental approach. In pursuit of this ambitious substantive goal, the WFD can be said to have redrawn the map of Europe for water policy, as it mandates the establishment of planning structures at the river basin, rather than on country, level. Competent river-basin authorities were required to designate water bodies (natural, heavily modified, artificial); assess the status of water bodies; and produce plans to achieve and maintain 'good status' (see WFD, Annex V). River basin management planning is to be

conducted in a participatory fashion, with the ‘active involvement’ of all interested parties in the production and updating of river basin management plans (RBMPs) and programs of measures (PoMs). These plans and programs are supposed to be the main vehicles of policy implementation.

In calling for the active involvement of stakeholders in the planning process, the European Commission is appealing to a distinctly instrumentalist rationale for participation, as reflected in the WFD guidance document on participation (European Commission, 2003: 6): “Public participation is not an end in itself but a tool to achieve the environmental objectives of the Directive”. Thus, public participation is seen as a central element of WFD planning, and a key success factor for the Directive’s implementation (see WFD, Preamble 14). There is, however, no prescription on how participatory planning should be designed in terms of who should be involved, at what stage and how, and as such the Directive leaves member states with considerable leeway in this regard (Newig et al., 2014).

With the initial planning phase completed in 2009, however, the extent to which this mandated participatory planning approach (Newig and Koontz, 2014) has been effective remains unclear. The empirical evidence that might validate claims either way is certainly still lacking in the European context. Notwithstanding the expanding body of literature on WFD implementation, a single case study approach seems to predominate, and only a relatively small number of comparative analyses are available (e.g. Beouf and Fritsch 2016; Liefferink et al., 2011). Only very rarely are social and substantive outcomes explored in the context of participatory implementation (e.g. Hophmayer-Tokich and Krozer, 2008).

3.2 Case selection and methodology

The WFD, like other EU environmental directives, constitutes a particularly apt setting for comparative research, given the aforementioned set of common requirements and timeframe. This common context helps to isolate the causal mechanisms by which participation affects governance outcomes, which are otherwise difficult to study in a comparative manner.

Taking advantage of the fixed WFD frame, we selected the Planning Unit South Elbe-Lübeck Canal (506 km²) in the German state of Schleswig-Holstein; the Miera and Campiazo Basins in Cantabria, Spain (620 km²); and the Belfast Lough and Lagan Catchments in Northern Ireland (1,005 km²)³ as our case study sites (see figure 1). These exhibit, on the one hand, similar institutional contexts as in the three member states implementing competent authorities were located at a sub-national level. On the other hand, we selected these three cases from the diversity of participatory process forms within the three different member states in order to account for varying approaches regarding the three dimensions of participation introduced in section 2:

- *Involvement of non-state actors*: Whereas in Elbe-Lübeck small groups of less than 10 carefully selected stakeholders participated, Belfast Lough and Lagan had larger groups of 20-40 participants based on open invitation, while Miera and Campiazo sought much broader societal representation, combining targeted and open invitation, attracting a total of 644 participants.
- *Communication mode*: Consistent with the small groups in Elbe-Lübeck, two-way communication was most intensive here. Although the Cantabrian approach had to handle a huge number of participants, there was also two-way information exchange, whereas in Belfast Lough and Lagan, despite the moderately sized groups, the process was mostly restricted to information provision and subsequent consultation.

³ Henceforth respectively: Elbe-Lübeck; Miera and Campiazo; Belfast Lough and Lagan.

- *Power delegation to participants*: Elbe-Lübeck was the only case in which stakeholders had a clear influence on decisions, to a degree close to local self-governance. In both Miera and Campi-azo and Belfast Lough and Lagan, participants' influence on planning was much more limited.

To ensure attribution of participatory processes and outcomes and the comparability between cases, our analysis focuses on those processes that were (1) most decisive in influencing RBMPs and POMs, and (2) located on a rather local, sub-basin level.

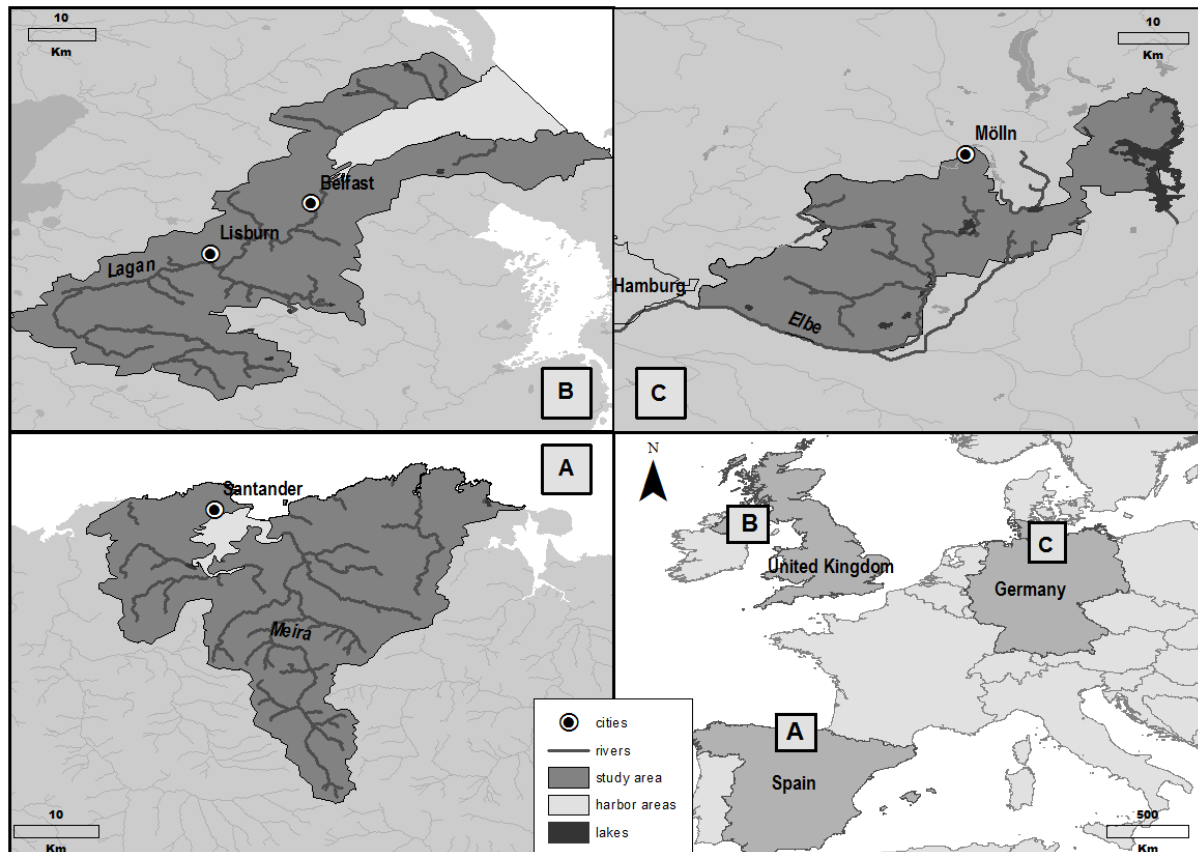


Figure 1: Case study sites.

Following a review of the WFD literature – including peer reviewed studies, official EU and member state reports, and grey literature from various planning authorities – we conducted semi-structured interviews with stakeholders at the level of competent authorities in late-2014 (3 interviews) and the level of sub-basin planning processes, in the first half of 2015 (12 interviews). For the latter we identified process organizers and at least two stakeholders representing opposing interests in relation to the most pressing water quality problem in each case study area.

We performed a content analysis on the transcribed interviews and documentary case material, structured according to context, process, substantive output, social outcomes and environmental outcomes and impacts. Environmental outputs were mainly assessed through RBMPs and PoMs, tracing the measures proposed in each of the selected processes. Hence, yardstick for the assessment of environmental quality was the goals of ‘good water status’s set by the WFD itself. Where no clear link between participation and environmental standards of RBMPs and PoMs could be established, we analyzed additional output documents. Environmental output quality was assessed on four dimensions:

targeting of main water management issues in the sub-basin, specificity of measures, identification of implementing addressees, and feasibility of measures.

3.3 Germany – Schleswig-Holstein: Elbe-Lübeck Planning Unit

Participation in Schleswig-Holstein was mainly organized at the sub-basin level, where 34 planning units, each with one working group, were established. So-called Water Boards, associations that traditionally represent the interests of land-owners, chair these working groups and have responsibility for implementation under public contract. Due to their experience and contacts, the Water Boards were expected to be crucial for generating acceptance among stakeholders (Bruns, 2010), particularly as implementation of land-owner related measures relied on voluntary action. Further, it was assumed that inclusion of relevant stakeholders at an early stage in the planning process, would also aid implementation. Thus, the working groups, comprising organized stakeholders selected by the Ministry of Environment, initiated planning relatively early (in 2002), and held meetings generally on a monthly basis (see figure 2 for an overview of the planning process).

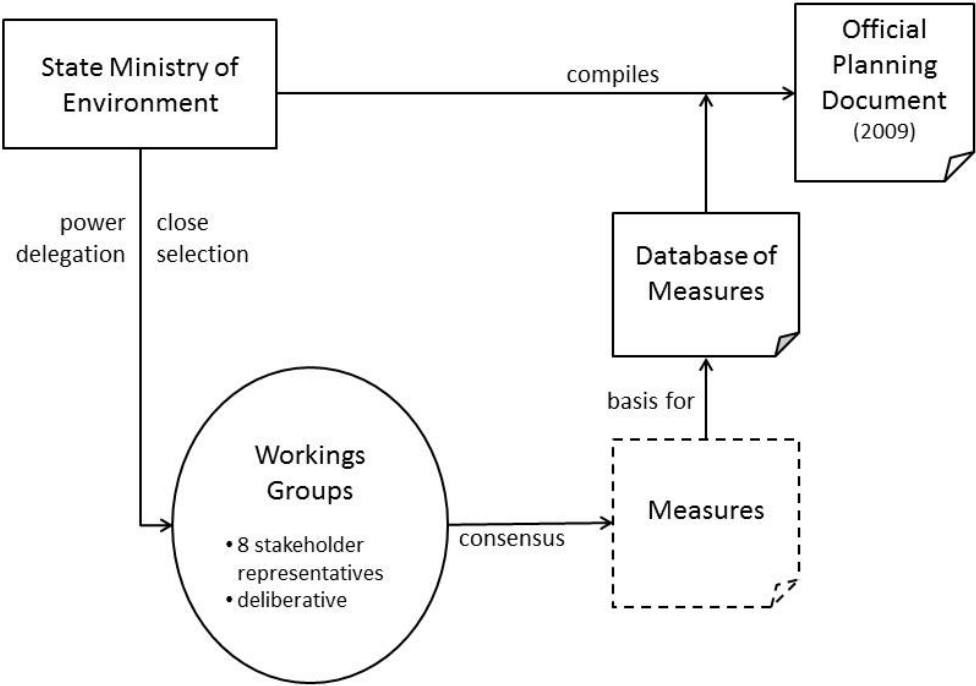


Figure 2: Overview of the river basin management planning process in Elbe-Lübeck. Dashed lines indicate informal document.

The Elbe-Lübeck working group comprises eight stakeholders: Water Board (2), Association of Towns and Municipalities (1), Farmers’ Federation (1), ENGOS (environmental non-governmental organizations) (2), Fishery Association (1), Local Water Authority (1), as well as a guest representative of the Water and Shipping Agency. Additionally, a representative of the state Ministry of Environment attends the meetings, but does not have voting rights. In addition to the agricultural representative, two participants – including the chair – have an agricultural background.

The main water management issues in the planning unit are lack of connectivity due to river flow alterations and infrastructure, and diffuse pollution – almost exclusively from agriculture. No water bod-

ies were classified as having good status. Despite this difficult starting point, participants and organizers described the atmosphere within the working group as calm, constructive and cooperative throughout the process. The Ministry and Water Board provided information and expert advice. The process chair – a Water Board representative – was highly regarded by all participants, being seen as well suited for the task, highly committed and motivated. Participants were actively involved in discussion, which was described as almost conflict-free and without intense negotiations. Participant input was perceived as constructive and useful for achieving WFD targets. Most of the measures were proposed by the Water Board, and participants had the possibility to adjust them. As implementation depended on voluntary action combined with state funding, an important benchmark for discussion was the implementability of measures.

Once decisions were taken, they were submitted to a federal state database. Within the final RBMP (MELUR, 2009) and PoM (FGG Elbe, 2009) only general measure types were listed, rather than specific ones. Measures were also not recorded elsewhere, except in the meeting minutes, which give a detailed account. The process chair always communicated the final output and its implementation status to the working group.

3.4 Spain – Cantabria: Miera and Campiazo Basins

Participatory planning in Cantabria has surpassed the basic requirements of the WFD. The majority of basins in Cantabria lie within the interregional river basin district of the Cantábrico Occidental, which is administered by its respective river basin authority (RBA). For such basins, which span multiple autonomous regions, RBAs are the implementing competent authorities. Despite this, the Government of Cantabria decided to initiate its own participatory process, as the RBA-led process was perceived as insufficiently local, and the RBA itself was not highly regarded among Cantabrian stakeholders. To this end, the Office for Hydrologic Participation in Cantabria (OHPC) was created within the Cantabrian Environmental Agency, representing the ‘new water culture’ (*nueva cultura del agua*)– a new and important paradigm in the Spanish context at the time, which demanded a more holistic and integrated view on water resource management (ISSTI, 2008).

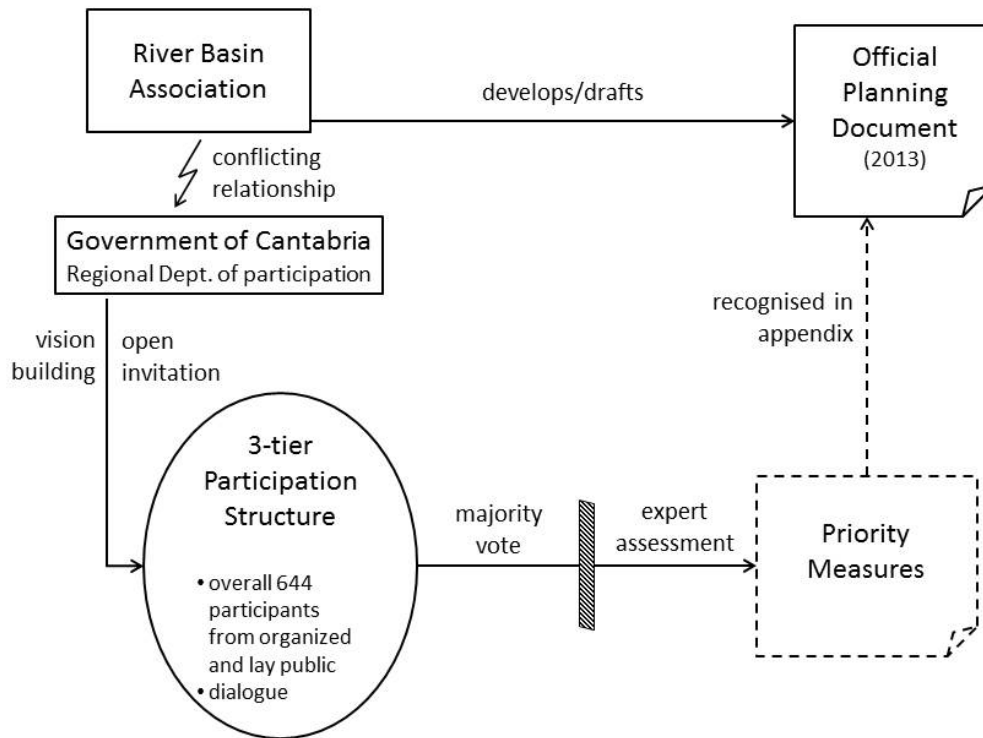


Figure 3: Overview of the river basin management planning process in Miera and Campiazo. Dashed lines indicate no formal document or no formal connection.

Following an analysis of other European processes of participatory water governance, the OHPC initiated an extensive stakeholder identification process (see figure 3 for an overview of the planning process). While at the beginning of the planning cycle, sectoral meetings (i.e. involving only one stakeholder group defined as economic, social and administrative) were held in each sub-basin, the OHPC later ran additional multi-stakeholder forums, as well as water forums open to the wider public, in order to reach as many stakeholders as possible.

The Miera and Campiazo process, starting in 2008, comprised an official opening event, four sectoral meetings, six water forums, and three multi-stakeholder forums, which were held in different catchments. The aim of maximizing representation and activation of stakeholders was even supported by advertisements placed in churches and bars. This led finally to the participation of 644 individuals and entities (OHCP, 2010).

In preparation for the meetings, the OHPC together with the University of Cantabria, compiled all relevant information on water bodies and pressures in the sub-basins into an analysis document, which was supplied to participants beforehand. In the upper basins, diffuse pollution is an issue due to agriculture, but even more pressing problems are point- and diffuse-source pollution by urban development and industry – in particular around the capital city of Santander and its port in the north – as well as river connectivity in the middle and lower sections of the basins. 67% of waters do not reach good status (OHCP, 2008).

The process aimed to identify social perception of relevant water issues by eliciting information and proposals from stakeholders. Accordingly, meetings were generally characterized by only little two-way discussion and consensus building, as the OHPC initially intended, and focused rather on the collection of opinions and proposals. Meetings sometimes developed “an atmosphere of individual wish-fulfillment, lacking collective goals or coordination” (ISSTI, 2008: 11). On the other hand, this meant

ample possibility for participants to bring in their opinions. In large water forums, for instance, the OHPC divided participants into sub-groups so everyone could have a say.

The main clash between stakeholders played out in the multi-stakeholder forums, particularly in the final one that aimed to reach a decision. Categories of problems – as results of the foregoing meetings – were presented, discussed, and finally voted on in terms of their urgency using a ‘traffic light’ system. Each participant had one vote, and ‘consensus’ was reached when more than 50% agreed. When the voting procedure was criticized by a representative of a large interest group, it was made clear that these were not final or concrete decisions or measures, but more of an ‘idea map’ for further planning.

Following the prioritization of measures by stakeholders, experts from the University of Cantabria selected measures based on feasibility (ISSTI, 2008). The output comprises a document compiling 213 generic measures, which was published in 2010 (OHCP, 2010) and presented in 2011 at meetings in each catchment. The list was handed over to the RBA on time, which published the RBMP in late-2013. The 213 measures, however, are confined to an appendix on stakeholder participation (CHCantábrico, 2013) and no explication of their integration into the actual PoM is given.

3.5 United Kingdom – Northern Ireland: Belfast Lough and Lagan Catchments

WFD implementation in Northern Ireland followed a largely uniform approach consisting of the centralized development of RBMPs and PoMs, organized by the Northern Ireland Environment Agency (NIEA) within the Department of the Environment, which is the implementing competent authority. Active stakeholder involvement below a national-level forum occurs mainly at the sub-basin scale via Catchment Stakeholder Groups, which were set up in 2007 and have met biannually since then, such as in Belfast Lough and Lagan (see figure 4 for an overview of the planning process).

The main pressures in Belfast Lough and Lagan result from agriculture via diffuse and point-source pollution in the upper catchment. In the lower reaches, point-source pollution (including industrial, sewage, and urban wastewater spills) is the main pressure, while barriers to connectivity are also an issue. 97% of all water bodies do not reach good status (NIEA, 2010, 2012).

The biannual meetings of Belfast Lough and Lagan were hosted at different venues within the catchments, and several officials from NIEA had chaired the group. The evening meetings were open to the general public and all interested stakeholders, but in practice attendance by citizens and community groups was rather limited, and clearly incident-driven. Meetings were usually attended by between 20 and 40 stakeholders, although officials from NIEA and other government departments sometimes accounted for more than half of all attendees. Other participants included representatives from local angling clubs, environmental conservation and natural heritage groups, electricity generators, and the government-owned water company. Surprisingly, farmers and agricultural interests were generally not represented in the process, and nor did ENGOs participate to any great extent. According to farmer representatives, meetings were held at an inconvenient time of day, and the tone of the meetings was perceived as hostile towards farmers, who were seen by many other stakeholders as the source of water quality problems. The main reason stated, however, was that the meetings were not deemed particularly important or relevant given the already established channels of communication and cooperation between farmers union and groups and the government on water issues. Similarly, ENGOs preferred engagement via the national stakeholder forum and the related consultation process, which opened the door for bilateral meetings with decision-makers.

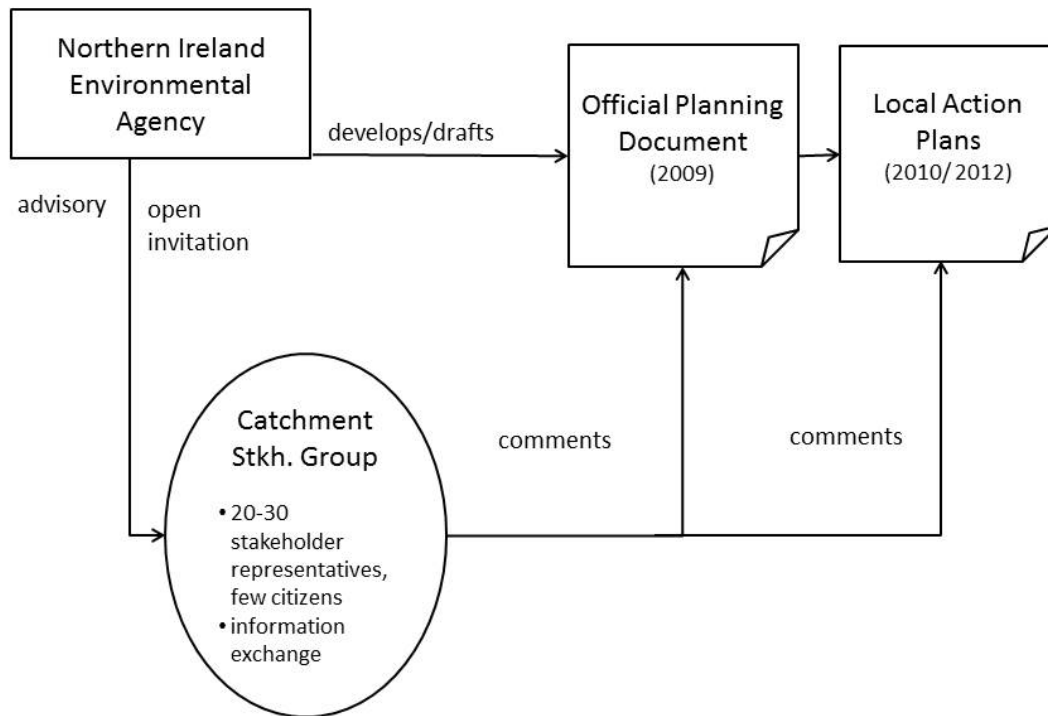


Figure 4: Overview of the river basin management planning process in Belfast Lough and Lagan.

The typical format of meetings was for the authorities to deliver or invite one or two presentations on water management issues, monitoring efforts, or proposed measures or initiatives, and for these to be followed by questions from the floor and discussion. Some more structured forms of information elicitation were also employed, such as workshops, questionnaires or written comments. In the absence of agricultural and environmental groups, angling groups, which represented the largest non-state actor group, took on the role of advocating for water quality and environmental protection more generally. Yet, some stakeholders described having become disillusioned with the process given the often-limited scope for questions and discussion as meeting agendas were filled with Agency presentations.

In spite of this, participants had opportunity to comment on most WFD documents relating to the sub-basin, including the draft RBMP in 2009. The main critiques of the draft plan were that it lacked detail and ambition (NIEA, 2009a). Key recommendations included promoting local projects and integrating local knowledge (e.g. via monitoring by angling clubs), to increase co-ordination with agriculture and ENGOs, and to promote efficient water use (NIEA, 2009a). Four sections of the plan had been updated subsequently and one new measure on promotion of water efficiency included. How far-reaching this new measure is, is not clear, as the RBMP itself lists generic measures to be applied to the whole basin (NIEA, 2009b). In late-2009, Local Management Areas were defined, for which Local Management Area Action Plans were produced to drive implementation at the local level. At the spring 2010 meetings, Local Management Area Action Plan workshops were held, to gather participants' input into local Action Plans and their feedback on the format of the meetings. The comments of participants on the draft Action Plans are not publicly accessible.

4 Cross-case analysis

4.1 Environmental planning outputs and outcomes

We distinguish planning outputs (agreements/plans) from outcomes (action on the ground in terms of implementation and compliance) and impacts (actual changes in the environment). The WFD envisages RBMPs and PoMs as the central vehicles for implementation. While these were in fact produced in all case study regions (albeit with considerable delay in Spain), our analysis suggests that these official plans are of limited value for understanding actual implementation of measures, because they are too general and abstract to drive action on the ground. Instead, each of the planning processes studied produced more specific, localized outputs (list of measures; local Action Plans). Below we analyze these outputs according to the following criteria: (1) Targeting of main water management issues; (2) specificity of measures; (3) identification of implementing addressees; and (4) feasibility of measures.

(1) In Elbe-Lübeck, the developed measures comprehensively target river connectivity – a significant water management issue in the area. Nonetheless, measures failed to really address diffuse pollution, a major pressure in the planning unit. Given the reliance on voluntary action for implementation, addressing diffuse pollution implied in most cases the state buying land from farmers for buffer strips. A rapid rise in land prices since 2007, due to the federal promotion of corn for biogas, was therefore frequently identified as the main barrier to implementation. In addition, addressing diffuse pollution was not a priority for stakeholders, including nature conservation representatives. In Miera and Campiazzo, on the other hand, most measures address main problems by targeting contamination caused by industry and urban development, followed by river connectivity, and port related measures. While the local Action Plans for Belfast Lough and Lagan (NIEA, 2010, 2012) do describe the measures planned for each water body and most measures do target the main pressures of the catchment, the measures are ‘soft’, entailing further investigation and assessment, environmental education, awareness raising, and support of local stakeholder groups. Whereas these measures may have important impacts, it seems they should be complemented with specific ‘hard’ measures (e.g. removing barriers for improved connectivity).

(2) Regarding specificity of measures, only the minutes of Elbe-Lübeck list concrete measures. The listed measures in Miera and Campiazzo rather reflect broad aspirations and the measures in the local Action Plans read more like general recommendations.

(3) Implementing addressees were specified in Elbe-Lübeck (usually the Water Board), and also the Belfast Lough and Lagan local Action Plans address particular stakeholders, identify implementing agencies and implementation timeframes. The rather generic list of measures of Miera and Campiazzo does not identify implementation addressees, which would have exceeded the competence of the non-binding, complementary proposal.

(4) Measures produced in Elbe-Lübeck were clearly feasible, as selected measures were almost fully subsidized by state government. Although the local university had conducted a general feasibility check for the Miera and Campiazzo list, this did not assess actual short-term implementability. As all measures comprised soft actions under the Belfast Lough and Lagan local Action Plans, they were likely to be feasible provided sufficient resources are made available.

In Elbe-Lübeck, implementation, which began in 2010, has been completed for most measures, and has had a considerable impact: The number of natural water bodies increased from three to five (MELUR, 2014) and the rivers are repopulated with trout. Improvements in water status, however, are yet to materialize.

Implementation in the Local Management Areas of Belfast Lough and Lagan, as described in the draft updated RBMP (NIEA, 2014), was successful for some of the awareness-raising measures, such as leaflets and river walks, and for monitoring, carried out mainly in partnerships; e.g. together with anglers. Nonetheless, the 2009 targets have not been met, and the number of water bodies achieving good status has not increased in either Local management Area.

In the Miera and Campiazzo case, there appears to be no real connection between the RBMP and the list of measures. By assessing an overall improved status, even the inventory of water bodies is different to that developed by the University of Cantabria and OHCP. Apart from the sometimes difficult coordination between the RBA, the Cantabrian government, and municipalities, two major external factors came to hinder implementation. First, due to the economic crisis of 2008/2009, many high-cost measures became infeasible to implement. Second, a change of the Cantabrian government in 2011 halted the entire process. The OHCP was disestablished and no further participatory processes were organized in Cantabria for the 2009-2015 cycle.

4.2 Social outcomes

All processes produced important social outcomes. Both cases which included two-way information generated different learning processes. In Elbe-Lübeck, individual learning occurred through improved knowledge on the WFD and sustainable water management more generally. According to the Ministry, the whole group passed through an iterative learning process from measure to measure. In Miera and Campiazzo even rather knowledgeable participants stated that they learned from the process. According to the OHCP and stakeholder representatives interviewed, the whole group learned about sustainable water management. One representative even cited the exchange of opinions and related learning processes as the most important outcome of the whole process.

Trust was only reported to have developed in Elbe-Lübeck; according to participants meetings are still characterized by an atmosphere of trust and mutual understanding. In Miera and Campiazzo development of common understanding and trust were not very strong, given a lack of actual dialogue. In Belfast Lough and Lagan, meetings did not afford much opportunity for learning, developing trust or mutual understanding among stakeholders.

Nevertheless, various groups, which (unlike unionized farmers and ENGOS) did not necessarily enjoy routine access to relevant government departments, valued the increased accessibility of important governmental and private sector actors. The process has perhaps been most helpful for local stakeholders where it has supported already existing and new projects on the ground. Support accessed via new networks and relationships built were reported as having been instrumental in setting up and sustaining various local environmental projects. Network-building and improved collaboration, however, have been most pronounced among the various government officials and departments responsible for the water environment..

Improved contacts or network building was not the case in Miera and Campiazzo. Although contacts between participants of Elbe-Lübeck intensified over time, neither specific networks nor common implementation projects emerged at local level. A multiplier effect, in disseminating information and creating acceptance of measures among the wider public, intended by the process organizers, seems to have occurred only to a minimal extent. Stakeholders did not perceive their role to involve reporting back to their organizations and appear not to have used their contacts to agriculture in order to promote respective measures.

4.3 Mechanisms linking process and outcome

Mechanism 1: Opening up of decision-making to environmental concerns

In all cases, we find the involvement of environmental concerns in river basin management planning. This was most notable in Elbe-Lübeck – with 2 out of 8 participants from ENGOs – and in Miera and Campiazo, where environmental interests were proactively sought to participate, in line with the ‘new water culture’. In Belfast Lough and Lagan, ENGOs participated sporadically, as they had more effective means for engagement outside the process; a robust affirmation of the influence of alternative and more effective venues to influence outputs, as mentioned in section 2 (see table 1). In the absence of ENGOs angling groups acted as environmental advocates to a certain extent.

In section 2, we identified the mechanism of advocacy as enabling the translation of the participation of environmental groups into effective outputs. This seems to hold for all cases: In Elbe-Lübeck ENGO representatives were active in ensuring that the issue of river connectivity was comprehensively addressed. In Miera and Campiazo, environmentally oriented stakeholders actively contributed to the rather comprehensive list of well targeted measures. In Belfast Lough and Lagan, it is clear from interviews and meeting minutes that angling groups were very active and highly vigilant on water quality and river ecosystem health.

The opposite mechanism was defined as co-optation, which seems to have occurred to some degree in Elbe-Lübeck; the pressing issue of diffuse agricultural pollution was not addressed at all. Overrepresentation of agriculture within the group seems not to have been the main reason for this, as all participants highlighted the calm and constructive atmosphere of meetings. It appears that the need for clearly implementable solutions put the focus on less demanding issues; encouraged by the progress made with measures addressing river connectivity – such as the replenished fish stocks. ENGOs that were not participating directly in the working groups did critically question the disregard for agricultural pollution (NABU, 2010).

Apart from this opposing mechanism, additional factors seem to have hindered advocacy in influencing the output, which we did not cover in section 2. Arguably, the less deliberative atmosphere in Miera and Campiazo, compared to Elbe-Lübeck, made environmental groups less prone to co-optation. Yet, opposing stakeholders agreed on the priority list of measures only upon assurance that it was non-binding and rather symbolic, thereby incorporating environmental concerns, but into a ‘wish-list’-like output. In Belfast Lough and Lagan, advocacy could not impact greatly on the output, simply due to how the process was designed. Despite various suggestions and criticisms from stakeholders, it appears that promotion of efficient water use and support for local monitoring (e.g. by angling groups) are the only points to have been taken up.

Table 1: Mechanism ‘Opening up of decision-making to environmental concerns’ potentially explaining results

	Case	Elbe-Lübeck	Miera & Campiazo	Belfast Lough & Lagan
Sequence of (theory driven) causalities	‘Opening’ up of DMP	Representation of EN-GOs	Representation of EN-GOs and additional actors (‘new water culture’)	Representation of angling groups
	Representation of environmental concerns	Advocacy of environmental concerns Co-optation of environmental actors	Advocacy of environmental concerns Non-bindingness of measures suggested	Advocacy of environmental concerns Lacking power delegation
	Higher environmental standards of the output	Addressing significant water issue Ignoring the important issue of agricultural nitrate	Addressing significant water issues General ‘wish-list’ character	Only two proposals clearly included into planning Addressing significant water issues (only soft measures)

Mechanism 2: Incorporation of additional environmental knowledge

Our second mechanism focuses on the incorporation of additional environmental knowledge, brought in by stakeholders, into the process output. Additional environmentally relevant knowledge seems to have evolved in all cases. While different forms of knowledge played a role (table 2), we observed no conflict between these. In Elbe-Lübeck, all participants were quite familiar with issues around particular water bodies and could contribute useful local knowledge to shape concrete and implementable measures. In Miera and Campiazo, local knowledge was brought in by several stakeholders, including ENGOs, and OHPC was frequently surprised by the relevant knowledge brought in by rural people. Although in Belfast Lough and Lagan the information flow was primarily from the authorities to participants, stakeholders (especially anglers) succeeded in contributing local knowledge via feedback and input on draft plans.

However, the second part of the mechanism – incorporation into the output – seems to have been influenced again by the combination with additional factors. In Elbe-Lübeck, the Water Board, which was leading the participatory process, holds not only context-specific knowledge, but also expert knowledge so that every measure was prepared with, discussed with or revised by, the association’s engineer. In Miera and Campiazo, there was no direct exchange between expert and lay-local knowledge, which was sharply criticized by some stakeholders. The general feasibility check was conducted after meetings. In Belfast Lough and Lagan, it seems that the administration only drew on input to a minimal extent, demonstrating perhaps limited political will and resources to include additional knowledge.

Table 2: Mechanism ‘Incorporation of additional environmental knowledge’ potentially explaining results

Sequence of (theory driven) causalities	Case	Elbe-Lübeck	Miera & Campiazo	Belfast Lough & Lagan
	Harnessing additional knowledge	Lay-local knowledge Expert knowledge	Lay-local knowledge No expert knowledge	Lay-local knowledge Expert knowledge Lacking political will and resources
	Additional / more specific knowledge relevant to the DMP and implementation	Feasible, concrete measures	Generally feasible, no concrete measures	No concrete measures, feasible (soft) measures

Mechanism 3: Dialogical interaction

Interestingly, none of the cases represented a deliberative process. In Belfast Lough and Lagan this was perhaps not foreseen in the first place, although the original terms of reference (NIEA, 2008) did imply rather more exchange and interaction among stakeholders, but overall the process appears not to have lived up to these terms.

Table 3: Mechanism ‘Dialogical interaction’ potentially explaining results

Sequence of (theory driven) causalities	Case	Elbe-Lübeck	Miera & Campiazo	Belfast Lough & Lagan
	Deliberation and common-good orientation	No deliberation No common-good orientation	No deliberation No common-good orientation	No deliberation No common-good orientation
	Strong environmental output	-	-	-
	Negotiation for mutual gains	Dialogue/ negotiation No shared understanding of preferences and interests/ mutual gains	Broad participant selection Medium dialogue/ negotiation No shared understanding of preferences and interests/ mutual gains	Mainly one-way flow of information No dialogue/ negotiation
	Strong environmental output (and social outcomes)	Avoidance of/ No solution for conflicting issue Learning, trust	Avoidance of/ No solution for conflicting issues (generic list of actions) Learning	Avoidance of/ No solution for conflicting issues (soft measures drafted by state agency)

In Elbe-Lübeck, dialogue and negotiation, rather than deliberation, were the main modes of interaction, and arguably contributed to high quality outputs (see table 3). Nonetheless, the development of a

shared understanding of interests and preferences did not occur. The main potentially conflicting issue, which would have directly affected stakeholder property and/or property rights and as such shaped their preferences and interests, was left out.

In Miera and Campiazo there was little negotiation, let alone deliberation, due to the process design. The aggregation of all proposed measures precluded a discussion reflecting on or negotiating individual preferences. Hence, individual interests served as the main points of orientation rather than any shared understanding or common good orientation. This was in part due to the group sizes, which were simply too large for intensive discussion, highlighting a trade-off between broad representation of stakeholders and the possibility for effective deliberation.

Mechanism 4: Acceptance, implementation, and compliance

The inclusion of stakeholder interests into a decision and subsequent acceptance and implementation was one mechanism identified in section 2 (see table 4). This seemed to be important in Elbe-Lübeck, as the self-drafted measures were in fact accepted by stakeholders and subsequently implemented by them (mainly the Water Board). An additional factor, not covered in our theoretical scheme, which was repeatedly raised, was the possibility to see tangible results. All participants seemed to be highly satisfied with their decisions if they could witness the actual results. Connectivity problems – unlike diffuse agricultural pollution – lend themselves to this, as measures usually imply a removal or construction of new, more sustainable infrastructure.

In Belfast Lough and Lagan, some stakeholders were frustrated at the apparent lack of responsiveness of NIEA to their concerns, and a perceived lack of influence on the planning process. They expressed dissatisfaction with the RBMPs and Action Plans on the grounds that measures were vague and ambiguous, and perceived as unlikely to be implemented given a shortage of resources. Aside from this, however, dissatisfaction was mainly expressed regarding the process. Stakeholders felt that the meetings were often stacked with government staff, and that the agenda often allowed too much time for official presentations and insufficient time for questions and meaningful discussion. Despite relatively high reported levels of dissatisfaction, several local groups have proceeded to cooperate with NIEA as co-deliverers in an attempt to deliver on a few of the measures.

A perceived fair and legitimate process contributing to acceptance – the second mechanism stated in section 2, also played a major role in Miera and Campiazo: There was no actual integration of stakeholder interests into the final output (RBMP) or implementation. Surprisingly, acceptance and stakeholder satisfaction appear here to be mainly related to the participatory process. Participants valued very highly the opportunity to participate in forums and express their opinions. The process was perceived as very fair and legitimate, in particular due to the equal opportunities to have a say, open mode of communication, neutral mechanism for reaching consensus, and neutral moderation. Although everyone knew that the priority list was not actually part of the plan, and had not been implemented, they were highly satisfied with the process and even stated that they would participate again.

Also in Elbe-Lübeck the process was perceived as very fair and legitimate. Stakeholders praised particularly the consensus vote, even if this meant less favored options on a few occasions. Early and on-going participation was also highlighted as important.

Table 4: Mechanism ‘Acceptance, implementation and compliance’ potentially explaining results

	Case	Elbe-Lübeck	Miera & Campiazo	Belfast Lough & Lagan
Sequence of (theory driven) causalities	Acceptance through procedural fairness	Perceived fair and legitimate process	Perceived fair and legitimate process	No perceived fair and legitimate process
	Accommodation of participant interests	Reflection of interests in the output Tangible results	No reflection of interests in the output	No reflection of interests in the output
	Enhanced implementation and compliance with output	Acceptance Implementation Empowerment	Acceptance No implementation Empowerment	No acceptance Implementation gap Empowerment, networks

5 Conclusion

In this study we identified and elaborated on three different experiences in participatory water governance under the European WFD. The considerable leeway afforded to member states in establishing participatory processes led in the German case to a model of small groups of organized stakeholders with intensive communication and high power delegation. In the Spanish case, far-reaching participation by stakeholders and the wider public involved two-way information flow, but finally no power delegation to participants. In the Northern Ireland case, medium-sized groups of stakeholders participated in meetings characterized largely by one-way information flows and limited power delegation. In all cases the required RBMPs and PoMs were produced, but these documents do not appear to have played the decisive role envisaged by the Commission. Many actually remain quite descriptive and vague about measures to be taken.

In all of our three cases, however, additional outputs (list of measures, local Action Plans) were produced to guide subsequent implementation, but these often bypassed the official EU planning process. Regarding mandated participatory planning, we found an increasing quality of these additional outputs with increasing intensity of local participation. However, the model of local collaborative governance in the German case shows the dangers of co-optation of environmental groups, which weakened environmental outputs. Full implementation also only occurred under this model. Social outcomes such as learning occurred within the more dialogical settings of the German and Spanish cases. All cases seem to have led to empowerment to some degree, whereas network building emerged mainly in the Northern Ireland case characterized mostly by one-way information.

We identified four mechanisms potentially contributing to the environmental quality of outputs and implementation within the three case studies: Representation and advocacy for environmental concerns; provision of additional environmental knowledge; deliberation and negotiation; and acceptance through perceived fairness of process and reflection of stakeholder interests in the output. We found these mechanisms seemingly conducive to output and outcome quality, however, mainly in combination with additional factors. Let alone the counteracting co-optation mechanism in the German case; actual advocacy of environmental interests was difficult to achieve with a non-binding output in the Spanish case and lacking power delegation in the Northern Ireland case. Likewise, not only additional knowledge brought into the process but also a balanced exchange of knowledge types, between e.g.

lay-local and expert knowledge seems to have been crucial for a more specific output. The former is surely difficult to achieve when there is a lack of political will to draw on this knowledge, as in the Northern Ireland case. In addition, balancing of interests through negotiation or deliberation that might have led to common understanding of preferences or a common good orientation was not required, as conflicting issues that would have substantially affected stakes had been left out: In the Spanish case due to the broad participant selection and process type allowing every stakeholder to voice concerns; in the German case by excluding one pressing issue from discussions; and in the Northern Ireland case by only drafting soft measures.

Finally, incorporation of stakeholder interests into the output enhanced acceptance, particularly, in combination with tangible results as in the German case (frequently difficult to provide in environmental planning). Surprisingly, the Spanish case offered strong evidence counter to the claim in literature that actual influence in decision-making is necessary for a perceived fair and legitimate process. The Spanish and Northern Ireland cases suggest that stakeholder acceptance seems to be rather more related to processes than to outputs. There might certainly be additional potential factors, deriving from different participatory national cultures, which earlier studies showed to have an influence on WFD implementation (Enserink et al. 2007, Tippet et al. 2005). Nonetheless, the factors identified in our conceptual framework seem to hold over different contexts, as the above-mentioned acceptance mechanism indicates.

Given the variety of (often conflicting) findings in the continually expanding cross-disciplinary literature on participation in environmental politics and governance, we suggest that comparative case studies, like the one presented here, stand to yield novel insights into the conditions under which mechanisms linking participation and environmental outcomes are effective.

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References

- Amy, D.J., 1987. *The Politics of Environmental Mediation*. Columbia University Press, New York.
- Ansell, C., Gash, A., 2008. Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory* 18, 543-571.
- Armitage, D.R., Marschke, M., Plummer, R., 2008. Adaptive co-management and the paradox of social learning. *Global Environmental Change*, 18, 86-98.
- Boeuf, B., Fritsch, O. 2016. Studying the implementation of the Water Framework Directive in Europe: a meta-analysis of 89 journal articles. *Ecology and Society* 21(2):19.
- Berry, J.M., 1981. Beyond citizen participation: Effective advocacy before administrative agencies. *Journal of Applied Behavioral Science* 17, 463-477.
- Binder, S., Neumayer, E., 2005. Environmental pressure group strength and air pollution: An empirical analysis. *Ecological Economics* 55, 527-538.

- Brody, S.D., 2003. Measuring the effects of stakeholder participation on the quality of local plans based on the principles of collaborative ecosystem management. *Journal of Planning Education and Research* 22, 407-419.
- Bruns, A., 2010. Governance im Küstenraum: Europäische Umweltpolitik im Wandel – Die Umsetzung des Integrierten Küstenzonenmanagements und der Wasserrahmenrichtlinie an der Westküste Schleswig-Holsteins, Mathematisch-Naturwissenschaftliche Fakultät, Christian-Albrecht-Universität zu Kiel, Kiel.
- Bulkeley, H., Mol, A.P.J., 2003. Participation and environmental governance: Consensus, ambivalence and debate. *Environmental Values* 12, 143-154.
- CHCantábrico, 2013. Plan Hidrológico de Cuenca: Demarcación Hidrográfica del Cantábrico Occidental. Gobierno de España, Ministerio de Agricultura, Alimentación y Medio Ambiente, Confederación Hidrográfica del Cantábrico, Madrid.
- Connick, S., Innes, J. E., 2003. Outcomes of collaborative water policy making: Applying complexity thinking to evaluation. *Journal of Environmental Planning and Management* 46, 177-197.
- Cooke, B., 2001. The social psychological limits of participation?, in: Cooke, B., Kothari, U. (Eds.), *Participation: The new tyranny?* Zed Books, London, 102-121.
- De Stefano, L., 2010. Facing the Water Framework Directive challenges: A baseline of stakeholder participation in the European Union. *Journal of Environmental Management* 91, 1332-1340.
- Delli Carpini, M.X., Cook, F.L., Jacobs, L.R., 2004. Public deliberation, discursive participation, and citizen engagement: A review of the empirical literature. *Annual Review of Political Science* 7, 315-344.
- Drazkiewicz, A., Challies, E., Newig, J., 2015. Public participation and local environmental planning: Testing factors influencing decision quality and implementation in four case studies from Germany. *Land Use Policy* 46, 211-222.
- Dryzek, J.S., 2005. *The Politics of the Earth: Environmental discourses*. 2nd Edition. Oxford University Press, Oxford.
- Elster, J., 2000. Arguing and bargaining in two constituent assemblies. *Journal of Constitutional Law* 2, 345-421.
- Enserink, B., M. Patel, N. Kranz, and J. Maestu. 2007. Cultural factors as co-determinants of participation in river basin management. *Ecology and Society* 12(2): 24
- European Commission, 2003. Common Implementation Strategy for the Water Framework Directive (2000/60/EC): Guidance document no. 8 on public participation in relation to the Water Framework Directive. European Commission, Brussels.
- FGG Elbe, 2009. Maßnahmenprogramm nach Artikel 11 der Richtlinie 2000/60/EG bzw. § 36 WHG der Flussgebietsgemeinschaft Elbe. Flussgebietsgemeinschaft Elbe, Magdeburg.
- Flynn, B., 2008. Planing cells and citizen juries in environmental policy: Deliberation and its limits, in: Coenen, F.H.J.M. (Ed.), *Public Participation and Better Environmental Decisions*. Springer, Enschede, 57-71.
- Fritsch, O., Newig, J., 2012. Participatory governance and sustainability: Findings of a meta-analysis of stakeholder involvement in environmental decision making, in: Brousseau, E., Dedeurwaerdere, T., Siebenhüner, B. (Eds.), *Reflexive Governance for Global Public Goods*. MIT Press, Cambridge, 181-204.
- Fung, A., 2006. Varieties of participation in complex governance. *Public Administration Review* 66, 66-75.
- Gerlak, A.K., Lubell, M., Heikkila, T., 2013. The promise and performance of collaborative governance, in: Kamieniecki, S., Kraft, M. (Eds.), *The Oxford Handbook of US Environmental Policy*. Oxford University Press, New York, 413-434.
- Hering, D., Borja, A., Carstensen, J., Carvalho, L., Elliott, M., Feld, C.K., Heiskanen, A.-S., Johnson, R.K., Moe, J., Pont, D., Solheim, A.L., van de Bund, W., 2010. The European Water Framework Directive at the age of 10: A critical review of the achievements with recommendations for the future. *Science of the Total Environment* 408, 4007-4019.
- Hophmayer-Tokich, S., Krozer, Y., 2008. Public participation in rural area water management: Experiences from the North Sea countries in Europe. *Water International* 33, 243-257.

- ISSTI, 2008. Secondary Evaluation of Public Participation under the Water Framework Directive for the Miera-Bahía De Santander and Campiazo River Basins: A Perspective from the Social Sciences. Institute for the Study of Science, Technology and Innovation (ISSTI), Edinburgh.
- Jager, N.W., Challies, E., Kochskämper, E., Newig, J., Benson, D., et al., (2016). Transforming European Water Governance? EU Water Framework Directive implementation in 13 member states. *Water* 8.
- Koontz, T.M., Thomas, C.W., 2006. What do we know and need to know about the environmental outcomes of collaborative management? *Public Administration Review* 66, 111-121.
- Larson, K.L., Lach, D., 2008. Participants and non-participants of place-based groups: An assessment of attitudes and implications for public participation in water resource management. *Journal of Environmental Management* 88, 817-830.
- Liefferink, D., Wiering, M., Uitenboogaart, Y., 2011. The EU Water Framework Directive: A multi-dimensional analysis of implementation and domestic impact. *Land Use Policy* 28, 712-722.
- Lind, E.A., Tyler, T.R., 1988. *The Social Psychology of Procedural Justice*. Plenum Press, New York.
- Macnaghten, P., Jacobs, M., 1997. Public identification with sustainable development: Investigating cultural barriers to participation. *Global Environmental Change* 7, 5-24.
- MELUR, 2009. Entwurf - Erläuterungen Zum Schleswig-Holsteinischen Anteil Am Bewirtschaftungsplan nach Art. 13 Der Richtlinie 2000/60/Eg (§ 83 Whg) Der Flussgebietseinheit Elbe. Ministerium für Energiewende, Landwirtschaft, Umwelt und ländliche Räume (MELUR), Kiel.
- MELUR, 2014. Entwurf - Erläuterungen Zum Schleswig-Holsteinischen Anteil Am Bewirtschaftungsplan Für Den 2. Bewirtschaftungszeitraum Gemäß Art. 13 Der Richtlinie 2000/60/Eg (§ 83 Whg) Der Flussgebietseinheit Elbe. Ministerium für Energiewende, Landwirtschaft, Umwelt und ländliche Räume (MELUR), Kiel.
- NABU, 2010. 10 Jahre Europäische Wasserrahmenrichtlinie in Schleswig-Holstein: Ein Resümee der Naturschutzverbände. Naturschutzbund Deutschland e.V. (NABU), Schleswig-Holstein.
- Newig, J., Adzersen, A., Challies, E., Fritsch, O., Jager, N., 2013. Comparative analysis of public environmental decision-making processes: A variable-based analytical scheme. *INFU Discussion Paper No. 37 / 13, Lüneburg*.
- Newig, J., Challies, E., Jager, N., Kochskämper, E., 2014. What role for public participation in implementing the EU Floods Directive? A comparison with the Water Framework Directive, early evidence from Germany, and a research agenda. *Environmental Policy and Governance* 24, 275-288.
- Newig, J., Challies, E., Jager, N., Kochskämper, E., (submitted). How and under what circumstances does collaborative and participatory governance lead to better (or worse) environmental outcomes? A causal framework for analysis. Submitted to *Journal of Public Administration Research and Theory*
- Newig, J., Fritsch, O., 2009. Environmental governance: Participatory, multi-Level – and effective? *Environmental Policy and Governance* 19, 197-214.
- Newig, J., Koontz, T.M., 2014. Multi-level governance, policy implementation and participation: the EU's mandated participatory planning approach to implementing environmental policy. *Journal of European Public Policy* 21, 248-267.
- Newig, J., Kvarda, E., 2012. Participation in environmental governance: Legitimate and effective?, in: Hogl, K., Kvarda, E., Nordbeck, R., Pregernig, M. (Eds.), *Environmental Governance: The Challenge of Legitimacy and Effectiveness*. Edward Elgar, Cheltenham, pp. 29-45.
- NIEA, 2009a. Draft River Basin Management Plans: Summary of consultation responses. Northern Ireland Environment Agency, Lisburn.
- NIEA, 2009b. North Eastern River Basin Management Plan Summary. Northern Ireland Environment Agency, Lisburn.
- NIEA, 2010. Action Plan 2010/ 2011: Lagan Local Management Area. Northern Ireland Environment Agency, Lisburn.
- NIEA, 2012. Action Plan 2009-2015: Belfast Lough Local Management Area. Northern Ireland Environment Agency, Lisburn.
- NIEA, 2014. North Eastern Draft River Basin Management Plan. Northern Ireland Environment Agency, Lisburn.

- OPHC, 2008. Cuencas del Miera Y del Campiazo: Documento abierto para el proceso participativo. Oficina de Participación Hidrológica De Cantabria, Torrelavega.
- OPHC, 2010. Cuencas del Miera y del Campiazo: Conclusiones Del Proceso Participativo. Oficina de Participación Hidrológica De Cantabria, Torrelavega.
- Papadopoulos, Y., Warin, P., 2007. Are innovative, participatory and deliberative procedures in policy making democratic and effective? *European Journal of Political Research* 46, 445-472.
- Pellizzoni, L., 2003. Knowledge, uncertainty and the transformation of the public sphere. *European Journal of Social Theory* 6, 327-355.
- Raymond, C.M., Fazey, I., Reed, M.S., Stringer, L.C., Robinson, G.M., Evely, A.C., 2010. Integrating local and scientific knowledge for environmental management. *Journal of Environmental Management* 91, 1766-1777.
- Reed, Mark S. 2008. Stakeholder participation for environmental management: a literature review. *Biological Conservation* 114 (10):2417-2431.
- Smith, Graham. 2003. *Deliberative Democracy and the Environment*. London: Routledge.
- Susskind, L., Bacow, L., Wheeler, M., 1983. *Resolving Environmental Regulatory Disputes*. Schenkman, Cambridge.
- Susskind, L., McMahon, G., 1985. The theory and practice of negotiated rulemaking. *Yale Journal on Regulation* 3, 133-165.
- Tippet, J., Searle, B., Pahl-Wostl, C., Rees, Y., 2005. Social learning in public participation in river basin management—early findings from HarmoniCOP European case studies. *Environmental Science & Policy* 8, 287–299.
- Webler, T., 1995. ‘Right’ discourse in citizen participation: An evaluative yardstick, in: Renn, O., Webler, T., Wiedemann, P. (Eds.), *Fairness and Competence in Citizen Participation: Evaluating models for environmental discourse*. Kluwer, Dordrecht, 35-86.
- Webler, T., Tuler, S., 2000. Fairness and competence in citizen participation. *Administration & Society* 32, 566-595.
- Whelan, J., Lyons, K., 2005. Community engagement or community action: Choosing not to play the game. *Environmental Politics* 14, 596-610.
- Wynne, B., 1992. Misunderstood misunderstanding: Social identities and public uptake of science. *Public Understanding of Science* 1, 281-304.
- Young, J.C., Jordan, A., Searle, K.R., Butler, A., Chapman, D.S., Simmons, P., Watt, A.D., 2013. Does stakeholder involvement really benefit biodiversity conservation? *Biological Conservation* 185, 359-370.

Supplementary Material

Interview guide for process participants⁴

1. Participant characteristics

To start with – what interests did you represent in the process, and how did you come to participate in the process? Had you in the past participated in a process like this (or other, different types of participatory processes)? What was your initial opinion of the process (at the beginning)? Were you aware in advance of how the process would work? Were you able to contribute to the design of the process itself?

Follow-up questions:

- Did you already have knowledge of the content and aims of the WFD, or familiarity with water resources management? In what form?
- What, in your view, is the main water management issue in the area, the main problem, or what should be the main goal?
- What was your perspective on the role of the authorities and the other stakeholder groups involved? Were there conflicting goals, competing interests? Were there any past/pre-existing conflicts?
- Were you already in contact with the other stakeholder groups or participants?

2. Process as it played out

How did the process play out? In general: How did the meetings work? Frequency/length, information provision or discussion/dialogue, means of information exchange? Was there any possibility to alter the process on the basis of feedback from the participants, or organiser?

In terms of the dynamics: What was the tone and type of discussion like? Was it possible to contribute your ideas and views effectively, were there conflicts (or resolution of conflicts)? What was the behaviour of participants like towards each other (at the start and over the course of the process)?

Follow-up questions:

- Was it clear from the start what the goal of the process was? And what your role in it was?
- What interests were represented: Who were the main actors/interests (in terms of the size of organisations, the resources or expertise at their disposal)? Did these have more of a chance to be heard and to participate in the process?
- Were there any uncertainties, from your perspective, at the outset of the process? (in the sense of uncertainties regarding the purpose and goals of the WFD, or how certain goals could be achieved...? Or uncertainties regarding the goals and motivations of other participants, such that it was difficult to gauge their objectives...? Did this change at all during the process?

⁴ We used a slightly modified guideline for implementing competent authorities and process organizers. Both were structured according the same topics as that for process participants. These are available from the corresponding author on request.

- Did other participants bring information or knowledge to the process that was new to you? Did you learn something through understanding the positions of other participants? Was information introduced to the process by the process organisers/authorities communicated in such a way that it was understandable and accessible to others? Did you learn about the issue as a result of information introduced by the organisers/authorities?
- After the process, were you able to understand/sympathise with the perspectives of other participants? Would you assume that others were better able to understand your own position? Did your opinion change over the course of the process? Do you think others' opinions were changed via the process?
- How did group decision-making work? Was there any consensus-based decision-making?

3. Results of the participatory process

What exactly was the (main) result of the CSG process? Written documents, list of measures, HMWB-designation, implementation strategy, etc.? To what extent did these feed into the official management plan or programme of measures? Were these outputs of the process rather general or rather concrete recommendations and measures? How do you assess the decisions made via the process? How did they help achieve the goals of the WFD? Can you provide examples? How do you assess the decisions made?

Follow-up questions:

- Were the decisions of the group accepted by all, or were there divergent opinions at the end of the process?
- Would you see any of the results/decisions/measures as particularly innovative?
- Were there any adaptive solutions – i.e. either experimental measures/approaches such as piloting measures for future application to other contexts; or flexible measures, such as projects or measures deliberately designed to be changed as necessary. Was the need for adaptive approached discussed at all? Are you in favour of such measures? Why/Why not?

Over the course of the process, did you learn about the WFD and/or sustainable water management? If so how/what? How do you assess the process of learning that happened in the group (if there was one)? Do you have better connections to other stakeholder groups due to your involvement in the process? Are there any common or cooperative efforts underway as a result (to do with WFD implementation, or other actions)?

5. Final considerations and continued participation

How would you assess the CSG process overall (positive and negative points)?

Would you take part in such a process again? *Are* you taking part in the course of the second WFD planning cycle? In the case that you are taking part in the current WFD planning process, how would you describe it in comparison to the process in the first planning cycle? Is interaction among the par-

ticipants different/the same, more positive/negative? Are new actors participating? How is cooperation with these new actors playing out?

Do you think that overall this kind of participation in the implementation of the WFD / sustainable water management is beneficial? Or could it also be achieved through other forms of planning and decision-making or involving other actors?

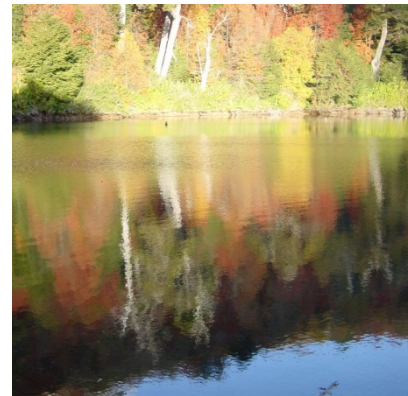
Supplement [S1]:

Comparative analysis of public environmental decision-making processes – a variable-based analytical scheme

Jens Newig, Ana Adzersen, Edward Challies,
Oliver Fritsch, Nicolas Jager

Comparative analysis of public environmental decision-making processes – a variable-based analytical scheme

Discussion Paper No. 37 / 13



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PART ONE: INTRODUCTION

Jens Newig, Edward Challies, Nicolas Jager

Why an analytical scheme?

Research on public environmental decision-making is proliferating. Yet, consolidated knowledge on how different forms of governance work, and what outcomes they produce in different contexts is still rare. There is certainly no consensus among researchers as to whether public participation, collaborative management, network governance or classical public management will do the best job in any given case. Instead, current knowledge rests largely on independent, scattered small-n case study analyses. Thousands of such case studies have been carried out and published in various forms, ranging from doctoral dissertations and conference proceedings to journal articles, book chapters, and whole volumes. Each of these is written from a different perspective, using different methods, gathering different kinds of data in order to respond to different research questions. How might this huge pool of knowledge be tapped to derive consolidated evidence on the mechanisms of public environmental decision-making?

At least three strategies lend themselves to this task: (1) multi-case comparative case, (2) meta-analyses, and (3) individual case studies carried out according to a standardised protocol.

- (1) *Multi-case comparative studies* have a long tradition. Using a common analytical framework, they allow for a higher degree of generalisation than single case studies while at the same time providing for considerable analytical depth (Yin & Heald 1975; George & Bennett 2005). A few larger multi-case studies are available (e.g. Bingham 1986; Chess & Purcell 1999; Lauria & Wagner 2006). While clearly superior to single case studies in many respects, the efforts and resources needed to carry out multi-case studies increases roughly proportionally with the number of cases under study, which makes large comparisons feasible only in larger, well-resourced research projects.
- (2) *Meta-analyses (e.g. case survey)* seek to integrate findings from a typically larger number of original studies to arrive at new insights beyond the scope and findings of the original studies. Taking the myriad of available case studies as an “intellectual goldmine awaiting discovery” (Jensen 2001), a highly structured and systematic integration of single case study data into a coherent analysis is undertaken via the case survey method (Yin & Heald 1975, Larsson 1993, Newig & Fritsch 2009). Like multi-case studies, a case survey requires a common analytical framework (code book). This is applied to a number of already published studies, producing consistent qualitative or quantitative data conducive to further analysis via established methods. The clear advantage is to grant structured access to a large body of research in order to answer a particular set of research questions with relatively few resources (as no primary research is conducted). However, a particular challenge lies in the heterogeneity of the original material. With the exception of Beierle & Cayford (2002) and Newig & Fritsch (2009), very few case surveys have been conducted so far in the field of public environmental decision making.

(3) *Individual case studies using a standardised, commonly accepted analytical scheme* constitute a third option that has to date not been put into practice. Such an approach would allow for easy and coherent comparison of a multitude of case studies. It would foster the genuine cumulation of research as is common practice in (many of) the natural sciences, but still rare in the social sciences, let alone the complex field of public multi-actor decision-making processes. Depending on the specific focus of research, not every case study would need to apply the whole of a common research protocol. Rather, each study would focus on those variables most relevant to the case at hand. To our knowledge, no operable analytical scheme is publicly available today that could be used by different researchers embarking on new case studies.

All of the above options crucially rely on the existence of a coherent and empirically operable analytical scheme. In this discussion paper, we introduce and outline in detail an analytical scheme – SCAPE – that has been developed over several years, that has been tested and iteratively refined through application to dozens of case studies, and which is currently in use for a case survey of several hundred case studies of public environmental decision-making.

Scope and applicability of SCAPE

This is our initial contribution towards a standardised, common analytical framework to respond to the needs outlined above. Our ‘scheme for the comparative analysis of public environmental decision-making’ (SCAPE) facilitates the systematic comparison of cases of public decision-making and serves to identify causal relationships between the characteristics of a decision-making process and its outcomes. The framework is meant to be applicable to a wide range of public decision-making processes, focused on but not limited to environmental governance processes.

A number of conceptual frameworks are available to study (environmental) governance, the most common and widely recognised being the Institutional Analysis and Development framework, advanced by E. Ostrom and colleagues. Most of these, however, lack sufficient detail to be directly empirically applicable. Application then results in different research protocols that, while referring to the same conceptual framework, produce empirical data hardly suitable for comparative analysis. SCAPE, developed through the integration of existing conceptual and empirical literature, provides the detail required in an applicable research protocol. To our knowledge, no other comparable analytical scheme for application in the field of governance analysis is currently publicly available.

SCAPE is particularly suited to the analysis of processes in the realm of environmental governance that entail different forms of citizen and interest group involvement or environmental mediation. It develops a clear notion of the ‘decision-making process’ as its core unit of analysis, and provides a coherently structured set of more than 300 items covering:

- *contextual conditions* (section B) such as the societal and political environment, the pre-history of a decision-making process, elements of the issue at stake, characteristics of the relevant stakeholder field, and the level of pre-existing conflict;
- *process characteristics* (section C) such as who is involved in terms of governmental and non-governmental actors, the configuration of power relations, the role of scientific expertise, communication and information flows between actors, aspects of process facilitation, and process resources;

- *process outputs and outcomes* (section D) in terms of social, economic and environmental aspects (with an emphasis on the latter), social learning, trust-building, public acceptance, and conflict resolution, to name but a few.

The definition of these elements has been motivated and informed by the general notion that the process of decision-making – and different forms of participation in particular – make a difference for environmental and social outputs and outcomes. A wealth of individual hypotheses on how and why process features impact on outcomes can be found in the literature (see figure 1 for a simplified overview).

SCAPE integrates these claims, drawing, for example, on management theory and procedural justice (Lind & Tyler 1988); federalism and multi-level governance (Schmitter 2002; Newig & Fritsch 2009), social learning (Reed et al. 2010), democratic theory (Fung 2006; Dryzek 1995; Schmitter 2002; Smith 2003); deliberation (Webler & Tuler 2000), social capital (Putnam 1995; Fukuyama 1997); sociological systems theory (Bora 1994); legal studies (Coglianese 1997); public administration (Koontz 1999); political science (Dahl 1961; Tsebelis 1995); policy implementation (Pressman & Wildavsky 1973; deLeon & deLeon 2002) and consensus-making (Susskind & Cruikshank 1987; Susskind et al. 1999). Moreover, many propositions derive from numerous practitioner reports or handbooks (see the overview by Reed 2008).

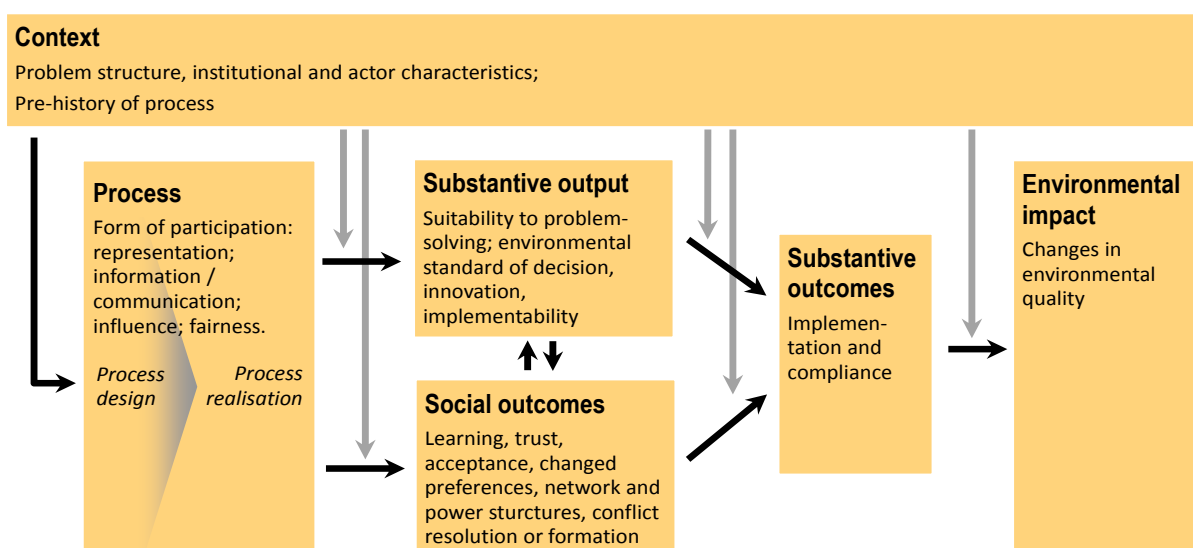


Figure 1: Simplified conceptual framework.

The specifics of SCAPE

SCAPE has been rigorously tested on a variety of case studies and iteratively developed to a high level of consistency and applicability. High inter-coder reliabilities observed across multiple independent applications of the protocol to the same case studies demonstrate convincingly the protocol's comprehensibility, despite its indispensable intricacy.

The key assumption underpinning SCAPE is the idea that the way public decision-making processes are designed and carried out matters for the quality of decisions, their implementation, and other (social) outcomes. This reflects a strong trend in the literature that asks how modes of governance (process designs) have impacts on, for example, environment and sustainability (Heinelt 2002; Smith 2003), or “how” to “best” do participation (Daniels et al. 1996). Process de-

sign is thus conceived as a deliberate *intervention*: Policy-makers have a choice among multiple possibilities for designing and running a process. This has been termed “choice of mechanism” by Beierle & Cayford (2002) or “instrument” or “technique” by (Webler & Tuler 2002). Such design choices are meant to make a difference, to “work” and achieve their aims.

SCAPE aims to provide a structured means to better understand which “mechanisms” work under which contexts, by allowing the systematic comparison of empirical evidence from a variety of different sources. Process design therefore is the focal starting point and key independent variable (or rather: set of independent variables) in the scheme. Context variables, then, seek to gauge how the setting in which a decision-making process takes place shapes the way in which process impacts on outputs and outcomes.

The key analytical unit of SCAPE is the public decision-making process (DMP). Together with its societal and environmental context and its outcomes, it forms a case study. A DMP is defined as a process with the aim of reaching a collectively binding decision on a given issue. This can be completely ‘top down’ (without any stakeholder involvement) or relatively participatory. A DMP can start, for instance, with an initial interaction or meeting of stakeholders or with a building application, and ends with a final decision or set of decisions (output). A DMP as such does not include subsequent implementation of the output. Nor does it include the events leading to a process. A DMP can be made up of several sub-processes and process types (such as hearings, task forces, etc.) and embraces all of them. It is typically delimited temporally and separated from its antecedents and consequents (Ragin & Becker 1992). Antecedents are captured by context variables, consequents are captured by output, outcome and impact variables. If the DMP is the focal unit of a case, then a case embraces a whole policy cycle from agenda-setting to policy-making (i.e. the DMP) and implementation. The variables in SCAPE provide clear definitions and help to identify and delimit empirical DMPs in complex environments of policy-making, and other processes playing out in the public realm.

Among the innovative elements that SCAPE introduces to the general field of assessing (environmental) policy processes, three are particularly noteworthy:

- *Structured stakeholder mapping (sections B.III and C.II.2)*: Individual and organised actors with their stakes, interests, and power positions arguably play a key role in (participatory) public decisions. But just how can one compare the actors and stakeholders of importance to a decision-making process coherently across highly heterogeneous cases? One way would be to simply name these actors, but this makes cross-case comparison almost impossible. Another way would be to introduce aggregate variables for the (environment-related) interests of all relevant actors, but this would not capture any detail on the nature of these actors. SCAPE opts for a structured stakeholder mapping approach based on a typology of sectors and generic positions towards the environment. Distinguishing government, private and civic sector collective actors as well as individual actors on the sectoral dimension and pro-conservation, pro-human health, pro-natural resource protection and pro-exploitation interests on the environment-related dimension yields a total of 16 societal segments (pp. 26–18 and 39–41). These are applied to the stakes and power positions of stakeholders as well as their representation in a DMP and their influence on decisions, respectively. This allows for a structured, precise and consistent mapping of actor-related features across a great variety of different cases.
- *Definition of environmental and social outputs, outcomes and impacts (section D)*: One of the greatest challenges in evaluating the ‘results’ of decision-making processes is to find common measures that apply across a great variety of cases. While for social outcomes

such as acceptance or learning, variables have been defined to compare across cases (Beierle & Cayford 2002), little effort has previously been made to compare the environmental results of decision-making. SCAPE introduces a threefold approach that draws on work by Mitchell (2008). Outputs, outcomes and impacts are assessed against three different evaluative yardsticks. *Environmental outputs* (i.e. the decisions produced by a decision-making process) are assessed (1) against the internally set goals of the process represented by the goals of the DMP initiator; (2) externally, against the goals of a given environmental regime reflected in any higher order policy of relevance to the issue (if applicable); (3) globally, against a hypothetical 'business as usual' scenario, and a hypothetical 'optimal' condition or worst case scenario. Similarly, *environmental impacts* (i.e. likely changes in the environment due to the implementation of the output of decisions) are assessed (1) against the goals of the environmental output, as well as against criteria (2) and (3) as applied to outputs above.

- *Assessing indications for causal hypotheses in a case (section E)*: SCAPE introduces a method for assessing whether and to what degree a given case study provides support for a number of causal hypotheses that link process characteristics with outputs and outcomes (as sketched above). This assessment relies on counterfactual reasoning based on the facts and arguments the case provides.

The technical details of SCAPE have been specifically developed to be applied in a case-study meta analysis (case survey), drawing on multiple coders per case. The analytical scheme (code book) presented in part two of this discussion paper corresponds to the second revision of 15 March 2012 plus a number of minor editorial changes. SCAPE may, however, be used for guiding and analysing original (comparative) case studies as well. Not every detail will be relevant for every application. However, we felt it would be most illustrative and inspiring to display all technical features of the analytical scheme, because any given application will have to deal with similar issues again.

We sincerely hope that SCAPE will prove as productive in other applications as it has proven in the current case survey of 200 cases of environmental decision-making processes worldwide. We invite fellow researchers to critique, test, apply, adapt or improve this analytical scheme and look forward to any criticism.

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PART TWO: THE ANALYTICAL SCHEME (CODE BOOK)

General coding guidelines

Number of coders: In principle, all variables must be coded by three coders. A few exceptions are made regarding some key variables the codes of which crucially determine a whole range of other variable codes. One coder will be assigned to these variables, which are marked with an asterisk (*).

Variable scales: For semi-quantitative variables (**s-q**), we typically use a 5-level scale from 0 to 4. This can be interpreted as:

- 0 corresponds to 0-20 per cent;
- 1 corresponds to 20-40 per cent;
- 2 corresponds to 40-60 per cent;
- 3 corresponds to 60-80 per cent;
- 4 corresponds to 80-100 per cent;

with 100 per cent corresponding to a theoretical maximum, to be expected under realistic optimal conditions. For details on additional scales, see the full 'list of scales used' below.

Coding is to be based on evidence from the text(s). As a second priority, substantiated judgments by the author(s) that provide good arguments can be drawn on (usually with lower reliability than coding based on evidence). Only as a third priority, coding can be based on informed guesses (e.g. aspects not mentioned in the text but which can reasonably be assumed given all other information). For selected variables only, information may be looked up in sources other than the specified text(s). These are marked with a (+) sign.

Coding is to follow as closely as possible the authors' assessment rather than the interpretation of the coder. This does not imply following the authors' terminology, as it may deviate from that of SCAPE. Authors' terminology may need to be 'translated' into that of SCAPE.

Reliability field: For most variables, there is a separate field for the appraisal of the *reliability of data* on a scale from 0 to 3:

0 = insufficient information available. This means, the **main variable** is coded "**NIL**" (this is the default option in the web-based data-entry form); for technical reasons, NIL is not available in number and date fields; instead of NIL, enter **-77** in number fields, and **00.00.0000** in date fields (each with a reliability of 0).

- 1** = sufficient information to make an informed guess on variable value;
- 2** = sufficient information to permit a reasonable evaluation;
- 3** = explicit, detailed and reliable information.

In situations where only very little information is available from the case text(s) for coding a specific variable or hypothesis, it is important to consider carefully the coding options. The choice in such situations will normally be between coding **NIL** with **0** reliability, or entering some other code with a low reliability. Generally, if there is clearly no information or insufficient information to make an informed guess, a variable or hypothesis should be coded **NIL** with **0** reliability. However, in some situations, the absence of information (an author's not mentioning something) can be informative. For example, where the author does not mention a factor or occurrence (X) that would reasonably be expected given all that we know about the case, it may in some instances be sufficient evidence that X was not present or did not occur. Similarly, if the author describes a process as involving X and Y, and it can reasonably be assumed that this is an exhaustive description of the process, it may be safe to assume Z was not present. In such cases it may be better to enter the appropriate code with a low reliability score.

Several variables depend on earlier coded variables (for instance, implementation variables 304–306 depend on how the output in variables 259–261 is coded). Here, reliability values should not depend on those earlier coded variables but only on the availability of information for each variable.

The reliability field **should not** be used to reflect uncertainty about the meaning of a variable. This would have to be mentioned in the annotations field.

Logically uncodable variables: If a variable cannot be coded because this would make no sense logically, it receives the value **-99** and a reliability value of "**NIL**". Where a reason for coding -99 is specified for a given variable (e.g. "Code -99 when there was no output"), this is not exclusive, and -99 can still be coded for other reasons. This then would have to be mentioned in the annotations field. If (**99**) is specified in the variable description, the variable cannot be coded **-99**. For technical reasons, -99 is not available in date fields. Instead of -99, enter **13.13.1313** in date fields.

Annotations to variable codes: If the facts of the case appear to be in contradiction to the logic of SCAPE (i.e. a particular variable, a particular hypothesis or hypothesised counterfactual scenario, or some combination thereof) please provide an account of this in the annotations field 3. ANNOTATIONS.

Pre-coded variables: Before starting coding, coders should confirm that information on pre-coded variables - marked by asterisks (*) - is correct. This should be confirmed with the other two coders as soon as possible and *before* coding any other variables.

Priority variables: Variables for which the variable name **appears in red** should receive priority in coding discussions.

Glossary of key terms

The following key terms and definitions are adopted, and underlined throughout the Code Book.

Term (abbreviation)	Definition/description
Actor	Any stakeholder that engages to any degree in the decision-making process at hand, not necessarily as a participant. An actor group is a plurality of actors who share similar characteristics.
Business as usual	A projected scenario reflecting what is likely to happen assuming no interruption of current practices, trends and plans. A business as usual scenario can imply positive and/or negative environmental change.
Citizens	Non-organised individuals (e.g. consumers, residents, etc.), and ad-hoc, temporary and issue-related citizen initiatives.
Civic sector (non-profit)	A collection of entities and groups that are organised (institutionalised), non-governmental, non-profit, self-governing, and voluntary (e.g. NGOs, churches, unions) (adapted from Salamon & Anheier 1997: 33f).
Communication	One-way information flow from the process initiator/organiser to the public.
Competent authority (CA)	The authority that has legal responsibility for the issue and is therefore responsible for the DMP.
Compliance	Rule conformity (i.e. to do what a rule prescribes). This includes more or less simple tasks, including to refrain from doing something. Whereas implementation implies to actively (and creatively) design a solution, compliance simply means adherence to the rule (i.e. compliance is typically a single or repeated action, rather than a process).
Conservation	As an actor, actor group, or policy orientation: To preserve, protect or restore the natural environment and ecosystems (including the atmosphere, biodiversity, terrestrial and aquatic habitats, and flora and fauna) largely independently of their instrumental value to humankind.
Consultation	One-way information flow from the public to the process initiator/organiser.
Decision-making process (DMP)	A process with the aim of reaching a collectively binding decision on a given issue, which can be completely 'top down' (without any stakeholder involvement) or rather participatory. A DMP can start e.g. with an initial interaction or meeting of stakeholders or with a building application, and ends with a final decision or decisions (output) - but does not include subsequent implementation of the output. A DMP can be made up of several sub-processes (such as hearings, task forces, etc.) and embraces all of them.
Dialogue	Two-way information flow and direct interaction between the process initiator/organiser and participants, and among participants. Dialogue implies more than just extensive communication and/or consultation and requires responsive on-going interaction, and exchange of relevant information (i.e. assumes the possibility to ask questions and respond to comments).
Exploitation	As an actor or actor group: To cause or tolerate or accept harmful effects on the environment including pollution or general degradation of the quality of the environment and its ecosystems, the endangerment of human health as well as the unsustainable utilisation of natural resources and capacities.
Government sector	All governmental actors and organisations at various levels engaged in the formulation of policies and their execution (i.e. involved state agencies), including quasi non-governmental organisations fulfilling functions of government.
Higher order policy	A higher order policy is a legally binding rule (e.g. law, directive, decree), typically issued by a superordinate level of government that requires further decision making on subordinate levels as part of its implementation. Note that a governmental decision that is not a general rule but targeted at an individual case (e.g. a permit) is not a policy.
Human health	As an actor, actor group, or policy orientation: Concern for those environmental issues that are likely to affect human health. Protection of human health means to protect quality of (human) life through enhancing environmental factors beneficial to human health, and/or mitigating environmental impacts and remediating environmental problems detrimental to human health.
Impact	Actual (or very likely) changes in the environment (or, if applicable, unchanged conditions), typically as an effect of the outcome (which refers to the change in behaviour of the actors that are affected by the output). In certain cases, impacts may be observed although no decision (output) was made.
Implementation	The process of putting a plan or rule into operation, e.g. by developing specific measures (i.e. in contrast to compliance, implementation is a process). This is typically done by government sector actors.
Influence	The degree to which an actor or a group of actors develops or determines the output of a DMP.
Institution	Institutions are established rules or laws that govern (aspects of) society. Note that this definition is much broader than that of organisations.
Natural resource protection	As an actor, actor group, or policy orientation: To protect, preserve, enhance or restore stocks and flows of natural resources that are of instrumental value to humans, and provide for their sustainable use.

Non-state actor (NSA)	Civic sector (non-profit) and private sector (for-profit) actors, and individual citizens. Excludes government sector actors.
Outcome	Changes in human perceptions or actions that directly result from an output. Change means departure from the scenario had there been no output. This refers mainly to the planned consequences of the output (such as compliance with a new rule). Unintended consequences are normally not included under outcome. As opposed to 'impact', 'outcome' does not refer to changes in the environment. In certain cases, outcomes following a DMP may be observed although no decision (output) was made.
Output	The decision made at the end of the decision-making process. This decision is typically set down in writing, in the form of a management plan, a permit, a law, etc. Over the course of a decision-making process several outputs may be produced, e.g. a draft plan, an official plan and a legal revision of the plan. For each case the 'final decision' discussed in the text(s) will be identified as the output (see variable 243 OUTF NAME). Final decision is defined as the most legally binding output described in the text(s), excluding subsequent changes through litigation. The caveat being that sufficient information must be available for coding this final decision; otherwise, a less binding output should be identified as the output.
Participant	Any actor taking part in the decision-making process due to a position granted by the DMP organiser. This can apply to certain interest groups or the general public, be restricted to specifically invited individuals, certain experts or even just the applicant for a permit, or certain state agencies; or apply to no one at all.
Participatory process (PP)	A decision-making process (or parts of it) involving an element of participation by non-state actors, who have some degree of input or are given some degree of process control and/or decision control. Participation may occur through one or more participatory sub-processes or elements within the DMP, but not through parallel processes external to or independent from the DMP.
Policy addressee	Any person or group potentially responsible for implementing the output (= policy). Policy addressees can be anyone from the stakeholder field.
Power resources	Power is the "probability that one actor within a social relationship will be in a position to carry out his own will despite resistance" (Weber 1947: 152). Power resources, as the measurable basis of power, refer to "anything that can be used to sway the specific choices or the strategies of another individual" (Dahl 1978: 226), and might include: access to time, money, information and human resources as well as social standing, charisma, legitimacy and legality.
Private sector (for profit)	All for-profit organisations that are owned or operated by private individuals, and companies engaged in the supply of goods and services (i.e. productive private enterprises, farmers, industry, etc.), including umbrella organisations representing industry, and state-owned enterprises that are mandated to return a profit from their commercial activity.
Process initiator	An organisation or group who (formally) initiated the decision-making process. A process initiator can be a governmental or a non-state actor (of the private or civic sector, or the citizenry). If multiple actors contributed to process initiation, process initiator is the one who had the formal responsibility to do so. The initiator's goal is used as a proxy for the original orientation of the decision-making process.
Process organiser	The organisation or group responsible for organising, designing and managing the process. The process organiser can be a government sector actor or a non-state actor (of the private or civic sector, or the citizenry), and may even be contracted specifically to manage the process (e.g. facilitation consultants). The process organiser may be identical to the process initiator, but this is not necessarily the case.
Representation	The extent to which the composition of process participants mirrors the interest constellation in the public. Full representation is reached when there is a sufficient number of representatives for all relevant public groups and when these representatives are fully accepted as such by their constituencies.
Segment	Segments of the stakeholder field are defined as analytical categories by four types of societal sectors (government, private, civic, citizens) and four different positions towards the environment (pro-conservation, pro-human health, pro-natural resource protection, pro-exploitation). It is the aim of coding to describe the stakeholder field through the characteristics of its different segments.
Societal sector	In line with common usage, three societal sectors (government, private, civic) plus citizens as a type of non-organized actors are distinguished as analytical categories for actors and stakeholders.
Stake	"Stake [...] involves all those – regardless of where they live, what their nationality is or what their level of information/skills may be – that could be materially or even spiritually affected by a given measure" (Schmitter 2002: 63). Affectedness can derive from different factors, such as proximity, economic interest, usage, social concerns or values.
Stakeholder	Anyone potentially affected by the environmental problem and the consequences of possible solutions (e.g. redistribution effects, loss of access to resources, etc.). Stakeholders are defined independently of who actually participates in (or is invited to) a decision-making process. SCAPE distinguishes four stakeholder categories as defined above: government sector, private sector (for profit), civic sector (non-profit) and citizens.
Veto player	"A veto player is an individual or collective actor whose agreement is required for a policy decision" (Tsebelis 1995:293), or who may potentially obstruct the implementation of this decision.

Guidelines for specific groups of variables

- Coding reliability for dates:
0 = no discernible date;
1 = the year is uncertain;
2 = the year is known;
3 = the year and month are known.
- For a small number of variables assigning a reliability value does not make sense and, hence, these will not be assigned a reliability code. Variables where this is the case are marked with a **(rel)** in the 'scale' column and do not provide the possibility of assigning a reliability code in the database.
- Some particular variables ask for general information which may be looked up in other sources. These variables are marked with a **(+)** before the variable description.

Guidelines and information for specific sections

Name of the section	Variables	Guideline
B. CONTEXT	15 - 118	All context variables are coded independently of the decision-making process and represent the socio-political context <i>before</i> the decision-making process started. They ignore potential changes in that context that occurred during the decision-making process.
B.III STAKEHOLDER CHARACTERISTICS	81 - 118	The stakeholder field is understood as the multitude of actors that have a meaningful relation to the issue at stake. These 'real' actors are mapped onto a set of analytical categories defined by four actor types (government sector, private sector, civic sector, citizens) and four different positions towards the environment (pro-conservation, pro-human health, pro-natural resource protection, pro-exploitation). <i>The complete guidelines for this section can be found in the coding table.</i>
C PROCESS		Process variables relate to the whole DMP, that is, to all possible process types that were employed during the DMP. The DMP may be more or less participatory. Participation may occur through one or more participatory sub-processes or elements within the DMP, but not through parallel processes external to or independent from the DMP.
C.I PROCESS DESIGN	121 - 176	Variables in this section assess the way in which the decision-making process (and its participation possibilities) was designed and set up. Process design relates to all basic decisions on process design (conscious or not) either before the DMP started or regarding modifications during the process. Process design can be very different from how the process <i>actually</i> developed. However, as process design is of course connected to the actual process, some of the variables in this section require consideration of features of the actual process..
C.I.2 Process design characteristics: <i>Process type variables</i>	140 - 176	Process design characteristics relate to the whole DMP, that is, all process types that were employed during the decision-making process. The table on process types (PT) serves as an overview of the most important process types constituting the DMP, capturing some details on these sub-processes. In coding, the whole DMP including all its possible sub-processes should be regarded as a unity, such that every variable should be coded considering the DMP as a whole
D.I SUBSTANTIVE OUTPUT	243 - 269	The <i>output</i> of a public decision-making process presents the developed 'solution' to the issue and usually consists of a single decision (e.g. not to build a coal power plant), or a plan (e.g. the designation of a natural park and specific steps for its management). This section of the Code Book is concerned with capturing information about the output. Therefore, the variables in D.I only refer to the characteristics of the output. For example, for coding the variable 267. OUP INFO GAIN, only information <i>that was used</i> for formulating the output should be considered. That means that information that was disregarded in the output is not coded in the variables in D.I (such information would be coded in D.II). Code all variables in this section -99 if there was no output. For each case the 'final decision' discussed in the text(s) will be identified as the output. Final decision is defined as the most legally binding output described in the text(s), excluding subsequent changes through litigation. The caveat being that sufficient information must be available for coding this final decision.

D.I.1 Environmental and sustainability-related output: *Environmental Output variables*

243 - 266

Here, a threefold approach is adopted to coding environmental **outputs** (like that adopted for coding impacts below) in order to make them comparable across cases, building on concepts developed by Mitchell (2008). In variables 253 - 261, the output is assessed against: First, the goals of the process initiator; second, the goals of any higher order policy of relevance to the issue; third, implied change from the 'business as usual' scenario towards either a hypothetical 'optimal' condition or a worst case scenario.

	Output	Impact
Goal attainment	<i>Initiator goal</i>	<i>Output goal (= OUTPUT OPTIMUM)</i>
Higher order policy	<i>Higher order policy goal</i>	<i>Higher order policy goal</i>
Collective optimum	<i>Planned improvement [or tolerated deterioration] of environmental conditions, moving from the 'business as usual' scenario (projected trend) towards a hypothetical 'optimal' condition [or towards a hypothetical 'worst case' condition]</i>	a) actual impact can already be determined (because implementation is - almost - complete): <i>actual improvement of environmental conditions, moving from the counterfactual 'business as usual' scenario towards a hypothetical 'optimal' condition</i> b) actual impact cannot yet be determined (because implementation is not sufficiently under way), but likely impact can be assessed from case data: <i>likely improvement of environmental conditions, moving from the 'business as usual' scenario (projected trend) towards a hypothetical 'optimal' condition.</i>

Table: Normative standard (*in Italics*) against which output and impact are evaluated

D.III ENVIRONMENTAL OUTCOMES AND IMPACTS

300 - 314

Here, a threefold approach is adopted to assessing environmental **impacts** (like that adopted for assessing outputs above) in order to make them comparable across cases, building on concepts developed by Mitchell (2008). In variables 304 - 312, the impact is assessed against: First, the goals of the output; second, the goals of any higher order policy of relevance to the issue; third, actual or likely change in the environment from conditions under a 'business as usual' scenario towards either a hypothetical 'optimal' condition or a worst case scenario.

	Output	Impact
Goal attainment	<i>Initiator goal</i>	<i>Output goal (= OUTPUT OPTIMUM)</i>
Higher order policy	<i>Higher order policy goal</i>	<i>Higher order policy goal</i>
Collective optimum	<i>Planned improvement [or tolerated deterioration] of environmental conditions, moving from the 'business as usual' scenario (projected trend) towards a hypothetical 'optimal' condition [or towards a hypothetical 'worst case' condition]</i>	a) actual impact can already be determined (because implementation is - almost - complete): <i>actual improvement of environmental conditions, moving from the counterfactual 'business as usual' scenario towards a hypothetical 'optimal' condition</i> b) actual impact cannot yet be determined (because implementation is not sufficiently under way), but likely impact can be assessed from case data: <i>likely improvement of environmental conditions, moving from the 'business as usual' scenario (projected trend) towards a hypothetical 'optimal' condition.</i>

Table: Normative standard (*in Italics*) against which output and impact are evaluated

E. CAUSAL HYPOTHESES	316 - 343	<p>In this section, hypothesised causal mechanisms are coded. Coding assesses the extent to which attributes of the decision-making process (such as different levels of participation) are assumed to affect social or environmental outputs, outcomes or impacts under otherwise unchanged conditions. It is important to note that here not variables (in the strict sense) but the existence of causal chains (i.e. relations between variables according to case evidence and counterfactual considerations) are coded.</p> <p>In the variable field, the observed strength of the hypothesised causal relation is coded (0 indicates the absence of a particular causal link; 4 indicates strong causal effect); in the reliability field, the strength of evidence or plausibility supporting this effect is coded. It is important to judge whether events were just coincidental or whether one actually brought about the other.</p> <p><i>Full guidelines for this section can be found in the coding table.</i></p>
E.I.1 Participation produces outputs with higher environmental standards	316 - 326	Hypotheses in this section indicate a positive causal relationship between participation and environmental output (i.e. the more intense the PP, the higher the environmental standards of the output).
E.I.2 Participation produces outputs with lower environmental standards	327 - 329	Hypotheses in this section generally indicate a negative causal relationship between participation and environmental output (i.e. the more intense the PP, the lower the environmental standards of the output).
E.II.1 Participation fosters implementation capacity and the acceptance of decisions	330 - 340	Hypotheses in this section indicate a positive causal relationship between participation and implementation (i.e. the more intense the PP, the higher the likelihood of full implementation).
E.II.2 Participation fosters opposition to decisions	341 - 343	Hypotheses in this section indicate a negative causal relationship between participation and implementation (i.e. the more intense the PP, the lower the likelihood of full implementation).

Key abbreviations and symbols

(*)	Pre- coded by one designated coder only
(+)	External information sources may be consulted
(rel)	No reliability necessary
(99)	Variable cannot be coded '-99'
(NIL)	Variable cannot be coded 'NIL'
Bin.	Binary scale
CA	Competent authority
DMP	Decision-making process
Interv.	Interval scale
NGO	Non-governmental organisation
Nom.	Nominal scale
NRP	Natural resource protection
NSA	Non-state actor(s)
PO	Process organiser(s)
PP	Participatory process
Qual.	Qualitative scale
S-q	Semi-quantitative scale

List of scales used / NIL and -99 peculiarities

In addition to the usual five-point scale outlined above, the following scales are also used. Due to technical reasons, NIL and -99 will be coded differently in some scales.

Scale	Coding possibilities	NIL	-99
[0/1]	0, 1	NIL	-99
[-1/0/1]	-1, 0, 1	NIL	-99
[0..2]	0, 1, 2	NIL	-99
[0..3]	0, 1, 2, 3	NIL	-99
[0..4]	0, 1, 2, 3, 4	NIL	-99
[-4..4]	-4, -3, -2, -1, 0, 1, 2, 3, 4	NIL	-99
[0..6]	0, 1, 2, 3, 4, 5, 6	NIL	-99
[0..8]	0, 1, 2, 3, 4, 5, 6, 7, 8	NIL	-99
Text	<i>Enter text</i>	NIL	-99
Text area	<i>Enter text</i>	NIL	-99
Number	<i>Enter numbers</i>	-77	-99
Date	<i>Enter date</i> DD.MM.YYYY	00.00.0000	13.13.1313

Variable short name	Scale	Range of values	Variable full name: explanation
A. GENERAL INFORMATION			
CASE ID	qual.	Text (rel)	(*) Case identification: Unique case name.
CODER	qual.	Text (rel)	Coder: Initials of coder.
REFERENCES	qual.	Text area (rel)	(*) References: Full bibliographic references to all literature used, including page numbers with specific case information; internet URLs with access dates.
PUBL DATE	date	Date (99)	(*) Publication date: Date of publication or production of the latest text considered. Provide year and month. Format: DD.MM.YYYYY. If only the year is available, code 30.06.YYYY (mid-year).
PUBL WORD	date	Number (rel)	(*) Publication word length: As an estimate of the amount of information available on the case. Estimate the number of words by counting pages dealing with the case, and number of words per page. Count illustrations as though the space they occupy was occupied by words. Count all pages (in all publications) that are used for coding this particular case.
SOURCE GREY	bin.	[0/1] (99)	(*) Source grey: Is the source classified as grey literature, including scientific or non-scientific literature without ISBN or ISSN (e.g. conference contribution or academic report, not published in citable proceedings; Bachelor or Master thesis)?
SOURCE PUBL	bin.	[0/1] (99)	(*) Source published: Is the source classified as a citable, commercially published (but not necessarily peer-reviewed as in SOURCE PEER) book or journal publication not listed in Scopus? (if yes, it must have ISBN or ISSN).
SOURCE PEER	bin.	[0/1] (99)	(*) Source peer reviewed: Is the source classified as a peer-reviewed journal publication listed in Scopus?
1. CODING DATE	date	Date (99) (rel)	Coding date: Date of completion of coding. Format: DD.MM.YYYY.
2. SUMMARY	qual.	Text area (rel) (rel)	Summary: Brief description of the case (ideally between 150 and 300 words). Provide a concise account including a brief description of the environmental issue at hand and the situation leading to the DMP, a characterisation of the DMP itself, and a short account of the process output and possible outcomes and impacts. Use short sentences and include any special characteristics of the case that are not captured by the variables.
3. ANNOTATIONS	qual.	Text area (rel)	Annotations: Problems with variables and/or codes noted during the coding process or at a later time (with dates). Each annotation should start on a new line, beginning with the relevant variable number. Note any variables for which external information informed the coding.
4. AUTH ORG	bin.	[0/1] (99)	Author organiser: Was the author involved in the <u>DMP</u> as an organiser, facilitator or mediator? In cases of multiple authors, consider all co-authors.
5. AUTH STKH	bin.	[0/1] (99)	Author stakeholder: Was the author involved in the <u>DMP</u> as a participant (including as the <u>CA</u>) or as a non-participating stakeholder? In cases of multiple authors, consider all co-authors.
6. AUTH ACTIVE	bin.	[0/1] (99)	Author active researcher: Was the author actively involved in the <u>DMP</u> as a researcher (through action research or mission-oriented contract research etc.)? In cases of multiple authors, consider all co-authors.
7. AUTH NEUTRAL	bin.	[0/1] (99)	Author neutral researcher: Was the author a neutral researcher (if involved in the <u>DMP</u> then as neutral observer)? In cases of multiple authors, consider all co-authors.

8. CASE START DATE	date	Date (99)	Case start date: The case starts when there is first evidence of events leading to a DMP. This could be the adoption of higher-level policy triggering action at local levels, an application for a building permit, or public debate or expressions of concern calling for a public decision.
9. DMP START DATE	date	Date (99)	(* Decision-making process start date: Start of the DMP in the form of a first interaction/meeting with the intention of reaching a collectively binding decision. Applies equally to 'top-down' and 'bottom-up' initiated processes.
10. DMP END DATE	date	Date	(* Decision-making process end date: Date of the final decision (output) that terminated this particular DMP. If multiple subsequent decisions exist, take the most collectively binding one, without taking into account court action. This implies that the final output is not necessarily identical to a decision made in a public participatory process. If there is insufficient information available on the most collectively binding decision and another (perhaps less binding) decision exists on which more information is available, the latter may be defined as the output. Code -99 if the process failed to produce a decision (output).
11. IMPL END DATE	date	Date	Implementation end date: End of decision implementation phase. Implementation is completed if all requirements laid down in the final decision are fulfilled. Where the decision combined actions with goals, e.g. do A, B, C (all legally binding) in order to achieve X, Y, Z (also legally binding), code the date when A, B and C were completed (regardless of whether they achieved X, Y, Z). In cases of continuous implementation (e.g. regular monitoring activities), implementation is completed when all arrangements allowing for ongoing activities are made and there is no evidence that they will be interrupted again. Code -99(= 13.13.1313 for date field) if there was no decision to be implemented, if the decision did not need implementation, or if the decision was not yet implemented.
12. CASE END DATE	date	Date	Case end date: Note when the case was completed in the sense that no (major) further action was required. Code -99 (= 13.13.1313 for date field) if the case was not yet completed.
13. CASE END STATE	qual.	Text area (99) (rel)	End state of case: Describe in one sentence at what point of the DMP the description ends, e.g. decision not (yet) taken, or decision not yet implemented, or implementation complete, etc.
14. LATEST DATA	date		Latest available data: Note the last reported date for which information was available on the case.

B. CONTEXT

All context variables are coded independently of the decision-making process and represent the socio-political context *before* the decision-making process started. They ignore potential changes in that context that occurred during the decision-making process.

B.I POLICY SPACE

B.I.1 Policy environment

15. PA ENERGY PLANT SITING			Policy area: Code all policy areas in the list for presence or absence. Code the presence of as few as possible but as many as necessary in order to describe the case at hand. Scale: bin. Range of values: [0/1] (99) (rel) 0 = not present 1 = present
16. PA WASTE FACILITY SITING			
17. PA HOUSING DEVELOPMENT			
18. PA TRAFFIC INFRASTRUCTURE PLANNING			
19. PA URBAN SPATIAL PLANNING			
20. PA SUSTAINABILITY PLANNING			
21. PA CLIMATE CHANGE			
22. PA COASTAL ZONE MANAGEMENT			
23. PA WATERSHED MANAGEMENT			
24. PA GROUNDWATER MANAGEMENT			
25. PA SEWAGE TREATMENT			
26. PA LAND USE PLANNING			
27. PA NATURE RESERVE MANAGEMENT			
28. PA WILDLIFE MANAGEMENT			
29. PA FISHERY MANAGEMENT			
30. PA FOREST MANAGEMENT			
31. PA BIODIVERSITY ENDANGERED SPECIES			
32. PA ECOSYSTEM RESTORATION			
33. PA BIOTECH GENETIC ENGINEERING			
34. PA NATURAL CATASTROPHE MANAGEMENT			
35. PA POLLUTION REDUCTION			
36. PA OTHER	qual.	Text (rel)	Policy area other: Specify any other important policy area(s) that characterise(s) the case but is/are not covered by the above list. Code -99 if nothing to add.
37. BOTTOM-UP TRIGG	bin.	[0/1] (99)	Bottom-up triggering: Was the DMP triggered (i.e. did the original impulse for initiating a DMP come from) "bottom-up", i.e. through a non-state actor or a lower-level governmental body? 0 = no; 1 = yes.
38. BOTTOM-UP TRIGG TYPE	qual.	Text	Bottom-up triggering actor type: If applicable, classify the actor that triggered the DMP. Enter the codes for, first, the respective actor group and, second, its environmental orientation. Separate codes by one single space (e.g. PRIV PROCONS). Select the appropriate code for the actor group from this list and enter it in the text field: GOVT = government sector; PRIV = private sector, for-profit; CIV = civic sector, non-profit; CIT = citizens, ad hoc citizen groups. Select the appropriate code for the environmental orientation from this list and enter it in the text field: PROCONS = Pro-conservation; PROHEALTH = Pro-human health; PRONRP = Pro-natural resource protection; PROEXPL = Pro-exploitation. Code -99 if the DMP was not triggered by an NSA.

39. HIGHER ORDER POL TRIGG	bin.	[0/1] (99)	<p>Higher order policy triggering: Was the DMP triggered by a <u>higher order policy</u>?</p> <p>A higher order policy is a legally binding rule (e.g. law, directive, decree), typically issued by a superordinate level of government that requires further decision making on subordinate levels as part of its implementation. Note that a governmental decision that is not a general rule but targeted at an individual case (e.g. a permit) is not a policy.</p> <p>The fact that no higher order policy triggered a DMP does not necessarily imply that there are no higher order policies of relevance to the DMP (meaning that variables 43–45 can potentially still be coded).</p> <p>0 = no higher order policy was involved in the initiation of the DMP; 1 = there was a higher order policy involved in the initiation of the DMP.</p>
40. HIGHER ORDER POLICY DESCR	qual.	Text	<p>Higher order policy description: Briefly name any <u>higher order policies</u> of relevance to the issue that may serve as an evaluative yardstick against which to assess the environmental output of the DMP. For instance: Art. 5, Water Framework Directive. If 39. HIGHER ORDER POL is 1, then this policy should be named first, followed (if applicable) by other relevant policies.</p>
41. POL GOAL AMBIGUITY	s-q	[0..4]	<p>Policy goal ambiguity: Degree to which higher-order policy as in 40. HIGHER ORDER POLICY DESCR was ambiguous, and therefore able to be interpreted in different ways.</p> <p>0 = not ambiguous (e.g. clearly defined duties, courses of action, and policy goals); 2 = some degree of ambiguity; 4 = highly ambiguous (e.g. policy instruments and goals are vaguely defined, overall phrasing leaves course of action unclear).</p> <p>Code -99 if 40. HIGHER ORDER POLICY DESCR is coded -99.</p>
42. PERMIT	bin.	[0/1] (99)	<p>Permitting procedure: Was decision-making (at least primarily) a permitting procedure – that is, a decision whether to grant a permit or permits for a particular activity?</p> <p>0 = not primarily a permitting procedure; 1 = primarily a permitting procedure.</p>
43. POL GOAL CONS	s-q	[-4..4]	<p>Policy goal conservation: Degree to which an existing higher order policy pursued an environmental <u>conservation</u> goal related to the issue of the DMP. This variable is to be coded in relation to 39. HIGHER ORDER POL. If 39. HIGHER ORDER POL is 0, this variable can be coded in relation to other higher order policies named in 40. HIGHER ORDER POLICY DESCR.</p> <p><i>Conservation:</i> To preserve, protect or restore the natural environment and ecosystems (including the atmosphere, biodiversity, terrestrial and aquatic habitats, and flora and fauna) largely independently of their instrumental value to humankind.</p> <p>-4 = higher order policy pursued a goal highly incompatible with, or antagonistic to, conservation; 0 = higher order policy pursued a goal neutral to conservation; 4 = higher order policy pursued a highly ambitious conservation goal.</p> <p>Code -99 if there was no higher order policy with goals concerning the issue of the DMP.</p>
44. POL GOAL HEALTH	s-q	[-4..4]	<p>Policy goal human health: Degree to which an existing higher order policy pursued a <u>human health</u> goal related to the issue of the DMP. This variable is to be coded in relation to 39. HIGHER ORDER POL. If 39. HIGHER ORDER POL is 0, this variable can be coded in relation to other higher order policies named in 40. HIGHER ORDER POLICY DESCR.</p> <p><i>Human health:</i> To protect quality of (human) life through enhancing environmental factors beneficial to human health, and/ or mitigating environmental impacts and remediating environmental problems detrimental to human health.</p> <p>-4 = higher order policy pursued a goal highly incompatible with, or antagonistic to, human health; 0 = higher order policy pursued a goal neutral to human health; 4 = higher order policy pursued a goal highly compatible with human health.</p> <p>Code -99 if there was no higher order policy with goals concerning the issue of the DMP.</p>

45. POL GOAL NRP	s-q	[-4..4]	<p>Policy goal natural resource protection: Degree to which an existing higher order policy pursued a <u>natural resource protection</u> goal related to the issue of the DMP. This variable is to be coded in relation to 39. HIGHER ORDER POL. If 39. HIGHER ORDER POL is 0, this variable can be coded in relation to other higher order policies named in 40. HIGHER ORDER POLICY DESCR.</p> <p><i>Natural resource protection:</i> To protect, preserve, enhance or restore stocks and flows of natural resources that are of instrumental value to humans, and provide for their sustainable use.</p> <p>-4 = higher order policy pursued a goal highly incompatible with, or antagonistic to, NRP; 0 = higher order policy pursued a goal neutral to NRP; 4 = higher order policy pursued a goal highly compatible with NRP.</p> <p>Code -99 if there was no higher order policy with goals concerning the issue of the DMP.</p>
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B.1.2 Multi-level and spatial aspects

46. COUNTRY	qual.	Text (99)	<p>(*) Country: Country or countries in which the DMP took place. If multiple countries were involved, name in order of importance starting with the most important one (typically the one in which the CA is located).</p> <p><i>Format:</i> Internet domain suffixes (e.g. for USA use 'us'), separated by commas.</p>
47. CONTINENT	qual.	Text (99)	<p>(*) Continent: Continent in which the DMP took place (if in doubt, take the seat of the CA). Europe, North America, or Australia and New Zealand.</p>
48. MLG VERT	interv.	Number (NHL)	<p>Multi-level governance vertical: Number of discernible policy levels in the respective political system, which are of relevance to the DMP. To be considered relevant to the DMP, authorities must have oversight of or potential responsibility for part of the decision-making process (e.g. municipal authority + catchment authority + state authority + national authority + supranational authority = 5).</p>
49. CA LEVEL	s-q (ord.)	[0..8] (99)	<p>Jurisdictional level of the competent authority.</p> <p>0 = locality / municipality; 1 = cross-municipality; 2 = county (or e.g. département); 3 = cross-county; 4 = subnational level such as federal state, province, autonomous region, Kanton 5 = cross-subnational (as defined in 4; i.e. within a federal system); 6 = country (in the sense of a sovereign state, e.g. Germany, UK, USA); 7 = bilateral or multilateral; 8 = supra-national (e.g. EU, UN).</p> <p>If in cross-border collaborations, different levels are involved, code the most important one; if equally important, code the highest one (e.g. Saarland and Luxemburg collaboration would be coded bilateral = 7). Luxemburg does not have categories 4 and 5. Also, in the case of Hamburg (which is municipality as well as state), take the highest one.</p>
50. GOVCE SCALE LEVEL	s-q (ord.)	[0..8] (99)	<p>Governance scale level: Policy level of the DMP (which is not necessarily equal to CA SCALE LEVEL).</p> <p>0 = locality / municipality; 1 = cross-municipality; 2 = county (or e.g. département); 3 = cross-county; 4 = subnational level such as federal state, province, autonomous region, Kanton 5 = cross-subnational (as defined in 4; i.e. within a federal system); 6 = country (in the sense of a sovereign state, e.g. Germany, UK, USA); 7 = bilateral or multilateral; 8 = supra-national (e.g. EU, UN).</p> <p>If in cross-border collaborations, different levels are involved, code the most important one; if equally important, code the highest one (e.g. Saarland and Luxemburg collaboration would be coded bilateral = 7). Luxemburg does not have categories 4 and 5. Also, in the case of Hamburg (which is municipality as well as state), take the highest one.</p>

B.1.3 Societal environment

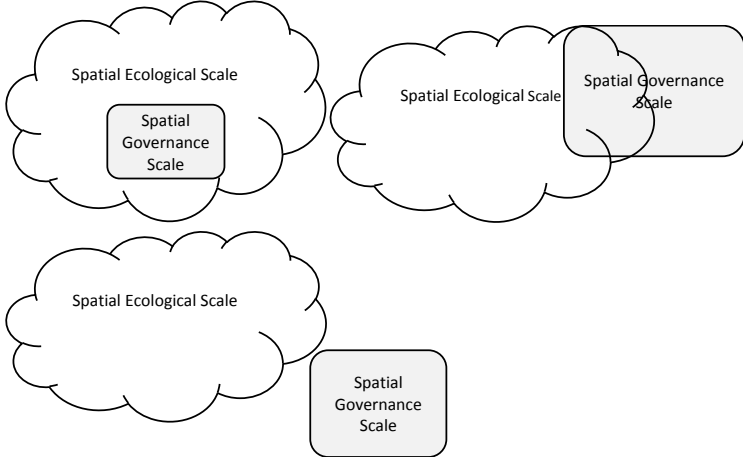
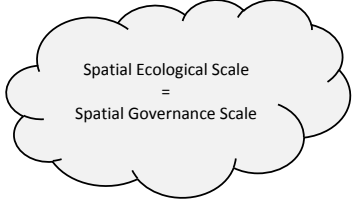
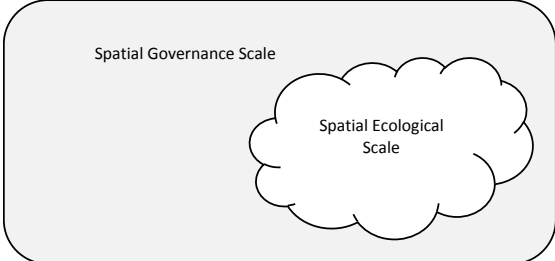
51. SC GEN TRUST GOVT	s-q	[-4..4] (99)	<p>Social capital general trust in government: Degree of general public trust in the capabilities and intentions of the government and government sector actors to act in the public interest – before the DMP.</p> <p>-4 = government and government actors regarded with high levels of distrust; 0 = government and government actors neither trusted nor distrusted; 4 = government and government actors regarded with high levels of trust.</p>
52. SC TRUST GOVT ACTORS	s-q	[-4..4]	<p>Social capital trust in governmental actors: Degree of trust of stakeholders and the specific governmental actors potentially involved in the decision-making process – before the DMP. “Trust is the willingness to accept vulnerability based on positive expectations about another’s intentions or behaviors” (McEvily et al. 2003). Levels of trust likely depend on the existence of a prehistory of either antagonism or cooperation between stakeholders and government sector actors. Where there is no prehistory of interaction, there is possibly (but not necessarily) neither trust nor distrust between the parties.</p> <p>-4 = very high levels of distrust between stakeholders and governmental actors; 0 = stakeholders and governmental actors neither trust nor distrust each other; 1..3 = more or less trust between few and many stakeholders and governmental actors; 4 = very high levels of trust between stakeholders and governmental actors.</p> <p>Code -99 if there were no governmental actors involved in the DMP at large.</p>
53. SC TRUST STKH	s-q	[-4..4] (99)	<p>Social capital trust among stakeholders: Degree of trust among stakeholders potentially involved in the DMP – before the DMP. “Trust is the willingness to accept vulnerability based on positive expectations about another’s intentions or behaviors” (McEvily et al. 2003). Levels of trust likely depend on the existence of a prehistory of either antagonism or cooperation among potential participants. Where there is no prehistory of interaction, there is possibly (but not necessarily) neither trust nor distrust among the parties.</p> <p>-4 = very high levels of distrust among stakeholders; 0 = stakeholders neither trust nor distrust each other; 1..3 = more or less trust between few to many stakeholders; 4 = very high levels of trust among stakeholders.</p>
54. SC NTWK STKH	s-q	[0..4] (99)	<p>Social capital networks among stakeholders: Degree to which the stakeholders potentially involved in the DMP were already communicating with each other engaged in functioning networks (characterised by reciprocal, collaborative and mutually beneficial activity) – before the DMP.</p> <p>0 = no existing networks among stakeholders; 2 = Strong networks among a few stakeholders, or some degree of networking among many stakeholders; 4 = strong existing networks and collaboration among (almost) all stakeholders (not necessarily implying that all actors are linked through the same network, or that there is co-operation among all stakeholders).</p>
55. SC SHARED NORMS	s-q	[0..4] (99)	<p>Social capital shared norms: Degree of social capital in the sense of informal values or norms shared among stakeholders that permit cooperation among these (Fukuyama 1997) – before the DMP.</p> <p>0 = very low level of norms shared among stakeholders permitting cooperation among these; 4 = very high level of norms shared among stakeholders.</p>

56. PARTN CULT	s-q	[0..4] (99)	<p>Participation culture: Degree to which participation and cooperation were accepted as appropriate means to resolve social and political conflicts and make public decisions, at the scale of the <u>DMP</u>. In assessing participation culture, consider the following elements (Note: these elements need not <i>all</i> be present to justify a high code):</p> <ul style="list-style-type: none"> • Legal requirement to adopt cooperative conflict resolution; • Scope to apply participatory procedures across a variety of political and social areas (ranging from singular policy areas to the wider political system as under conditions of neocorporatism or deliberative democracy); • Degree of <u>NSA</u> involvement in public policy-making (ranging from information rights to <u>consultation</u> to participation rights); • Degree of public acceptance of participation and cooperation as decision-making procedures; • Length of participatory tradition. <p>0 = absence of participation culture; 4 = long-standing and strong tradition of public participation.</p>
57. GREEN CULT	s-q	[0..4] (99)	<p>Green culture: Degree to which the societal context was characterised by a culture of environmental awareness, at the scale of the <u>DMP</u>. This variable estimates the extent to which environmental and sustainability concerns were present in the public consciousness and inform community action and decision-making. In assessing environmental awareness, consider the following elements (Note: these elements need not <i>all</i> be present to justify a high code):</p> <ul style="list-style-type: none"> • Public awareness of environmental laws and regulations, and understanding of rights, interests, duties and responsibilities with respect to these laws and regulations, and the social, environmental and economic consequences of non-compliance; • Prevalence of social action and environmental campaigns at the community level; • Prevalence of environmental awareness-raising by public sector authorities, environmental NGOs or interest groups; • Coverage of environmental issues in local and national mainstream media and community media. <p>0 = absence of a culture of environmental awareness; 4 = strong culture of environmental awareness.</p>

B.II ENVIRONMENTAL ISSUE

58. ISSUE DESCR	qual.	Text area (rel)	<p>Issue description: Brief description of the environmental issue at stake. Describe what was at stake for environmental quality. If there was disagreement among actors, describe multiple perspectives.</p>
59. ISSUE PERCEP CONS	s-q	[0..4] (99)	<p>Issue perception conservation: Degree to which <u>conservation</u> was perceived as important by <u>stakeholders</u>.</p> <p><i>Conservation:</i> To preserve, protect or restore the natural environment and ecosystems (including the atmosphere, biodiversity, terrestrial and aquatic habitats, and flora and fauna) largely independently of their instrumental value to humankind.</p> <p>0 = conservation not perceived as important by stakeholders; 2 = conservation perceived as very important by a few stakeholders, or somewhat important by most stakeholders; 4 = conservation perceived as very important by most stakeholders.</p>
60. ISSUE PERCEP HEALTH	s-q	[0..4] (99)	<p>Issue perception human health: Degree to which <u>human health</u> was perceived as important by <u>stakeholders</u>.</p> <p><i>Human health:</i> To protect quality of (human) life through enhancing environmental factors beneficial to human health, and/ or mitigating environmental impacts and remediating environmental problems detrimental to human health.</p> <p>0 = human health not perceived as important by stakeholders; 2 = human health perceived as very important by a few stakeholders, or somewhat important by most stakeholders; 4 = human health perceived as very important by most stakeholders.</p>

61. ISSUE PERCEP NRP	s-q	[0..4] (99)	<p>Issue perception natural resource protection: Degree to which <u>natural resource protection</u> was perceived as important by <u>stakeholders</u>.</p> <p><i>Natural resource protection:</i> To protect, preserve, enhance or restore stocks and flows of natural resources that are of instrumental value to humans, and provide for their sustainable use.</p> <p>0 = Natural resource protection not perceived as important by stakeholders; 2 = Natural resource protection perceived as very important by a few stakeholders, or somewhat important by most stakeholders; 4 = Natural resource protection perceived as very important by most stakeholders.</p>
62. ENVI IMPT CONS	s-q	[0..4] (99)	<p>Environmental importance conservation: Degree to which the environmental issue at stake has a potential <u>conservation</u> impact.</p> <p><i>Conservation:</i> To preserve, protect or restore the natural environment and ecosystems (including the atmosphere, biodiversity, terrestrial and aquatic habitats, and flora and fauna) largely independently of their instrumental value to humankind.</p> <p>Comparing across cases, provide the scale of the potential conservation impact, considering a spatial scale from the local to the global, and taking into account temporal scope and irreversibility of the impact.</p> <p>0 = low and/or short-term potential conservation impact of restricted scope; 2 = low and/or short-term impact of global scope, or high and/or long-term impact of very restricted scope; 4 = very high and/or long-term potential conservation impact of global scope.</p>
63. ENVI IMPT HEALTH	s-q	[0..4] (99)	<p>Environmental importance human health: Degree to which the environmental issue at stake has a potential <u>human health</u> impact.</p> <p><i>Human health:</i> To protect quality of (human) life through enhancing environmental factors beneficial to human health, and/ or mitigating environmental impacts and remediating environmental problems detrimental to human health.</p> <p>Comparing across cases, provide the scale of the potential human health impact, considering a spatial scale from the local to the global, and taking into account temporal scope and irreversibility of the impact.</p> <p>0 = low and/or short-term potential human health impact of restricted scope; 2 = low and/or short-term impact of global scope, or high and/or long-term impact of very restricted scope; 4 = very high and/or long-term potential human health impact of global scope.</p>
64. ENVI IMPT NRP	s-q	[0..4] (99)	<p>Environmental importance natural resource protection: Degree to which the environmental issue at stake has a potential <u>NRP</u> impact.</p> <p><i>Natural resource protection:</i> To protect, preserve, enhance or restore stocks and flows of natural resources that are of instrumental value to humans, and provide for their sustainable use.</p> <p>Comparing across cases, provide the scale of the potential NRP impact, considering a spatial scale from the local to the global, and taking into account temporal scope and irreversibility of the impact.</p> <p>0 = low and/or short-term potential NRP impact of restricted scope; 2 = low and/or short-term impact of global scope, or high and/or long-term impact of very restricted scope; 4 = very high and/or long-term potential NRP impact of global scope.</p>
65. TECH COMPLEX	s-q	[0..4] (99)	<p>Technical complexity: Degree to which the key environmental issue at stake in the <u>DMP</u> is difficult to understand and process intellectually. In the context of this variable, the issue is taken to include underlying causes, actual or potential impacts, and possible means to mitigate or enhance these impacts. The notion of complexity includes both the range of associated phenomena that need to be considered in order to comprehend the issue, and the level of expertise, education or specialist knowledge required to make sense of the issue.</p> <p>0 = low complexity (environmental issue easy to understand); 2 = moderate complexity; 4 = high level of complexity (environmental issue difficult to understand).</p>

66. FACT UNCERT	s-q	[0..4] (99)	<p>Factual uncertainty: Degree to which knowledge of the environmental issue and its human or ecological causes and effects is uncertain or incomplete, and therefore hinders reliable prediction of impacts. Factual uncertainty can be a result of any of the following phenomena, which may occur together or separately: Lack of factual knowledge about the environmental issue; controversy or lack of consensus among experts on the nature of the environmental issue; lack of controllability and ability to make reliable predictions.</p> <p>0 = very low degree of factual uncertainty; 4 = very high degree of factual uncertainty.</p>
67. RURAL URBAN	s-q	[0..4] (99)	<p>Rural urban: Degree to which the environmental issue can be characterised as predominantly urban or rural. In characterising the issue, consider the urban/rural nature of both the geographic area of cause and effect, and the type of land-use or human activity that gives rise to the issue. Consider whether the issue is more accurately described as pertaining to the city or the countryside.</p> <p>0 = predominantly rural; 2 = intermediate/mixed; 4 = predominantly urban.</p>
68. SPATIAL SCALE ISSUE	interv.	Number (NHL)	<p>(+) (*) Spatial scale issue: Approximate size, in km², of the environmental issue area.</p>
69. GOVCE ECO SCALE	nom.	[-1/0/1] (99)	<p>Governance ecological scale: Spatial correspondence of governance scale and ecological scale (68. SPATIAL SCALE ISSUE): Does the spatial unit addressed by the DMP 'fit' the spatial unit of the environmental issue, or is it too small or too large?</p> <p>-1 = governance scale smaller than, intersecting or outside of ecological scale:</p>  <p>0 = governance scale equals ecological scale:</p>  <p>1 = governance scale is greater than and fully encompasses ecological scale:</p> 

70. SPILL POLLUTION	s-q	[0..4] (99)	<p>Spillovers pollution: Degree to which what is potentially or actually at stake in the DMP implies pollution spillovers beyond the policy scale of the DMP, as in 50. GOVCE SCALE LEVEL.</p> <p>A pollution spillover occurs with the movement of pollutants across jurisdictional boundaries (Stewart 1992: 45). In coding, consider both the severity and the geographical scope of the pollution spillover.</p> <p>0 = no potential or actual pollution spillover; 2 = moderate potential or actual pollution spillover; 4 = significant potential or actual pollution spillover.</p>
71. SPILL CONS	s-q	[0..4] (99)	<p>Spillovers conservation: Degree to which what is potentially or actually at stake in the DMP implies <u>conservation</u> spillovers beyond the policy scale of the DMP, as in 50. GOVCE SCALE LEVEL.</p> <p>A conservation spillover occurs when the conservation or protection of an ecologically significant resource has benefits for parties across jurisdictional boundaries (Stewart 1992: 45). The ecological resource may, for example, provide ecosystem services or hold existence value for parties beyond the jurisdiction of the CA.</p> <p>0 = no potential or actual conservation spillover; 2 = moderate potential or actual conservation spillover; 4 = significant potential or actual conservation spillover.</p>
72. SPILL RACE TOP	s-q	[0..4] (99)	<p>Competitive spillovers ‘race to the top’: Degree to which what is potentially or actually at stake in the DMP implies environmentally positive competitive spillovers in the sense of a ‘race to the top’ beyond the policy scale of the DMP, as in 50. GOVCE SCALE LEVEL.</p> <p>Competitive spillovers occur when multiple (potentially distant) jurisdictions compete on environmental regulatory standards in order to gain a competitive advantage, thus influencing each other’s environmental regulation. Competitive spillovers with <i>positive</i> environmental impacts (‘race to the top’) occur when competition drives jurisdictions to increase environmental standards (e.g. when competing for tourists who favour higher environmental standards) (Stewart 1992: 45; Benson & Jordan 2010: 10).</p> <p>0 = no positive potential or actual competitive spillover; 2 = moderate positive potential or actual conservation spillover; 4 = competitive potential or actual spillover strongly positive for environmental standards (‘race to the top’).</p>
73. SPILL RACE BOTTOM	s-q	[0..4] (99)	<p>Competitive spillovers ‘race to the bottom’: Degree to which what is potentially or actually at stake in the DMP implies environmentally negative competitive spillovers in the sense of a ‘race to the bottom’ beyond the policy scale of the DMP, as in 50. GOVCE SCALE LEVEL.</p> <p>Competitive spillovers occur when multiple (potentially distant) jurisdictions compete on environmental regulatory standards in order to gain a competitive advantage, thus influencing each other’s environmental regulation. Competitive spillovers with <i>negative</i> environmental impacts (‘race to the bottom’) occur when competition drives jurisdictions to lower environmental standards (e.g. when competing for industry investments that favour lower environmental standards). (Stewart 1992: 45; Benson & Jordan 2010: 10)</p> <p>0 = no negative potential or actual competitive spillover; 2 = moderate negative potential or actual conservation spillover; 4 = competitive potential or actual spillover strongly negative for environmental standards (‘race to the bottom’).</p>
74. PREVIOUS ATTEMPT	bin.	[0/1] (99)	<p>Previous attempt: Had there been a previous ‘unsuccessful’ attempt at resolving the issue at stake (perhaps framed slightly differently)? ‘Unsuccessful’ means that either no output or an insufficient output was produced or that an output was not accepted, implemented or complied with, and that therefore a new attempt was made which led to the current DMP.</p> <p>0 = no; 1 = yes.</p>

75. PUBLIC ATTN IN	s-q	[0..4] (99)	<p>Public attention in: Degree to which the issue at stake attracted public attention before the DMP started. The public is hereby restricted to those living <i>inside</i> the jurisdictional area covered by the decision, as in 50. GOVCE SCALE LEVEL. Important indicators include: media attention, surveys (issue salience), discussion of issue in political debates and among experts.</p> <p>0 = issue has attracted no public attention; 4 = issue has attracted high public attention.</p>
76. PUBLIC ATTN OUT	s-q	[0..4] (99)	<p>Public attention out: Degree to which the issue at stake attracted public attention before the DMP started. Public is hereby restricted to the public living <i>outside</i> the jurisdictional area covered by the decision, as in 50. GOVCE SCALE LEVEL. Important indicators include: media attention, surveys (issue salience), discussion of issue in political debates and among experts.</p> <p>0 = issue has attracted no public attention; 4 = issue has attracted high public attention.</p>
77. CONFL VALUES	s-q	[0..4] (99)	<p>Conflict of values: Degree to which there was an actual or potential conflict of values associated with the issue at stake. Consider diverging ethical, social, cultural and ideological values. Indicators include: latent conflict because of ('objectively') conflicting values; manifest conflict or actual dispute among <u>stakeholders</u>. Code the degree of conflict of values in comparison to other cases, and not in comparison to alternative potential scenarios for the same case.</p> <p>0 = no actual or potential conflict of values evident; 2 = moderate actual or potential conflict of values evident; 4 = significant actual or potential conflict of values evident.</p>
78. CONFL DISTN	s-q	[0..4] (99)	<p>Conflict of distribution: Degree to which there was an actual or potential conflict of distribution (=conflict of interests) associated with the issue at stake. This type of conflict concerns the distribution of resources or opportunities among <u>stakeholders</u> (<u>who gets what? Whose interests are threatened?</u>). Conflict may arise over the distribution of tangible or intangible resources, costs and reparations, power and authority, health hazards, etc., and the situation need not be a zero-sum game. Code the degree of conflict of distribution in comparison to other cases, and not in comparison to alternative potential scenarios for the same case.</p> <p>0 = no actual or potential conflict of distribution evident; 2 = moderate actual or potential conflict of distribution evident; 4 = significant actual or potential conflict of distribution evident.</p>
79. NIMBY	bin.	[0/1] (99)	<p>NIMBY – 'Not in my backyard': Existence of a NIMBY situation in the political conflict at hand. A NIMBY situation can be said to exist where there is general agreement on the need for a particular facility or activity, but disagreement on the appropriate location. In particular, there is widespread and strong resistance by people to its being located in their neighbourhood or immediate vicinity.</p> <p>0 = no NIMBY situation; 1 = NIMBY situation.</p>
80. BAU SCENARIO	qual.	Text area	<p>(*) Business as usual scenario: Brief description of the counterfactual scenario of how the issue would have developed without the DMP (i.e. extrapolate from just before the DMP started). This is termed the '<u>business as usual</u>' scenario. A BAU scenario can imply positive and/or negative environmental change. In permitting cases, the BAU scenario typically relates to a scenario without a permit being granted.</p>

B.III STAKEHOLDER CHARACTERISTICS

Stakeholders are conceived of as anyone potentially affected by the environmental problem and the consequences of possible solutions, e.g. redistribution effects, loss of access to resources, etc. *Note:* Stakeholders are defined independently of who actually participated in (or was invited to) the decision-making process. There are four stakeholder categories:

Government sector: All governmental actors and organisations at various levels engaged in the formulation of policies and their execution (i.e. involved state agencies), including quasi non-governmental organisations fulfilling functions of government.

Private sector (for profit): All for-profit organisations that are owned or operated by private individuals, and companies engaged in the supply of goods and services (i.e. productive private enterprises, farmers, industry, etc.), including umbrella organisations representing industry, and state-owned enterprises that are mandated to return a profit from their commercial activity.

Civic sector (non-profit): A collection of entities and groups that are organised (institutionalised), non-governmental, non-profit, self-governing, and voluntary (e.g. NGOs, churches, unions) (adapted from Salamon & Anheier 1997: 33f).

Citizens: Non-organised individuals (e.g. consumers, residents, etc.), and ad-hoc, temporary and issue-related citizen initiatives.

The stakeholder field is understood as the multitude of actors that have a meaningful relation to the issue at stake. These 'real' actors are mapped onto a set of analytical categories (segments) defined by four types of societal sectors (government, private, civic, citizens) and four different positions towards the environment (pro-conservation, pro-human health, pro-natural resource protection, pro-exploitation). It is the aim of coding to describe the stakeholder field through the characteristics of its different segments. While coding, it is essential to consider each segment as a whole and not only a single stakeholder in this segment. Segments may of course remain 'empty' in the sense that only those 'segment variables' should receive non-0 codes that are explicitly mentioned in the case or for which informed guesses on stake, power etc. can be made.

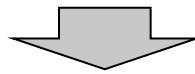
Societal sector	Government Sector	Private Sector	Civic Sector	Citizens
Position towards Environment				
Pro-Conservation	Segment	Segment	Segment	Segment
Pro-Human Health	Segment	Segment	Segment	Segment
Pro-Natural resource protection	Segment	Segment	Segment	Segment
Pro-Exploitation	Segment	Segment	Segment	Segment

The first step in the coding procedure is to assign a given 'real' actor or actor group to its analytical category (segment) according to its societal sector and its position towards the environment. Here, each actor must be unambiguously assigned to one (and only one) sector; if in doubt, consider the function that the actor fulfils in relation to the issue at hand (e.g. policy-making and implementation are usually tasks of government actors, while production and trade of goods and services usually correspond to private actors). Any given actor may have a broad spectrum of interests and therefore may hold multiple positions towards the environment. This means that an actor may be assigned to more than one segment within the same column. The table below gives an example for actor allocation.

Societal sector	Government Sector	Private Sector	Civic Sector	Citizens
Position towards Environment				
Pro-Conservation			E	
Pro-Human Health	A			F
Pro-Natural resource protection		B		
Pro-Exploitation		D		

The second step requires assigning a code to each segment for the two variables **Stake** and **Power resources**. To do this, the characteristics of the different actors comprising this segment have to be aggregated. The usual procedure for this is to consider the actor with the highest value in this segment and assign this to the whole segment; there should be no averaging out across different actors of the segment. If an actor is assigned to different segments due to a mixed position towards the environment, its characteristics shall not be split between the segments but count fully in each (actors A, E); in this case, actor characteristics may vary according to different segments (illustrated by actor E, but not actor A). The tables below illustrate this step:

Societal sector	Government Sector	Private Sector	Civic Sector	Citizens
Position towards Environment				
Pro-Conservation			E Stake: 3 Power Resources: 1	
Pro-Human Health	A Stake: 3 Power Resources: 3			F Stake: 4 Power resources: 2
Pro-Natural resource protection		B Stake: 3 Pwr Res: 1	C Stake: 1 Pwr Res: 2	E Stake: 1 Power Resources: 1
Pro-Exploitation		D Stake: 1 Pwr Res: 4		



Societal sector	Government Sector	Private Sector	Civic Sector	Citizens
Position towards Environment				
Pro-Conservation			Stake: 3 Power Resources: 1	
Pro-Human Health	Stake: 3 Power Resources: 3			Stake: 4 Power Resources: 2
Pro-Natural resource protection	Stake: 3 Power Resources: 3	Stake: 3 Power Resources: 2	Stake: 1 Power Resources: 1	
Pro-Exploitation		Stake: 1 Power Resources: 4		

If a segment is empty (i.e. there are no mentionable actors with the respective orientation) both STAKE and POWER are coded 0 – as well as REPRESENTATION and INFLUENCE –, and their absence is marked by a -99 code for ACCEPTANCE.

Societal sector	Government sector	Private sector (for profit)	Civic sector (non-profit)	Citizens
Position towards environment				
Pro-Conservation STAKE s-q [0...4] (-99)	81. STAKE GOVT PROCONS Stake government sector pro-conservation: Degree to which the actors of this stakeholder group had a stake in the issue at hand. "Stake [...] involves all those – regardless of where they live, what their nationality is or what their level of information/skills may be – that could be materially or even spiritually affected by a given measure" (Schmitter 2002: 63). Affectedness can derive from different factors, including proximity, economic interest, usage, social concerns or values. 0 = there were no stakeholders in this category or actors in this category did not have any relevant stake in the issue at hand; 4 = actors in this category had a vital stake in the issue at hand.	82. STAKE PRIV PROCONS Stake private sector pro-conservation	83. STAKE CIV PROCONS Stake civic sector pro-conservation	84. STAKE CIT PROCONS Stake citizens pro-conservation

Pro-human health STAKE s-q [0..4] (-99)	85. STAKE GOVT PROHEALTH Stake government sector pro-human health: See above for description.	86. STAKE PRIV PROHEALTH Stake private sector pro-human health	87. STAKE CIV PROHEALTH Stake civic sector pro-human health	88. STAKE CIT PROHEALTH Stake citizens pro-human health
Pro-natural resource protection STAKE s-q [0..4] (-99)	89. STAKE GOVT PRONRP Stake government sector pro-natural resource protection: See above for description.	90. STAKE PRIV PRONRP Stake private sector pro-natural resource protection	91. STAKE CIV PRONRP Stake civic sector pro-natural resource protection	92. STAKE CIT PRONRP Stake citizens pro-natural resource protection
Pro-exploitation STAKE s-q [0..4] (-99) As an actor, actor group: To cause or tolerate or accept harmful effects for the environment including pollution or general degradation of the quality of the environment and its ecosystems, the endangerment of human health as well as the unsustainable utilisation of natural resources and capacities.	93. STAKE GOVT PROEXPL Stake government sector pro-exploitation: See above for description.	94. STAKE PRIV PROEXPL Stake private sector pro-exploitation	95. STAKE CIV PROEXPL Stake civic sector pro-exploitation	96. STAKE CIT PROEXPL Stake citizens pro-exploitation
Pro-Conservation POWER RESOURCES s-q [0..4] (-99)	97. PWR RES GOVT PROCONS Power resources government sector pro-conservation: Degree to which the actors of this stakeholder group possessed strong power resources. Power is the “probability that one actor within a social relationship will be in a position to carry out his own will despite resistance” (Weber 1947: 152). Power resources, as the measurable basis of power, refer to “anything that can be used to sway the specific choices or the strategies of another individual” (Dahl 1978: 226), and might include: access to time, money, information and human resources as well as social standing, charisma, legitimacy and legality. 0 = there were no stakeholders in this category or actors in this category possessed very few power resources; 4 = actors in this category possessed significant power resources, potentially enabling them to control the DMP.	98. PWR RES PRIV PROCONS Power resources private sector pro-conservation	99. PWR RES CIV PROCONS Power resources civic sector pro-conservation	100. PWR RES CIT PROCONS Power resources citizens pro-conservation
Pro-human health POWER RESOURCES s-q [0..4] (-99)	101. PWR RES GOVT PROHEALTH Power resources government sector pro-human health: See above for description.	102. PWR RES PRIV PROHEALTH Power resources private sector pro-human health	103. PWR RES CIV PROHEALTH Power resources civic sector pro-human health	104. PWR RES CIT PROHEALTH Power resources citizens pro-human health
Pro-natural resource protection POWER RESOURCES s-q [0..4] (-99)	105. PWR RES GOVT PRONRP Power resources government sector pro-natural resource protection: See above for description.	106. PWR RES PRIV PRONRP Power resources private sector pro-natural resource protection	107. PWR RES CIV PRONRP Power resources civic sector pro-natural resource protection	108. PWR RES CIT PRONRP Power resources citizens pro-natural resource protection
Pro-exploitation POWER RESOURCES s-q [0..4] (-99)	109. PWR RES GOVT PROEXPL Power resources government sector pro-exploitation: See above for description.	110. PWR RES PRIV PROEXPL Power resources private sector pro-exploitation	111. PWR RES CIV PROEXPL Power resources civic sector pro-exploitation	112. PWR RES CIT PROEXPL Power resources citizens pro-exploitation

113. PERCEIVED URGENCY	s-q	[0..4] (-99)	<p>Perceived urgency: Degree to which members of the public perceived the issue at hand as one requiring urgent attention and/or action.</p> <p>Indicators: media coverage, bottom-up debates in town halls, formation of neighbourhood initiatives, demonstrations, strikes and protests, public campaigns.</p> <p>This variable has two dimensions: number of individual or organised actors that perceived the issue as urgent, and the degree of urgency or significance of the issue identified.</p> <p>0 = no one perceived the issue at hand as one of urgency; 2 = many members of the public perceived the issue at hand as one of moderate urgency, or some members of the public perceived the issue at hand as one of great urgency; 4 = many members of the public perceived the issue at hand as one of great urgency.</p>
114. COOP PROCONS	s-q	[0..4]	<p>Cooperativeness of pro-conservation actors: Degree of cooperativeness of pro-conservation actors.</p> <p>Cooperativeness is an aggregate concept describing the willingness to engage in a collaborative process, to contribute information and to reach a compromise or consensus.</p> <p>0 = pro-conservation actors were not cooperative; 4 = pro-conservation actors were fully cooperative.</p> <p>Code -99 if stakeholder group not present.</p>
115. COOP PROHEALTH	s-q	[0..4]	<p>Cooperativeness of pro-health actors: Degree of cooperativeness of pro-health actors.</p> <p>Cooperativeness is an aggregate concept describing the willingness to engage in a collaborative process, to contribute information and to reach a compromise or consensus.</p> <p>0 = pro-health actors were not cooperative; 4 = pro-health actors were fully cooperative.</p> <p>Code -99 if stakeholder group not present.</p>
116. COOP PRONRP	s-q	[0..4]	<p>Cooperativeness of pro-NRP actors: Degree of cooperativeness of pro-NRP actors.</p> <p>Cooperativeness is an aggregate concept describing the willingness to engage in a collaborative process, to contribute information and to reach a compromise or consensus.</p> <p>0 = pro-NRP actors were not cooperative; 4 = pro-NRP actors were fully cooperative.</p> <p>Code -99 if stakeholder group not present.</p>
117. COOP PROEXPL	s-q	[0..4]	<p>Cooperativeness of pro-exploitation actors: Degree of cooperativeness of pro-exploitation actors.</p> <p>Cooperativeness is an aggregate concept describing the willingness to engage in a collaborative process, to contribute information and to reach a compromise or consensus.</p> <p>0 = pro-exploitation actors were not cooperative; 4 = pro-exploitation actors were fully cooperative.</p> <p>Code -99 if stakeholder group not present.</p>
118. WIN WIN POT	s-q	[0..4]	<p>Win-win potential: Degree of a win-win potential (that was also recognised by at least one stakeholder) prior to the DMP. It does not matter how many stakeholders recognised the potential, provided it was recognised by at least one. Decisive is the size or significance of the win-win potential.</p> <p>Win-win (or Pareto optimal) solutions are those that provide gains (or at least: no losses) to all involved parties. These are always positive-sum solutions compared to the non-collaborative alternative. Win-win solutions include solutions where compensation is provided to those who would otherwise suffer losses. Win-win solutions are not necessarily limited to the environmental issue at hand, but may be linked to alternative issues and competing interests on and off the table, as well as to future decisions (Wondolleck & Yaffee 2000: 50).</p> <p>0 = there was no win-win potential recognised by stakeholders; 2 = there was a moderate win-win potential recognised by stakeholders; 4 = there was a significant win-win potential meeting all stakeholders' maximum expectations.</p>

C. PROCESS

Process variables relate to the whole DMP, that is, to all possible process types that were employed during the DMP. The DMP may be more or less participatory. Participation may occur through one or more participatory sub-processes or elements within the DMP, but not through parallel processes external to or independent from the DMP.

C.I PROCESS DESIGN

Variables in this section assess the way in which the decision-making process (and its participation possibilities) was designed and set up. Process design relates to all basic *decisions* on how the process should be set up (at any point before or during the DMP). Actual process may of course play out differently to how it was designed.. However, as process design is of course connected to the actual process, some of the variables in this section require consideration of features of the actual process.

C.I.1 Rationales and goals of the process

119. INITR NAME	qual.	Text (99)	(*) Initiator name: Enter the name of the main <u>formal process initiator</u> – that is, the main organisation or group through whose action the decision-making process was initiated.
120. INITR TYPE	qual.	Text (99)	Initiator type: Classify the main formal <u>process initiator</u> . Enter the codes for, first, the respective <u>actor group</u> and, second, its environmental orientation. Separate codes by one single space (e.g. PRIV PROCONS). Select the appropriate code for the actor group from this list and enter it in the text field: GOVT = government sector; PRIV = private sector, for-profit; CIV = civic sector, non-profit; CIT = citizens, ad hoc citizen groups. Select the appropriate code for the environmental orientation from this list and enter it in the text field: PROCONS = Pro-conservation; PROHEALTH = Pro-human health; PRONRP = Pro-natural resource protection; PROEXPL = Pro-exploitation.
121. DMP INITN GOVT	s-q (ord.)	[0..8]	Decision-making process initiation government: Administrative level of the <u>government sector</u> organisation that initiated or co-initiated the <u>DMP</u> . In the case that the DMP was initiated by government sector as well as <u>non-state actors</u> , consider here only the government sector actor. If initiated in (cross-border) collaboration, where different levels were involved, code the most important one; if equally important, code the highest one (e.g. Saarland and Luxemburg collaboration would be coded bilateral = 7). 0 = locality / municipality; 1 = cross-municipality; 2 = county (or e.g. département); 3 = cross-county; 4 = subnational level such as federal state, province, autonomous region, Kanton 5 = cross-subnational (as defined in 4; i.e. within a federal system); 6 = country (in the sense of a sovereign state, e.g. Germany, UK, USA); 7 = bilateral or multilateral; 8 = supra-national (e.g. EU, UN). Code -99 if the DMP was not initiated by a government sector organisation.

122. DMP INITN NSA	s-q	[0..4]	<p>Decision-making process initiation non-state actor: Size of the non-state organisation that initiated or co-initiated the <u>DMP</u>.</p> <p><u>Non-state actors</u> include <u>civic sector</u> and <u>private sector</u> actors, and individual <u>citizens</u>. Size refers here to the size of the organisation's constituency or membership.</p> <p>In the case that the DMP was initiated by non-state as well as <u>government sector</u> actors, consider here only the non-state actors.</p> <p>0 = individual citizens that demanded a collective decision on a given problem; 1 = small scale, local non-state organisation; 2 = medium scale and/or regionally active non-state organisation; 4 = large scale, supra-nationally operating organisation.</p> <p>Code -99 if no non-state actors were involved in the initiation of the DMP.</p>
123. PP INITN GOVT	s-q (ord.)	[0..8]	<p>Participatory process initiation government: Administrative level of the <u>government sector</u> organisation that initiated participation.</p> <p>In the case that a PP was initiated by government sector as well as <u>non-state actors</u>, consider here only the government sector actor. If initiated in (cross-border) collaboration, where different levels were involved, code the most important one; if equally important, code the highest one (e.g. Saarland and Luxemburg collaboration would be coded bilateral = 7).</p> <p>0 = local / municipality; 1 = cross-municipality; 2 = county; 3 = cross-county; 4 = state; 5 = multi-state (e.g. within a federal system); 6 = country; 7 = bilateral or multilateral; 8 = supra-national (e.g. EU, UN).</p> <p>Code -99 if no government sector organisation was involved in the initiation of participation, or if no PP took place.</p>
124. PP INITN NSA	s-q	[0..4]	<p>Participatory process initiation non-state actors: Size of the non-state organisation that initiated participation.</p> <p><u>Non-state actors</u> include <u>civic sector</u> and <u>private sector</u> actors, and individual <u>citizens</u>. Size refers here to the size of the organisation's constituency or membership.</p> <p>In the case that a PP was initiated by non-state as well as <u>government sector</u> actors, consider here only the non-state actor.</p> <p>0 = individual citizens that demanded the opportunity to participate in a DMP; 1 = small scale, local non-state organisation; 2 = medium scale and/or regionally active non-state organisation; 4 = large scale, supra-nationally operating organisation.</p> <p>Code -99 if no non-state actor was involved in the initiation of participation, or if no PP took place.</p>
125. INITR GOAL CONS	s-q	[-4..4] (99)	<p>Initiator goal conservation: Degree to which the main formal <u>process initiator</u>, as specified in 119. INITR NAME, pursued an environmental <u>conservation goal</u> in the DMP, i.e. only code the position towards the DMP issue, not general goals.</p> <p>-4 = initiator pursued a goal highly incompatible with, or antagonistic to, conservation; -2 = initiator pursued a goal moderately incompatible with, or antagonistic to, conservation; 0 = initiator pursued a goal neutral to conservation; 2 = initiator pursued a moderately ambitious conservation goal; 4 = initiator pursued a highly ambitious conservation goal.</p>
126. INITR GOAL HEALTH	s-q	[-4..4] (99)	<p>Initiator goal human health: Degree to which the main formal <u>process initiator</u>, as specified in 119. INITR NAME, pursued a <u>human health protection goal</u> in the DMP, i.e. only code the position towards the DMP issue, not general goals.</p> <p>-4 = initiator pursued a goal highly incompatible with, or antagonistic to, human health protection; -2 = initiator pursued a goal moderately incompatible with, or antagonistic to, human health protection; 0 = initiator pursued a goal neutral to human health protection; 2 = initiator pursued a goal moderately compatible with human health protection; 4 = initiator pursued a goal highly compatible with human health protection.</p>

127. INITR GOAL NRP	s-q	[-4..4] (99)	<p>Initiator goal natural resource protection: Degree to which the main formal <u>process initiator</u>, as specified in 119. INITR NAME, pursued a <u>natural resource protection</u> goal in the DMP, i.e. only code the position towards the DMP issue, not general goals.</p> <p>-4 = initiator pursued a goal highly incompatible with, or antagonistic to, NRP; -2 = initiator pursued a goal moderately incompatible with, or antagonistic to, NRP; 0 = initiator pursued a goal neutral to NRP; 2 = initiator pursued a goal moderately compatible with NRP; 4 = initiator pursued a goal highly compatible with NRP.</p>
128. RAT EMPOWER	s-q	[0..4] (99)	<p>Rationale empowerment: Degree to which empowerment was an overall rationale for the chosen type of <u>DMP</u>.</p> <p>Empowerment includes measures of public capacity building by means of information and education with the aim of “levelling the playing field between the public and the government”, and facilitating individual and collective public agency in the DMP (Stern & Fineberg 1996, cited in Beierle & Cayford 2002: 15).</p> <p>0 = empowerment provided no rationale for the chosen type of DMP; 2 = empowerment provided a significant rationale for the chosen type of DMP; 4 = empowerment provided a very strong rationale for the chosen type of DMP.</p>
129. RAT LEGITIMACY	s-q	[0..4] (99)	<p>Rationale legitimacy: Degree to which (democratic) legitimacy was an overall rationale for the chosen type of <u>DMP</u>.</p> <p>Legitimacy refers here to input-legitimacy deriving from the consent of the public and the authentic expression of its will in the behaviour and decisions of the government (Wolf 2002). Public participation “provides a mechanism for obtaining the consent of the governed in more specific ways than are possible with elections. In the ideal case, public participation is a form of democracy in action, and its results are likely to be widely accepted as legitimate (Nonet, 1980)” (Dietz & Stern 2008: 2-15).</p> <p>Indicators include: acceptance, transparency, etc.</p> <p>0 = legitimacy provided no rationale for the chosen type of DMP; 2 = legitimacy provided a significant rationale for the chosen type of DMP; 4 = legitimacy provided a very strong rationale for the chosen type of DMP.</p>
130. RAT EFFECTIVE	s-q	[0..4] (99)	<p>Rationale effectiveness: Degree to which the effective achievement of specific <i>substantive</i> goals (= <u>outcomes</u> as opposed to process) (e.g. environmental, social, economic), was an overall rationale for the chosen type of <u>DMP</u>.</p> <p>0 = effective achievement of substantive goals provided no rationale for the chosen type of DMP; 2 = effective achievement of substantive goals provided a significant rationale for the chosen type of DMP; 4 = effective achievement of substantive goals provided a very strong rationale for the chosen type of DMP.</p>
131. RAT ENVI	s-q	[0..4] (99)	<p>Rationale environmental benefit: Degree to which the achievement of environmental benefits was an overall rationale for the chosen type of <u>DMP</u>.</p> <p>0 = achievement of environmental benefits provided no rationale for the chosen type of DMP; 2 = achievement of environmental benefits provided a significant rationale for the chosen type of DMP; 4 = achievement of environmental benefits provided a very strong rationale for the chosen type of DMP.</p> <p>This rationale is a sub-rationale of 130. RAT EFFECTIVE meaning that 130. RAT EFFECTIVE is always coded at least as high as 131. RAT ENVI.</p>
132. RAT LONGTERM EFFICIENCY	s-q	[0..4] (99)	<p>Rationale long-term efficiency: Degree to which long-term efficiency was an overall rationale for the chosen type of <u>DMP</u>.</p> <p>Long-term efficiency refers to the achievement of lasting and more satisfactory decisions, avoiding potential obstacles such as litigation and gridlock that characterise much environmental decision-making (Susskind & Cruikshank 1987).</p> <p>0 = long-term efficiency provided no rationale for the chosen type of DMP; 2 = long-term efficiency provided a significant rationale for the chosen type of DMP; 4 = long-term efficiency provided a very strong rationale for the chosen type of DMP.</p>

133. RAT MINIMISING RES	s-q	[0..4] (99)	<p>Rationale minimising resources: Degree to which considerations of short-term efficiency in achieving a given goal were an overall rationale for the chosen type of <u>DMP</u>.</p> <p>Short-term efficiency means that actors spend less time, money and person-hours to achieve a specific result in the short term (Susskind et al. 1999: 6).</p> <p>0 = short-term efficiency provided no rationale for the chosen type of DMP; 2 = short-term efficiency provided a significant rationale for the chosen type of DMP; 4 = short-term efficiency provided a very strong rationale for the chosen type of DMP.</p>
134. RAT CONFL RESOL	s-q	[0..4] (99)	<p>Rationale conflict resolution: Degree to which conflict resolution was an overall rationale for the chosen type of <u>DMP</u>.</p> <p>0 = conflict resolution provided no rationale for the chosen type of DMP; 2 = conflict resolution provided a significant rationale for the chosen type of DMP; 4 = conflict resolution provided a very strong rationale for the chosen type of DMP.</p>
135. RAT INFO GAIN	s-q	[0..4] (99)	<p>Rationale information gain: Degree to which gaining relevant information was an overall rationale for the chosen type of <u>DMP</u>.</p> <p>The term information includes scientific and non-scientific information about the issue at hand, as well as about the social environment within which the DMP takes place.</p> <p>0 = information gain provided no rationale for the chosen type of DMP; 2 = information gain provided a significant rationale for the chosen type of DMP; 4 = information gain provided a very strong rationale for the chosen type of DMP.</p>
136. RAT ACCEP	s-q	[0..4] (99)	<p>Rationale acceptance: Degree to which increased acceptance of <u>output</u> was an overall rationale for the chosen type of <u>DMP</u>.</p> <p>“Acceptance, [in this context], ranges from mere toleration despite a lack of approval up to support of and identification with a decision.” (Newig 2007: 62).</p> <p>0 = acceptance provided no rationale for the chosen type of DMP; 2 = acceptance provided a significant rationale for the chosen type of DMP; 4 = acceptance provided a very strong rationale for the chosen type of DMP.</p>
137. RAT LEGAL REQ	s-q	[0..4] (99)	<p>Rationale legal requirements: Degree to which fulfilment of legal requirements was an overall rationale for the chosen type of <u>DMP</u>.</p> <p>That is, higher order policies or laws required a certain level of participation; in the absence of these policies or laws participation would not have taken place.</p> <p>0 = fulfilment of legal requirements provided no rationale for the chosen type of DMP; 2 = fulfilment of legal requirements provided a significant rationale for the chosen type of DMP; 4 = fulfilment of legal requirements provided a very strong rationale for the chosen type of DMP.</p>
138. RAT ETHICAL DUTY	s-q	[0..4] (99)	<p>Rationale ethical duty: Degree to which the fulfilment of an ethical duty was the overall rationale for the chosen type of <u>DMP</u>.</p> <p>Ethical duty implies an individually perceived sense of obligation on the part of the initiator deriving from his/her personal values, societal position as a citizen of a democratic political community, and the social responsibilities attached to that. “These obligations include responsibility for establishing and maintaining horizontal relationships of authority with one’s fellow citizens, seeking ‘power with’ rather than ‘power over’ the citizenry” (Cooper 1984: 143).</p> <p>0 = fulfilment of ethical duty provided no rationale for the chosen type of DMP; 2 = fulfilment of ethical duty provided a significant rationale for the chosen type of DMP; 4 = fulfilment of ethical duty provided a very strong rationale for the chosen type of DMP.</p>
139. OPEN RAT	qual.	Text area	<p>Open rationale: Note any further rationale(s) for the chosen type of <u>DMP</u></p> <p>Code -99 if nothing to add.</p>

C.1.2 Process design characteristics

Process design characteristics relate to the whole DMP, that is, all process types that were employed during the decision-making process. The table on process types (PT) serves as an overview of the most important process types constituting the DMP, capturing some details on these sub-processes. In coding, the whole DMP including all its possible sub-processes should be regarded as a unity, such that every variable should be coded considering the DMP as a whole.

<p>Process type (PT): Note all of the process types that were part of the <u>DMP</u> in this case, using the author's own terminology.</p> <p>'Process type' refers here to the common types of democratic decision-making (such as administrative rule-making, parliamentary legislation, taskforces, etc.) as well as established types of participatory processes (such as public hearings, referenda, citizens' jury, negotiated rule-making, mediation, etc.). Code rather general than specific process types.</p> <p>Note: lawsuits / court procedures are defined as external to the DMP.</p> <p>If there are no sub-processes, the DMP as a whole can be coded as PT1.</p> <p>qual. / Text</p> <p>For PT2 or PT3, code -99 if not applicable.</p>	<p>Number of instances: How many times was this process type employed?</p> <p>interval</p> <p>Number</p> <p>For PT2 or PT3, code -99 if not applicable.</p>	<p>Number of meetings:</p> <p>Average number of meetings (of max. one day duration) per instance of this process type.</p> <p>interval</p> <p>Number</p> <p>For PT2 or PT3, code -99 if not applicable.</p>	<p>Number of participants:</p> <p>Average number of participants per instance (if multiple meetings per instance, then average over all meetings).</p> <p>interval</p> <p>Number</p> <p>For PT2 or PT3, code -99 if not applicable.</p>	<p>Female participants: Average share [%] of female participants.</p> <p>interval (1-100)</p> <p>Number</p> <p>For PT2 or PT3, code -99 if not applicable.</p>	<p>Professionals: Average share [%] of participants who participated as part of their professional activity.</p> <p>interval (1-100)</p> <p>Number</p> <p>For PT2 or PT3, code -99 if not applicable.</p>
140. (*) PT1 NAME	141. PT1 INSTANCES	142. PT1 MEETINGS	143. PT1 PARTICIPT	144. PT1 FEMALE	145. PT1 PROFS
146. (*) PT2 NAME	147. PT2 INSTANCES	148. PT2 MEETINGS	149. PT2 PARTICIPT	150. PT2 FEMALE	151. PT2 PROFS
152. (*) PT3 NAME	153. PT3 INSTANCES	154. PT3 MEETINGS	155. PT3 PARTICIPT	156. PT3 FEMALE	157. PT3 PROFS

158. RESOURCES s-q [0..4] (99) **Resources:** Degree to which sufficient overall resources (including money, time, staff, office space, etc.) were available to support the preferred type of DMP.
 0 = the available resources were insufficient to allow planning for the preferred process type;
 2 = the available resources were sufficient to allow planning for certain parts of the preferred process type (e.g. interviews, information leaflets, etc.);
 4 = the available resources were sufficient to allow planning for all required steps in the preferred process type (e.g. scientific assessments, travel reimbursements, etc.).

159. PROC LEEWAY s-q [0..4] (99) **Process leeway:** Degree to which the choice of how to conduct the DMP was 'voluntary' (i.e. how much leeway did the PO have in choosing a specific form of decision-making?).
 0 = no leeway, the specific type of DMP was strictly prescribed;
 2 = some process principles were required;
 4 = the PO could freely choose what form of DMP to use.

160. KNOWL STKH s-q [0..4] **Knowledge about stakeholders:** Degree to which the process organiser was familiar with the range, priorities or characteristics of stakeholders.
 0 = the PO designed the process without knowledge of who would be affected by the decision;
 2 = the PO had identified the prominent actors and stakeholders interested in the decision;
 4 = the PO had detailed knowledge about the stakeholders.
 Code -99 if there were no stakeholders.

161. PARTICIPT SELECTION	s-q	[0..4]	<p>Participant selection: Degree to which <u>participant</u> selection was designed in a controlled way and followed a specific logic.</p> <p>0 = open, whereby participants were not selected but ‘anyone’ could participate as they wished (e.g. public hearing);</p> <p>2 = open to all that fulfilled certain requirements;</p> <p>4 = closed, whereby particular participants were selected according to specific criteria (e.g. citizens jury).</p> <p>Code -99 if the process was non-participatory or if the PO had no say in participant selection.</p>
162. COMM POT	s-q	[0..4] (99)	<p>Communication potential: Degree to which the process was designed to provide for access by <u>participants</u> (excluding the CA) to all relevant information (i.e. potential flow of information in the direction of participants, in relation to the amount of information the PO had, or could easily access).</p> <p>0 = no provision for access by participants to any relevant information;</p> <p>4 = provision for access by participants to all relevant information.</p>
163. EXPERT KNOWL	s-q	[0..4]	<p>Access to expert knowledge: Degree to which the process was designed to provide <u>stakeholders</u> with access to expert knowledge (e.g. via scientific databases or invited experts, etc.). Expert knowledge is defined here as explicit, systematised, decontextualised and transferable knowledge (Reed 2008: 2425).</p> <p>0 = the process provided no access to expert knowledge;</p> <p>4 = the process provided access to all relevant knowledge.</p> <p>Code -99 if there was no expert knowledge relevant to the specific issue of decision-making.</p>
164. CONSUL POT	s-q	[0..4]	<p>Consultation potential: Degree to which the process design provided for <u>participants</u> (excluding the CA) to be able to give all the input they considered relevant.</p> <p>0 = process design made no provision for participants to give input;</p> <p>4 = process design allowed for participants to give all input they considered relevant.</p>
165. STRUC INFO ELICIT	s-q	[0..4] (99)	<p>Structured information elicitation: Degree to which the process design provided for the structured <i>elicitation</i> of information from <u>stakeholders</u>.</p> <p>Elicitation refers to the process of providing occasions and incentives for stakeholders to provide information. Elicitation methods can be interviews, questionnaires, agenda points with lead questions, etc.</p> <p>0 = process design did not provide for any structured or facilitated mode of information elicitation;</p> <p>2 = process design provided for much of the information used in the process to be elicited through structured / facilitated methods;</p> <p>4 = process design provided for the elicitation of a maximum of information from stakeholders through structured / facilitated methods.</p>
166. STRUC INFO AGGR	s-q	[0..4] (99)	<p>Structured information aggregation: Degree to which the process design provided for the structured <i>aggregation</i> of <u>stakeholder</u> input (i.e. through the use of structured / facilitated aggregation methods).</p> <p>Aggregation refers to the process of summarising, combining and prioritising information. Aggregation methods are means of defining which opinions and information become part of decisions and which do not. Examples of aggregation methods include majority vote and selective summary of letters from the public. In some cases there may be overlap between aggregation and elicitation, but each is possible independently of the other.</p> <p>0 = process design did not provide for stakeholder input to be aggregated in a structured way;</p> <p>2 = process design provided for much stakeholder input to be aggregated in a structured way;</p> <p>4 = process design provided for a maximum of stakeholder input to be aggregated in a structured way.</p>

167. DEC MODE POT	nom.	[0..6]	<p>Potential decision mode: What was the planned decision mode? With multiple sub-processes, consider the one with the (potentially) greatest contribution to shaping the output.</p> <p>0 = autocratic decision (i.e. one person or another homogenous entity decides); 1 = minority decision (i.e. a small group decides); 2 = simple majority vote; 3 = absolute majority (i.e. more than 50%); 4 = qualified majority (e.g. two thirds or three quarters); 5 = relatively broad consensus (i.e. as many as possible can accept the agreement); 6 = unanimity (i.e. every participant has the right to veto).</p> <p>Code -99 if no decision mode was set beforehand.</p>
168. DIALOGUE POT	s-q	[0..4] (99)	<p>Dialogue potential: Degree to which process design provided room for two-way information flow and direct interaction among participants and between participants and the process organisers. Dialogue implies more than just extensive communication and/or consultation but requires responsive, on-going interaction, so that the relevant information is exchanged (i.e. assumes the possibility to ask questions and respond to comments).</p> <p>0 = process design did not allow for dialogue; 2 = process design provided for a medium degree of dialogue (i.e. intense information flow between a few participants, or some information-flow between all participants); 4 = process design allowed for a high degree of dialogue.</p>
169. FACE TO FACE	s-q.	[0..4] (99)	<p>Face-to-face: Degree to which process design provided for participants to communicate in person.</p> <p>0 = process design did not provide for face-to-face communication; 4 = process design provided for face-to-face communication as far as possible.</p>
170. KNOWL INTEGR METH	s-q	[0..4]	<p>Knowledge integration methods: Degree to which process design provided for different methods for knowledge integration (e.g. participatory modelling, multi-criteria analysis). Integration of knowledge is conceived of here as the combination of different kinds of knowledge to more comprehensively inform the output.</p> <p>0 = process design did not provide for methods for knowledge integration to be utilised; 4 = process design provided for the extensive use of knowledge integration methods.</p> <p>Code -99 if only one kind of knowledge was used for decision-making.</p>
171. PWR DELEGATION	s-q	[0..4] (99)	<p>Power delegation: Degree to which the process design provided the possibility for participants (excluding the CA) to develop and determine the output. The output referred to is the one named in 243. OUP NAME.</p> <p>0 = process design did not provide for direct influence on the output by participants; 2 = process design provided for considerable influence on the output by participants; 4 = process design provided participants with full control over the output.</p>
172. ISSUE SCOPE	s-q	[0..4] (99)	<p>Issue scope: Degree to which the scope of the environmental issue was defined clearly and unambiguously (before the DMP or at the first meeting) as a basis for decision-making. The scope of the issue refers to which policy areas and aspects are part of decision-making, which causes and effects of the issue are considered part of decision-making, and consequently who the relevant stakeholders are.</p> <p>0 = the scope of the issue was not clearly defined; participants relied on their own pre-conceptions about the issue; 2 = the scope of the issue was partly defined; 4 = the scope of the issue was clearly and unambiguously defined in terms of policy areas, causes, effects, etc.</p>
173. STRICT DEADL	s-q	[0..4] (99)	<p>Strict deadline: Degree to which the DMP was subject to a strict deadline by which the decision had to be taken.</p> <p>0 = no deadline; 4 = there was a strict, unmovable deadline for the delivery of a decision.</p>
174. DEADL TIME	interv.	Number	<p>Deadline time: Note the time interval available for decision-making in days, as applicable.</p> <p>Code -99 if 173. STRICT DEADL = 0.</p>

175. ADAPTIVE PROC DESIGN	s-q	[0..4] (99)	<p>Adaptive process design: Degree to which the process was designed to be flexible and adaptive to changing conditions, experiences and learning.</p> <p>0 = the process design was inflexible; 2 = the process design could be adapted for specific requirements; 4 = the process design could be freely adapted according to arising needs and demands.</p>
176. PARTICIPT DESIGN	s-q	[0..4]	<p>Participant design: Degree to which participants (excluding the CA) were involved in designing the DMP (i.e. the variables in this section C.I.).</p> <p>0 = participants were not involved in designing the process; 2 = participants had some influence on the process design (e.g. invitation of expert witnesses); 4 = the process was fully designed by the participants (e.g. participants could decide who to include, what kind of participatory process to conduct, how to communicate, how to decide, etc.).</p> <p>Code -99 if 159. PROC LEEWAY = 0.</p>

C.II ACTUAL PROCESS

C.II.1 Role of the competent authority

177. NAME CA	qual.	Text	<p>(*) Name of competent authority: The authority that has legal responsibility for the issue and is therefore responsible for the DMP. Code the most important authority or group of authorities.</p> <p>Code -99 if there was no CA.</p>
178. CA INTR	bin.	[0/1]	<p>Competent authority initiator: Was the CA the (main) initiator of the process?</p> <p>0 = no; 1 = yes.</p> <p>Code -99 if there was no CA.</p>
179. CA GOAL CONS	s-q	[-4..4]	<p>Competent authority goal conservation: Degree to which the CA, as specified in 177. NAME CA, pursued a conservation goal in relation to the DMP, i.e. only code the position towards the DMP issue, not general goals.</p> <p>If 178. CA INTR = 1, then this variable must be equal to 125. INTR GOAL CONS.</p> <p>-4 = CA pursued a goal highly incompatible with, or antagonistic to, conservation; -2 = CA pursued a goal moderately incompatible with, or antagonistic to, conservation; 0 = CA pursued a goal neutral to conservation; 2 = CA pursued a goal moderately compatible with conservation; 4 = CA pursued a goal highly compatible with conservation.</p> <p>Code -99 if there was no CA.</p>
180. CA GOAL HEALTH	s-q	[-4..4]	<p>Competent authority goal human health: Degree to which the CA, as specified in 177. NAME CA, pursued a human health protection goal in relation to the DMP, i.e. only code the position towards the DMP issue, not general goals.</p> <p>If 178. CA INTR = 1, then this variable must be equal to 126. INTR GOAL HEALTH.</p> <p>-4 = CA pursued a goal highly incompatible with, or antagonistic to, human health; -2 = CA pursued a goal moderately incompatible with, or antagonistic to, human health; 0 = CA pursued a goal neutral to human health; 2 = CA pursued a goal moderately compatible with human health; 4 = CA pursued a goal highly compatible with human health.</p> <p>Code -99 if there was no CA.</p>

181. CA GOAL NRP	s-q	[-4..4]	<p>Competent authority goal natural resource protection: Degree to which the <u>CA</u>, as specified in 177. NAME CA, pursued a <u>natural resource protection</u> goal in relation to the DMP, i.e. only code the position towards the DMP issue, not general goals.</p> <p>If 178. CA INTR = 1, then this variable must be equal to 127. INTR GOAL NRP.</p> <p>-4 = CA pursued a goal highly incompatible with, or antagonistic to, NRP; -2 = CA pursued a goal moderately incompatible with, or antagonistic to, NRP; 0 = CA pursued a goal neutral to NRP; 2 = CA pursued a goal moderately compatible with NRP; 4 = CA pursued a goal highly compatible with NRP.</p> <p>Code -99 if there was no CA.</p>
182. CA NEUTRALITY	s-q	[0..4]	<p>Competent authority neutrality: Degree to which the <u>CA</u> remained neutral in the <u>DMP</u>.</p> <p>0 = CA was highly partial and pursued its own specific interest; 4 = CA remained entirely neutral.</p> <p>Code -99 if the CA was not directly involved in the process, or if there was no CA.</p>
183. CA PROC LEAD	bin.	[0/1]	<p>Competent authority process leadership: Was the <u>CA</u> the leader (in a participatory setting, e.g. chair, moderator, facilitator) of the <u>DMP</u> (or substantive parts thereof)?</p> <p>0 = CA did not lead the process; 1 = CA did lead the process.</p> <p>Code -99 if the CA was not directly involved in the process, or if there was no CA.</p>
184. COMMITMENT CA	s-q	[0..4]	<p>Commitment competent authority: Degree to which the <u>CA</u> was committed to (maintaining) the <u>DMP</u>.</p> <p>“Commitment involves support [of the CA] at all levels for the objectives of the process, stated at the outset and updated periodically as the participation process and the context evolve. It implies clarifying how and by whom the outputs will be used, and a commitment to open-minded consideration of those outputs” (Dietz & Stern 2008: 4-4).</p> <p>0 = no (or very low level of) CA commitment to the process; 2 = medium level of CA commitment to the process; 4 = high level of CA commitment to the process.</p> <p>Code -99 if there was no CA.</p>

C.II.2 Actor characteristics

Code variables 185 - 220 in relation to the participants in the DMP. If the DMP was non-participatory, but influence was exerted by other non-state actors, influence variables (INFL) may be coded in relation to these other actors.

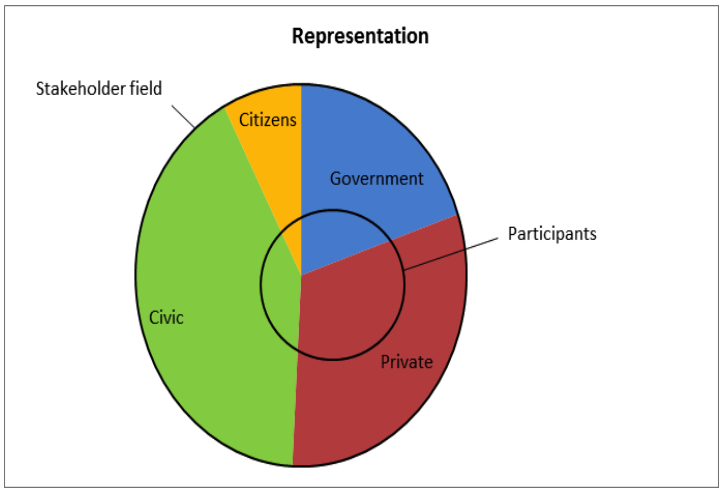
For coding the following actor table reconsider step one outlined above for the stakeholder table. The second step again requires assigning a code to each segment. In this step, the variables of **Influence** and **Representation** are coded according to different procedures.

The procedure for **Influence** follows the usual procedure described above for the stakeholder table: In aggregating the characteristics of the different actors comprising a segment consider the actor with the highest value in this segment and assign this value to the whole segment; there should be no averaging out across different actors of the segment. Also, if an actor is assigned to different segments due to a mixed position towards the environment, its characteristics shall not be split between the segments but count fully in each.

While these guidelines are true for the **Influence** variables, **Representation** is an exception. **Representation** variables assess the degree to which the composition of participants in the process mirrors the interest constellation in the public. The degree to which a particular segment of participants is representative of a corresponding segment of stakeholders is coded in relation to (a) the degree to which the participant segment is *proportionally representative* of the corresponding stakeholder segment, and (b) the degree to which participants are *accepted* by their constituency as representatives.

It is important to note that with **Representation**, the aggregation of actors in one segment does *not* follow the maximum rule, but rather it should be averaged out across different actors of one segment.

The reference point for coding the representation of participants is the segment with the highest representation, which is assigned a relatively high value. All others are coded in relation to this segment, meaning that the other segments can only be equally- or under-represented. Overrepresentation is not possible here.



The diagram provides a simplified illustration of this coding procedure. The outer circle encompasses the whole stakeholder field, while the inner shows the participants. Here, it becomes obvious that the group with the highest representation is the private sector, which may therefore be considered as the reference point for the other segments and assigned a high code. The government sector also appears to be well represented and may therefore also be given a high code. But, in relation to the reference segment of the private sector, the civic sector and citizens are certainly less well represented and may thus be assigned lower codes.

The tables below illustrate the coding procedures for the variables of this table:

Societal sector	Government Sector	Private Sector	Civic Sector	Citizens
Position towards Environment				
Pro-Conservation			E Representation: 3 Influence: 1	
Pro-Human Health	A Representation: 3 Influence: 3			F Representation: 4 Influence: 2
Pro-Natural resource protection		B Repr: 3 Influ: 1	E Representation: 1 Influence: 1	
Pro-Exploitation		D Repr: 1 Influ: 4	C Repr: 1 Influ: 2	



Societal sector	Government Sector	Private Sector	Civic Sector	Citizens
Position towards Environment				
Pro-Conservation			Representation: 3 Influence: 1	
Pro-Human Health	Representation: 3 Influence: 3			Representation: 4 Influence: 2
Pro-Natural resource protection	Representation: 3 Influence: 3	Representation: 2 Influence: 2	Representation: 1 Influence: 1	
Pro-Exploitation		Representation: 1 Influence: 4		

<i>Societal sector</i> <i>Position towards environment</i>	<u>Government sector</u>	<u>Private sector for profit</u>	<u>Civic sector (non-profit)</u>	<u>Citizens</u>
TOTAL NUMBER interv. (-99)	185. GOVT TOTAL Total number government sector: Total number of <u>government agencies/ organisations</u> that took part in the DMP, either due to a participatory process design, or on their own initiative.	186. PRIV TOTAL Total number private sector: Total number of <u>private sector organisations</u> that took part in the DMP, either due to a participatory process design, or on their own initiative.	187. CIV TOTAL Total number civic sector: Total number of <u>civic sector organisations</u> that took part in the DMP, either due to a participatory process design, or on their own initiative.	188. CIT TOTAL Total number citizens: Total number of <u>citizens</u> that took part in the DMP, either due to a participatory process design, or on their own initiative.
Pro-Conservation REPRESENTATION s-q [0...4] (-99)	189. REPR GOVT PROCONS Representation government sector pro-conservation: <u>Representation</u> refers to the extent to which the composition of <u>participants</u> in the process mirrors the interest constellation in the public. Full representation is reached when there are a sufficient number of representatives and when those representatives are fully accepted as such by their constituencies. 0 = stakeholder group is not represented at all; 2 = stakeholder group is quantitatively underrepresented by accepted representatives; or representatives are sufficient in number but not accepted by their stakeholder group; 4 = stakeholder group is perfectly represented in terms of number and acceptance of representatives.	190. REPR PRIV PROCONS Representation private sector pro-conservation: <u>Representation</u> refers to the extent to which the composition of <u>participants</u> in the process mirrors the interest constellation in the public. Full representation is reached when there are a sufficient number of representatives and when those representatives are fully accepted as such by their constituencies. 0 = stakeholder group is not represented at all; 2 = stakeholder group is quantitatively underrepresented by accepted representatives; or representatives are sufficient in number but not accepted by their stakeholder group; 4 = stakeholder group is perfectly represented in terms of number and acceptance of representatives.	191. REPR CIV PROCONS Representation civic sector pro-conservation: <u>Representation</u> refers to the extent to which the composition of <u>participants</u> in the process mirrors the interest constellation in the public. Full representation is reached when there are a sufficient number of representatives and when those representatives are fully accepted as such by their constituencies. 0 = stakeholder group is not represented at all; 2 = stakeholder group is quantitatively underrepresented by accepted representatives; or representatives are sufficient in number but not accepted by their stakeholder group; 4 = stakeholder group is perfectly represented in terms of number and acceptance of representatives.	192. REPR CIT PROCONS Representation citizens pro-conservation: <u>Representation</u> refers to the extent to which the composition of <u>participants</u> in the process mirrors the interest constellation in the public. Full representation is reached when there are a sufficient number of representatives and when those representatives are fully accepted as such by their constituencies. 0 = stakeholder group is not represented at all; 2 = stakeholder group is quantitatively underrepresented by accepted representatives; or representatives are sufficient in number but not accepted by their stakeholder group; 4 = stakeholder group is perfectly represented in terms of number and acceptance of representatives.
Pro-human health REPRESENTATION s-q [0..4] (-99)	193. REPR GOVT PROHEALTH Representation government sector pro-human health: See above for description.	194. REPR PRIV PRO-HEALTH Representation private sector pro-human health: See above for description.	195. REPR CIV PROHEALTH Representation civic sector pro-human health: See above for description.	196. REPR CIT PROHEALTH Representation citizens pro-human health: See above for description.
Pro-natural resource protection REPRESENTATION s-q [0...4] (-99)	197. REPR GOVT PRONRP Representation government sector pro-natural resource protection: See above for description.	198. REPR PRIV PRONRP Representation private sector pro-natural resource protection: See above for description.	199. RERP CIV PRONRP Representation civic sector pro-natural resource protection: See above for description.	200. REPR CIT PRONRP Representation citizens pro-natural resource protection: See above for description.
Pro-exploitation REPRESENTATION s-q [0...4] (-99)	201. REPR GOVT PROEXPL Representation government sector pro-exploitation: See above for description.	202. REPR PRIV PROEXPL Representation private sector pro-exploitation: See above for description.	203. REPR CIV PROEXPL Representation civic sector pro-exploitation: See above for description.	204. REPR CIT PROEXPL Representation citizens pro-exploitation: See above for description.
Pro-Conservation INFLUENCE s-q [0...4] (-99)	205. INFL GOVT PROCONS Influence government sector pro-conservation: Degree to which the members of this stakeholder group developed and determined the <u>output</u> . 0 = no influence on the output; 4 = full control over the output.	206. INFL PRIV PROCONS Influence private sector pro-conservation: Degree to which the members of this stakeholder group developed and determined the <u>output</u> . 0 = no influence on the output; 4 = full control over the output.	207. INFL CIV PROCONS Influence civic sector pro-conservation: Degree to which the members of this stakeholder group developed and determined the <u>output</u> . 0 = no influence on the output; 4 = full control over the output.	208. INFL CIT PROCONS Influence citizens pro-conservation: Degree to which the members of this stakeholder group developed and determined the <u>output</u> . 0 = no influence on the output; 4 = full control over the output.

Pro-human health INFLUENCE [0..4] (-99)	s-q	209. INFL GOVT PROHEALTH Influence government sector pro-human health: See above for description.	210. INFL PRIV PRO-HEALTH Influence private sector pro-human health: See above for description.	211. INFL CIV PROHEALTH Influence civic sector pro-human health: See above for description.	212. INFL CIT PROHEALTH Influence citizens pro-human health: See above for description.
Pro-natural resource protection INFLUENCE q [0...4] (-99)	s-	213. INFL GOVT PRONRP Influence government sector pro-natural resource protection: See above for description.	214. INFL PRIV PRONRP Influence private sector pro-natural resource protection: See above for description.	215. INFL CIV PRONRP Influence civic sector pro-natural resource protection: See above for description.	216. INFL CIT PRONRP Influence citizens pro-natural resource protection: See above for description.
Pro-exploitation INFLUENCE q [0...4] (-99)	s-	217. INFL GOVT PROEXPL Influence government sector pro-exploitation: See above for description.	218. INFL PRIV PROEXPL Influence private sector pro-exploitation: See above for description.	219. INFL CIV PROEXPL Influence civic sector pro-exploitation: See above for description.	220. INFL CIT PROEXPL Influence citizens pro-exploitation: See above for description.

221. OPINION LEADERS s-q [0..4] **Opinion leaders:** Degree to which important opinion leaders were involved in the DMP. "Opinion leadership is the degree to which an individual is able to influence other individuals' attitudes or overt behaviour informally in a desired way with relative frequency. This informal leadership is not a function of the individual's formal position or status in the system. Opinion leadership is earned and maintained by the individual's technical competence, social accessibility, and conformity to the system's norms" (Rogers 1995: 26).
0 = no important opinion leaders were involved in the DMP;
1..3 = some important opinion leaders were involved;
4 = all important opinion leaders were involved.
Code -99 if the DMP was not participatory.

222. POL ADDR s-q [0..4] **Policy addressees:** Degree to which those potentially responsible for implementing the output participated in the decision-making process.
0 = none of the policy addressees participated or were represented in the DMP;
4 = all policy addressees or their representatives participated in the DMP.
Code -99 if there were no policy addressees.

223. SCIENT PROC ADV s-q [0..4] (99) **Scientific process advice:** Degree to which scientific process expertise informed the process (either by external advisors or process organisers).
0 = no researchers were involved in the DMP as process advisors;
4 = the DMP was designed and steered by scientific advisors.

224. FACILITATION s-q [0..4] (99) **Facilitation:** Degree to which the process was characterised by skilled facilitation. A facilitator is a specialist who helps people design effective meetings and problem-solving sessions, and acts as the meeting leader on behalf of the group. A facilitator does not have the authority to make substantive decisions, but may have a say in how the meeting is run, and will consult with the group about major process decisions, such as a significant change in agenda or meeting procedures (adapted from Creighton 1998). Skilled facilitation consists of the following elements:

- Assistance with designing meetings;
- Helping to keep meetings on track;
- Clarifying and accepting communication and feelings;
- Stating problems in a constructive way;
- Suggesting appropriate procedures or problem-solving approaches;
- Summarising and clarifying direction;
- Consensus-testing
- Managing power imbalances between participants.

0 = process did not have any of the elements of skilled facilitation;
2 = process had a number elements of skilled facilitation;
4 = process had all elements of skilled facilitation.

225. SHARED CULT	s-q	[0..4]	<p>Shared culture: Degree to which the <u>participants</u> shared the same issue-specific cultural background.</p> <p>0 = the participants had a very low level of cultural commonality; 2 = the participants had a medium level of cultural commonality; 4 = all participants shared a common culture concerning the issue at hand.</p> <p>Code -99 if the DMP was not participatory.</p>
226. VENUE SHOP STKH	s-q	[0..4] (99)	<p>Venue shopping stakeholders: Degree to which <u>stakeholders</u> 'venue shop'.</p> <p>The term policy venue refers to institutional locations where authoritative decisions are made concerning a given issue (Baumgartner & Jones 1993: 32). Venue shopping describes the activities of <u>stakeholders</u> seeking access to alternative venues to influence the process (Weible 2006: 101).</p> <p>0 = stakeholders do not engage in venue shopping; 2 = stakeholders engage in venue shopping to a moderate degree (i.e. some stakeholders concentrate on access to alternative venues, or a significant share of stakeholders also consider alternative venues); 4 = all of the stakeholders engage in alternative venues to influence the decision.</p>
227. VENUE SHOP ENGOS	s-q	[0..4]	<p>Venue shopping pro-environmental actors: Degree to which pro-environmental actors (typically, but not limited to, NGOs) 'venue shop'.</p> <p>The term policy venue refers to institutional locations where authoritative decisions are made concerning a given issue (Baumgartner & Jones 1993: 32). Venue shopping describes the activities of <u>stakeholders</u> seeking access to alternative venues where they might have a competitive advantage (Weible 2006: 101).</p> <p>0 = Pro-environmental actors do not engage in venue shopping; 2 = Pro-environmental actors also consider alternative venues; 4 = Pro-environmental actors engage frequently and pivotally in alternative venues.</p> <p>Code -99 if there are no pro-environmental stakeholders.</p>
C.II.3 Process characteristics			
228. PROC ADAP	s-q	[0..4] (99)	<p>Process adaptations: Degree to which the <u>DMP</u> design was changed or adapted in the course of the process.</p> <p>0 = there was no change during the process; 2 = considerable adaptations were made during the process; 4 = the DMP was completely reorganised.</p>
229. COMM ACT	s-q	[0..4] (99)	<p>Actual communication: Degree to which <u>participants</u> (excluding the CA) received all relevant information (i.e. actual flow of information in the direction of participants), in relation to the amount of information the <u>PQ</u> had or could easily access.</p> <p>0 = no provision for access by participants to any relevant information; 4 = provision made for access by participants to all relevant information.</p>
230. CONSUL ACT	s-q	[0..4] (99)	<p>Actual consultation: Degree to which <u>participants</u> (excluding the CA) gave all the input they considered relevant.</p> <p>0 = participants did not give any input; 4 = participants gave all the input they considered relevant.</p>
231. DIALOGUE ACT	s-q	[0..4] (99)	<p>Actual dialogue: Degree to which a two-way information flow and direct interaction among <u>participants</u> and between participants and the <u>process organisers</u> took place. Dialogue implies more than just extensive <u>communication</u> and/or <u>consultation</u> but requires responsive on-going interaction, so that the relevant information is exchanged (i.e. assumes the possibility to ask questions and respond to comments).</p> <p>0 = the process did not allow for dialogue; 2 = the process allowed for a medium degree of dialogue (i.e. intense information flow between few participants or some information flow between all participants); 4 = the process allowed for a high degree of dialogue.</p>

232. INFL ACT	s-q	[0..4] (99)	<p>Influence actual: Degree to which the <u>participants</u> (excluding the CA) actually developed and determined the <u>output</u>. The output referred to is the one named in 243. OUP NAME.</p> <p>0 = participants did not directly influence the output; 2 = participants considerably influenced the output; 4 = participants fully determined the output.</p>
233. DELIB	s-q	[0..4] (99)	<p>Deliberation: Degree to which deliberation in the sense of a 'rational' discourse among <u>participants</u> took place.</p> <p>The notion of deliberation refers to a process of interaction, exchange and mutual learning preceding any group decision. During this process, participants disclose their respective (relevant) values and preferences, avoiding hidden agendas and strategic game playing. Agreements are based on rational arguments, and principles such as laws of formal logic and analytical reasoning (Renn 2004: 303; Fung 2006: 68).</p> <p>0 = no deliberation took place; 2 = some deliberation with limited impact took place; 4 = the DMP was characterised by steady deliberation among participants.</p>
234. DEC MODE ACT	nom.	[0..6]	<p>Actual decision mode: Mode by which the <u>output</u> was decided upon. With multiple sub-processes, consider the one with the greatest contribution to shaping the output.</p> <p>0 = autocratic decision (i.e. one person or another homogenous entity decides); 1 = minority decision (i.e. a small group decides); 2 = simple majority vote; 3 = absolute majority (i.e. more than 50%); 4 = qualified majority (e.g. two thirds or three quarters); 5 = relatively broad consensus (i.e. as many as possible can accept the agreement); 6 = unanimity (i.e. every participant has the right to veto).</p> <p>Code -99 if no decision was taken.</p> <p>Analogous to 167. DEC MODE POT.</p>
235. DISC FAIR	s-q	[0..4] (99)	<p>Discursive fairness: Degree to which the <u>DMP</u> was executed through a process of fair discourse.</p> <p>Indicators include: all <u>participants</u> must be able to attend, make statements, participate in the discussion, and participate in the decision-making (Webler & Tuler 2000: 569).</p> <p>0 = DMP was not discursively fair, but highly discriminatory; 2 = DMP afforded participants limited opportunity to engage in fair discourse; 4 = DMP was characterised by fair discourse.</p>
236. GROUP DYSF	s-q	[0..4] (99)	<p>Group dysfunction: Degree to which there were dysfunctional group dynamics.</p> <p>Group dysfunction refers to situations where internal group dynamics eliminate discursive principles based on reason and argument and lead to unfavourable transformations of the <u>participants</u>' attitudes and behaviour. Common types of group dysfunction are risky shift, Abilene paradox and group think (explained below) (Cooke 2001: 106 ff.).</p> <p><i>Risky shift:</i> Refers to a situation in which a group discussion leads its members to take more risky decisions than they would otherwise have taken as individuals (Cooke 2001: 106 ff.).</p> <p><i>Abilene paradox:</i> In collective decision making processes group members may agree to a certain action because everyone else is in favour of this action. An Abilene paradox arises where all group members agree against their genuine will because all others seem to be in favour, leading an organisation or group to act in contradiction to its own objectives (Cooke 2001: 109).</p> <p><i>Group think:</i> May occur in situations where an 'ingroup' versus 'outgroup' mentality prevails. In the context of a collective decision making process, group think may result in irrational and dehumanising reactions to the views of outgroups. The more amiability and esprit de corps there is among the ingroup, the greater the danger of group think replacing independent critical thinking (Cooke 2001: 112).</p> <p>0 = no dysfunctional group dynamics; 4 = DMP characterised by dysfunctional group dynamics.</p>
237. EXPERT SELECTION PARTICIPT	s-q	[0..4] (99)	<p>Expert selection participants: Degree to which <u>participants</u> (excluding the CA) drew on expertise from sources that they could independently choose.</p> <p>0 = participants did not draw on expertise from independently selected sources; 4 = participants chose independently which sources of expertise to draw on.</p>

238. COMPR INFO	s-q	[0..4]	<p>Comprehensible information for lay public: Degree to which information was processed in the DMP in a way that enabled all participants to understand and use it equally.</p> <p>0 = information was not processed for special needs of participants;</p> <p>2 = information was processed, so that all participants could understand some of it;</p> <p>4 = information was processed in a way that enabled all participants to understand everything;</p> <p>Code -99 if participants had no special information needs or if the DMP was not participatory.</p>
239. TIME NEED	interv. [h]	Number	<p>Time need: Average number of hours each participant spent in meetings and preparations <i>in total</i>, regarding the whole participatory process.</p> <p>Code -99 if there was no participatory process.</p>
240. PP DURATION	interv. [Mont hs]	Number	<p>Participatory process duration: If a participatory process was conducted, note the number of months (with decimal place) that the process lasted from first to final event.</p> <p>Code -99 if there was no participatory process.</p>
241. REIMBURSEMENT	s-q	[0..4]	<p>Reimbursement: Degree to which financial, material or immaterial compensation was offered to participants for their efforts to engage in the DMP.</p> <p>0 = no reimbursement was offered to participants;</p> <p>4 = full reimbursement was offered to participants.</p> <p>Code -99 if there were no participants that needed reimbursement.</p>
242. EXT TRANSP	s-q	[0..4]	<p>External transparency: Degree to which the process was transparent to third parties, including constituencies, and the general public.</p> <p>Transparency here refers to <i>the degree to which</i> information about the process was accessible, <i>how</i> it was accessible (e.g. in its original version, filtered), <i>when</i> information was accessible (e.g. immediately, after processing, after the process) and <i>to whom</i> (e.g. journalists, the public).</p> <p>0 = no information was made public;</p> <p>1..3 = only selected information was made public; and/or only selected people had access to the information; and/or information provision was delayed; and/or information was first filtered;</p> <p>4 = all information was made public immediately in accessible and unfiltered form.</p>

D. RESULTS

D.I SUBSTANTIVE OUTPUT

The *output* of a public decision-making process presents the developed ‘solution’ to the issue and usually consists of a single decision (e.g. to build or not to build a power plant), or a plan (e.g. the designation of a natural park and specific steps for its management).

This section of the Code Book is concerned with capturing information about the output. Therefore, the variables in D.I only refer to the characteristics of the output.

For example, for coding the variable 267. OUTP INFO GAIN, only information *that was used* for formulating the output should be considered. That means that information that was disregarded in the output is not coded in the variables in D.I (such information would be coded in D.II).

Code all variables in this section -99 if there was no output.

For each case the ‘final decision’ discussed in the text(s) will be identified as the output. Final decision is defined as the most legally binding output described in the text(s), excluding subsequent changes through litigation. The caveat being that sufficient information must be available for coding this final decision.

D.I.1 Environmental and sustainability-related output

Here, a threefold approach is adopted to assessing environmental **outputs** (like that adopted for assessing impacts below) in order to make them comparable across cases, building on concepts developed by Mitchell (2008). In variables 253 - 261 the output is assessed against: First, the goals of the process initiator; second, the goals of any higher order policy of relevance to the issue; third, implied change from the ‘business as usual’ scenario towards either a hypothetical ‘optimal’ condition or a worst case scenario.

	Output	Impact
Goal attainment	<i>Initiator goal</i>	<i>Output goal (= OUTPUT OPTIMUM)</i>
Higher order policy	<i>Higher order policy goal</i>	<i>Higher order policy goal</i>
Collective optimum	<i>Planned improvement [or tolerated deterioration] of environmental conditions, moving from the ‘business as usual’ scenario (projected trend) towards a hypothetical ‘optimal’ condition [or towards a hypothetical ‘worst case’ condition]</i>	<p>a) actual impact can already be determined (because implementation is - almost - complete): <i>actual improvement of environmental conditions, moving from the counterfactual ‘business as usual’ scenario towards a hypothetical ‘optimal’ condition</i></p> <p>b) actual impact cannot yet be determined (because implementation is not sufficiently under way), but likely impact can be assessed from case data: <i>likely improvement of environmental conditions, moving from the ‘business as usual’ scenario (projected trend) towards a hypothetical ‘optimal’ condition.</i></p>

Table: Normative standard (*in Italics*) against which output and impact are evaluated.

243. OUTP NAME	qual.	Text	<p>(*) Output name: Note the name of the <u>output</u> or describe it such that it is clear for all coders which output (if multiple exist) is meant.</p> <p>If multiple subsequent decisions exist, take the most collectively binding one, without taking into account court action. This implies that the final output is not necessarily identical to a decision made in a public <u>participatory process</u>. If there is insufficient information available on this most collectively binding decision, and another (perhaps less binding) decision exists on which more information is available, the latter may be defined as the output.</p> <p>Code -99 if there was no output.</p>
244. OUTP BINDINGNESS	s-q	[0..2]	<p>Output bindingness: Degree to which the <u>output</u> was legally binding.</p> <p>0 = the output did not have any binding character but was a mere recommendation; 1 = the output had some degree of legal bindingness (e.g. government guideline); 2 = the output was legally binding.</p> <p>Code -99 if there was no output.</p>

245. OUTP DESCR	qual.	Text area	<p>Output description environmental: Concisely describe the <i>environmental output(s)</i>: The goal(s), how to achieve them (e.g. measures, monitoring provisions), etc.</p> <p>The focus on environmental outputs means that only those aspects of the output that have a positive or negative effect on the environment are relevant here, independently of social or other aspects.</p> <p>Please note if there was a trade-off in environmental quality within one of the three dimensions (conservation, human health and natural resource protection).</p>
246. OUTP END OF PIPE	bin.	[0/1]	<p>Output end-of-pipe: Did the <u>output</u> include ‘end-of-pipe’ measures (i.e. measures that deal with the symptoms rather than with the causes of environmental issues)?</p> <p>0 = the output included no end-of-pipe measures; 1 = the output included end-of-pipe measures.</p> <p>Code -99 if there was no output.</p>
247. OUTP TECHNOL	bin.	[0/1]	<p>Output technologically innovative: Did the <u>output</u> involve early adoption of innovative technologies?</p> <p>0 = no; 1 = yes.</p> <p>Code -99 if there was no output.</p>
248. OUTP AWAR	bin.	[0/1]	<p>Output awareness-raising: Did the <u>output</u> include measures to raise awareness and build capacity (education, training, information, etc.)?</p> <p>0 = no; 1 = yes.</p> <p>Code -99 if there was no output.</p>
249. OUTP ECON	bin.	[0/1]	<p>Output economic measures: Did the <u>output</u> include general (i.e. not just directed at a particular addressee) economic or financial measures (e.g. taxes or charges)?</p> <p>0 = no; 1 = yes.</p> <p>Code -99 if there was no output.</p>
250. OUTP COMMAND	bin.	[0/1]	<p>Output command and control measures: Did the <u>output</u> include command and control measures such as requirements and prohibitions (e.g. threshold values for pollutants)?</p> <p>0 = no; 1 = yes.</p> <p>Code -99 if there was no output.</p>
251. OUTP REORG	bin.	[0/1]	<p>Output reorganisation of competencies: Did the <u>output</u> include a reorganisation of administrative competencies (e.g. shifting of responsibilities such as devolution, re-scaling of government entities to fit natural scales, integration of different policy areas in a new agency, etc.)?</p> <p>0 = no; 1 = yes.</p> <p>Code -99 if there was no output.</p>
252. OUTP NEW INST	bin.	[0/1]	<p>Output new institutions: Did the <u>output</u> include the formation of new governance <u>institutions</u> such as networks or participatory procedures?</p> <p>0 = no; 1 = yes.</p> <p>Code -99 if there was no output.</p>

253. OUTP PROC GOAL ATTAIN CONS	s-q	[-4..4]	<p>Output process goal attainment conservation: Degree to which the goals and implications of the <u>output</u> were consistent with the environmental <u>conservation</u> goals of the <u>process initiator</u> at the beginning of the <u>DMP</u>. Code in relation to 125. INITR GOAL CONS.</p> <p>If a trade-off occurred between two or more conservation goals, note this in the annotations and code the net output goal.</p> <p>-4 = the conservation goal of the output was significantly inferior to the initiator conservation goal; 0 = the conservation goal of the output was consistent with the initiator conservation goal; 4 = the conservation goal of the output was significantly superior to the initiator conservation goal.</p> <p>Code -99 if there was no output.</p>
254. OUTP PROC GOAL ATTAIN HEALTH	s-q	[-4..4]	<p>Output process goal attainment human health: Degree to which the goals and implications of the <u>output</u> were consistent with the <u>human health</u> goals of the <u>process initiator</u> at the beginning of the <u>DMP</u>. Code in relation to 126. INITR GOAL HEALTH.</p> <p>If a trade-off occurred between two or more human health goals, note this in the annotations and code the net output goal.</p> <p>-4 = the human health goal of the output was significantly inferior to the initiator human health goal; 0 = the human health goal of the output was consistent with the initiator human health goal; 4 = the human health goal of the output was significantly superior to the initiator human health goal.</p> <p>Code -99 if there was no output.</p>
255. OUTP PROC GOAL ATTAIN NRP	s-q	[-4..4]	<p>Output process goal attainment natural resource protection: Degree to which the goals and implications of the <u>output</u> were consistent with the <u>natural resource protection</u> goals of the <u>process initiator</u> at the beginning of the <u>DMP</u>. Code in relation to 127. INITR GOAL NRP.</p> <p>If a trade-off occurred between two or more natural resource protection goals, note this in the annotations and code the net output goal.</p> <p>-4 = the NRP goal of the output was significantly inferior to the initiator NRP goal; 0 = the NRP goal of the output was consistent with the initiator NRP goal; 4 = the NRP goal of the output was significantly superior to the initiator NRP goal.</p> <p>Code -99 if there was no output.</p>
256. OUTP POL CONS	s-q	[-4..4]	<p>Output higher order policy conservation: Degree to which environmental <u>outputs</u> were consistent with the environmental <u>conservation</u> goal of a higher-order policy of relevance to the issue. Code in relation to 43. POL GOAL CONS.</p> <p>-4 = the conservation goal of the output was significantly inferior to the conservation goal of the higher order policy; 0 = the conservation goal of the output was consistent with the conservation goal of the higher order policy; 4 = the conservation goal of the output was significantly superior to the conservation goal of the higher order policy.</p> <p>Code -99 if there was no higher order policy to be implemented.</p>
257. OUTP POL HEALTH	s-q	[-4..4]	<p>Output higher order policy human health: Degree to which environmental <u>outputs</u> were consistent with the <u>human health</u> goal of a higher-order policy of relevance to the issue. Code in relation to 44. POL GOAL HEALTH.</p> <p>-4 = the human health goal of the output was significantly inferior to the human health goal of the higher order policy; 0 = the human health goal of the output was consistent with the human health goal of the higher order policy; 4 = the human health goal of the output was significantly superior to the human health goal of the higher order policy.</p> <p>Code -99 if there was no higher order policy to be implemented.</p>

258. OUTP POL NRP	s-q	[-4..4]	<p>Output higher order policy natural resource protection: Degree to which environmental <u>outputs</u> were consistent with the <u>natural resource protection</u> goal of a higher-order policy of relevance to the issue. Code in relation to 45. POL GOAL NRP.</p> <p>-4 = the NRP goal of the output was significantly inferior to the NRP goal of the higher order policy;</p> <p>0 = the NRP goal of the output was consistent with the NRP goal of the higher order policy;</p> <p>4 = the NRP goal of the output was significantly superior to the NRP goal of the higher order policy.</p> <p>Code -99 if there was no higher order policy to be implemented.</p>
259. OUTP OPTIMUM CONS	s-q	[-4..4]	<p>Output optimum conservation: Degree to which the environmental <u>output</u> aimed at an improvement (or tolerated a deterioration) of environmental conditions in terms of <u>conservation</u>. This is to be assessed moving from the 'business as usual' scenario (projected trend) towards a hypothetical 'optimal' (or 'worst case') condition.</p> <p>A collective 'optimum' is defined as "one that accomplishes ... all that can be accomplished - given the state of knowledge at the time" (Underdal 2002, p. 8).</p> <p>-4 = the output implied a deterioration in environmental conditions from the business as usual scenario to a hypothetical 'worst case';</p> <p>0 = the output implied no improvement in environmental conditions compared to the business as usual scenario;</p> <p>2 = the output implied an improvement in environmental conditions halfway between the business as usual scenario and hypothetical 'optimum';</p> <p>4 = the output implied an improvement in environmental conditions equal to a hypothetical 'optimum'.</p> <p>Code -99 if there was no output.</p>
260. OUTP OPTIMUM HEALTH	s-q	[-4..4]	<p>Output optimum human health: Degree to which the environmental <u>output</u> aimed at an improvement (or tolerated a deterioration) of environmental conditions in terms of <u>human health</u>. This is to be assessed moving from the 'business as usual' scenario (projected trend) towards a hypothetical 'optimal' (or 'worst case') condition.</p> <p>A collective 'optimum' is defined as "one that accomplishes ... all that can be accomplished - given the state of knowledge at the time" (Underdal 2002: 8).</p> <p>-4 = the output implied a deterioration in environmental conditions from the business as usual scenario to a hypothetical 'worst case';</p> <p>0 = the output implied no improvement in environmental conditions compared to the business as usual scenario;</p> <p>2 = the output implied an improvement in environmental conditions halfway between the business as usual scenario and hypothetical 'optimum';</p> <p>4 = the output implied an improvement in environmental conditions equal to a hypothetical 'optimum'.</p> <p>Code -99 if there was no output.</p>
261. OUTP OPTIMUM NRP	s-q	[-4..4]	<p>Output optimum natural resource protection: Degree to which the environmental <u>output</u> aimed at an improvement (or tolerated a deterioration) of environmental conditions in terms of <u>natural resource protection</u>. This is to be assessed moving from the 'business as usual' scenario (projected trend) towards a hypothetical 'optimal' (or 'worst case') condition.</p> <p>A collective 'optimum' is defined as "one that accomplishes ... all that can be accomplished - given the state of knowledge at the time" (Underdal 2002: 8).</p> <p>-4 = the output implies a deterioration in environmental conditions from the business as usual scenario to a hypothetical 'worst case';</p> <p>0 = the output implies no improvement in environmental conditions compared to the business as usual scenario;</p> <p>2 = the output implies an improvement in environmental conditions halfway between the business as usual scenario and hypothetical 'optimum';</p> <p>4 = the output implies an improvement in environmental conditions equal to a hypothetical 'optimum'.</p> <p>Code -99 if there was no output.</p>

262. OUTP IMPLEMENTABILITY	s-q	[0..4]	<p>Output implementability: Degree to which the <i>environmental</i> goals of the <u>output</u> were likely to be implemented (“ex ante expectation”). E.g., did the output specify clear procedures, provide resources, assign responsibilities, include measures to control <u>policy</u> addressees, monitor <u>implementation/compliance</u> and enforcement mechanisms (i.e. penalties, sanctions or other coercive measures to induce compliance with obligations) (Newig 2003: 73)?</p> <p>0 = the output did not include the necessary provisions to implement its environmental goals; 2 = the output included some important provisions necessary to implement its environmental goals; 4 = the output was easy to implement, either because it included all necessary provisions to implement its environmental goals, or because no implementation is necessary (this is often the case where a building permit is declined)</p> <p>Code -99 if there was no output.</p>
263. OUTP ADAPTIVE APPROACH	s-q	[0..4]	<p>Output adaptive approach: Degree to which the <u>output</u> is characterised by an adaptive approach. Adaptive approach refers to adapting measures to new knowledge or changing conditions. It does not mean that overall goals can be altered, but rather that the means, strategies and interim targets to achieve them can be adapted.</p> <p>0 = the output was not designed to allow for adaptation; 2 = the output was designed to allow for some degree of adaptation; 4 = the output was designed to be fully adaptable as to the means to achieve its goals.</p> <p>Code -99 if there was no output.</p>
264. OUTP FLEXIBLE GOALS	s-q	[0..4]	<p>Output flexible environmental goals: Degree to which the overall <i>environmental</i> goals of the <u>output</u> were flexible.</p> <p>0 = the environmental goals of the output were fully fixed and not alterable; 4 = the environmental goals of the output were fully flexible and/or negotiable.</p> <p>Code -99 if there was no output.</p>
265. OUTP SUSTY PERSPECTIVE	s-q	[0..4]	<p>Output sustainability perspective: Degree to which a sustainability perspective was adopted in the <u>output</u>. “Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (Brundtland report, WCED 1987).</p> <p>0 = The output did not consider sustainable development. 1..3 = The output was shaped in a way that it considered sustainable development to a certain degree. 4 = The output was shaped in a way that it considered sustainable development as far as possible within the limits of the issue at stake.</p> <p>Code -99 if there was no output.</p>
266. OUTP ADDIT	qual.	Text area (rel)	<p>Output additional: Describe any important additional environmental <u>outputs</u> that are broader than the originally defined issue/goal(s) (e.g. new problems were tackled that did not appear in the original problem-framing or agenda).</p> <p>Code -99 if nothing to add.</p>

D.I.2 Information and learning

267. OUTP INFO GAIN	s-q	[0..4]	<p>Output information gain: Degree to which additional information in the sense of contextualised, local (including traditional and indigenous) knowledge informed the <u>output</u>. This kind of knowledge is characterised as implicit, informal, context-dependent, and resulting from collective experience, and can concern known parameters and/or new perspectives. This includes knowledge that may be ‘expert’ knowledge (e.g. of local people) but not in the sense of knowledge that is published (e.g. in a handbook) (cf. Berkes & Folke 2002: 122).</p> <p>0 = contextualised, local knowledge did not contribute to the output; 2 = contextualised, local knowledge contributed to the output; 4 = contextualised, local knowledge was decisive for producing the output.</p> <p>Code -99 if there was no local knowledge to draw on, or if there was no output.</p>
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268. OUTP INNOV	s-q	[0..4]	<p>Innovation: Did the <u>output</u> present an innovative, novel solution in the sense of a solution addressing the issue at hand that had not been discussed before the <u>DMP</u>? This need not be an innovation in the sense of an 'invention' in global comparison.</p> <p>0 = the output did not include innovative elements but only reflected what was known and had been discussed before the DMP;</p> <p>2 = the output included considerable innovative elements;</p> <p>4 = the core of the output was innovative.</p> <p>Code -99 if there was no output.</p>
269. PRBL REDEF	qual.	Text area	<p>Problem redefinition: If the problem was reframed or redefined in the course of the <u>DMP</u>, briefly describe how.</p>

D.II SOCIAL OUTCOMES

D.II.1 Acceptance of output

270. MUTUAL GAINS	s-q	[0..4]	<p>Mutual gains: Degree to which win-win solutions were developed during the <u>DMP</u> (i.e. degree to which the <u>output</u> provided mutual gains).</p> <p>Win-win (or Pareto optimal) solutions are those that provide gains (or at least: no losses) to all involved parties. These are always positive-sum solutions compared to the non-collaborative alternative. Win-win solutions include solutions where compensation is provided to those who would otherwise suffer losses. Win-win solutions are not necessarily limited to the environmental issue at hand, but may be linked to alternative issues and competing interests on and off the table, as well as to future decisions (Wondolleck & Yaffee 2000: 50).</p> <p>0 = output provided no mutual gains;</p> <p>2 = output provided moderate gains for some stakeholder groups;</p> <p>4 = output provided high gains for all stakeholder groups.</p> <p>Code -99 if there was no output.</p>
271. CONFL RESOL	s-q	[-4..4] (99)	<p>Conflict resolution: Degree to which an existing conflict was resolved or worsened or a new conflict developed. Consider the nature of change in any pre-existing conflict of values and/or distribution identified in variables 77. CONFL VALUES and 78. CONFL DISTN.</p> <p>-4 = conflict severely intensified or developed in the first place;</p> <p>0 = degree of conflict did not change during the process;</p> <p>4 = existing conflict was fully resolved.</p>
272. ADDR ACCEP	s-q	[0..2]	<p>Addressees acceptance: Acceptance of the decision on the part of those actors who had to comply with and implement the decision (i.e. those actors coded in 222. POL ADDR).</p> <p>0 = decision was opposed;</p> <p>1 = decision was accepted despite reservations regarding its content;</p> <p>2 = decision was accepted and supported.</p> <p>Code -99 if there were no policy addressees</p>
273. CA ACCEP	s-q	[0..2]	<p>Competent authority acceptance: Acceptance of the decision on the part of the <u>CA</u>.</p> <p>0 = decision was opposed;</p> <p>1 = decision was accepted despite reservations regarding its content;</p> <p>2 = decision was accepted and supported.</p> <p>Code -99 if there was no CA.</p>

Societal sector Position to- wards environment	<u>Government sector</u>	<u>Private sector for profit</u>	<u>Civic sector (non-profit)</u>	<u>Citizens</u>
Pro-Conservation ACCEPTANCE s-q [0...2]	274. ACEP GOVT PROCONS Acceptance government sector pro-conservation: Did the <u>stakeholders</u> of this segment oppose, accept or support the decision? 0 = decision was opposed; 1 = decision was accepted despite reservations regarding its content; 2 = decision was accepted and supported. Code -99 if this stakeholder group is absent, or if there was no output.	275. ACEP PRIV PRO- CONS Acceptance private sector pro-conservation: See above for description.	276. ACEP CIV PRO- CONS Acceptance civic sector pro-conservation: See above for description.	277. ACEP CIT PROCONS Acceptance citizens pro- conservation: See above for description.
Pro-health ACCEPTANCE s-q [0...2]	278. ACEP GOVT PROHEALTH Acceptance government sector pro-human health: See above for description.	279. ACEP PRIV PRO- HEALTH Acceptance private sector sector pro-human health: See above for description.	280. ACEP CIV PRO- HEALTH Acceptance civic sector sector pro-human health: See above for description.	281. ACEP CIT PRO- HEALTH Acceptance citizens sector pro-human health: See above for description.
Pro-natural re- source protection ACCEPTANCE s-q [0...2]	282. ACEP GOVT PRONRP Acceptance government sector pro-natural resource protec- tion: See above for description.	283. ACEP PRIV PRONRP Acceptance private sector pro-natural resource protection: See above for description.	284. ACEP CIV PRONRP Acceptance civic sector pro-natural resource protection: See above for description.	285. ACEP CIT PRONRP Acceptance citizens pro- natural resource protec- tion: See above for description.
Pro-exploitation ACCEPTANCE s-q [0...2]	286. ACEP GOVT PROEXPL Acceptance government sector pro-exploitation: See above for description.	287. ACEP PRIV PRO- EXPL Acceptance private sector pro-exploitation: See above for description.	288. ACEP CIV PROEXPL Acceptance civic sector pro-exploitation: See above for description.	289. ACEP CIT PROEXPL Acceptance citizens pro- exploitation: See above for description.

D.II.2 Capacity building

290. INFOD ADDR	s-q	[0..4]	Informed policy addressees: Degree to which the addressees of a decision (see 222. POL ADDR) received the necessary information to comply with the agreed rules or implement them, in relation to their respective need for information (Newig 2007: 62). 0 = addressees received no or insufficient information relevant for compliance or implementation (because addressees were not involved in the process, and/or no relevant information was supplied); 1..3 = only some addressees received information, or all addressees received partly relevant information; 4 = all addressees received sufficient information relevant for compliance and/or implementation. Code -99 if there were no addressees, or if there was no output.
291. SOCIETAL LEARNING	s-q	[0..4] (99)	Societal learning: Degree to which <u>participants</u> , <u>stakeholders</u> or broader society learned about the issue such that they gained new or improved understanding or knowledge of the issue, enabling them potentially to contribute to future joint problem solving efforts ('social learning' in the sense of Reed et al. 2010). Exclude any learning by a CA. 0 = no participants or stakeholders gained new or improved insights about the issue; 1..3 = some participants and/or stakeholders gained some new or improved knowledge; 4 = all participants and/or broad sections of society gained considerable new or improved knowledge relevant to the issue as defined above.

292. INDIV CAPACITY BLDG	s-q	[0..4] (99)	<p>Individual capacity building: Degree to which the skills and capabilities of individual participants or stakeholders were enhanced through involvement in or engagement with the DMP. These skills and capabilities may be specific to the issue at hand, or incidental and applicable to a range of social situations.</p> <p>0 = individual-level skills and capabilities were not enhanced; 1..3 = significant enhancement of skills and capabilities among a few individuals, or some enhancement of skills and capabilities among many individuals; 4 = significant enhancement of skills and capabilities among many individuals.</p>
293. COMPENSATION	s-q	[0..4]	<p>Compensation: Degree to which compensation was awarded to groups that would (potentially) suffer from implications of the decision.</p> <p>0 = no compensation was awarded; 4 = all groups that (potentially) suffer from a decision were awarded adequate compensation.</p> <p>Code -99 if no groups were affected in a way that compensation would make any sense.</p>
294. SC BUILDING TRUST	s-q	[-4..4] (99)	<p>Social capital building (trust): Degree to which trust relationships were created or strengthened among participants (and potentially beyond), which can be expected to “facilitate coordination and cooperation for mutual benefit” (Putnam 1995: 67, see also Ansell & Gash 2008). “Trust is the willingness to accept vulnerability based on positive expectations about another’s intentions or behaviors” (McEvily et al. 2003).</p> <p>-4 = existing trust relationships were seriously undermined, or distrust was built up; 0 = there was no change in trust relationships; 4 = trust relationships in the above sense were significantly built up or strengthened.</p>
295. SC BUILDING NETWK	s-q	[-4..4] (99)	<p>Social capital building (networks): Degree to which social networks were created or built on (or undermined) among participants and beyond, taking into account the structure of the network including both ‘weak’ and ‘strong’ ties (Granovetter 1973). Networks are defined here in the sense of social capital building, which can be expected to “facilitate coordination and cooperation for mutual benefit” (Putnam 1995: 67; also cf. http://www.socialcapitalresearch.com/definition.html) regarding capacity to address the problem or similar issues.</p> <p>-4 = existing network relations were seriously undermined; 0 = there was no change in social networks; 4 = network relations were significantly built on or strengthened.</p>
296. SC BUILDING SHARED NORMS	s-q	[-4..4] (99)	<p>Social capital building (shared norms): Degree to which social capital among participants (and potentially beyond) was created or strengthened in the sense of “informal values or norms shared among members of a group that permit cooperation among them” (Fukuyama 1997).</p> <p>-4 = shared norms were seriously undermined; 0 = there was no change in shared norms; 4 = shared norms were significantly built up or strengthened.</p>
D.II.3 Other			
297. OUTC ECON	s-q	[-4..4] (99)	<p>Outcomes economic: Degree to which outcomes - in the sense of all intended consequences of the DMP - were economically positive or negative. Economic outcomes include consequences for productivity, competitiveness, standard of living, employment rate, or general economic well-being at the level of the region at issue (as identified in 50. GOVCE SCALE LEVEL), taking into consideration possible negative or positive externalities to other regions, if data are available.</p> <p>-4 = DMP produced strongly negative economic outcomes; 0 = DMP had no economic consequences; 4 = DMP produced strongly positive economic outcomes.</p>
298. OUTC SOCIAL	s-q	[-4..4] (99)	<p>Outcomes social equity: Degree to which outcomes - in the sense of all intended consequences of the DMP - were socially equitable in a distributional justice sense. Social equity refers to the distribution of all types of costs and benefits (e.g. economic, environmental, access to information, education).</p> <p>-4 = DMP produced strongly negative social equity outcomes; 0 = DMP had no social equity consequences; 4 = DMP produced strongly positive social equity outcomes.</p>

299. OUTC OTHER	qual.	Text area (rel)	Outcomes other: Describe any important (economic, social, or other) <u>outcomes</u> not sufficiently covered by the above variables. Code -99 if nothing to add.
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D.III ENVIRONMENTAL OUTCOMES AND IMPACTS

Here, a threefold approach is adopted to assessing environmental **impacts** (like that adopted for assessing outputs above) in order to make them comparable across cases, building on concepts developed by Mitchell (2008). In variables 304 - 261 the impact is assessed against: First, the goals of the output; second, the goals of any higher order policy of relevance to the issue; third, actual or likely change in the environment from conditions under a 'business as usual' scenario towards either a hypothetical 'optimal' condition or a worst case scenario.

	Output	Impact
Goal attainment	<i>Initiator goal</i>	<i>Output goal (= OUTPUT OPTIMUM)</i>
Higher order policy	<i>Higher order policy goal</i>	<i>Higher order policy goal</i>
Collective optimum	<i>Planned improvement [or tolerated deterioration] of environmental conditions, moving from the 'business as usual' scenario (projected trend) towards a hypothetical 'optimal' condition [or towards a hypothetical 'worst case' condition]</i>	a) actual impact can already be determined (because implementation is - almost - complete): <i>actual improvement of environmental conditions</i> , moving from the counterfactual 'business as usual' scenario towards a hypothetical 'optimal' condition b) actual impact cannot yet be determined (because implementation is not sufficiently under way), but likely impact can be assessed from case data: <i>likely improvement of environmental conditions</i> , moving from the 'business as usual' scenario (projected trend) towards a hypothetical 'optimal' condition.

Table: Normative standard (*in Italics*) against which output and impact are evaluated.

300. IMPACT DESCR	qual.	Text area (rel)	Description of environmental impact: Brief description of the environmental impact in the case. The impact refers to the actual (or very likely) changes in the environment or, if applicable, unchanged conditions. Thus, impact refers to the effect of the outcome (which refers to the change in behaviour of the actors that are affected by the output).
301. IMPLEMENTATION	s-q	[0..4]	Implementation: Degree to which environmental <u>outputs</u> (i.e. those described in 245. OUTP DESCR) were being (or would most probably be) implemented, taking into account everything we know from the case material. <u>Implementation</u> - as opposed to <u>compliance</u> - means putting a more abstract plan or rule into operation by making it more concrete or developing specific measures (i.e. implementation is a process). This is typically done by <u>government sector</u> actors. <i>Note:</i> This variable only relates to <i>environmental</i> outputs, not the decision as such. Implementation here refers to measures that affect the general public (i.e. public policies). Measures that merely serve private purposes (e.g. a building permit) need not be implemented in this sense, or rather they are self-implementing. If such permitting is the only content of the output, code 4. However, if a permit is issued subject to a number of requirements such as to lessen negative impact on the environment, then <i>these</i> are potentially subject to more/less implementation once the building project is underway. 0 = environmental provisions of the output were not (likely to be) implemented by the relevant bodies; 4 = environmental provisions of the output were (likely to be) fully implemented by the relevant bodies. Code -99 if no implementation of environmental provisions is required (e.g. see discussion of permitting above).

302. BEHAVIOUR CHANGE	s-q	[0..4] (99)	<p>Behaviour change: Degree to which behaviour of actors changed - due to the <u>DMP</u> and/or the <u>output</u> - in ways more or less favourable to the environment. This may include <u>implementation</u> and <u>compliance</u> efforts but also other kinds of behaviour change, including behaviour change induced by the DMP alone, independently of the output (which may even not exist).</p> <p>-4 = widespread behaviour change likely to produce significant environmental deterioration; -2 = some degree of behaviour change likely to produce significant environmental deterioration, or widespread behaviour change likely to produce moderate environmental deterioration; 0 = no behaviour change relevant to the environment; 2 = some degree of behaviour change likely to produce significant environmental improvement, or widespread behaviour change likely to produce moderate environmental improvement; 4 = widespread behaviour change likely to produce environmental improvement.</p>
303. COMPLIANCE	s-q	[0..4]	<p>Compliance: Degree to which environmental <u>outputs</u> were being (or would most probably be) complied with, taking into account everything we know from the case material. <u>Compliance</u> - as opposed to <u>implementation</u> - means to do what the rule prescribes (rule conformity). This includes more or less simple tasks, including to refrain from doing something. Whereas implementation implies actively (and creatively) designing a solution, compliance simply means adherence to the rule (i.e. compliance is typically a single or repeated action, rather than a process).</p> <p><i>Note:</i> This variable only relates to <i>environmental</i> outputs, not the decision as such.</p> <p>0 = environmental provisions of the output were not (likely to be) complied with by the relevant addressees; 4 = environmental provisions of the output were (likely to be) fully complied with by the relevant addressees.</p> <p>Code -99 if no compliance with environmental aspects is required (e.g. pure permitting). See variable 301. IMPLEMENTATION.</p>
304. IMPACT GOAL ATTAIN CONS	s-q	[-4..4]	<p>Impact goal attainment conservation: Degree to which the <u>impact</u> corresponded to the environmental <u>conservation</u> goals of the <u>output</u>. Impact refers to actual (or very likely) changes in the environment or, if applicable, unchanged conditions.</p> <p>-4 = the conservation impact was significantly inferior to the output conservation goal; 0 = the conservation impact was consistent with the output conservation goal; 4 = the conservation impact was significantly superior to the output conservation goal.</p> <p>Code -99 if there was no output.</p>
305. IMPACT GOAL ATTAIN HEALTH	s-q	[-4..4]	<p>Impact goal attainment human health: Degree to which the <u>impact</u> corresponded to the <u>human health</u> goals of the <u>output</u>. Impact refers to actual (or very likely) changes in the environment or, if applicable, unchanged conditions.</p> <p>-4 = the human health impact was significantly inferior to the output human health goal; 0 = the human health impact was consistent with the output human health goal; 4 = the human health impact was significantly superior to the output human health goal.</p> <p>Code -99 if there was no output.</p>
306. IMPACT GOAL ATTAIN NRP	s-q	[-4..4]	<p>Impact goal attainment natural resource protection: Degree to which the <u>impact</u> corresponded to the <u>natural resource protection</u> goals of the <u>output</u>. Impact refers to actual (or very likely) changes in the environment or, if applicable, unchanged conditions.</p> <p>-4 = the NRP impact was significantly inferior to the output NRP goal; 0 = the NRP impact was consistent with the output NRP goal; 4 = the NRP impact was significantly superior to the output NRP goal.</p> <p>Code -99 if there was no output.</p>

307. IMPACT POL CONS	s-q	[-4..4]	<p>Impact higher order policy conservation: Degree to which the <u>impact</u> corresponded to the environmental <u>conservation</u> goal of a higher order policy of relevance to the issue. Impact refers to actual (or very likely) changes in the environment or, if applicable, unchanged conditions. Code in relation to 43. POL GOAL CONS.</p> <p>-4 = the conservation impact was significantly inferior to the conservation goal of the higher order policy; 0 = the conservation impact was consistent with the conservation goal of the higher order policy; 4 = the conservation impact was significantly superior to the conservation goal of the higher order policy.</p> <p>Code -99 if there was no higher order policy with goals concerning the issue of the DMP.</p>
308. IMPACT POL HEALTH	s-q	[-4..4]	<p>Impact higher order policy human health: Degree to which the <u>impact</u> corresponded to the <u>human health</u> goal of a higher-order policy of relevance to the issue. Impact refers to actual (or very likely) changes in the environment or, if applicable, unchanged conditions. Code in relation to 44. POL GOAL HEALTH.</p> <p>-4 = the human health impact was significantly inferior to the human health goal of the higher order policy; 0 = the human health impact was consistent with the human health goal of the higher order policy; 4 = the human health impact was significantly superior to the human health goal of the higher order policy.</p> <p>Code -99 if there was no higher order policy with goals concerning the issue of the DMP.</p>
309. IMPACT POL NRP	s-q	[-4..4]	<p>Impact higher order policy natural resource protection: Degree to which the <u>impact</u> corresponded to the <u>natural resource protection</u> goal of a higher-order policy of relevance to the issue. Impact refers to actual (or very likely) changes in the environment or, if applicable, unchanged conditions. Code in relation to 45. POL GOAL NRP.</p> <p>-4 = the NRP impact was significantly inferior to the NRP goal of the higher order policy; 0 = the NRP impact was consistent with the NRP goal of the higher order policy; 4 = the NRP impact was significantly superior to the NRP goal of the higher order policy.</p> <p>Code -99 if there was no higher order policy with goals concerning the issue of the DMP.</p>
310. IMPACT OPTIMUM CONS	s-q	[-4..4]	<p>Impact optimum conservation: Degree to which the environmental <u>impact</u> implies an improvement in environmental conditions, moving from the '<u>business as usual</u>' scenario (projected trend) towards a hypothetical '<u>optimal</u>' condition in terms of <u>conservation</u>. A collective '<u>optimum</u>' is defined as "one that accomplishes ... all that can be accomplished - given the state of knowledge at the time" (Underdal 2002: 8).</p> <p>-4 = the impact implies a deterioration in environmental conditions from the business as usual scenario to a hypothetical '<u>worst case</u>'; 0 = the impact implies no improvement in environmental conditions compared to the business as usual scenario; 2 = the impact implies an improvement in environmental conditions halfway between the business as usual scenario and hypothetical '<u>optimum</u>'; 4 = the impact implies an improvement in environmental conditions equal to a hypothetical '<u>optimum</u>'.</p>
311. IMPACT OPTI- MUM HEALTH	s-q	[-4..4]	<p>Impact optimum human health: Degree to which the environmental <u>impact</u> implies an improvement in environmental conditions, moving from the '<u>business as usual</u>' scenario (projected trend) towards a hypothetical '<u>optimal</u>' condition in terms of <u>human health</u>. A collective '<u>optimum</u>' is defined as "one that accomplishes ... all that can be accomplished - given the state of knowledge at the time" (Underdal 2002: 8).</p> <p>-4 = the impact implies a deterioration in environmental conditions from the business as usual scenario to a hypothetical '<u>worst case</u>'; 0 = the impact implies no improvement in environmental conditions compared to the business as usual scenario; 2 = the impact implies an improvement in environmental conditions halfway between the business as usual scenario and hypothetical '<u>optimum</u>'; 4 = the impact implies an improvement in environmental conditions equal to a hypothetical '<u>optimum</u>'.</p>

312. IMPACT OPTIMUM NRP	s-q	[-4..4]	<p>Impact optimum natural resource protection: Degree to which the environmental <u>impact</u> implies an improvement in environmental conditions, moving from the 'business as usual' scenario (projected trend) towards a hypothetical 'optimal' condition in terms of <u>natural resource protection</u>. A collective 'optimum' is defined as "one that accomplishes ... all that can be accomplished - given the state of knowledge at the time" (Underdal 2002: 8).</p> <p>-4 = the impact implies a deterioration in environmental conditions from the business as usual scenario to a hypothetical 'worst case'; 0 = the impact implies no improvement in environmental conditions compared to the business as usual scenario; 2 = the impact implies an improvement in environmental conditions halfway between the business as usual scenario and hypothetical 'optimum'; 4 = the impact implies an improvement in environmental conditions equal to a hypothetical 'optimum'.</p>
313. COUNTERF LESS PARTN	qual.	Text area (NH)	<p>Counterfactual outcome of less participation: Brief description of the most probable alternative <u>outcome</u> concerning environmental quality, had the process been conducted in a non- (or less-) participatory way. Consider authors' reflections in particular.</p> <p>The three dimensions of participation (inclusiveness, power delegation, information flow) can serve as conceptual guidelines to construct the counterfactual. E.g. consider: what would have been the outcome if the DMP had been less inclusive.</p> <p>In particular, note whether any trade-offs between less participation and higher environmental outcomes would have been likely.</p>
314. COUNTERF MORE PARTN	qual.	Text area (NH)	<p>Counterfactual outcome of more participation: Brief description of the most probable alternative <u>outcome</u> concerning environmental quality, had the process been conducted in a (more) participatory way. Consider authors' reflections in particular.</p> <p>The three dimensions of participation (inclusiveness, power delegation, information flow) can serve as conceptual guidelines to construct the counterfactual. E.g. consider: what would have been the outcome, if the DMP had been more inclusive.</p> <p>In particular, note whether any trade-offs between more participation and higher environmental outcomes would have been likely.</p>
315. ADDITIONAL FINDINGS	qual.	Text area	<p>Additional findings: If applicable, shortly name (or quote) any particular findings of relevance to the project's research question that the author(s) highlight which have not been sufficiently captured in the previous variables.</p>

E. CAUSAL HYPOTHESES

In this section, hypothesised causal mechanisms are coded. Coding assesses the extent to which attributes of the decision-making process (such as different levels of participation) are assumed to affect social or environmental outputs, outcomes or impacts under otherwise unchanged conditions.

It is important to note that here not variables (in the strict sense) but the existence of causal chains (i.e. hypothesized relations between variables according to case evidence and counterfactual considerations) are coded.

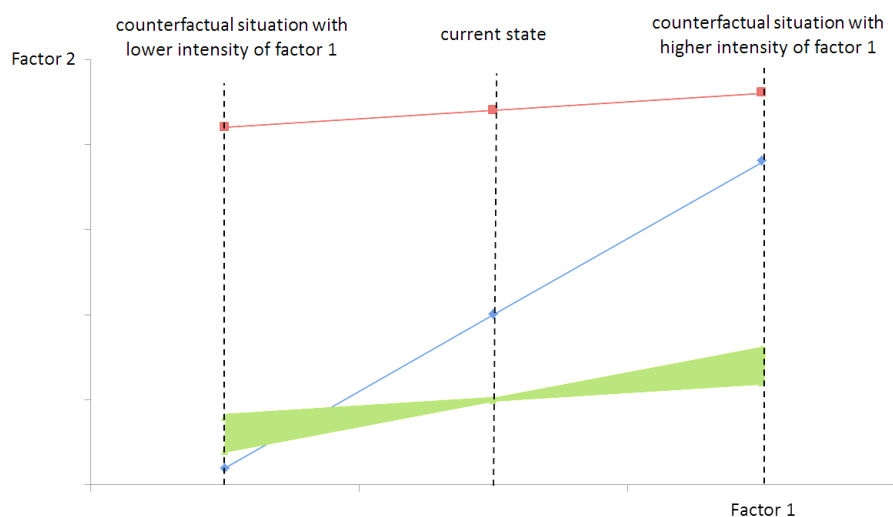
In the **variable field**, the observed strength of the hypothesised causal relation is coded (**0** indicates the absence of a particular causal link; **4** indicates strong causal effect); in the **reliability field**, the strength of evidence or plausibility supporting this effect is coded. It is important to judge whether events were just coincidental or whether one actually brought about the other.

The existence or plausibility of causal links is coded ideally as follows. For each hypothesis, consider (see figure):

- the actual state of the dependent and independent variables in the case;
- a hypothetical counterfactual situation in which the value of the independent variable is lower than its actual value (but contextual conditions remain the same), and assess the hypothetical value of the dependent variable;
- a hypothetical counterfactual situation in which the value of the independent variable is higher than its actual value (but contextual conditions remain the same), and assess the hypothetical value of the dependent variable;

This should yield a relation between the independent and dependent variable.

In the case that the hypothesized relation between independent and dependent variable can reasonably be assumed in a given case, but due to a *different* causal mechanism than that specified in the hypothesis description, then the hypothesis should still be coded but with a remark in the **annotations field** explaining this different causal mechanism.



Hypotheses in the coding scheme postulate linear causal relationships between various factors. The relationship between any two different factors may be visualised by a straight line (if the material of a given case suggests a non-linear relationship, this should be noted under 6. ANNOTATIONS).

The code for a hypothesis should reflect the slope of this line: A weak relationship shows a gentle slope, a strong relationship shows a steep slope. The diagram above gives an example for this:

- the blue line assumes a rather strong positive relationship between two different factors, hence resulting in a rather high code
- the red line, despite the higher values for the factors in the current state, shows a much weaker positive relationship and, therefore may be assigned a low code.

The thickness of the line reflects the weakness of the evidence (= inverse of reliability) supporting the hypothesis. Considering the above green line, evidence of the case did not allow for the construction of an unambiguous counterfactual situation but rather offered indication for a vague, informed guess about such a counterfactual situation. Hence, the value assigned to the green line may be supported by a lower reliability score than as those corresponding to the red and blue lines.

E.I.1 Participation produces outputs with higher environmental standards

Hypotheses in this section indicate a positive causal relationship between participation and environmental output (i.e. the more intense the PP, the higher the environmental standards formulated in the output).

316. H OPENING UP	s-q	[0..4] (99)	<p>Hypothesis opening-up of decision-making: An open and inclusive <u>DMP</u> leads to stronger <u>representation</u> of environmental groups in the <u>DMP</u> than in less inclusive processes.</p> <p>Compare the actual situation in the case to counterfactuals with both a more and less open and inclusive DMP: Would a more open and inclusive DMP have led to stronger representation of environmental groups? Would a less open and inclusive DMP have led to less strong representation of environmental groups?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
317. H ENVI INFL	s-q	[0..4] (99)	<p>Hypothesis influence of environmental groups: Increased <u>representation</u> of environmental groups in the <u>DMP</u> leads to stronger inclusion of environmental considerations in the <u>output</u>.</p> <p>Compare the actual situation in the case to counterfactuals with both more and less representation of environmental groups (if applicable): Would stronger representation of environmental groups have increased the environmental standard of the output? And vice versa: Would less strong representation of environmental groups have reduced the environmental standard of the output?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
318. H ACTOR DIVERSITY ENVI KNOWL	s-q	[0..4] (99)	<p>Hypothesis actor diversity and environmental knowledge: A wider range of participating actors leads to a higher degree of environmentally relevant knowledge and knowledge relevant for <u>implementation</u> being made available to the <u>DMP</u>.</p> <p>Compare the actual situation in the case to counterfactuals with both a wider and narrower range of actors: Would a wider range of participating actors have increased the relevant knowledge available to the DMP (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
319. H METH KNOWL	s-q	[0..4] (99)	<p>Hypothesis structured methods and environmental knowledge: The use of structured methods of knowledge elicitation (see 165. STRUC INFO ELICIT for explanation) in the <u>DMP</u> leads to a higher degree of environmentally relevant knowledge and knowledge relevant for generating implementable outputs being made available for the <u>DMP</u>.</p> <p>Compare the actual situation in the case to counterfactuals with both more and less structured methods: Would a more extensive use of structured methods have increased the relevant knowledge available to the DMP (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.;</p>
320. H ENVI RELEVANT KNOWL	s-q	[0..4] (99)	<p>Hypothesis environmentally relevant knowledge and output standards: A higher degree of elicited environmentally relevant knowledge leads to higher environmental standards of the <u>output</u>.</p> <p>Compare the actual situation in the case to counterfactuals with both more and less elicited environmentally relevant knowledge: Would more elicited knowledge have increased the environmental standard of the output (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>

321. H DELIB	s-q	[0..4] (99)	<p>Hypothesis deliberation: A process setting characterised by discursive fairness leads to the formation or transformation of <u>participants'</u> views oriented towards the common good (Smith 2003: 63-64, quoting Miller 1992, Goodin 1996). See also Dryzek (1995). 'Orientation towards a common good' is defined here as the transgression of personal interests, i.e. a focus on solving the problem rather than securing personal benefits.</p> <p>Compare the actual situation in the case to counterfactuals with settings characterised by both more and less discursive fairness: Would a more discursively fair setting have increased the (trans)formation of participants' views towards the common good (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
322. H COMMON GOOD	s-q	[0..4] (99)	<p>Hypothesis common good orientation: Stronger orientation of <u>participants</u> towards the common good leads to higher environmental standards of the <u>output</u> (Smith 2003: 63). 'Orientation towards a common good' is defined here as the transgression of personal interests, i.e. a focus on solving the problem rather than securing personal benefits.</p> <p>Compare the actual situation in the case to counterfactuals with both stronger and weaker orientation of participants towards the common good: Would a stronger orientation of participants towards the common good have increased the environmental standards of the output (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
323. H NEGOTIATION	s-q	[0..4] (99)	<p>Hypothesis effects of negotiation: A <u>DMP</u> characterised by a higher degree of <u>communication</u> and bargaining leads to the identification of an optimal allocation/solution, such that a positive-sum game results.</p> <p><i>Extreme example:</i> Two parties battle over a single egg. A participatory setting enables them to talk in a rational manner in which they find out that one party is interested in the egg yolk, and the other in the egg white only, thus giving each party what it really wants.</p> <p>Compare the actual situation in the case to counterfactuals with both more and less communication and bargaining: Would more communication and bargaining have increased the likelihood of identification of an optimal allocation/solution (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
324. H POSITIVE SUM GAME	s-q	[0..4] (99)	<p>Hypothesis effects of positive-sum solution: Positive-sum results of a <u>DMP</u> (see 323. H NEGOTIATION) lead to higher environmental standards of the <u>output</u> (because everyone profits, including 'the environment').</p> <p>Compare the actual situation in the case to counterfactuals with both more and fewer positive-sum results: Would more positive-sum-results have increased the environmental standards of the output (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
325. H CREATIVITY	s-q	[0..4] (99)	<p>Hypothesis creativity: A <u>DMP</u> characterised by open <u>dialogue</u> (involving open-minded communication atmosphere) leads to the collective development of more creative, innovative <u>solutions</u>.</p> <p>Compare the actual situation in the case to counterfactuals with more or less open dialogue: Would more open dialogue have increased the generation of innovative ideas (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
326. H ENVI INNOV	s-q	[0..4] (99)	<p>Hypothesis environmental effects of innovation: Creative solutions generated in a <u>DMP</u> lead to higher environmental standards of the <u>output</u> (because creative solutions involve a positive-sum game benefitting the environment).</p> <p>Compare the actual situation in the case to counterfactuals with both more and less creative solutions: Would more creative solutions have increased the environmental standards of the output (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>

E.I.2 Participation produces outputs with lower environmental standards

Hypotheses in this section generally indicate a negative causal relationship between participation and environmental output (i.e. the more intense the PP, the lower the environmental standards of the output).

327. H ENVI UNDER RES	s-q	[0..4] (99)	<p>Hypothesis under-resourced environmental groups: An open <u>DMP</u> leads to less strong representation of environmental groups compared to other groups (because environmental groups are relatively under-resourced, and better-resourced groups tend to dominate the process).</p> <p>Compare the actual situation in the case to counterfactuals with both a more and less open and inclusive DMP: Would a more open and inclusive DMP have led to less strong representation of environmental groups (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
328. H COOPTED ENVI	s-q	[0..4] (99)	<p>Hypothesis co-opted environmental groups: Participation weakens the position of environmental groups because it alters their institutional position (either because they are co-opted into a general 'development' frame, or because they are disarmed of their common effective tools such as appeals, lawsuits, public relations campaigns).</p> <p>Compare the actual case to counterfactuals with both more and less participation: Had there been more participation, would the position of environmental groups have been weakened (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
329. H VETO PLAYERS	s-q	[0..4] (99)	<p>Hypothesis veto players: The more <u>veto players</u> involved in a <u>DMP</u>, the more likely that the output will have lower environmental standards (because a solution at the lowest common denominator will result and almost everyone loses, including 'the environment').</p> <p>Compare the actual situation in the case to counterfactuals with both more and fewer veto players: Would involvement of fewer veto players have made low environmental standards less likely (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>

E.II.1 Participation fosters implementation capacity and acceptance of decisions

Hypotheses in this section indicate a positive causal relationship between participation and implementation (i.e. the more intense the PP, the higher the likelihood of full implementation).

330. H FIT IMPL	s-q	[0..4] (99)	<p>Hypothesis fit of public demands with existing institutions: Participation leads to a higher compatibility of the demands of <u>stakeholders</u> (or the general public) with existing <u>institutions</u> and thus a better implementability of decisions (because of intensive discussion and increased mutual understanding).</p> <p>Compare the actual situation in the case to counterfactuals with both more and less participation: Would more participation have increased the compatibility of public demands and existing institutions and thereby the implementability of the output (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
331. H IMPLEMENT-ABLE OUTP	s-q	[0..4] (99)	<p>Hypothesis implementable output: Environmentally relevant knowledge and knowledge relevant for implementation generated in the <u>DMP</u> (as in 318. H ACTOR DIVERSITY ENVI KNOWL) leads to improved <u>implementation</u> (because this knowledge is reflected in an <u>output</u> incorporating more feasible measures).</p> <p>Compare the actual situation in the case to counterfactuals with both more and less relevant knowledge generation: Would more relevant knowledge have led to improved implementation (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>

332. H CONFL RESOL	s-q	[0..4] (99)	<p>Hypothesis conflict resolution: Resolving a conflict through a <u>participatory process</u> leads to greater acceptance of the <u>output</u> on the part of <u>veto players</u>.</p> <p>Compare the actual situation in the case to counterfactuals with both more and less conflict resolution: Would more conflict resolution have increased acceptance by veto players (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
333. H ACCOMM INTERESTS	s-q	[0..4] (99)	<p>Hypothesis accommodation of interests: A higher degree of participation leads to the accommodation of more diverse interests in the <u>output</u>.</p> <p>Compare the actual situation in the case to counterfactuals with both more and less participation: Would more participation have accommodated more diverse interests in the output (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
334. H INTERESTS ACCEP	s-q	[0..4] (99)	<p>Hypothesis interests and acceptance: Accommodation of more different/diverse interests in the <u>output</u> increases acceptance on the part of <u>veto players</u>.</p> <p>Compare the actual situation in the case to counterfactuals with both more and less accommodation of diverse interests: Would more accommodation of diverse interests have increased acceptance by veto players (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
335. H POSITIVE SUM ACCEP	s-q	[0..4] (99)	<p>Hypothesis positive-sum game acceptance: Positive-sum results of a <u>DMP</u> increase acceptance of the <u>output</u> on the part of <u>veto players</u>.</p> <p>Compare the actual situation in the case to counterfactuals with both more and fewer positive sum results: Would more positive sum results have increased the acceptance by veto players (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
336. H ACCEP IMPL COMPLIANCE	s-q	[0..4] (99)	<p>Hypothesis acceptance and implementation/compliance: The greater the degree of acceptance by <u>veto players</u>, the higher the likelihood of <u>implementation</u> and <u>compliance</u>.</p> <p>Compare the actual situation in the case to counterfactuals with both greater and lesser degrees of acceptance by veto players: Would a greater degree of acceptance have increased the likelihood of full implementation and compliance (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
337. H PROCEDURAL JUSTICE	s-q	[0..4] (99)	<p>Hypothesis acceptance through procedural justice: A <u>DMP</u> that is perceived as fair and legitimate increases acceptance on the part of <u>participants</u> and their respective constituencies, and other <u>veto players</u> (even if substantive interests of involved parties are not reflected in the output) (Lind & Tyler 1988).</p> <p>Compare the actual situation in the case to counterfactuals with both a more and less fair and legitimate DMP: Would a more fair and legitimate DMP have increased acceptance (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
338. H INFORM ADDR	s-q	[0..4] (99)	<p>Hypothesis informed and educated policy addressees: Involving (potential) <u>policy addressees</u> early in the <u>DMP</u> increases the likelihood and degree of <u>compliance</u> and <u>implementation</u> (because it enables early and thorough education and information of policy addressees, who can adapt their practices - such as daily routines, investments, business planning, technology development - earlier to upcoming decisions).</p> <p>Compare the actual situation in the case to counterfactuals with both more and less involvement of potential policy addressees: Would more involvement of potential policy addressees have increased rates of <u>implementation</u> and <u>compliance</u> (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>

339. H NETWK CREATION	s-q	[0..4] (99)	<p>Hypothesis partnerships and social control for better implementation: Participation provides opportunities for <u>participants</u> to get to know each other and each other's interests and capacities, so that alliances and other networks can develop, which further implementation and/or other environmentally beneficial activities and allow for mutual social control.</p> <p>Compare the actual situation in the case to counterfactuals with both more and less participation: Would more participation have increased the development of alliances and networks for implementation or other environmentally beneficial activities (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
340. H NETWK IMPL	s-q	[0..4] (99)	<p>Hypothesis networks for implementation: Creation of networks/partnerships (see 339. H NETWK CREATION) leads to improved <u>compliance and implementation</u>. This includes the possibility that participants play a major role in monitoring each <u>other's compliance and implementation activities</u>.</p> <p>Compare the actual situation in the case to counterfactuals with both more and less network and partnership creation: Would more network and partnership creation have increased the likelihood of full implementation and compliance (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
<h2>E.II.2 Participation fosters opposition to decisions</h2>			
<p>Hypotheses in this section indicate a negative causal relationship between participation and implementation (i.e. the more intense the PP, the lower the likelihood of full implementation).</p>			
341. H AWAR DECREASE ACCEP	s-q	[0..4] (99)	<p>Hypothesis waking sleeping dogs: Raising <u>stakeholders'</u> awareness of issues and their involvement in decision-making leads them to consider possible negative effects of decisions and thus increases opposition to environmentally beneficial measures (Coglianese 1997).</p> <p>Compare the actual situation in the case to counterfactuals with both more and less participation: Would more participation have increased opposition to environmentally beneficial measures (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
342. H MISFIT INST	s-q	[0..4] (99)	<p>Hypothesis misfit of public demands with existing institutions: Participation opens the door for procedural and substantive demands of <u>stakeholders</u> (or the general public), which tend to be incompatible with existing <u>institutions</u> (Bora 1994).</p> <p>Compare the actual situation in the case to counterfactuals with both more and less participation: Would more participation have decreased the compatibility of public demands and existing institutions (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>
343. H MISFIT IMPL	s-q	[0..4] (99)	<p>Hypothesis misfit of public demands with implementability: Participation opens the door for procedural and substantive demands of <u>stakeholders</u> (or the general public), which tend to be less implementable than 'top-down' decisions (Bora 1994).</p> <p>Compare the actual situation in the case to counterfactuals with both more and less participation: Would more participation have decreased the implementability of the output (and vice versa)?</p> <p>0 = absence of the hypothesised causal link; 4 = a strong causal effect.</p>

References

- Ansell, C., & Gash, A. (2008). Collaborative Governance in Theory and Practice. *Journal of Public Administration Research and Theory*, 18(4), 543-571.
- Baumgartner, F. R., & Jones, B. D. (1993). *Agendas and instability in American politics*. Chicago: University of Chicago Press.
- Beierle, T. C., & Cayford, J. (2002). *Democracy in Practice. Public Participation in Environmental Decisions*. Washington, DC: Resources for the Future.
- Benson, D., & Jordan, A. (2010). The Scaling of Water Governance Tasks: A comparative federal analysis of the European Union and Australia. *Environmental Management*, 46(1), 7-16.
- Berkes, F. & Folke, C. (2002). Back to the Future: Ecosystem Dynamics and Local Knowledge. In L. Gunderson & C.S. Holling (eds.): *Panarchy. Understanding transformations in human and natural systems*, Washington: Island Press (pp. 121-146).
- Bingham, G. (1986). *Resolving Environmental Disputes. A Decade of Experience*. Washington, D.C.: The Conservation Foundation.
- Bora, A. (1994). Grenzen der Partizipation? Risikoentscheidungen und Öffentlichkeitsbeteiligung im Recht. *Zeitschrift für Rechtssoziologie*, 15(2), 126-152.
- Chess, C., & Purcell, K. (1999). Public Participation and the Environment: Do We Know What Works? *Environmental Science & Technology*, 33(16), 2685-2692.
- Coglianesi, C. (1997). Assessing Consensus: The Promise And Performance Of Negotiated Rule-making. *Duke Law Journal*, 46, 1255-1346.
- Cooke, B. (2001). The Social Psychological Limits of Participation? In B. Cooke & U. Kothari (Eds.), *Participation: the new tyranny?* (pp. 102-121). London, New York: Zed Books.
- Cooper, T. L. (1984). Citizenship and Professionalism in Public Administration. *Public Administration Review*, 44, 143-151.
- Creighton, J. L. (1981). *The public involvement manual*. Cambridge (Mass.): Abt Books.
- Dahl, R. A. (1961). *Who Governs*. New Haven: Yale University Press.
- Daniels, S. E., Lawrence, R. L., & Alig, R. J. (1996). Decision-making and ecosystem-based management: applying the Vroom-Yetton model to public participation strategy. *Environmental Impact Assessment Review*, 16(1), 13-30.
- deLeon, P., & deLeon, L. (2002). What Ever Happened to Policy Implementation? An Alternative Approach. *Journal of public administration research and theory*, 12(4), 467-492.
- Dietz, T., & Stern, P. C. (Eds.). (2008). Public participation in environmental assessment and decision-making. Panel on Public Participation in *Environmental Assessment and Decision Making*, National Research Council. Washington, D.C.: National Academic Press.
- Dryzek, J. S. (1995). Political and ecological communication. *Environmental Politics*, 4(4), 13-30.
- Fukuyama, F. (1997). Social capital and the modern capitalist economy: Creating a high trust workplace. *Stern Business Magazine*, 4(1).
- Fung, A. (2006). Varieties of Participation in Complex Governance. *Public Administration Review*, 66(Special Issue), 66-75.
- George, A. L., & Bennett, A. (2005). *Case Studies and Theory Development*. Cambridge, Mass.: MIT Press.
- Granovetter, M. (1973). The Strength of Weak Ties. *American Journal of Sociology*, 78(6), 1360-1380.
- Heinelt, H. (2002). Achieving Sustainable and Innovative Policies through Participatory Governance in a Multi-level Context: Theoretical Issues. In H. Heinelt, P. Getimis, G. Kafkalas, R. Smith & E. Swyngedouw (Eds.), *Participatory governance in multi-level Context. Concepts and experience* (pp. 17-32). Opladen: Leske + Budrich.
- Jensen, J. L., & Rodgers, R. (2001). Cumulating the Intellectual Gold of Case Study Research. *Public Administration Review*, 61(2), 235-246.
- Koontz, T. M. (1999). Citizen Participation: Conflicting Interests in State and National Agency Policy Making. *The Social Science Journal*, 36(3), 441-458.
- Larsson, R. (1993). Case Survey Methodology: Quantitative Analysis of Patterns across Case Studies. *The Academy of Management Journal*, 36(6), 1515-1546.
- Lauria, M., & Wagner, J. A. (2006). What Can We Learn from Empirical Studies of Planning Theory? A Comparative Case Analysis of Extant Literature. *Journal of Planning Education and Research*, 25, 364-381.
- Lind, E. A., & Tyler, T. R. (1988). *The Social Psychology of Procedural Justice*. New York, London.
- McEvily, B., Perrone, V., & Zaheer, A. (2003). Trust as an Organizing Principle. *Organization Science*, 14(1), 91-103.
- Mitchell, R. B. (2008). Evaluating the Performance of Environmental Institutions: What to Evaluate and How to Evaluate it? In O. R. Young; L. A. King & H. Schroeder (eds.): *Institutions and Environmental Change. Principal Findings, Applications and Research Frontiers*, Cambridge, Mass. (pp. 79-114).
- Newig, J. (2003). *Symbolische Umweltgesetzgebung. Rechtssoziologische Untersuchungen am Beispiel des Ozongesetzes, des Kreislaufwirtschaft- und Abfallgesetzes sowie der Großfeuerungsanlagenverordnung*. Berlin: Duncker & Humblot.
- Newig, J. (2007). Does public participation in environmental decisions lead to improved environmental quality? Towards an analytical framework. *Communication, Cooperation, Participation* (International Journal of Sustainability Communication), 1(1), 51-71.

- Newig, J., & Fritsch, O. (2009). Environmental Governance: Participatory, Multi-Level – And Effective? *Environmental Policy and Governance*, 19(3), 197-214.
- Pressman, J. L., & Wildavsky, A. (1984 [1973]). *Implementation: how great expectations in Washington are dashed in Oakland*. Berkeley, Calif. et al.: Univ. of Calif. Press.
- Putnam, R. D. (1995). Bowling Alone: America's Declining Social Capital. *Journal of Democracy*, 6(1), 65-78.
- Ragin, C. C., & Becker, H. S. (Eds.). (1992). *What is a Case? Exploring the Foundations of Social Inquiry*. Cambridge, New York, Melbourne, Madrid, Cape Town, Singapore, Sao Paulo, Delhi, Dubai, Tokyo, Mexico City.
- Reed, M. S. (2008). Stakeholder participation for environmental management: a literature review. *Biological Conservation*, 114(10), 2417-2431.
- Reed, M. S., Evely, A. C., Cundill, G., Fazey, I., Glass, J., Laing, A., Newig, J., Parrish, B., Prell, C., Stringer, L. C. (2010). What is Social Learning? *Ecology & Society*, 15(2).
- Renn, O. (2004). The Challenge of Integrating Deliberation and Expertise. Participation and Discourse in Risk Management. In T. L. MacDaniels & M. J. Small (Eds.), *Risk Analysis and Society. An Interdisciplinary Characterization of the Field* (pp. 289–366). Cambridge: Cambridge University Press.
- Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). New York: Free Press.
- Salamon, L. M., & Anheier, H. K. (1997). *Defining the nonprofit sector*. Manchester [u.a.]: Manchester Univ. Press.
- Schmitter, P. C. (2002). Participation in Governance Arrangements: Is there any reason to expect it will achieve "Sustainable and Innovative Policies in a Multi-Level Context"? In J. R. Grote & B. Gbikpi (Eds.), *Participatory Governance. Political and Societal Implications* (pp. 51-69).
- Smith, G. (2003). *Deliberative Democracy and the Environment*. London: Routledge.
- Stewart, R. B. (1992). Environmental Law in the United States and the European Community: Spillovers, cooperation, rivalry, institutions. *University of Chicago Legal Forum*, 1992, 41-80.
- Susskind, L., McKernan, S., & Thomas-Larmer, J. (Eds.). (1999). *The consensus building handbook : a comprehensive guide to reaching agreement*. Thousand Oaks, Calif. [u.a.]: Sage Publications.
- Susskind, L., J. Thomas-Larmer, et al. (2000). *Negotiating environmental agreements*. Washington, D.C, Island Press.
- Tsebelis, G. (1995). Decision Making in Political Systems: Veto Players in Presidentialism, Parliamentarism, Multicameralism and Multipartism. *British Journal of Political Science* 25 (3), 289-325.
- Underdal, A. (2002). One Question, Two Answers. In E. L. Miles, A. Underdal, S. Andresen, J. Wetterstad, J. B. Skjaereth & E. M. Carlin (Eds.), *Environmental regime effectiveness: Confronting theory with evidence* (pp. 3–46). Cambridge, Mass: MIT Press.
- Weber, M. (1947, first published 1922). *The Theory of Social and Economic Organization*. Translated by A. M. Henderson and Talcott Parsons; edited by Talcott Parsons. New York: Free Press.
- Webler, T., & Tuler, S. (2000). Fairness and Competence in Citizen Participation. *Administration & Society*, 32(5), 566-595.
- Weible, C. M. (2006). An Advocacy Coalition Framework Approach to Stakeholder Analysis: Understanding the Political Context of California Marine Protected Area Policy. *Journal of Public Administration Research and Theory*, 17(1), 95-117.
- Wolf, K. D. (2002). Contextualizing Normative Standards for Legitimate Governance beyond the State. In J. R. Grote & B. Gbikpi (Eds.), *Participatory Governance. Political and Societal Implications* (pp. 35–50). Opladen: Leske + Budrich.
- World Commission on Environment and Development (1987). *Our common future*. Oxford: Oxford University Press.
- Wondolleck, J.M. and S.L. Yaffee (2000). *Making Collaboration Work. Lessons from Innovation in Natural Resource Management* (Washington, D.C., Covelo: Island Press).
- Yin, R. K., & Heald, K. A. (1975). Using the Case Survey Method to Analyze Policy Studies. *Administrative Science Quarterly*, 20, 371-381.

Supplement [S2]:

What Role for Public Participation in Implementing the EU Floods Directive? A Comparison With the Water Framework Directive, Early Evidence from Germany and a Research Agenda

Abstract

We examine the roles and functions of non-state actor participation in implementing the EU Floods Directive of 2007 (FD). We draw on experiences with participation under the Water Framework Directive (WFD), because of important links between the two directives. Comparing the legal bases and the different functions for participation, we observe the paradoxical situation that while the WFD has fervently advocated public participation public interest has remained low, whereas the FD is less sanguine about participation despite citizens being potentially more affected by flood management issues – particularly given the current trend towards a ‘risk management’ approach under the FD. Our examination of current FD implementation in Germany reveals a considerable variety of participation approaches, as well as a general trend to ‘less’ rather than ‘more’ participation as compared with the WFD. The paper closes by discussing implications for future flood management planning and avenues for comparative research.

Keywords: flood risk management; mandated participatory planning; nested policy cycle; risk approach; security approach; adaptive policy learning.

What role for public participation in implementing the EU Floods Directive? A comparison with the Water Framework Directive, early evidence from Germany, and a research agenda

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Key words: Flood risk management, mandated participatory planning, nested policy cycle, risk approach, security approach, adaptive policy learning.

1 Introduction

The recurrence of flood disasters in central Europe over the past decade¹ has reinforced the discussion on the effectiveness of flood management. The EU Floods Directive (FD)², in place since 2007, aims to reduce the adverse consequences for human health, the environment, cultural heritage and economic activity associated with floods. The directive requires that flood risk management plans (FRMPs) be drafted for flood risk areas across Europe by 2015. Following the general trend of current EU (environmental) policies, such planning has to be carried out by informing the public and actively involving all interested parties: “This Directive reinforces the rights of the public to access this information and to have a say in the planning process” (European Commission 2014). The EU is following an instrumental rationale wherein participation is expected to lead to better informed, more widely accepted decisions and thus more effective policy delivery (Newig and Fritsch 2009b).

There is ongoing debate as to whether and under what concrete circumstances participatory planning efforts in general are actually conducive to effective public (environmental) management (Layzer 2002, Newig and Fritsch 2009a, Young, *et al.* 2013). For two reasons, flood risk management according to the Floods Directive constitutes a particularly interesting case for studying the effectiveness of participatory environmental governance: *First*, flood risk management planning is a relatively recent policy field, in which the risk paradigm poses particular emphasis on the role of

¹ “Between 1998 and 2009, floods in Europe have caused some 1126 deaths, the displacement of about half a million people and at least €52 billion in insured economic losses” (European Environment Agency, cited in European Commission 2014, online).

² Directive 2007/60/EC of the European Parliament and of the Council of 23 October 2007 on the assessment and management of flood risks, entered into force on 26 November 2007.

individuals. The importance of the latter can be demonstrated by recent experiences from German municipalities which have revealed that public involvement may severely delay effective flood protection measures, leading to increased damages (as in the case of the June 2013 flood in Germany – see Baldauf 2013³). *Second*, as the FD has to be implemented in all EU member states in parallel, and this lends itself to quasi-experimental approaches to studying more or less participatory planning on a given issue in a multitude of cases in parallel. It is thus more than timely to investigate the role of public and stakeholder participation in flood management planning.

Flood risk management planning under the FD is required to be closely aligned with river basin management planning under the Water Framework Directive (WFD)⁴, issued in 2000. The FD and related guidance documents repeatedly and systematically refer to the WFD as a role model in its requirements for public participation in river basin management planning. As the first major directive to introduce ‘mandated participatory planning’ instruments to implement policy (Newig and Koontz 2013), the WFD has attracted wide scholarly attention. A particular focus has been on the role of (public) participation in the Directive’s implementation (Blomqvist 2004, Newig, *et al.* 2005, De Stefano 2010, Wright and Fritsch 2011, Van der Heijden and Ten Heuvelhof 2012, Roggero 2013). Building on this ample experience, it will therefore be useful to establish parallels and to compare participatory governance in the two directives in order to elucidate what can be learned from WFD experiences, what is transferable to FD implementation – and what is not (see Evers and Nyberg 2013 for a critical discussion).

Against this backdrop, this paper aims to assess the role of public participation in implementing the FD. In particular, we ask what types of participation are likely to be useful for effective and sustainable flood risk management. The paper thus contributes to the growing body of literature that addresses the issue of ‘what works’ in participatory environmental governance (Bäckstrand 2006, Koontz and Thomas 2006, Newig and Fritsch 2009a, Høgl, *et al.* 2012).

We proceed as follows: In section 2, we draw on legal and policy documents to analyse the formal basis for participation under the FD in comparison to the WFD. In a short excursus (section 3), we summarise recent experiences with participatory management planning under the WFD. Subsequently, in section 4, we discuss different functions of participation as described in the academic literature, applying these again in comparative context to the FD and flood management more generally, and to water management under the WFD. We show how different policy issues in sustainable water management and flood management lead to different functions of participation. Notably, the stronger and more direct affectedness of flood-prone communities, especially given the current trend towards a risk approach through the FD, implies a greater need for effective participation. In sections 5 and 6, we explore early experiences with FD-related participation. We do so by first reviewing the (scant) available academic literature. *Second*, we present early results of primary research of FD implementation in Germany, drawing on document analysis and interviews with public officials. The paper closes by summarising the early application of FD-related participation, highlighting differences to the more consolidated experiences with implementing the WFD, and outlining avenues for further research.

2 Legal and policy analysis of the role of participation in FD and WFD implementation

Both the Floods Directive and the Water Framework Directive share a common, novel approach to EU (environmental) policy, namely the ‘mandated participatory planning’ (MPP) approach to policy implementation (Newig and Koontz 2013). This mode of EU policy explicitly mandates the formulation of particular plans or programmes on a national, subnational or even cross-national level.

³ Technical protection measures planned in the aftermath of major floods in 2002 in the city of Grimma were delayed by citizen protest, with lengthy court proceedings until 2007.

⁴ Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy.

These plans serve as the central vehicles for policy implementation; at the same time, they are in themselves political programmes. A political decision-making process results, which we describe in terms of a secondary policy-cycle nested within a larger cycle of European public policy-making and implementation. Figures 1 and 2 depict these nested policy cycles for the WFD and the FD, respectively.

Importantly, non-state organised interests or the wider public must be involved in drafting the required plans. Mandated from ‘above’ rather than bottom-up, this institutionalisation of participation in policy implementation can be regarded as a particular form of participatory governance. We begin our analysis by considering the WFD as the earliest and arguably most prominent example of MPP before turning to the FD as its most recent instance, and considering connections between the two.

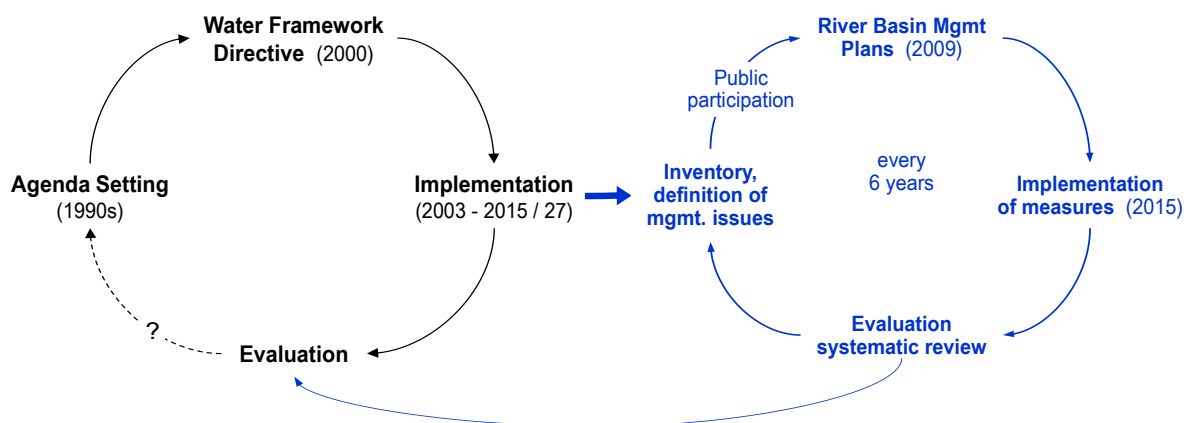


Figure 1: Nested policy cycle of the Water Framework Directive. Source: Newig and Koontz 2013.

The *Water Framework Directive* requires all EU member states to achieve “good status” of all inland ground and surface waters by 2015. As the central vehicle of implementation, member states must develop River Basin Management Plans (RBMPs) and Programmes of Measures (PoMs) that assess current water conditions and define actions to be taken to achieve the Directive’s targets. Public authorities are given substantial flexibility in operationalising the goal of ‘good water status’, defining the measures by which this is to be attained, and defining exemptions for certain water bodies. RBMPs and PoMs had to be submitted to the European Commission by the end of 2009. Subsequent six-year planning cycles require the submission of plans in 2015 and 2021 (see table 1 for an overview). Plans must be produced at the level of river basin districts, thereby covering hydrological spatial units rather than political-administrative jurisdictions, to overcome spatial ‘misfit’ and internalise negative externalities (spillovers) (Moss 2004).

Public participation is seen as *the* central element of the WFD planning process (European Commission 2003: 55) and a key success factor for the Directive’s implementation (Preamble 14 WFD). The official WFD internet portal⁵ proclaims the need to ‘get Europe’s waters cleaner by getting citizens involved’:

The increasing demand by citizens and environmental organisations [...] is one of the main reasons why the Commission has made water protection one of the priorities of its work. [...] In achieving these objectives, the roles of citizens and citizens’ groups will be crucial. This is why a new European Water Policy has to get citizens more involved.

Against the backdrop of these more rhetorical statements, the WFD specifies public participation in its Article 14. It introduces three main forms, namely: information supply, consultation and active involvement. Whereas information supply and consultation must be “ensured” by member states,

⁵ URL: http://ec.europa.eu/environment/water/water-framework/info/intro_en.htm (last accessed 22.01.2014; unchanged since 2002). Ironically, this introduction to the Directive is available in English language only.

active involvement is only to be “encouraged”. Consultation is to be organised in a three-step procedure (see table 1). Draft RBMPs and associated planning documents have to be made available for public scrutiny and comment. Consultation and active involvement apply to the implementation of the whole directive, but to the production of RBMPs in particular. Annex VII WFD requires that RBMPs summarise the participatory measures taken, their results and their impact on the plan, as well as details on how background information can be obtained.

Unprecedented in European public policy, a ‘Common Implementation Strategy’ (CIS) was established via a joint process by European national water ministries with the aim of coordinating implementation of the WFD and providing guidance on specific aspects of the Directive. The CIS guidance document on public participation in the planning process is particularly enthusiastic about participation, maintaining that “Public participation covers a *wider* range of activities than prescribed by the Directive. The Directive requires active involvement, consultation and access to information. *More* may be useful to reach the objective of the Directive (preamble 14)” (EU 2002: 19, emphasis added).

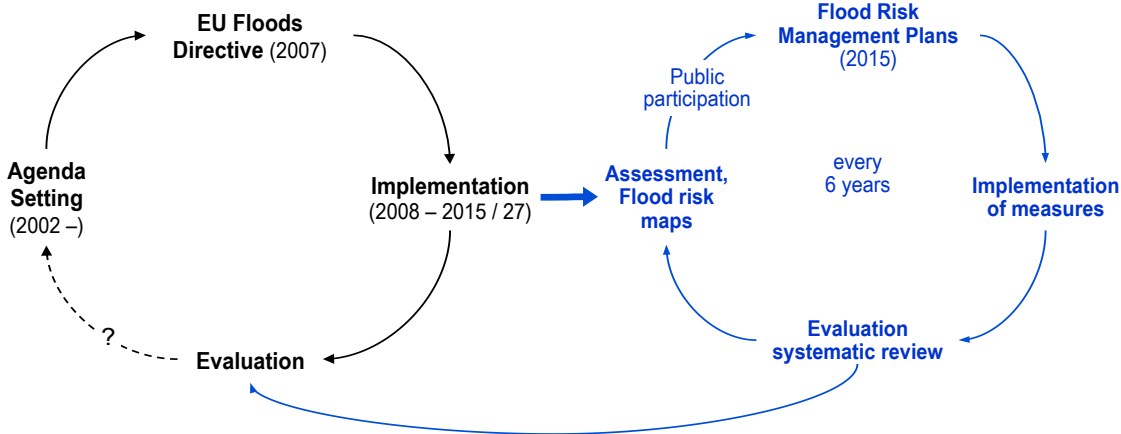


Figure 2: Nested policy cycle of the Floods Directive.

Aimed at the protection of human health, the environment, cultural heritage and economic development, the *Floods Directive* is the most recent and the first not predominantly ‘environmental’ directive to follow the MPP model. It requires member states to:

- carry out preliminary flood risk assessments by December 2011;
- identify areas with potentially significant flood risk;
- produce flood hazard maps and flood risk maps by December 2013;
- produce flood risk management plans by December 2015.

These planning steps have to be repeated every six years, reviewing and updating the respective planning documents. As Preamble 17 FD stresses, planning under both the WFD and the FD constitute elements of integrated river basin management, and ought to be coordinated (Albrecht and Wendler 2009).

Unlike the WFD, the FD remains purely procedural, leaving definition of goals for flood protection and the reduction of flood risk to the member states (or sub-/cross-national administrations). Beyond assessment of the status quo of flood risk and the considerable requirements of drafting flood risk maps and designating flood risk areas, plans only have to define measures for flood risk *management*, but need not address how flood *protection* will be achieved. MPP here becomes almost purely an exercise in reflexive governance. By obliging public administrations to intensively engage with flood risk at the local level, it is hoped that flood protection will also be enhanced.

Compared to the high expectations for public participation in the WFD, the FD appears less sanguine. On the FD online portal⁶, public participation is briefly addressed, but not given nearly the same weight as in relation to the WFD. There is also no guidance document on participation specifically drafted for the FD. However, the whole process of the Common Implementation Strategy for WFD implementation has recently been extended to the FD in the form of a ‘Working Group F on Floods’. Both FD-related scholarly literature and policy documents refer to the guidance document’s definitions of ‘active involvement’ and ‘interested parties’, while at the same time acknowledging differences regarding participation in both directives (Gierk and Stratenwerth 2010, Heintz and Pohl 2011). In summary, the FD could arguably be regarded as an addendum to the WFD, albeit with a different substantive focus, and in some cases distinct competent authorities.

The legal provisions of the FD are also somewhat less ample on participation, compared to the WFD. According to Art. 10 para. 1 FD, the public must be granted access to preliminary flood risk assessments, flood hazard maps and flood risk maps, implying ‘ex post’ access and mandating no public involvement in the drafting of these documents (Heintz and Pohl 2011). As with the WFD, ‘active involvement’ of ‘interested parties’ must be ‘encouraged’ in the production (as well as the review and updating) of FRMPs. Moreover, according to Art. 9 FD, “the active involvement of all interested parties [...] shall be coordinated, as appropriate, with the active involvement of interested parties under Article 14 of Directive 2000/60/EC”.

Table 1: Participation requirements in WFD and FD implementation.

	Water Framework Directive	Floods Directive
Name of plans	River Basin Management Plans (RBMPs), Programmes of Measures (PoMs)	Flood Risk Management Plans (FRMPs), and accompanying flood risk maps and flood hazard maps
Geographical focus	River basin districts and sub-units	Flood risk areas within river basin districts and sub-units
Cyclical planning	Six-year cycles (2009, 2015 ...)	Six-year cycles; for FRMPs aligned with those of the WFD (2015 ...); for flood maps, three years ahead (2012, 2018, ...)
Material goals of the directive	Good water status for all ground and surface waters by 2015	Abstract goal only, no concrete objectives
Subject of participation	Implementation of the whole directive, and RBMPs in particular (PoMs are subject to consultation under a Strategic Environmental Assessment)	Formally, FRMPs only (also subject to public consultation under a Strategic Environmental Assessment)
Public information	Work programme for RBMPs, overview of significant water management issues and draft RBMPs (Art. 14 para. 1). On request, access to background documents (Art. 14 para. 1)	Preliminary flood risk assessment, flood hazard maps, flood risk maps, FRMPs (Art. 10 para. 1)
Public consultation	Three-stage consultation of the general public (Art 14 para. 2)	Not mentioned, but FRMPs are subject to public consultation as part of a Strategic Environmental Assessment
Active involvement	Active involvement of all interested parties in implementation of the directive shall be encouraged (Art. 14 para. 1)	Active involvement of all interested parties in production of FRMPs shall be encouraged (Art. 10 para. 2)

⁶ URL: http://ec.europa.eu/environment/water/flood_risk/index.htm (last accessed 22.01.2014)

In both the WFD and the FD, the term ‘encourage active involvement’ leaves substantial leeway for member states to implement a wide variety of forms of public involvement, including non-participatory forms of drafting plans where this is deemed appropriate. In addition to the specific participation-related requirements, draft Flood Risk Management Plans (FD) and Programmes of Measures (WFD) are subject to a formal consultation as part of a Strategic Environmental Assessment according to the SEA Directive⁷ (Carter and Howe 2006, Unnerstall 2010).

3 Excursus: Experiences to date with public participation in implementing the WFD

In contrast to the Floods Directive, the implementation of the Water Framework Directive has already passed through its first planning cycle. It is therefore useful to consider these experiences with participatory planning in order to inform FD-related participation. Undoubtedly, the WFD has had a huge impact on water-related public administration Europe-wide. The scope and depth of WFD-mandated participatory planning has been unprecedented in water governance in the great majority of member states (see De Stefano 2010).

Due to the considerable leeway with how to implement Article 14 WFD, member states and even jurisdictions within member states have adopted quite different approaches to participation, leading to an enormous variety of process types (Rault and Jeffrey 2008). Although this makes general statements about participatory planning in WFD implementation difficult, a number of insights common to most member states do emerge. Participation of the general (lay) public (‘users’ in WFD terminology) is essentially absent. In most EU member states – with the notable exception of France – hardly any comments on RBMPs have been submitted by non-specialists⁸. In hindsight, this is not overly surprising: Despite different water governance challenges across the EU (e.g. in southern member states water scarcity and quality issues are often more acute, and citizen participation has been slightly higher), most citizens remain affected only to a very limited degree by often rather technical WFD issues. The two earlier consultation steps (in 2007 and 2008) elicited virtually no comments at all, not even by professional stakeholders, arguably because these steps were not perceived as relevant, despite being mandated by the WFD. In contrast to this sobering experience with the formal consultation procedure, quite a rich variety of ‘active involvement’ activities has emerged, which typically include organisational representatives such as municipalities, agriculture, industry and environmental NGOs (see, e.g. Demetropoulou, *et al.* 2010, Van der Heijden and Ten Heuvelhof 2012).

Notwithstanding the range of processes involving non-state actors in WFD implementation, evidence is emerging to suggest that participant input may have very little impact in actually shaping RBMPs and PoMs (Koontz and Newig forthcoming). While such evidence suggests that participation so far has failed to effectively address pressing water-related problems, such as agricultural nitrate pollution (EEB 2010), participation does seem to have fostered trust and networks among participants, which may have positive long-term effects. These are, in any case, early conclusions, and a comprehensive assessment of WFD-induced participation and its impact on achieving the material goals of the Directive is lacking to date (but see European Commission 2012).

Below we investigate which of these recent experiences with participatory WFD implementation may usefully be drawn on in FD implementation – and where the two regulatory fields differ to the extent that a transfer of WFD experiences may make little sense.

⁷ Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment, entered into force on 21 July 2001.

⁸ In Germany, for instance, only around 7 percent of all comments were made by (lay) citizens, and in England and Wales 11 percent (document analysis by Anna Ernst, 2010). However, these figures may even be too high, since apparently some professionals (e.g. NGOs) submitted their comments as private citizens.

4 Functions of participation in flood risk management

Over recent decades new forms of governance, increasingly drawing on the participation of non-state actors, have emerged in response to the failure of traditional state and market mechanisms to address democratically and effectively many pressing problems in the realm of the environment and beyond (Schmitter 2002). The current (European) policy discourse and much of scholarly research is concerned with the instrumental value of stakeholder and citizen participation. Through the inclusion of lay knowledge, social learning, and improved acceptance and compliance, participatory processes are expected to arrive at improved environmental standards, better implementation and positive environmental impacts, compared to more traditional top-down modes of decision-making (Reed 2008, Newig and Fritsch 2009b). However, evidence on the effects of public participation remains scattered, and debate is on-going. While advocates assert the aforementioned advantages of collaborative governance, critics highlight the potentially adverse effects of participatory group processes (Cooke 2001) as well as the superiority of scientific expertise over lay contextual knowledge (Rydin 2007).

Both the WFD and the FD subscribe to the positive potential of public participation. In the Common Implementation Strategy's Guidance Document on participation under the WFD, the expected outcomes of participation are described as awareness raising, knowledge elicitation and social learning, and enhanced transparency and acceptance (EU 2002). Also subscribing to the CIS process, the Floods Directive apparently follows in this line of political reasoning. However, as the two directives address different (though overlapping) policy fields, participation may serve different functions under both directives. Due to its wider interest in the quality of European surface, ground and coastal waters, stake under the WFD is mainly determined by actors' position and role in the hydrologic cycle; under the FD, affectedness is mainly a function either of exposure to flood risks or of contributing to flood risk management measures, largely leaving other issues of water management aside. This leads to different stakes among societal actors and publics under the two policy regimes. As table 2 indicates, WFD river basin management planning has largely been a public managerial effort in which almost exclusively organised interests (e.g. agriculture, industry, environmental groups) took part, as water users or concerned parties. The FD, however, as not exclusively, and not even primarily, an *environmental* directive, considers a larger range of 'goods' to be protected: environment, human health, cultural heritage, and economy. In this way, the FD generates a variety of affected stakeholders, ranging from a large number of lay citizens or abutting landowners from industry and agriculture exposed to an immediate flood risk, to various actors without direct exposure to flood hazards, but with capacities to engage or foster mitigating measures.

Table 2: Stakeholders in WFD and FD implementation in comparison.

	Water management under the WFD	Floods management under the FD
Local government	<i>Rather important</i> Local water authority Sponsor of measures	<i>Very important</i> Urban and land use planning in flood risk areas
Industry	<i>Less important</i> Local polluters	<i>Important</i> Abutting landowners Potential source of hazardous substances during floods
Agriculture	<i>Very important</i> Users of (ground)water for irrigation Source of diffuse pollution – nitrate, pesticides etc.	<i>Rather important</i> Retention areas on intensively used agricultural land
Forestry	<i>Less important</i>	<i>Rather important</i> Reforestation as ‘ecological’ measure in flood prevention
Environmental NGOs	<i>Important</i> Promote sustainable and ecological water management Integrate nature protection	<i>Important</i> Promote sustainable natural flood protection Integrate nature protection
Citizens	<i>Less important</i> Hardly directly affected Local knowledge	<i>Very important</i> Responsibility for property and well-being Local knowledge

Participation under the FD is further substantially determined by the special communication and information requirements imposed by flood risks. The Directive seeks to achieve a Europe-wide harmonisation of the flood management regime under a flood risk management paradigm, reflecting a shift away from the security paradigm hitherto prevalent in several member states. Under the security paradigm, floods are mainly seen as natural phenomena to be fought by predominantly structural protective measures, typically through centralised decision-making. Governance structures are usually characterised by strongly hierarchical, expert-driven planning systems aimed at the creation of ‘safe areas’ (Penning-Rowsell, *et al.* 2006, Heintz, *et al.* 2012). In contrast, the risk-based approach sees floods as related to human behavior and, as such, to be addressed in a broad debate in regional and local contexts (Butler and Pidgeon 2011, Heintz, *et al.* 2012). Uncertainties and risks are accommodated within decision-making processes, which incorporate a variety of societal values beyond security, such as ecological and environmental values (Penning-Rowsell, *et al.* 2006, Lange and Garrelts 2007, Heintz, *et al.* 2012). As such, flood risk management processes include in addition to central government also civic and private actors, and local-level public officials. Mitigation measures associated with risk-based approaches are oriented towards place-specific combinations of non-structural and people-centred measures over traditional structural approaches, embracing both causes and consequences of expected floods (Penning-Rowsell, *et al.* 2006).

The societal accommodation of risk is a core issue of FD governance, and, as such, shapes the involvement of stakeholders and the public. Independent of the particular source of risk, management procedures rest on two requirements: the accessibility of sufficient knowledge and information about the risk source and the likely consequences of different management options; and the availability of criteria to judge alternatives based on their consequences for affected parties and the wider public (Renn 2004 cf. McDaniels 1998). In this respect, stakeholders and the public perform important functions. Although scientific and expert knowledge is essential in risk management processes, anecdotal knowledge on the sources and consequences of certain risks and the impacts of given policy alternatives, held by stakeholders, has frequently proven to be able to add value to the systematic

analyses of experts (for a discussion of this issue see Pellizzoni 2003, Renn 2004). The weighting of certain risks and of their tolerability can be seen as a societal exercise (Schanze 2002), in which participation plays a pivotal role: “Public input is an essential contribution for determining the objectives of risk policies and for weighing the various criteria that ought to be applied when evaluating different options” (Renn 2004: 290 cf. McDaniels 1998). Measures of awareness raising and information about flood risk exposure are here again of particular significance as prerequisites for the meaningful inclusion of participants’ values into the political process through dialogue and collaboration (Merz, *et al.* 2011, Bradford, *et al.* 2012).

5 Review of early experiences with FD-related participation across Europe

Experience thus far with participation in Floods Directive implementation is limited, given that flood risk and flood hazard maps were only due by December 2013, and flood risk management plans (FRMPs) are not due until December 2015. Furthermore, as discussed in section 2, the requirements on member states to involve stakeholders and the public differ for the various stages of the planning cycle, and authorities are much less obliged to encourage participation and involvement in preliminary flood risk assessments and flood risk and hazard mapping. A review of the emerging literature on FD implementation reveals that scholarly attention to date has focused on (1) transposition of the FD into national legislation and integration with existing policy, and (2) calculation and mapping of flood risks and flood hazards. Only very few papers discuss early experiences with the development of regional implementation strategies, pilot planning processes, and the preparation of draft FRMPs.

Much of the literature engaging with the development and adoption of the FD is framed in the broader discussion of the shift from a flood protection paradigm towards a flood risk management paradigm in Europe. This shift, it is observed, has taken place unevenly, and a variety of flood risk management practices have evolved across the member states due to different historical, socio-economic, cultural and policy contexts (Klijn, *et al.* 2008, Krieger 2013). The Floods Directive both responds to this broad paradigm shift, and aims for convergence and harmonisation in European flood risk management (FRM) policy.

Flood Risk and Hazard Mapping

While the process of flood risk and hazard mapping under the FD is quite advanced in most member states (de Moel, *et al.* 2009), public participation appears to have been rather limited. Comparing the legal framework for participation in flood risk mapping across Germany, Austria, England and Wales, for example, Unnerstall (2010) found that the countries examined had not developed participatory approaches. In Flanders (Belgium), which has integrated FD and WFD implementation from 2009 onwards, Kellens *et al.* (2013) report that participation in flood risk mapping extended only to professionals and experts. Indeed, European flood risk mapping in general seems to have been carried out in a rather expert-led, technical fashion (Dráb and Říha 2010, Pleschko and Kaufmann 2012).

The publication of flood maps, as required by the FD, is recognised as important for awareness-raising, education and capacity-building (Buchecker, *et al.* 2013). However, simply making maps available is usually insufficient to meet these ends, and several authors report on research and pilot projects for the creation and improvement of flood risk and hazard maps via stakeholder and public participation (e.g. Meyer, *et al.* 2012, Kjellgren 2013). Common to most of this research is the general finding that participation in practice remains limited. In particular, evidence from Germany suggests that given the weak requirements of the Directive, flood managers tend not to mobilise the resources necessary for active public and stakeholder involvement (Kjellgren 2013).

Flood Risk Management Planning

As the production of FRMPs is yet to begin in most member states, we find little literature reporting on participation in flood risk management planning under the FD. Only a few papers report on pilot flood risk management planning projects. These tend also to focus on the legal and technical aspects of FD implementation, and while public participation is not described in great detail, several authors recognise scope and challenges for achieving active involvement of interested parties.

Cooper *et al.* (2013) discuss the FRM planning processes underway in the Catchment Flood Risk Assessment and Management programme in Ireland. In a deliberate move away from top-down consultation, the programme aims for close engagement between communities and local authorities, for the production of locally specific flood hazard and risk information. The authors observe progress in raising awareness of flood risk, generating community acceptance of FRM measures, and building trust among authorities, stakeholders and communities. Verta and Triipponen (2011) describe the production of a national pilot FRMP for the Kokemäenjoki River Basin in Finland. The authors report that the process involved extensive collaboration among agencies, municipalities and stakeholders, with the aim of “creating an open and participatory planning process, in which the opinions and views of various stakeholder groups are taken into account to produce a commonly accepted FRMP” (Verta and Triipponen 2011: 86). No detail is provided on the participatory process, however, and the authors note that ongoing collaboration remains the most significant challenge, given the divergent interests of stakeholders in the river basin.

Despite the current lack of literature, however, quite a number of pilot FRM planning processes are underway or recently completed in EU member states, and a number of draft and pilot FRMPs exist. These have the potential to yield important early insights and are worthy of investigation.

6 The ‘Case’ of Germany: A Multi-level Analysis

To begin to get an understanding of how FD implementation is playing out in the German case, and the extent to which it incorporates participatory planning and encourages the involvement of interested parties, we have turned to a variety of primary sources and ‘grey literature’. This includes planning documents, agency and consultants’ reports and official project websites. Particularly valuable have been the strategies and concept documents for active involvement in FD implementation produced by the responsible ministries and agencies of the federal states and early documentation of participatory processes in the practitioner literature and conference presentations. Our preliminary analysis reveals diverse participatory forms and structures materialising at different levels. In Germany, the 16 federal states (*Länder*) have the (sole) capacity to determine the type and degree of participation in FD implementation. Germany therefore can be seen as a ‘laboratory’ in which very different forms of participation in FRM planning may be observed under very similar overall contextual conditions, thus potentially leading to valid insights on the link between participation and planning outcomes.

Participation in International River Basins

Germany has joint responsibility for FRM planning in six international river basins. Each is managed under an international convention and a commission comprising competent authorities from the national or federal states party to the convention. Notable examples include the Convention on the International Commission for the Protection of the Elbe, the Danube River Protection Convention and the Convention on the Protection of the Rhine.

With the advent of the FD, stakeholder engagement in FRM planning was already occurring at the international river basin level, with varying degrees of stakeholder participation. For example, the Danube Action Programme on flood protection, finalised in 2004, deems participation “a cornerstone of successful implementation [...], both to improve the quality and the implementation of the decisions, and to give the public the opportunity to express its concerns” (ICPDR 2004: 16). The

extent to which such principles are operationalised basin-wide, however, remains unclear. As German federal state agencies reserve flood risk management planning authority at the sub-basin level, type and degree of stakeholder engagement in different sub-basins and federal states is varied.

Participation Strategy at the National Level

The FD was transposed into German law through a 2010 amendment to the Federal Water Act, which is an almost exact transposition of FD requirements. Leaving aside the intricacies of the German constitutional system, which determines the sharing of power between the federal and the state (*Länder*) level, the *Länder* in practice serve as the competent authorities for FD implementation.

Generally, the *Länder* had not been enthusiastic about the FD. Via the Federal Council (*Bundesrat*), they had sought to prevent stringent regulation (Bundesrat 2006), questioning the necessity of an EU directive on flood risk management given the already existing legal framework in Germany. Moreover, they expressed disapproval at close alignment of WFD and FD processes because of the different objectives, actors involved, and interests in the two policy fields (Bundesrat 2006).

To guide FD implementation in the German *Länder*, the Federal-state-workgroup on water (LAWA) developed guidance documents, including recommendations for the establishment of FRMPs (LAWA 2010) and for participation in FD implementation (LAWA 2012). Already for WFD implementation, the LAWA had played an important role by developing guidelines, in accordance with the European Common Implementation Strategy papers, for the German context (LAWA 2003).

The LAWA guidelines for both directives differ substantially on the notion of participation. Whereas the WFD guidelines adopt quite a broad notion of the public to be addressed in participatory processes, the recommendations for FRMPs interpret the term ‘interested parties’, given in Article 10 (2) of the FD, rather narrowly as “the relevant authorities involved in the drawing up and implementation of the FRMPs, municipalities, recognised associations [... and] other interest groups determined on a case-by-case basis” (LAWA 2010: 18). The wider public is just to be informed on flood risk and flood hazard maps and FRMPs. While the WFD guidelines stress early involvement of the public, both FD guidance documents mention active involvement merely as a ‘possibility’, recommending consultation as an equally valid approach. Furthermore, it is recommended that experiences with participation in WFD implementation are drawn upon in FD implementation, for instance in employing regional workshops at the river basin level (LAWA 2012). These, it is suggested, might take the form of flood risk partnerships (described further below). In essence, both FD documents leave much room for interpretation, and *Länder* may potentially select from a whole spectrum of participatory processes.

Participatory Strategies at the Länder Level

Empirically we observe three general types of (participatory) FRM planning unfolding in Germany, which can be described as: (1) the adoption of established WFD structures and procedures for FD implementation; (2) rather restricted consultation, and; (3) rather intensive stakeholder involvement. Out of the sixteen⁹ *Länder*, six are planning to use structures and procedures already established under the WFD to facilitate involvement in FRM planning¹⁰. Generally, they follow a two-tier structure with an Advisory Board at the state level, and participatory forums at the sub-basin level (Buschhüter 2013, LUGV 2012, Leeb 2013, MLULR 2011, MLUSA 2010, TMLFUN 2011). The concrete implementation measures within this two level structure vary. Bavaria, for instance, pursues the participatory development of FRMPs mainly at the regional level: The core planning function is passed to the eight governing districts, (*Regierungsbezirke*), which organise Regional Water Forums – an important participatory mechanism in WFD implementation. In adapting WFD institutions to FRM

⁹ No reliable information on participatory instruments in FD planning was found for Berlin or Hamburg.

¹⁰ Bavaria, Brandenburg, North Rhine Westphalia, Thuringia, Schleswig-Holstein and Saxony-Anhalt.

planning, the Regional Water Forums incorporate additional actors representing civil protection, cultural heritage, and the insurance sector. None of the states makes provision for inclusion of the general public, and Bavaria even deems the participation of individuals inappropriate for strategic FRM planning (Heintz, *et al.* 2012).

The second strategy for facilitating active involvement involves meeting the bare minimum requirements through information and consultation measures. Five *Länder*¹¹ endorse a concept of public involvement that emphasises the provision of information and use of the Strategic Environmental Assessment (see section 2) as the main instrument for active involvement (Gerber 2011, Marbuger 2012, MLUV 2011, NLWKN 2012). As there are no established mechanisms, stakeholder participation occurs on an ad-hoc basis, implying a decrease in the ‘level’ of participation as compared to WFD implementation in some states. Saxony, for instance, which drew on rather inclusive WFD structures (Unnerstall 2010) opted for information events and consultation for harmonising existing flood protection concepts and FRMP requirements.

The third strategy¹² entails participatory processes that contrast significantly – in the degree and scope of participation – with the first two strategies discussed above, as processes are designed as inclusive, bottom-up, and facilitative of active involvement. Baden Württemberg adopted a new flood defence strategy in 2003, which included the establishment of specific multi-stakeholder forums for flood risk management, so-called flood partnerships. This flood partnership model was in turn adopted by the adjacent *Länder* Rhineland-Palatinate (SGD Süd 2012) and Saarland (Jüpner 2010). Flood partnerships are supposed to foster cooperation among municipalities within sub-basins (WBWFG 2012), and function as round tables for an array of actors, including municipal representatives, local water and civil protection authorities, cultural heritage groups, industry and environmental groups. They are initiated by voluntary agreement among cities, municipalities, public officials and associations, so that the exact structure and organisation varies. Organised at the sub-basin level, flood partnerships are assigned as the main units advising in the preparation of FRMPs. Their wide-reaching mandate may even extend to elements of implementation. An advisory board exists at the federal state level, comprising state and non-state actors, to coordinate these efforts.

Notwithstanding their early opposition of the FD, some *Länder* have since engaged in comprehensive participatory processes. The different strategies discussed here, however, seem to have emerged largely due to already established flood protection structures, rather than because of the requirements of the FD.

7 Conclusions for participatory FD implementation and outlook for further research

The EU Floods Directive explicitly mandates the involvement of the public and organised stakeholders in its implementation, notably in the drafting of Flood Risk Management Plans. This paper has sought to shed light on the concrete roles and functions of participation in implementing the FD. It did so by comparing participation under the FD to participation under the Water Framework Directive. For two reasons, the WFD is taken as an important point of reference: First, the FD and the WFD share many similarities. Both address water management in river basins, and both follow the same recently established pattern of mandated participatory planning in European (environmental) governance. This requires local public administration to draft management plans in six-year cycles in order to operationalise the goals of the directives. Second, the FD makes explicit reference to the WFD, calling for the alignment of flood management with water management under the WFD, including in the realm of public participation.

In comparing participation under the FD and the WFD, our analysis suggests a paradoxical situation: The WFD and accompanying policy documents have fervently advocated participation, notably of the

¹¹ Hesse, Mecklenburg-Western Pomerania, Saxony, Lower Saxony and Bremen.

¹² This is taken up by just three *Länder*: Baden-Württemberg, Rhineland-Palatinate and Saarland.

broad public. Empirical evidence shows, however, that participation under the WFD has mainly incorporated organised interests, giving less opportunity for involvement of the wider public. The low levels of interest observed among the latter are indeed not surprising given the limited degree to which citizens are directly affected. The FD, on the other hand, is much less sanguine about participation, mandating even less involvement of the general public. However, citizens as residents and property owners are potentially far more significantly and directly affected by flood management issues as compared to water management under the WFD – even more so as the FD embodies a shift from an administration-led ‘security approach’ to a ‘risk approach’ that puts more responsibility on individuals. This suggests, therefore, that contrary to the legal requirements, the public ought to be more intensively involved in flood risk management planning than in river basin management planning. Such involvement would range from awareness-raising and education to opportunities to shape plans and identify measures.

Across Europe, there is currently only very little experience with FD-related participatory planning, since risk management plans are not due until 2015. Experience with participation in flood risk and hazard mapping, to be completed in late 2013, has also so far been limited, as mapping has been largely non-participatory. Some experience with pilot flood risk management plans exists, but there is little literature available detailing the participatory planning process. As an initial step, we have conducted a preliminary analysis of current *strategies* for involving the public in FRM planning in the 16 German *Länder*. Due to the distribution of competencies in the German federal system, each *Land* has developed its own approach to implementing the FD. We find, first, that although the FD suggests close alignment of management planning with the WFD, this appears to be seldom the case in practice. Some *Länder*, such as Lower Saxony, explicitly denounce both the WFD approach to participation as well as any close alignment in implementing the two directives. Second, we find that there is a wide variety of different approaches to participation, ranging from basic consultation in some *Länder* to flood partnerships, involving a lot of non-state actors in others. Third, we find that the ‘baseline’ level of non-state actor participation is lower in FD implementation as compared with WFD planning. Only three out of sixteen *Länder* have implemented a flood partnership model.

In order to promote informed decision-making by both flood managers and affected non-state actors (e.g. landowners), a more inclusive approach than what is currently practiced would be advisable. Allowing for structured participation in the drafting of FRMPs within pre-given deadlines could also help avoid the delay of flood protection measures as a result of local citizen intervention, as witnessed in some German communities severely affected by the June 2013 floods.

Institutionalised participation in flood risk management planning as mandated by the FD clearly is a novelty, and there will be much to learn throughout the upcoming planning cycles. Despite considerable experience with prior and ongoing participation in river basin management under the WFD, some important differences between the two policy areas prohibit a direct transposition of WFD experiences to FD implementation, as outlined above. From a governance research perspective, FD implementation provides an excellent quasi-experimental setting for studying the effects of mandated participatory planning occurring in parallel in 28 member states. It will be crucial to closely examine the extent to which (adaptive) policy learning takes place both across policy fields (by incorporating experiences with WFD implementation) and temporally (through learning from one planning cycle to the next). This will contribute significantly to an improved, evidence-based understanding of ‘what works’ in public environmental governance.

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References

- Albrecht J, Wendler W. 2009. Koordinierte Anwendung von Wasserrahmenrichtlinie und Hochwasserrisikomanagementrichtlinie im Kontext des Planungsprozesses. *Natur und Recht* **31**: 608-618.
- Bäckstrand K. 2006. Multi-Stakeholder Partnership for Sustainable Development: Rethinking Legitimacy, Accountability and Effectiveness. *European Environment* **16**: 290-306.
- Baldauf H. 2013. Versäumter Hochwasserschutz. "Die Flut kommt vier Jahre zu früh". *Spiegel Online*, 04.06.2013 <http://www.spiegel.de/panorama/hochwasser-in-grimma-wieso-die-schutzmauer-nicht-fertig-wurde-a-903738.html> (last accessed 22.01.2014).
- Blomqvist A. 2004. How can stakeholder participation improve European watershed management: the Water Framework Directive, watercourse groups and Swedish contributions to Baltic Sea eutrophication. *Water Policy* **6**: 39-52.
- Bradford RA, O'Sullivan JJ, van der Craats IM, Krywkow J, Rotko P, Aaltonen J, Bonaiuto M, De Dominicis S, Waylen K, Schelfaut K. 2012. Risk perception : Issues for flood management in Europe. *Natural Hazards and Earth System Sciences* **12**: 2299-2309.
- Buchecker M, Menzel S, Home R. 2013. How much does participatory flood management contribute to stakeholders' social capacity building? Empirical findings based on a triangulation of three evaluation approaches. *Natural Hazards and Earth System Sciences* **13**: 1427-1444.
- Bundesrat. 2006. Beschluss des Bundesrats. Vorschlag für eine Richtlinie des Europäischen Parlaments und des Rates über die Bewertung und Bekämpfung von Hochwasser KOM(2006) 15 endg.; Ratsdok. 5540/06.
- Buschhüter E. 2013. Umsetzung der HWRM-Richtlinie in NRW. Zwischen EU-Verpflichtung und vorausschauender Vorsorge vor Ort. Symposium: 'Hochwasserrisiken gemeinsam meistern'. Mülheim an der Ruhr.
- Butler C, Pidgeon N. 2011. From 'flood defence' to 'flood risk management': Exploring governance, responsibility, and blame. *Environment and Planning C: Government and Policy* **29**: 533-547.
- Carter J, Howe J. 2006. The Water Framework Directive and the Strategic Environmental Assessment Directive: Exploring the linkages. *Environmental Impact Assessment Review* **26**: 287-300.
- Cooke B. 2001. The Social Psychological Limits of Participation? In *Participation: the new tyranny?*, Cooke B, Kothari U (eds). Zed Books: London, pp102-121.
- Cooper J, Adamson M, Russell E. 2013. Flood risk management: Challenges to the effective implementation of a paradigm shift. *Planning Theory and Practice* **14**: 135-140.
- de Moel H, van Alphen J, Aerts JCJH. 2009. Flood maps in Europe: Methods, availability and use. *Natural Hazards and Earth System Sciences* **9**: 289-301.
- De Stefano L. 2010. Facing the water framework directive challenges: A baseline of stakeholder participation in the European Union. *Journal of Environmental Management* **91**: 1332-1340.
- Demetropoulou L, Nikolaidis N, Papadoulakis V, Tsakiris K, Koussouris T, Kalogerakis N, Koukaras K, Chatzinikolaou A, Theodoropoulos K. 2010. Water Framework Directive implementation in Greece: introducing participation in water governance – the case of the Evrotas River Basin management plan. *Environmental Policy and Governance* **20**: 336-349.
- Dráb A, Říha J. 2010. An approach to the implementation of European Directive 2007/60/EC on flood risk management in the Czech Republic. *Natural Hazards and Earth System Sciences* **10**: 1977-1987.
- EEB. 2010. 10 years of the Water Framework Directive: A toothless tiger? A snapshot assessment of EU environmental ambitions. Brussels: European Environmental Bureau (EEB).
- EU. 2002. *Common Implementation Strategy for the Water Framework Directive (2000/60/EC). Guidance Document No. 8 on Public Participation in Relation to the Water Framework Directive*: Luxemburg.
- European Commission. 2003. Planning Processes. Common implementation strategy for the water framework directive (2000/60/EC). Water Framework Directive Working Group 2.9. Brussels: European Commission.
- European Commission. 2012. Report from the Commission to the European Parliament and the Council on the Implementation of the Water Framework Directive (2000/60/EC): River Basin Management Plans. Brussels: European Commission.
- European Commission. 2014. A new EU Floods Directive. Brussels: European Commission, DG Environment (online): http://ec.europa.eu/environment/water/flood_risk/ (last accessed 22.01.2014).
- Evers M, Nyberg L. 2013. Coherence and inconsistency of European instruments for integrated river basin management. *International Journal of River Basin Management* **11**: 139-152.
- Gerber S. 2011. Öffentlichkeitsbeteiligung bei den sächsischen Hochwasserschutzkonzepten. *Wasserwirtschaft* **11**: 45-48.
- Gierk M, Stratenwerth T. 2010. EG-Hochwasserrisikomanagementrichtlinie: Stand der Umsetzung auf Nationaler Ebene. *Wasserwirtschaft* **11**: 12-15.
- Heintz MD, Hagemeyer-Klose M, Klaus W. 2012. Towards a Risk Governance Culture in Flood Policy: Findings from the Implementation of the 'Floods Directive' in Germany. *Water* **4**: 135-156.

- Heintz MD, Pohl J. 2011. Akzeptanz und Umsetzung der EG Hochwasserrisikomanagement-Richtlinie in der Wasserwirtschaftsverwaltung. *Wasserwirtschaft* **3**: 10-13.
- Hogl K, Kvarda E, Nordbeck R, Pregernig M. 2012. *Environmental Governance. The Challenge of Legitimacy and Effectiveness*. Edward Elgar: Cheltenham.
- ICPDR. 2004. Flood Action Programme. Action Programme for Sustainable Flood Protection in the Danube River Basin. Vienna: International Commission for the Protection of the Danube River (ICPDR).
- Jüpner R. 2010. Hochwasserpartnerschaften zur Koordinierung grenzüberschreitender Hochwasservorsorge. Paper presented at the BWK-Bundeskongress 2010, Duisburg, 22 - 25 September.
- Kellens W, Vanneuville W, Verfaillie E, Meire E, Deckers P, De Maeyer P. 2013. Flood Risk Management in Flanders: Past developments and future challenges. *Water Resources Management* **27**: 3585-3606.
- Kjellgren S. 2013. Exploring local risk managers' use of flood hazard maps for risk communication purposes in Baden-Württemberg. *Natural Hazards and Earth System Sciences* **13**: 1857-1872.
- Klijn F, Samuels P, Van Os A. 2008. Towards flood risk management in the EU: State of affairs with examples from various European countries. *International Journal of River Basin Management* **6**: 307-321.
- Koontz TM, Newig J. forthcoming. Cross-level Information and Influence in Mandated Participatory Planning: Alternative Pathways to Policy Delivery in Germany's Implementation of the EU Water Framework Directive. *Land Use Policy*.
- Koontz TM, Thomas CW. 2006. What Do We Know and Need to Know about the Environmental Outcomes of Collaborative Management? *Public Administration Review* **66**: 111-121.
- Krieger K. 2013. The limits and variety of risk-based governance: The case of flood management in Germany and England. *Regulation & Governance* **7**: 236-257.
- Lange H, Garrelts H. 2007. Risk Management at the Science-Policy Interface: Two Contrasting Cases in the Field of Flood Protection in Germany. *Journal of Environmental Policy & Planning* **9**: 263-279.
- LAWA. 2003. German Guidance Document for the implementation of the EC Water Framework Directive. Updated Version: 30.04.2003. Länderarbeitsgemeinschaft Wasser (LAWA).
- . 2012. Grundsatzpapier zur Öffentlichkeitsbeteiligung im Zuge der Umsetzung der HWRM-RL. Länderarbeitsgemeinschaft Wasser (LAWA), Ständigen Ausschusses Hochwasserschutz und Hydrologie.
- . 2010. Recommendations for the Establishment of Flood Risk Management Plans. Dresden: Länderarbeitsgemeinschaft Wasser (LAWA), Permanent Committee on Flood Protection and Hydrology.
- Layzer JA. 2002. Citizen Participation and Government Choice in Local Environmental Controversies. *Policy Studies Journal* **30**: 193-207.
- Leeb C. 2013. Hochwasserrisikomanagement-Planung in Bayern. Augsburg: Wasserforum Bayern.
- LUGV. 2012. Hochwasser- Risikomanagementplan (HWRMP) „Elbe bei Mühlberg“. Brandenburg: Landesamt für Umwelt, Gesundheit und Verbraucherschutz (LUGV).
- Marbuger M. 2012. Erfahrungen aus Öffentlichkeitsbeteiligung und strategischer Umweltprüfung. Wasserforum Hessen 2012 'Hochwasserschutz in Hessen'.
- McDaniels TL. 1998. Ten propositions for untangling descriptive and prescriptive lessons in risk perception findings. *Reliability Engineering & System Safety* **59**: 129-134.
- Merz B, Bittner R, Grünwald U, Piroth K. 2011. *Management von Hochwasserrisiken*. Schweizerbart Science: Stuttgart.
- Meyer V, Kuhlicke C, Luther J, Fuchs S, Priest S, Dorner W, Serrhini K, Pardoe J, McCarthy S, Seidel J, Palka G, Unnerstall H, Viavattene C, Scheuer S. 2012. Recommendations for the user-specific enhancement of flood maps. *Natural Hazards and Earth System Sciences* **12**: 1701-1716.
- MLULR. 2011. Konzept zur Information, Beteiligung und Anhörung der Öffentlichkeit zur EU-Hochwasserrisikomanagement-Richtlinie in Mecklenburg-Vorpommern. Schwerin: Ministerium für Landwirtschaft, Umwelt und Verbraucherschutz des Landes Mecklenburg-Vorpommern (MLULR).
- MLUSA. 2010. Hochwasserschutzkonzeption des Landes Sachsen-Anhalt bis 2020. Magdeburg: Ministerium für Landwirtschaft und Umwelt Sachsen-Anhalt (MLUSA).
- MLUV. 2011. Konzept zur Information, Beteiligung und Anhörung der Öffentlichkeit zur EU-Hochwasserrisikomanagement-Richtlinie in Mecklenburg-Vorpommern (MLUV).
- Moss T. 2004. The governance of land use in river basins: Prospects for overcoming problems of institutional interplay with the EU Water Framework Directive. *Land Use Policy* **21**: 85-94.
- Newig J, Fritsch O. 2009a. Environmental Governance: Participatory, Multi-Level – And Effective? *Environmental Policy and Governance* **19**: 197-214.
- Newig J, Fritsch O. 2009b. More Input – Better Output: Does citizen involvement improve environmental governance? In *In Search of Legitimacy. Policy Making in Europe and the Challenge of Complexity*, Blühdorn I (ed). Barbara Budrich: Opladen, pp205-224.
- Newig J, Koontz TM. 2013. Multi-level Governance, Policy Implementation and Participation: The EU's Mandated Participatory Planning Approach to Implementing Environmental Policy. *Journal of European Public Policy*: DOI: 10.1080/13501763.2013.834070
- Newig J, Pahl-Wostl C, Sigel K. 2005. The Role of Public Participation in Managing Uncertainty in the Implementation of the Water Framework Directive. *European Environment* **15**: 333-343.

- NLWKN. 2012. Konzept für die Information, Beteiligung und Anhörung der Öffentlichkeit bei der Umsetzung der EG-HWRM-RL in Niedersachsen. Hannover: Niedersächsischer Landesbetrieb für Wasserwirtschaft, Küsten und Naturschutz (NLWKN).
- Pellizzoni L. 2003. Knowledge, Uncertainty and the Transformation of the Public Sphere. *European Journal of Social Theory* **6**: 327–355.
- Penning-Rowsell E, Johnson C, Tunstall S. 2006. 'Signals' from pre-crisis discourse: Lessons from UK flooding for global environmental policy change? *Global Environmental Change* **16**: 323-339.
- Pleschko D, Kaufmann A. 2012. Implementing the EU Floods Directive in Austria - Umsetzung der Hochwasserrichtlinie in Österreich. *Österreichische Wasser- und Abfallwirtschaft* **64**: 329-335.
- Rault PAK, Jeffrey PJ. 2008. Deconstructing Public Participation in the Water Framework Directive: Implementation and Compliance with the Letter or with the Spirit of the Law? *Water and Environment Journal* **22**: 241-249.
- Reed MS. 2008. Stakeholder participation for environmental management: a literature review. *Biological Conservation* **114**: 2417-2431.
- Renn O. 2004. The Challenge of Integrating Deliberation and Expertise: Participation and Discourse in Risk Management. In *Risk Analysis and Society: An interdisciplinary characterization of the field*, McDaniels T L, Small M J (eds). Cambridge University Press: Cambridge, pp289-366.
- Roggero M. 2013. Shifting Troubles: Decision-Making versus Implementation in Participatory Watershed Governance. *Environmental Policy and Governance* **23**: 63-74.
- Rydin Y. 2007. Re-examining the role of knowledge within planning theory. *Planning Theory* **6**: 52-68.
- Schanze J. 2002. Flood Risk Management: A Basic Framework. In *Flood Risk Management: Hazards, Vulnerability and Mitigation Measures*, Schanze J, Zeman E, Marsalek J (eds). Springer: Dodrecht, pp1-20.
- Schmitter PC. 2002. Participation in Governance Arrangements: Is there any reason to expect it will achieve 'Sustainable and Innovative Policies in a Multi-Level Context'? In *Participatory Governance. Political and Societal Implications*, Grote J R, Gbikpi B (eds). Leske & Budrich: Opladen, pp51-69.
- SGD Süd. 2012. Jahresbericht 2012. Neustadt: Rheinland Pfalz Struktur- und Genehmigungsdirektion Süd (SGD Süd).
- TMLFUN. 2011. Thüringer Gewässer gemeinsam entwickeln. Erfurt: Thüringer Ministerium für Landwirtschaft, Forsten, Umwelt und Naturschutz (TMLFUN).
- Unnerstall H. 2010. Legal Framework for Public Participation in Flood Risk Mapping: A comparative study of the responses of different European member states to some requirements of the Floods Directive. Leipzig: Helmholtz Zentrum für Umweltforschung.
- Van der Heijden J, Ten Heuvelhof E. 2012. The Mechanics of Virtue: Lessons on Public Participation from Implementing the Water Framework Directive in the Netherlands. *Environmental Policy and Governance* **22**: 177-188.
- Verta O-M, Triipponen J-P. 2011. The Kokemäenjoki River Basin Flood Risk Management Plan: A national pilot from Finland in accordance with the EU Floods Directive. *Irrigation and Drainage* **60**: 84-90.
- WBWFG. 2012. Hochwasserpartnerschaften in Baden-Württemberg. Karlsruhe: WBW Fortbildungsgesellschaft für Gewässerentwicklung (WBWFG).
- Wright SAL, Fritsch O. 2011. Operationalising active involvement in the EU Water Framework Directive: Why, when and how? *Ecological Economics* **70**: 2268-2274.
- Young JC, Jordan A, Searle KR, Butler A, Chapman DS, Simmons P, Watt AD. 2013. Does stakeholder involvement really benefit biodiversity conservation? *Biological Conservation* **185**: 359-370.

Supplement [S3]:

Exploring governance learning: How policymakers draw on evidence, experience and intuition in designing participatory flood risk planning

Abstract

The importance of designing suitable participatory governance processes is generally acknowledged. However, less emphasis has been put on how decision-makers design such processes, and how they learn about doing so. While the policy learning literature has tended to focus on the substance of policy, little research is available on learning about the design of governance. Here, we explore different approaches to learning among German policymakers engaged in implementing the European Floods Directive. We draw on official planning documents and expert interviews with state-level policymakers to focus on learning about the procedural aspects of designing and conducting participatory flood risk management planning. Drawing on the policy learning and evidence-based governance literatures, we conceptualise six types of instrumental ‘governance learning’ according to sources of learning (endogenous and exogenous) and modes of learning (serial and parallel). We empirically apply this typology in the context of diverse participatory flood risk management planning processes currently unfolding across the German federal states. We find that during the first Floods Directive planning cycle, policymakers have tended to rely on prior experience in their own federal states with planning under the Water Framework Directive to inform the design and carrying out of participatory processes. In contrast, policymakers only sporadically look to experiences from other jurisdictions as a deliberate learning strategy. We argue that there is scope for more coordinated and systematic learning on designing effective governance, and that the latter might benefit from more openness to experimentation and learning on the part of policymakers.

Keywords: Evidence-based governance; Policy experimentation; Policy learning; Policy design; Flood risk management; EU Floods Directive.



Exploring governance learning: How policymakers draw on evidence, experience and intuition in designing participatory flood risk planning



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ABSTRACT

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1. Introduction

In the face of massive implementation problems, governments across the globe have increasingly sought to improve environmental policy delivery. One vehicle for this is stronger decentralisation and proceduralisation of policy-making (Flynn and Kröger, 2003), witnessing what has been described as a shift from 'government' to 'governance' (Pierre and Peters, 2000; Stoker, 1998). Polycentric and collaborative systems of governance, involving non-state actors (including the general public) in decision-making, are expected to enhance the knowledge-base of decisions and support improved implementation (Newig and Fritsch, 2009). However, it remains unclear just which problems and programmes might best be managed via participatory and collaborative models (Buss and Buss, 2011). This question has been a focus of research from different disciplinary perspectives, but it

has also directly occupied policymakers responsible for designing and conducting public environmental decision-making processes. The issue we seek to address in this paper is: How do these actors learn about, design and adapt effective participatory processes? And does this change governance in practice?

To address this, we turn to the literature on policy learning. This rich, but also rather conceptually crowded literature (Dunlop and Radaelli, 2013), intersects and overlaps with work on policy transfer, social learning, diffusion and convergence, and policy experimentation to name just a few neighbouring fields. Much work has focused on learning about the substantive effects of policy, but less attention has been devoted to learning about how to design and implement participatory (or less participatory) governance processes, and the benefits of participation under specific contexts. However, precisely because participatory and collaborative decision-making is becoming more prevalent and the repertoire of participatory instruments is becoming more complex, policymakers increasingly need to learn how to design and conduct effective participatory processes (see Howlett, 2014). By 'effective', we refer to decision-making processes that meet the goals of

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policymakers, such as reaching well-informed, implementable, acceptable decisions that are beneficial to environmental sustainability. Thus, questions of process design are increasingly relevant in the context of contemporary governance.

In this paper, we empirically examine policy learning about how to conduct participatory governance – or ‘governance learning’ – in the context of EU Floods Directive (FD) implementation in Germany. As a recent example of ‘mandated participatory planning’ (Newig and Koontz, 2014), and with close links to the earlier Water Framework Directive (WFD), the Floods Directive requires local administrations to develop flood-risk management plans by 2015, and in six-year cycles thereafter. Authorities are required to ‘encourage’ the ‘active involvement’ of non-state actors in order to improve planning. This affords considerable leeway on how participation is realised. Having triggered diverse forms of (more and less participatory) flood risk management (FRM) planning across Europe, the FD presents an ideal case to study learning on the design of participatory governance. We focus here on decentralised FD implementation in Germany, exploring in particular how federal state authorities actually design, conduct and adapt participatory FRM planning. Within this, we are especially interested in whether, and how, FD implementation stimulates governance learning on the part of competent authorities in FRM.

The research contributes to wider discussions on participatory and collaborative environmental governance, evidence-based policy and governance, (adaptive) policy learning and policy transfer. We seek to advance the debate in that we deliberately depart from the traditional focus of the policy learning (and related) literature on the *content* of policy to focus on procedural dimensions and the *process* of planning and governance (Emerson and Gerlak, 2014; van der Heijden, 2013).

The paper proceeds as follows: Section 2 outlines our conceptual framework, which draws on key ideas from the literature on policy learning and evidence-based policy and governance. Section 3 then describes the German context and the transposition of the FD into national and federal state law. Section 4 comprises the empirical core of the paper and presents findings from top-level expert interviews with flood risk management planning officials across 11 German federal states. The discussion focuses on how the FD has been received within German FRM planning circles, the design and execution of participatory FRM planning processes, and the extent to which FD implementation has afforded opportunities for governance learning. Section 5 concludes with a discussion of the relevance of our findings for theory and practice, and suggests avenues for further research.

2. Conceptual framework: governance learning for participatory planning

Several typologies of policy learning have been advanced in the literature in efforts to systematise the variety of ways in which policy-relevant learning takes place (e.g. Dunlop and Radaelli, 2013; Gilardi and Radaelli, 2012; Hall, 1993; May, 1992; Toens and Landwehr, 2009). We focus here on what has generally been referred to as instrumental policy learning, and seek to disaggregate this category for the purposes of our analysis of *governance learning*. We define learning as the reflexive updating of beliefs on the basis of evidence, experience and new information. Referring to Bennett and Howlett’s (1992) three dimensions,¹ we build on instrumental policy learning as learning (1) *by* policymakers and other government actors, (2) *about* designing and running

participatory planning processes, (3) *in order to* improve their effectiveness. We argue that a focus on policymakers and how they learn is important given the increasing prominence of participatory and collaborative modes of governance, yet mixed results and continued uncertainty around ‘what works’.

Policymakers may learn intentionally, e.g. through policy experimentation and evaluation of systematically collected evidence on implementation and impacts (Sabel and Zeitlin, 2012; Sanderson, 2002), or learning may be rather incidental or intuitive, via trial and error or ad hoc assimilation of experience (Bennett and Howlett, 1992). While policy learning can also be forced via coercive pressure from superordinate levels or more powerful jurisdictions (Dolowitz and Marsh, 1996; Shipan and Volden, 2008), we focus here on open and voluntary (though not necessarily uninhibited) learning by policymakers.

The experiential basis for policy learning is potentially very broad (May, 1992). Learning may be self-referential, drawing on endogenous (to a jurisdiction/policy network) sources and direct experience (Grin and Loeber, 2007), or it may draw on exogenous sources of learning and build on observed experience from other jurisdictions or policy fields with similar procedural requirements (Table 1 – sources of learning). *Endogenous* sources of learning refer to experience or new information originating from within a given jurisdiction and policy field. *Exogenous* sources of learning are differentiated according to experience drawn from other jurisdictions, and from other policy fields. Learning from other jurisdictions typically entails policy transfer and adaptation to the ‘domestic’ context (Benson and Jordan, 2011; Stone, 2012). Policymakers may also look to other policy fields – within or beyond their jurisdiction – for evidence and lessons. Policy-relevant lessons are perhaps more likely to come from neighbouring/related policy fields. However, lessons may also be available from distant and apparently unrelated policy fields, when the object of learning relates to the *procedural* policy aspects, which we focus on here. Indeed, it is a focus on learning about governance *processes* that opens up this cross-policy-field dimension of policy learning.

Further, policy learning may result from examining one’s past experiences or those of others through time, in a serial or sequential view (Hall, 1993), or it may imply observing the parallel unfolding of governance experiences and their outcomes (Table 1 – modes of learning). *Serial* learning typically occurs through updating and adaptation over the course of successive policy cycles, and via sequential policy pilots or less formal processes of ‘trial-and-error’. Serial learning may also draw on other jurisdictions or policy fields. *Parallel* learning on the basis of endogenous sources includes strategies such as simultaneous piloting and policy experiments or randomised controlled trials conducted to a set timeframe or policy cycle. Parallel learning from exogenous sources may occur via coordinated implementation of a policy programme or similar programmes across two or more networked jurisdictions in the context of joint knowledge generation and mutual learning. Parallel learning is also possible without deliberate cross-border coordination, insofar as policymakers draw lessons and assimilate new information on the basis of the unfolding experiences of other jurisdictions grappling with the same policy issues.

The varieties of learning described above are generally consistent with ‘lesson drawing’ and ‘updating’ (Gilardi and Radaelli, 2012; Toens and Landwehr, 2009), wherein prior beliefs and approaches are revised in light of direct experience and/or new information. Rose (1991, 2005) explains how lessons drawn from policy successes or failures in other contexts, can inform changes to existing policy programmes. Policy change may occur via outright copying or emulation, as well as degrees of adaptation, hybridisation, synthesis and innovation (see Rose, 2005, pp. 80–84). In the context of the EU (and other decentralised planning contexts), such lesson drawing

¹ Bennett and Howlett (1992) consider the (1) subject of learning (who learns?); (2) object of learning (learns what?), and; (3) result of learning (to what effect?).

Table 1
Types of instrumental governance learning.

Modes of learning	Sources of learning		
	Endogenous	Exogenous	
	Same jurisdiction and same policy field	Other jurisdictions	Other policy fields
Serial learning (sequential)	Learning from sequential instances of policymaking and implementation (e.g. successive policy/planning cycles, serial pilots, 'trial-and-error')	Learning from other jurisdictions' past experiences in the same policy field e.g. lesson drawing, policy diffusion, policy transfer)	Learning from previous experiences in other policy fields with similar procedural requirements
Parallel learning (simultaneous)	Learning from concurrent policymaking and implementation processes (e.g. parallel pilots, policy experiments, randomised controlled trials)	Learning with other jurisdictions, via co-production of knowledge/evidence (e.g. coordinated planning and implementation)	Learning in parallel across different policy fields with similar procedural requirements

across member states, or subnational units, and policy fields is consistent with the idea of laboratory federalism (Flynn and Kröger, 2003; Kerber and Eckard, 2007; Oates, 1999). Here, parallel 'experimentation' in different jurisdictions with a variety of policies on the same issue is supposed to drive diffusion of effective governance.

3. The EU Floods Directive and its implementation in Germany

The 2007 EU Directive on the Assessment and Management of Flood Risks (Floods Directive–FD) aims to reduce and manage the risks posed by floods to human health, the environment, cultural heritage and economic development. It follows a mandated participatory planning approach (Newig and Koontz, 2014) indicative of a broader shift in European environmental governance, in that it requires the formulation of local plans, with public input, as the main vehicle for implementation. These flood risk management plans (FRMP) – political programmes in themselves – serve to guide the formulation and implementation of programmes of measures. Plans must be updated every six years. The process entails: (1) a preliminary flood risk assessment, (2) identification of potentially significant flood risk areas, (3) production of flood hazard and flood risk maps, and (4) drafting (and updating) FRMPs. While, for the first planning cycle, steps 1–3 were due between 2011 and 2013, step 4 is to be completed by the end of 2015.

Unlike related directives such as the WFD, the FD does not define substantive goals (such as certain levels of flood protection), but only specifies the planning procedures. In that the FD mandates flood risk *management*, but not flood *protection*, it can be seen as an example of almost purely reflexive governance (Newig et al., 2014). Regarding public participation, the FD essentially follows the WFD (Gierk and Stratenwerth, 2010). According to the FD, the public must be granted access to key planning documents (preliminary flood risk assessments, flood maps), but need not be involved in their preparation (Unnerstall, 2010). In production of the actual FRMP, 'active involvement' of 'interested parties' must be 'encouraged'. However, as noted above, this allows member states considerable discretion to choose from an array of participatory forms, including the bare legal minimum – e.g. formal consultation on draft FRMPs within a strategic environmental assessment (SEA) under the SEA Directive (Carter and Howe, 2006).

The FD was transposed into German federal law in 2009, along with its minimum requirements for participation. As jurisdiction over flood risk management lies with the sixteen German federal states, these translated the provisions of the FD and federal law into their respective state Water Acts, without diverging from these regulations (see Albrecht, 2015, this special issue). However, given their status as competent authorities, federal states have

considerable leeway to introduce participatory planning processes that surpass the minimum requirements for information provision and consultation (Unnerstall, 2010).

Flood risk management planning was largely absent in Germany before the early 2000s. Instead, the dominant paradigm was to assure flood security (see Hartmann and Spit, 2015, this special issue; Samuels et al., 2006). However, following major floods in the 1990s and early 2000s (Rhine, 1993, 1995; Odra, 1997; Danube and Upper Rhine, 1990; Elbe, 2003) several particularly affected federal states began to develop risk management measures and plans (Thieken et al., 2005). With a 2005 revision of federal law, flood control plans became mandatory for all states (Hartmann and Albrecht, 2014), but these plans differed in detail and scope from those now required by the FD, and lacked in particular the procedural provisions for participation. With the exception of a few local (e.g. Theis, 2014; Vogt, 2012) and state (e.g. Hartmann and Albrecht, 2014; Thieken et al., 2005) initiatives, German federal states have had little experience with public participation and balancing spatial conflicts. It is against this backdrop of very different recent experiences with flooding, and with public and stakeholder participation, that participatory planning under the FD should be examined.

4. Empirical study: Floods Directive implementation, participatory planning, and governance learning across German federal states

4.1. Methodology

Our empirical analysis of FD implementation in Germany is based on an examination of available documentation on participatory FD implementation issued by state governments and their officials (reports, brochures, governmental websites), and semi-structured expert interviews with top-level policymakers. The authorities responsible for FD (and WFD) implementation are the federal environmental ministries. We aimed for coverage of all 16 German states in order to capture the full breadth of approaches. Representatives of two states (Berlin and Mecklenburg–Western Pomerania) declined our request for an interview on the grounds that they are essentially not flood-affected, two states (Hamburg and Rhineland-Palatinate) did not respond positively to our request, and we excluded one further state (Saarland) due to lack of data. Our analysis therefore covers 11 of 14 flood-affected German states. As Lower Saxony and Bremen have combined approaches for both FD and WFD implementation, we consider these as one case. We thus arrive at 10 cases: Bavaria (BA), Brandenburg (BB), Baden-Württemberg (BW), Hesse (HE), Lower Saxony/Bremen (LS), North Rhine Westphalia (NW), Saxony-Anhalt (SA), Schleswig-Holstein (SH), Saxony (SN) and Thuringia (TH).

Interviews were conducted with either heads of department or heads of unit responsible for flood risk management in the state environmental ministries. In all states this responsibility lies with the same department as WFD planning, sometimes even with the same unit. Interviews were conducted between April and November 2014, each lasting 60–120 min, and following an interview guideline encompassing issues of flood affectedness, governance and participation strategy, relations to WFD planning, and policy learning.

4.2. Characterising perceptions of the Floods Directive

The FD has had important implications for flood risk management in Germany. Whereas German states had been rather critical when the Directive was developed (Newig et al., 2014), it is now generally positively received by state-level officials, who see it as an opportunity to improve FRM structures and processes. Eight out of ten informants cited benefits in the structured and systematic planning approach prescribed by the Directive, which was also seen by some as creating clear lines of accountability and fostering transparency. It was noted in particular that the Directive has raised flood awareness among affected municipalities, and improved communication between municipalities and federal environmental ministries. Five interviewees highlighted benefits of the cyclical planning model, and the scope for on-going development of measures and plans. Other reported advantages of the Directive included its introduction of an integrated risk-based approach, which was seen as previously only weakly developed, and the harmonisation of policy across neighbouring jurisdictions. This latter point, however, was also raised as a criticism, with some claiming the Directive neglects regional cultural and environmental specificities. Other negative impressions related to the laborious and time-consuming nature of FD planning and reporting given tight timeframes. Perhaps most telling overall, however, was the appreciation expressed by interviewees that the Directive imposes no concrete, binding objectives.

The German federal states are exposed differently to flood hazards, and perceptions of flood risk are shaped considerably by past flood events (see Table 2). Some interviewees noted that public perceptions are so dependent on experience of past floods, that the recurrence of flooding is an important stimulus for building risk awareness and flood preparedness. Similarly, major

floods have in the past prompted authorities to update their FRM planning processes. Consequently, the organisational impact of the FD across the federal states has varied given the variety of pre-existing FRM arrangements. In some states it was claimed that the Directive brought little or no change, except for additional reporting to Brussels, as existing planning practice essentially complied with or surpassed the FD. In other states the Directive triggered a revision or realignment of planning timeframes, more co-ordinated or formalised planning structures, and the orientation of planning units towards flood risk areas (BA, BB, BW, NW, SN).

The environmental dimension of flood risk management is regarded by most states as falling within the purview of the WFD, and is assigned secondary importance behind structural flood protection. In almost all states environmental measures are not considered in terms of a holistic ecosystem-based approach, but rather in terms of specific individual measures, focusing on retention areas in particular. Measures such as afforestation, wetland restoration or other land-use change were not mentioned by any interviewees. Some respondents reported conflicting water quality and FRM goals at the project or implementation level. While in some states there was no overt effort to coordinate FD and the WFD planning, others saw potential advantages in doing so, and some had already aligned aspects of FD and WFD programmes at the state level.

4.3. Collaborative and participatory FD planning

FD planning in almost all German federal states centres on the two governance poles of the state and the municipalities, with differing degrees of concentration on each of these. Legal responsibility for FD implementation and reporting lies with the state environmental ministries, which, together with their environmental agencies, usually also produce the flood risk assessments and flood hazard and risk maps (Gierk and Stratenwerth, 2010). Although FRMPs are typically applied to planning units based on hydrological characteristics and exposure to flooding, it is the municipalities (or flood-specific conglomerations of these) that are in most states primarily responsible for planning and implementation of FRM measures. In some states (BW, LS, SA) municipalities or cross-municipal partnerships are tasked with the definition of measures, which are then collected by higher level authorities in a 'bottom-up' approach. Others (BB, HE)

Table 2
Flood risk, participatory FRM planning strategies, and different forms of systematic governance learning in German federal states (state abbreviations as per 4.1 above).

		BA	BB	BW	HE	LS	NW	SA	SH	SN	TH
Flood risk	Rivers with significant flood risk (km)	7650	2005	4980	NA	2300	6067	1865	936	2994	3400
	Flood damages since 2000	Medium to high	High	Low	Low	High, but locally	Low	High	Low; locally high	High	High
Participation	Deliberative, face-to-face, local level participation	(+)		+			+		+		
	Local knowledge gathering	+	+	+	+	+	+	+	+	+	+
	Participation at the federal state or regional level						+	+			+
Learning strategies	Piloting	+	+		+			+	+		
	Iterative, cyclical learning pursued (from FD processes)	+		+		(+)					
	Planned adoption of other states' strategies				+		+				+
	Learning from own WFD experience			+	+	+	+	+	+		+
	Openness to experimentation	+							+		
	Inspiration from other federal states' involvement models		+								
External knowledge used or perceived positively	+	+	+	+	+			+		+	

Source: Compiled on the basis of primary interview data, and flood risk data from federal state flood risk assessments.

organised the planning process in a ‘top-down’ manner wherein state-level authorities proposed measures on which municipalities were then consulted. Most states fall somewhere in between these examples, particularly where there are district governments as an intermediate administrative level. Typically, in such cases the state, the administrative districts, and the municipalities divided planning in line with their responsibilities according to the classification of rivers (SN, TH), or offered a variety of possibilities for input by actors at different levels (BA, NW). A noteworthy exception to this pattern is the state of Schleswig-Holstein, which relied mainly on its WFD working groups (see Bruns and Gee, 2009). These hydrologically delimited units, which are coordinated by water boards and include important local stakeholders, have also been given responsibility for FRM planning where applicable, and thus represent a unique governance arrangement beyond the state-municipality spectrum.

A common set of guidelines and recommendations on participation in FRM planning is provided by the federal state working group on water (LAWA) (2012), but governance nevertheless differs across the federal states. Table 2 gives an overview of three important aspects of participation in the federal states studied: (1) deliberative, face-to-face, local-level participation, (2) local knowledge gathering; and (3) participation organised at the state or regional (district) level. The first two aspects relate to commonly cited participation-related dimensions of deliberation or face-to-face communication and consultation (see Newig and Kvarda, 2012; Rowe and Frewer, 2005), and provide an indication of the ‘intensity’ of local participation. The third aspect relates to the assumption that participation, in particular involving non-governmental organisations, is often more effective on a more aggregated level (Rockloff and Moore, 2006).

There are considerable commonalities between states in terms of communication of information to key stakeholder groups, such as municipalities and water boards. Many states have developed questionnaires to elicit knowledge about stakeholders’ current status in relation to FRM planning and, in some cases, their perspectives as reference points for further FRM planning (BA, BB, BW, HE, SA, TH). Also, regional meetings were held to inform municipalities and other local stakeholders about the state of FD implementation (HE, LS, NW, SN, TH). In some states, ministries or representatives of water authorities from different levels established contact with municipalities through personal visits (BA, NW).

Participation beyond mere information exchange varies considerably across the German federal states. Two states (BA, LS) employed an online tool to incorporate input from stakeholders – including organised agricultural and environmental interests. Regional meetings and conferences were a common strategy in several states (BB, NW, SA, SN, TH), with some relying on existing fora established under the WFD (SA, TH). These had different purposes, ranging from information distribution to discussion and decision-making on management alternatives, and typically addressed stakeholders with potential to play a role in implementation. A few states went so far as to establish a broad participatory planning approach (BW, SH and, to a lesser extent, NW). They institutionalised cooperative bodies organised around hydrological units (flood partnerships or working groups), in which responsibility for matters of FRM planning was assigned to important local stakeholders (water boards, municipalities, industrial and commercial actors, agriculture and environmental groups). Higher level authorities mainly play a supporting role and compile the management decisions of these bodies into a FRMP. Surprisingly at first sight, we find that the states employing these more intensive participatory structures are not the ones that have experienced severe recent flooding (post 2000). In fact, those highly affected by the latest flood events engage in much less

far-reaching participation mechanisms. This can perhaps in part be attributed to the perceived urgency of planning in states with recent experience of severe flooding, where participation may appear as an obstacle to swift planning. Often the aforementioned structures, irrespective of their intensity, were complemented with state-level advisory boards responsible for wider water resource management, (including WFD and FD planning) and engaging different public actors and stakeholders (BA, BW, SA, SH, TH).

As the described participatory strategies indicate, municipalities, water boards and dike associations (where present) can be seen as central stakeholders in the German flood risk management system. The importance of these organised stakeholders (Meadowcroft, 2004) was supported by almost all interviewees, who saw flood risk awareness-raising, motivation and activation among these actors as foremost rationales for participatory planning. Other stakeholders that were considered important were those with co-implementation potential, such as local water authorities, county and city council representatives, cultural heritage groups, infrastructure managers, public agencies, and affected industrial or commercial actors. To a lesser extent agriculture, environmental interests and the lay public are also considered relevant. Particularly the relatively weak inclusion of affected citizens and the lay public appears remarkable, as many households are directly exposed to flood risk and, hence, may have much higher stakes in FRM than in, for example, water quality management under the WFD (see Newig et al., 2014). This view was shared by some interviewees, who highlighted the difficulties in mobilising citizens for such abstract procedures as the planning of generic flood risk measures. In some cases, citizens were deemed to show no interest and to lack understanding of aspects of FRM. Some interviewees expressed hope that the public may be more strongly involved in subsequent planning steps, where actual measures will be discussed.

4.4. Governance learning by federal states

Having found that approaches to participation in FD implementation vary greatly across the German federal states, just how do officials arrive at decisions for more or less participatory planning designs? Do they rely on evidence, intuition, best practice? Do they learn from their own previous experience or from that of others in similar situations? Relating to the typology developed in section 2, we identified seven areas of potential relevance for learning about how to design (participatory) FRM planning (see Table 3). Three can be characterised as *endogenous learning*: (1) pilots as intentional learning from a completed trial; (2) learning from current FD experiences for application in the next cycle; (3) openness to controlled experimentation. *Exogenous learning* is represented by: (4) potential learning from other federal states’ experiences with the current FD cycle; (5) taking inspiration from other states’ current or envisaged FD involvement models; (6) learning from previous experience with WFD implementation; and finally (7) seeking advice from researchers or consultancies.

(1) In four federal states (BA, BB, HE, SA), several pilot projects for participatory FRMP development were carried out. However, experiences from these had little impact on the design of actual participation strategies. In one federal state (BA), the results from pilots were not ready in time to inform the definition of participation strategies. In the remaining cases no knowledge on process performance and results was reported, and no emphasis put on pilots. This may be attributable to time restrictions and the need to constantly integrate new developments (e.g. LAWA recommendations) into planning considerations. Nevertheless, one federal state (HE) plans to run pilot projects in order to test participatory flood partnerships that were adopted by its neighbouring state.

Table 3
Observed types of instrumental governance learning in FD implementation in Germany.

Modes of learning	Sources of learning		
	Endogenous	Exogenous	
	Same jurisdiction and same policy field	Other jurisdictions	Other policy fields
Serial learning (sequential)	Pilots (but with little impact on the design of actual participation strategies); learning from current experience for next planning cycle.	<i>Potentially for the next planning cycle:</i> Inspiration from other federal states' involvement experiences.	Adaptation of WFD involvement models (with more/less participation).
Parallel learning (simultaneous)	<i>Considered by few states:</i> Controlled experimentation.	Inspiration from other federal states' involvement models.	Advice by researchers (<i>limited</i>) or consultancy (<i>more common</i>).

(2) Several officials referred to the cyclical nature of FD planning, viewing the current, first FD planning cycle as a test-bed for the second, in which the approach to participation could be adapted and improved. There appears a tendency to increase efforts for participation and collaboration in the next planning cycle. Only in one federal state was it anticipated that participatory processes would become more formalised and less open (SN).

(3) In principle, learning about the feasibility and effects of (more or less) participatory forms of decision-making can happen through controlled experimentation. Ideally, in a randomised experiment, a participatory 'treatment' would be contrasted with a (potentially less participatory) 'control' group under the same contextual conditions, thus allowing for the identification of the more successful process. However, no state had so far considered such an approach. In fact, eight out of ten federal states rejected the possibility of conducting randomised experiments based on an inclusive, face-to-face participatory process and a control group with minimal engagement. Experimentation in the sense of testing and improving designs was viewed positively by several officials, given sufficient resources and time. Others outright rejected such approaches, seeing the implementation of a control group as unjust and likely to meet with opposition from stakeholders. An additional reason given was that the field of FRM should not be treated as a 'playground' for trial-and-error experimentation, but rather demands decisive and comprehensive planning and implementation. Those federal states open to experimentation struggled to offer a viable project due to their advanced stage of planning (BA, SH). It appears consistent that the only state currently employing parallel pilots with water boards was also one of the states potentially open to randomised experiments (SH).

(4) Learning from other federal states occurs to some extent but seems to have been limited so far. By design, the LAWA serves as a forum to exchange and discuss (and, where appropriate, harmonise) state approaches. However, this is mostly restricted to technical harmonisation. Issues of governance and participation had been the topic of a 2010 meeting and subsequent document (LAWA, 2012), but this has not played a significant role in LAWA discussions since. Some examples of cross-state learning are however notable. Three federal states (HE, NW, TH) envisage adopting a 'flood partnership' design (as implemented in BW) in the next planning cycle, if sufficient resources are available.

(5) We also found evidence for parallel learning from other states. For example, one smaller state with limited resources (BB) has explicitly considered the strategy from another state with a stronger tradition in water management (BA), resulting in the adoption of a questionnaire strategy.

(6) Several federal states have apparently learned from their own experiences with WFD implementation (BW, HE, LS, NW, SA, SH, TH). Prior experience impacted on the design of FD participation in a variety of ways. In two states, lessons learnt from WFD processes resulted in improved citizen involvement in FRM (BW) or in applying the pre-existing WFD model to FRM (SH).

Perhaps contrary to expectation (in the sense of a shift from 'government' to 'governance'), in four federal states learning from WFD experiences led to decreased participation, since bottom-up planning involving a wide range of stakeholders did not produce effective implementation, or the process of engaging citizens was too laborious, or resulted in low citizen participation (HE, LS, SA, TH). Another reason for not simply incorporating FD planning into existing WFD processes and structures was to keep group size manageable given the involvement of many new flood-related stakeholders, and the assumption that they should be organised at a more local scale (NW).

(7) Exogenous, parallel learning through advice by researchers or consultants was valued positively or taken into account by more than half of the federal states (BA, BB, BW, HE, LS, SH, TH). But the role of science in informing participatory FRM planning was generally seen by interviewees as limited. The principal reason given was that scientific advice is deemed too general for the highly specific contexts under which state governments operate. By contrast, the appointment of external consultants with expertise in evaluation or organisation of participatory processes is far more commonplace. However, planning consultancies are also sometimes viewed critically, as each has its own approach, which can result in rather fragmented as opposed to holistic planning. Furthermore, advice by third parties is easily disregarded due to time or resource pressures. According to one public official, they simply 'knew better' at the time final results on a potential participatory design were presented (BA). Therefore, despite the potentially stronger influence of consultant input, the integration of external knowledge is generally not preferred over internal expert knowledge. A noticeable exception is one federal state (HE) where a university planned and carried out the pilot for participatory FRMP development together with a governing district. Only one public official mentioned the continual integration of new knowledge within the field of FRM as being important (SH). Indirect knowledge integration on strategic decisions related to participation through involvement of scientists and academics in steering groups or advisory boards is on the other hand valued positively, although this is only the case in two federal states (BW, SH).

5. Discussion and future research directions

As a recent example of mandated participatory and cyclical planning, the EU Floods Directive – like other European environmental directives such as the Water Framework Directive – holds great potential for learning in relation to the design of public and stakeholder participation in environmental planning. We set out to explore how German policymakers have learned about participatory planning through Floods Directive implementation. We considered the extent to which, and the ways in which, officials at the federal state level have drawn on experience, evidence and information to design, conduct and adapt participatory processes. To this end, we drew on the policy learning

literature to identify a number of instrumental governance learning strategies differentiated according to learning modes (serial or parallel), and sources of learning (endogenous or exogenous). We sought to extend the idea of exogenous sources of learning beyond the common treatment of cross-jurisdictional learning to encompass also cross-policy-field learning.

We find that of the six different types of instrumental learning strategies we conceptualised, most have been exercised or considered by German state-level officials implementing the FD. Generally, policymakers have tended to draw on their own experience in an iterative development, or updating, of participation and collaboration processes. Given that the FD is still only in its first implementation cycle, many states have relied on experiences with participatory river basin management planning under the WFD. Despite the apparent preference for 'serial' lesson drawing (including cross-policy-field lessons) and iterative process development, some states are beginning to exchange information and look to successful models in neighbouring states. Seeking external advice from consultants or universities is another common strategy. Some states are also considering controlled experimentation to systematically learn about the impacts of participation. Such forms of more 'parallel' lesson drawing seem to be in a very early stage of emergence, and may develop over the course of the second FD planning cycle. However, some states clearly rejected the notion of experimentation not only citing costs and time pressures, but also a reluctance to 'play around' with FRM, given the high stakes.

As regards the impact of governance learning on the actual design of participatory strategies, we find mixed evidence. For current FD processes, it was more often the case that federal states opted for less intensive participatory designs, which usually meant changing from local to higher scales or excluding citizens (in comparison to WFD-related processes). Then again, some states planned to intensify participation based on previous experience or learning from neighbouring states. This is a clear indication that systematic governance learning does not automatically lead to 'more' participation.

Whether or not public participation and stakeholder collaboration can contribute to better flood risk management plans and more sustainable FRM, we cannot say on the basis of this study. Therefore, we do not assume that participatory FRM is necessarily more appropriate or effective than other more hierarchical modes of governance. But we do contend that if this is assumed to be the case, and if EU and member state policy is going to build this in to environmental governance, then there is a need to understand whether and how evidence-based governance learning happens in this field.

Furthermore, given our tentative diagnosis that top-level policymakers in German flood risk management tend to rely on their own intuition (and experience), we suggest that there is still some potential for more systematic learning. We therefore make the following observations and recommendations:

First, there should be greater recognition and awareness among planners and policymakers of the potential role of evidence and learning in the *procedural* aspects of FRM. Public participation and stakeholder engagement processes are not yet generally recognised as fields that could benefit greatly from evidence-based process design and systemic learning. The German LAWA guidelines do not even consider that the design of participatory FRM could make use of evidence. This stands in contrast to the way in which flood protection measures and the technical content of flood policy are developed and designed.

Second, existing networks (in this case notably LAWA) do not facilitate the sharing of experiences in relation to designing and conducting governance processes in FRM. Given that such fora are already institutionalised, there is scope for them to function more effectively as a learning platform for the exchange of knowledge

and evidence among policymakers and planners, and to promote a more deliberate approach to learning in relation to the procedural dimension of FRM.

Third, purposeful lesson drawing and the incorporation of evidence is a challenge for policymakers, who typically have insufficient time to engage with and draw on research. In this respect there may be a need for authorities to make greater use of the services of intermediaries or consultancies in designing and running participatory FRM processes. For these intermediaries themselves, there is arguably much to be gained (in terms of governance learning and innovation) from searching for, collecting, and drawing more explicitly on evidence as to what is effective under what circumstances.

Fourth, there appears to be a general reluctance among policymakers, at least in the German FRM context, to engage with the idea of experimentation. Indeed negative connotations and risks of experimentalist approaches are far more widely perceived than any potential advantages or benefits. This may be a characteristic of the field of FRM, or of the German administrative culture (or both), but it appears to be more pronounced than in the USA, the Netherlands and the UK, for example (Sanderson, 2002). We suggest there could be much to be gained by fostering more of an experimentalist culture among authorities responsible for German FRM.

It is our hope that this attempt to conceptually structure instrumental 'governance learning' may prove useful to other researchers interested in understanding processes of evidence-based, adaptive governance, and participatory and collaborative decision-making in particular. We argue that focusing on learning about procedural dimensions of governance – in this case learning by policymakers about how to design and conduct participation processes – opens up the notion of lesson drawing across policy fields, in addition to serial or parallel learning within or across jurisdictions. This is particularly interesting in the context of EU environmental governance, where we see evidence of learning between Floods Directive and Water Framework Directive implementation, and potential for similar learning strategies across other directives and policy fields. Therefore, future research might fruitfully examine governance learning in other EU environmental directives and explore the extent of cross-policy-field learning where procedural requirements are similar. Our case study of Germany, while advantageous due to high comparability in terms of institutional context across the federal states, may also exhibit certain particularities (e.g. due to the important role played by municipalities), and therefore further research should look beyond the German federal states to other European and non-European cases. Further, as FD implementation is set to proceed in 6-year cycles, and given that we find evidence to suggest that policymakers are beginning to explore a variety of learning strategies, it will be valuable for future studies to follow up specifically on how far cyclical planning under the Directive supports updating and innovation in participatory planning over time. Finally, insofar as we are interested in understanding 'what works' in participatory flood risk management planning and participatory environmental governance more generally, we see a need for empirically and practically relevant governance learning research. In this sense, transdisciplinary approaches that can potentially facilitate collaboration and learning between policymakers, consultants and scientists, hold some promise, and policy or governance experiments designed in such settings have the potential to inform theory and practice.

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References

- Albrecht, J., 2015. Legal framework and criteria for effectively coordinating public participation under the Floods Directive and Water Framework Directive: European requirements and German transposition. *Environmental Science & Policy* (this special issue).
- Bennett, C., Howlett, M., 1992. The lessons of learning: reconciling theories of policy learning and policy change. *Policy Sciences* 25, 275–294.
- Benson, D., Jordan, A., 2011. What have we learned from policy transfer research? Dolowitz and Marsh revisited. *Political Studies Review* 9, 366–378.
- Bruns, A., Gee, K., 2009. From state-centered decision-making to participatory governance. *GAI* 18, 150–157.
- Buss, T.F., Buss, N.J., 2011. Four controversies in evidence-based public management. In: Shillabeer, A., Buss, T.F., Rousseau, D.M. (Eds.), *Evidence-based Public Management: Practices, Issues, and Prospects*. M. E. Sharpe, New York, pp. 17–45.
- Carter, J., Howe, J., 2006. The Water Framework Directive and the Strategic Environmental Assessment Directive: exploring the linkages. *Environmental Impact Assessment Review* 26, 287–300.
- Dolowitz, D., Marsh, D., 1996. Who learns what from whom: a review of the policy transfer literature. *Political Studies* 44, 343–357.
- Dunlop, C.A., Radaelli, C.M., 2013. Systematising policy learning: from monolith to dimensions. *Political Studies* 61, 599–619.
- Emerson, K., Gerlak, A., 2014. Adaptation in collaborative governance regimes. *Environmental Management* 54, 764–781.
- Flynn, B., Kröger, L., 2003. Can policy learning really improve implementation? Evidence from Irish Responses to the Water Framework Directive. *European Environment* 13, 150–163.
- Gierk, M., Stratenwerth, T., 2010. EG-Hochwasserrisikomanagementrichtlinie – Stand der Umsetzung auf Nationaler Ebene. *Wasserwirtschaft* 11, 12–15.
- Gilardi, F., Radaelli, C.M., 2012. Governance and learning. In: Levi-Faur, D. (Ed.), *The Oxford Handbook of Governance*. Oxford University Press, Oxford, pp. 155–168.
- Grin, J., Loeber, A., 2007. Theories of policy learning: agency structure, and change. In: Fischer, F., Miller, G., Sidney, M. (Eds.), *Handbook of Public Policy Analysis: Theory, Politics, and Methods*. CRC Press, Boca Raton, pp. 201–219.
- Hall, P.A., 1993. Policy paradigms social learning, and the state: the case of economic policymaking in Britain. *Comparative Politics* 25, 275–296.
- Hartmann, T., Albrecht, J., 2014. From flood protection to flood risk management: condition-based and performance-based regulations in German Water Law. *Journal of Environmental Law* 26, 243–268.
- Hartmann, T., Spit, T., 2015. Legitimizing differentiated flood protection levels: consequences of the European flood risk management plan. *Environmental Science & Policy* (this special issue).
- Howlett, M., 2014. From the 'old' to the 'new' policy design: design thinking beyond markets and collaborative governance. *Policy Sciences* 47, 187–207.
- Kerber, W., Eckard, M., 2007. Policy learning in Europe: the open method of co-ordination and laboratory federalism. *Journal of European Public Policy* 14, 227–247.
- LAWA, 2012. Grundsatzpapier zur Öffentlichkeitsbeteiligung im Zuge der Umsetzung der HWRM-RL. Länderarbeitsgemeinschaft Wasser (LAWA) In: Ständigen Ausschusses Hochwasserschutz und Hydrologie.
- May, P.J., 1992. Policy learning and failure. *Journal of Public Policy* 12, 331–354.
- Meadowcroft, J., 2004. Participation and sustainable development: modes of citizen, community and organisational involvement. In: Lafferty, W.M. (Ed.), *Governance for Sustainable Development: The Challenge of Adapting Form to Function*. Edward Elgar, Cheltenham, pp. 162–190.
- Newig, J., Challies, E., Jager, N., Kochskämper, E., 2014. What Role for Public Participation in Implementing the EU Floods Directive? A comparison with the Water Framework Directive, early evidence from Germany, and a research agenda. *Environmental Policy and Governance* 24, 275–288.
- Newig, J., Fritsch, O., 2009. Environmental governance: participatory, multi-level – and effective? *Environmental Policy and Governance* 19, 197–214.
- Newig, J., Koontz, T.M., 2014. Multi-level governance, policy implementation and participation: the EU's mandated participatory planning approach to implementing environmental policy. *Journal of European Public Policy* 21, 248–267.
- Newig, J., Kvarda, E., 2012. Participation in environmental governance: legitimate and effective? In: Hogl, K., Kvarda, E., Nordbeck, R., Pregernig, M. (Eds.), *Environmental Governance: The Challenge of Legitimacy and Effectiveness*. Edward Elgar, Cheltenham, pp. 29–45.
- Oates, W.E., 1999. An essay on fiscal federalism. *Journal of Economic Literature* 37, 1120–1149.
- Pierre, J., Peters, B.G., 2000. *Governance, Politics and the State*. St. Martin's Press, New York.
- Rockloff, S.F., Moore, S.A., 2006. Assessing representation at different scales of decision making: rethinking local is better. *The Policy Studies Journal* 34, 649–670.
- Rose, R., 1991. What is lesson-drawing? *Journal of Public Policy* 11, 3–30.
- Rose, R., 2005. *Learning from Comparative Public Policy*. Routledge, Oxon.
- Rowe, G., Frewer, L.J., 2005. A typology of public engagement mechanisms. *Science, Technology & Human Values* 30, 251–290.
- Sabel, C.F., Zeitlin, J., 2012. Experimentalist governance. In: Levi-Faur, D. (Ed.), *The Oxford Handbook of Governance*. Oxford University Press, Oxford, pp. 169–183.
- Samuels, P., Klijn, F., Dijkman, J., 2006. An analysis of the current practice of policies on river flood risk management in different countries. *Irrigation and Drainage* 55, 141–150.
- Sanderson, I., 2002. Evaluation, policy learning and evidence-based policy making. *Public Administration* 80, 1–22.
- Shipan, C.R., Volden, C., 2008. The mechanisms of policy diffusion. *American Journal of Political Science* 52, 840–857.
- Stoker, G., 1998. Governance as theory: five propositions. *International Social Science Journal* 50, 17–28.
- Stone, D., 2012. Transfer and translation of policy. *Policy Studies* 33, 483–499.
- Theis, W., 2014. *Beteiligungsmanagement bei Hochwasserschutzmaßnahmen in Rheinland-Pfalz*. In: Heimerl, S., Meyer, H. (Eds.), *Vorsorgender und nachsorgender Hochwasserschutz*. Wiesbaden, Springer, pp. 318–323.
- Thielen, A.H., Grünwald, U., Merz, B., Petrow, T., Schümberg, S., Kreibich, H., Streitz, W., Kaltfofen, M., 2005. Flood risk reduction in Germany after the Elbe 2002 flood: aspects of hazard mapping and early warning systems. In: Buchroithner, M.F. (Ed.), *Proceedings of the International Symposium on Cartographic Cutting-Edge Technology for Natural Hazard Management*. TU Dresden, pp. 145–156.
- Toens, K., Landwehr, C., 2009. The uncertain potential of policy-learning: a comparative assessment of three varieties. *Policy Studies* 30, 347–363.
- Unnerstall, H., 2010. *Legal Framework for Public Participation in Flood Risk Mapping: A Comparative Study of the Responses of Different European Member States to Some Requirements of the Floods Directive*. Helmholtz. Zentrum für Umweltforschung, Leipzig.
- van der Heijden, J., 2013. Experimentation in policy design: insights from the building sector. *Policy Sciences* 47, 249–266.
- Vogt, R., 2012. *Sensibilisierung und Beteiligung der Bürger im Hochwasserschutz Köln*. In: *Flussbautagung 2012. Hochwasserrisikomanagement: Analyse-Bewertung-Minderung-Kommunikation*. Österreichischer Wasser- und Abfallwirtschaftsverband, pp. 23–27.

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Overview of articles included in this cumulative Ph.D. thesis

(in accordance with the guideline for cumulative dissertations in Sustainability Science [January 2012], in the following termed “the guideline”)

Title of Ph.D. thesis: Beyond Panaceas: Assessing the Implementation and Performance of Participatory, Multi-Level Governance in European Water Resource Management

Papers included:

- [1] Newig, Jens; Challies, Edward; Jager, Nicolas W.; Kochskämper, Elisa; Adzersen, Ana (submitted) How and under what circumstances does collaborative and participatory governance lead to better (or worse) environmental outcomes? A causal framework for analysis. Submitted to Policy Studies Journal.
- [2] Newig, Jens; Schulz, Daniel; Jager, Nicolas W. (2016, in press) Disentangling puzzles of spatial scales and participation in environmental governance. The case of governance re-scaling through the European Water Framework Directive. *Environmental Management*. doi:10.1007/s00267-016-0753-8.
- [3] Jager, Nicolas W.; Challies, Edward; Kochskämper, Elisa; Newig, Jens; Benson, David; Blackstock, Kirsty; Collins, Kevin; Ernst, Anna; Evers, Mariele; Feichtinger, Judith; Fritsch, Oliver; Gooch, Geoffrey; Grund, Wiebke; Hedelin, Beatrice; Hernández-Mora, Nuria; Hüesker, Frank; Huitema, Dave; Irvine, Kenneth; Klinke, Andreas; Lange, Leonie; Loupsans, Delphine; Lubell, Mark; Matczak, Piotr; Maganda, Carmen; Páres, Marc; Saarikoski, Heli; Slavíková, Lenka; van der Arend, Sonja; von Korff, Yorck (in press) Transforming European Water Governance? A preliminary assessment of EU Water Framework Directive implementation in 13 member states. *Water* 8 (156). doi:10.3390/w8040156.
- [4] Jager, Nicolas W. (2016) Transboundary cooperation in European water governance – a set- theoretic analysis of international river basins. *Environmental Policy and Governance* 26 (4): 278–291. doi: 10.1002/eet.1717.
- [5] Newig, Jens; Jager, Nicolas; Challies, Edward (2012) Führt Bürgerbeteiligung in umweltpolitischen Entscheidungsprozessen zu mehr Effektivität und Legitimität? Erste Ergebnisse einer Metaanalyse von 71 wasserpolitischen Fallstudien. *Zeitschrift für Politikwissenschaft* 22:527–564.
- [6] Kochskämper, Elisa; Challies, Edward; Jager Nicolas W.; Newig, Jens. (2016) Participation for effective environmental governance? Evidence from Water Framework Directive implementation in Germany, Spain and the United Kingdom. *Journal of Environmental Management* 181: 737–748. <http://dx.doi.org/10.1016/j.jenvman.2016.08.007>
- [7] Newig, Jens; Adzersen, Ana; Challies, Edward; Fritsch, Oliver; Jager, Nicolas (2013) Comparative Analysis of Public Environmental Decision-Making Processes – a Variable-Based Analytical Scheme. 37/13. INFU Discussion Paper 37/13, Lüneburg.
- [8] Newig, Jens; Challies, Edward; Jager, Nicolas; Kochskämper, Elisa (2014) What Role for Public Participation in Implementing the EU Floods Directive? A Comparison With the Water Framework Directive, Early Evidence from Germany and a Research Agenda. *Environmental Policy and Governance* 24 (4): 275–88. doi:10.1002/eet.1650.
- [9] Newig, Jens; Kochskämper, Elisa; Challies, Edward; Jager, Nicolas (2014) Exploring governance learning: How policymakers draw on evidence, experience and intuition in designing participatory flood risk planning. *Environmental Science and Policy* 55: 353–360. doi:10.1016/j.envsci.2015.07.020.

Authors' contributions to the articles and articles publication status (according to §16 of the guideline):

Article #	Short title	Specific contributions of all authors	Author status	Weighting factor	Publication status	Conference contributions
[1]	How and under what circumstances does collaborative and participatory governance lead to better (or worse) environmental outcomes?	JN: Development of conceptual and methodological approach; JN, EC, NJ, EK, AA: Participation in literature review and analysis, participation in the development of the manuscript	Co-author with important contribution	0.5	Submitted for publication to <i>Policy Studies Journal</i> (IF=1.765)	3-Länder-Tagung Politikwissenschaft 2013, ICPP 2015 [†]
[2]	Disentangling puzzles of spatial scales and participation in environmental governance	JN, NJ: Development of conceptual and methodological approach; DS, NJ: data collection, preparation and analysis; DS: First draft of the empirical parts of the manuscript; NJ: First draft of the conceptual parts of the manuscript; JN, NJ: development and finalisation of the manuscript	Co-author with equal contribution	1	Published in <i>Environmental Management</i> (IF=1.724)	Symposium on Scale in Environmental Governance 2013 [†] , ICPP 2013 [†]
[3]	Transforming European Water Governance?	NJ, JN, EC: development of conceptual approach; NJ: development of methodological approach, data gathering; NJ, EK: data analysis; EC, EK, NJ, JN: development of the manuscript; JN: WFD workshop organisation; OTHERS: workshop participants, preparation of country reports, verification of results, supportive role in development of manuscript	Co-author with equal contribution	1	Published in <i>Water</i> (IF=1.428)	ICPP 2103 [†]
[4]	Transboundary cooperation in European water governance		Single author	1	Published in <i>Environmental Policy and Governance</i> (IF=1.614)	TWAM 2013*
[5]	Führt Bürgerbeteiligung	JN, EC, NJ: development of concep-	Co-author	1	Published in <i>Zeitschrift</i>	Tag der Politikwissen-

	in umweltpolitischen Entscheidungsprozessen zu mehr Effektivität und Legitimität?	tual and methodological approach; NJ, JN, EC: data collection, analysis, interpretation, NJ, JN, EC: development of the manuscript	with equal contribution		<i>für Politikwissenschaft</i>	schaft Graz 2012, Berlin Conference on Human Dimensions of Global Environmental Change 2012
[6]	Participation for effective environmental governance?	EK, JN, EC, NJ: development of conceptual and methodological approach; EK, EC: conduction of interviews; EC: literature review; EK, EC, NJ, JN: data analysis; EK, EC, NJ, JN: development of the manuscript	Co-author with important contribution	0.5	Published in <i>Journal of Environmental Management</i> (IF=3.131)	ECPR General Conference 2014 [†] , Wesley Conference 2015 [†] , ICPP 2015 [†]
[7]	Comparative Analysis of Public Environmental Decision-Making Processes – a Variable-Based Analytical Scheme	JN, AA, EC, OF, NJ: development of conceptual and methodological approach; AA, JN, EC, NJ: identification of variables and drafting of the analytical scheme	Co-author with important contribution	0.5	Published as <i>INFU Working paper</i>	
[8]	What Role for Public Participation in Implementing the EU Floods Directive?	JN, EC, NJ, EK: development of conceptual and methodological approach; JN: conduction of interviews; NJ, EK: document review; JN, EC, NJ, EK: data analysis; drafting of the manuscript	Co-author with equal contribution	1	Published in <i>Environmental Policy and Governance</i> (IF=1.614)	ISSRM 2014 [†]
[9]	Exploring governance learning	JN, EK, EC, NJ: development of conceptual and methodological approach; JN: conduction of interviews; EK, EC, JN, NJ: data analysis, drafting of the manuscript	Co-author with small contribution	0	Published in <i>Environmental Science and Policy</i> (IF=3.018)	ICPP 2015 [†]
Sum:				6.5		

Explanations

Specific contributions of all authors

AA = Ana Adzersen, EC = Edward Challies, OF = Oliver Fritsch, NJ = Nicolas W. Jager, EK = Elisa Kochskämper, JN = Jens Newig, DS = Daniel Schulz, OTHERS = Benson, David; Blackstock, Kirsty; Collins, Kevin; Ernst, Anna; Evers, Mariele; Feichtinger, Judith; Fritsch, Oliver; Gooch, Geoffrey; Grund, Wiebke; Hedelin, Beatrice; Hernández-Mora, Nuria; Hüesker, Frank; Huitema, Dave; Irvine, Kenneth; Klinke, Andreas; Lange, Leonie; Loupsans, Delphine; Lubell, Mark; Matczak, Piotr; Maganda, Carmen; Páres, Marc; Saarikoski, Heli; Slavíková, Lenka; van der Arend, Sonja; von Korff, Yorck

Author status

according to §12b of the guideline:

Single author [Allein-Autorenschaft] = Own contribution amounts to 100%.

Co-author with predominant contribution [Überwiegender Anteil] = Own contribution is greater than the individual share of all other co-authors and is at least 35%.

Co-author with equal contribution [Gleicher Anteil] = (1) own contribution is as high as the share of other co-authors, (2) no other co-author has a contribution higher than the own contribution, and (3) the own contribution is at least 25%.

Co-author with important contribution [Wichtiger Anteil] = own contribution is at least 25%, but is insufficient to qualify as single authorship, predominant or equal contribution.

Co-author with small contribution [Geringer Anteil] = own contribution is less than 20%.

Weighting factor

according to §14 of the guideline:

Single author [Allein-Autorenschaft]	1.0
Co-author with predominant contribution [Überwiegender Anteil]	1.0
Co-author with equal contribution [Gleicher Anteil]	1.0
Co-author with important contribution [Wichtiger Anteil]	0.5
Co-author with small contribution [Geringer Anteil]	0

Publication status

IF = ISI Web of Science - Impact Factor 2014

Conference contributions (acronym, society, date, venue, website)

3-Länder Tagung Politikwissenschaft 2013: Austrian Society for Political Science, Innsbruck, Austria, September 19 – 21, 2013,

<http://www.oegpw.at/de/innsbruck-2013/startseite/>

Tag der Politikwissenschaft Graz 2012: Austrian Society for Political Science, Graz, Austria, November 30, 2012

Symposium on Scale in Environmental Governance: Power Reconfiguration, Democratic Legitimacy and Institutional (Mis-)fit, Berlin, Germany, March 7 – 8, 2013

ICPP 2013: International Conference on Public Policy, Grenoble, France, June 26 – 28, 2013, <http://www.icpublicpolicy.org/-Grenoble-2013->

TWAM 2013: Transboundary water management across borders and interfaces: present and future challenges, Aveiro, Portugal, 16-20 March, 2013,

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Berlin Conference on Human Dimensions of Global Environmental Change 2012, Berlin, Germany, October 5 – 6, Germany

ICPP 2015: International Conference on Public Policy, Milan, Italy, July 1 – 4, 2015, <http://www.icpublicpolicy.org/-Milan-2015->

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<http://ecpr.eu/events/eventdetails.aspx?EventID=14>

Wesley Conference on Environmental Politics and Governance, Bainbridge Island, USA, May 14 – 16, 2015,

http://depts.washington.edu/envirpol/?page_id=280

ISSRM 2014: 20th International Symposium on Society and Resource Management, Hannover, Germany, June 10, 2014

* Paper accepted for presentation but not actually presented

† Paper presented by co-author

Declaration (according to §16 of the guideline)

I avouch that all information given in this appendix is true in each instance and overall.