

Contents lists available at ScienceDirect

Environmental Science & Policy

journal homepage: www.elsevier.com/locate/envsci

Exploring governance learning: How policymakers draw on evidence, experience and intuition in designing participatory flood risk planning



Jens Newig*, Elisa Kochskämper, Edward Challies, Nicolas W. Jager

Research Group Governance, Participation, Sustainability, Faculty of Sustainability, Leuphana University Lüneburg, Lüneburg, Germany

ARTICLE INFO

Article history:

Received 24 December 2014
 Received in revised form 14 July 2015
 Accepted 17 July 2015
 Available online 12 August 2015

Keywords:

Evidence-based governance
 Policy experimentation
 Policy learning
 Policy design
 Flood risk management
 EU Floods Directive

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.

© 2015 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

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

* Corresponding author at: Scharnhorststrasse 1, 21335 Lüneburg, Germany.
 E-mail address: newig@uni.leuphana.de (J. Newig).

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>Considered by few states:</i> Controlled experimentation.	<i>Potentially for the next planning cycle:</i> Inspiration from other federal states' involvement experiences. Inspiration from other federal states' involvement models.	Adaptation of WFD involvement models (with more/less participation).
Parallel learning (simultaneous)			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.

Acknowledgements

The authors would like to thank the interviewees for generously taking the time to discuss Floods Directive implementation in their respective states. Thanks also to two anonymous reviewers, whose

input helped to improve the paper. The research was conducted as part of the ERC Starting Grant project 'EDGE – evaluating the delivery of participatory environmental governance using an evidence-based research design' (263859-EDGE) to J.N.

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. *GAIA* 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., Jäger, 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, L., 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., Kaltofen, 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.

Jens Newig is Professor and heads the Research Group Governance, Participation & Sustainability at Leuphana University Lüneburg. He has led several research projects and published widely on public participation, water management, collaborative and multi-level governance, policy implementation, collective learning and network governance. See <http://sustainabilitygovernance.net>.

Elisa Kochskämper is a political scientist and specialised in water governance. Since 2013 she is part of the Research Group Governance, Participation & Sustainability through the ERC-funded project EDGE, which investigates the effectiveness of participation in environmental governance. Within the project, she is mainly concerned with collaborative and participatory planning in European water and flood risk governance under the EU Water Framework Directive and the EU Floods Directive. Her PhD project investigates adaptation through social and collective learning as well as capacity building in both policy fields.

Edward Challies is Senior Research Associate with the Research Group Governance, Participation & Sustainability at Leuphana University of Lüneburg in Germany. His research currently focuses on public and stakeholder involvement in environmental governance, with a focus on participatory and collaborative approaches in water resources management planning and flood risk management planning.

Nicolas Jäger is a Research Associate at Leuphana University of Lüneburg in the Research Group Governance, Participation and Sustainability and research associate in the ERC-funded project EDGE. His research interests focus on (transboundary) water resources governance, public participation and social science research methods.