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From flood safety to risk management

The rise and demise of engineers in the Netherlands and the United States?

Bergsma, E.J.

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7. A comparative analysis of expert-influence in Dutch and US flood governance*

Abstract

This thesis aimed to analyze the constitution of expert-influence in public policymaking on floods and the effects of expert-influence on distributive decision-making in this process. It was set up as a contribution to the existing literature on this topic that emphasizes the extended scope of expert-influence in democratic governance but has not much looked into its actual effects on political decision-making. Empirically, the focus lay on the turn from traditional safety to spatial planning measures in flood governance, which currently takes place in many flood-prone countries around the world as a response strategy to climate change where it then produces new allocations of costs and responsibilities in the policy domain. Using a theoretical framework that combines insights from institutional and framing theory, this thesis analyzed the constitution and effects of expert-influence in the specific cases of the turn to spatial planning measures in Dutch and US flood governance. This last chapter draws conclusions based on a comparative analysis of these two case studies.

7.1 Expert-influence in flood governance: Blessing or curse?

Floods are one of the most serious and deadliest risks posed to societies. Of all natural catastrophes, floods already cause most insured damages world-wide, and more losses are projected in the years to come (Swiss Re 2012: 6, Bouwer

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2010: 105). In the United Nations Office for Disaster Risk Reduction's ranking list, floods have been at the top as the most disastrous natural hazard for years (UNISDR 2015). In the World Economic Forum's Global Risks Assessment of 2015, global water crises are identified as the biggest threat facing humanity in the coming decades (World Economic Forum 2015). At the same time, uncertainties about the impacts of climate change, population changes, and the impacts of human adaptation to floods makes future flood risks difficult to capture and their impacts difficult to forecast. This thesis has dealt with the difficulty in finding management strategies to control this mounting flood risk in a context that also has to deal with uncertainty while decisions have huge implications for how the risk, and associated costs and responsibilities for dealing with the risk, are distributed over different members of society.

In the governance of risks such as floods, experts generally play a key role (Ewald 1991, Beck 1992, Rosanvallon 2008). This strong reliance on expert-knowledge has raised concern from a democratic perspective. Experts are legitimately involved as policy advisors or as executive professionals in bureaucratic agencies. In democratic political systems, however, it is important that "political" or "distributive" issues—that deal with the allocation of burdens and benefits over different members of a society—are dealt with by democratic decision-making bodies, which because all views and interests are then represented ensures that considerations of power (in the Laswellian sense of who gets what, when, and how) are integral to the decision-making process (Van Gunsteren 1976: 7, Rawls 1999). Expert-knowledge, by making a claim to a universal and objective truth, can weigh in strongly on political decision-making and as such undermine the open and democratic character of this process (Rittel and Webber 1973, Van Gunsteren 1976, Habermas 1996, Reddy 1996, Scott 1998, Zanetti and Adams 2000, Nowotny et al. 2001, Kahan 2006, Estlund 2007, Rosanvallon 2008).

Many studies already looked into the issue of expert-influence in democratic governance. They have demonstrated that the scope of expert-influence often extends into the political domain of public policymaking. By making claims about the effectiveness of certain policy approaches over others, expert-knowledge has (deliberately or unconsciously) influenced the choices that are made about the distribution of costs and responsibilities in public governance (e.g., Gusfield 1981, Jasanoff 1990, Hajer 1995, Maasen and Weingart 2005). Expert-influence therefore entails a form of power characterized by Lukes (2005) as its third dimension, which does not work through open contestation or through exclusion from the political agenda but by generating consent with underlying viewpoints and assumptions. This concealed form of power has led many political scholars to explore the possibilities and benefits of more participatory, deliberative, associative, or regulatory forms of democratic governance to better “control” or “check” the role of experts in democratic governance (Hisschemöller and Hoppe 2001, Hirst 2002, Warren 2006, Dijstelbloem 2007, Estlund 2007, Rosanvallon 2008, Cutler 2010, Mügge 2011, Bader 2014). This thesis has taken a step back in this development. While the extended scope of expert-influence has been demonstrated in many research articles over time, the way in which experts actually influence distributive decision-making in democratic governance has been analyzed to a much lesser extent (Boswell 2009, Beveridge 2012, Lundin and Öberg 2014, Spruijt et al. 2014).

This thesis aimed to contribute to a better understanding of the effects of expert-influence on distributive decision-making. It did so by analyzing these effects in the empirical context of flood governance. In many flood-prone countries, a shift is currently being made from a traditional safety approach that aims to prevent floods (e.g., by building levees, floodwalls, and other structural defense works) to a new spatial planning approach where the aim is to minimize the impacts of a flood event by reducing exposure to flood risks. This shift brings forward changes in the distribution of costs and responsibilities in flood governance (Meijerink and

Dicke 2008, Butler and Pidgeon 2011, Bergsma et al. 2012, Penning-Rowsell and Pardoe 2012, Paudel et al. 2015). In a safety approach, the national government generally assumes a large part of the costs and responsibilities for dealing with floods. Under a spatial planning approach, costs and responsibilities tend to be decentralized to the regional and local level to incentivize risk reduction and damage mitigation measures at these levels. What experts were involved in this transition to spatial planning measures in flood governance, and how have they influenced distributive decision-making underlying this transition?

These questions were analyzed in two national case studies. The first case study focused on Dutch flood governance. Flood governance in the Netherlands has always been characterized by a strong safety paradigm, but spatial planning measures have been implemented since the 1990s. The second case study focused on the turn to spatial planning measures in the US. In US flood governance, a spatial planning approach emerged in the 1940s, which institutionalized over time. The research question formulated for this thesis was: **How has expert-influence been constituted in the policymaking process underlying the turn from safety to spatial planning measures in Dutch and US flood governance, and how has this influenced distributive decision-making in this process?**

The previous chapters described the results of the case studies. This concluding chapter comparatively analyzes the case studies. The aim is to draw both context-specific and general conclusions on the constitution of expert-influence in, and its effects on, the turn to spatial planning measures in flood governance. This chapter is organized as follows. A short recap of the theoretical and analytical framework used in this thesis is provided in section 7.2. Section 7.3 summarizes the findings of the Dutch case study, and section 7.4 summarizes the findings of the case study on US flood governance. Section 7.5 comparatively analyzes the case study findings to draw conclusions. Section 7.6 reflects on these conclusions

through a discussion of the contributions and limitations of this thesis, and it highlights possible areas for future research.

7.2 Theoretical and analytical framework

7.2.1 The constitution and effects of expert-influence in processes of institutional change

In this thesis, the turn to spatial planning measures in flood governance was placed in the broader theoretical context of institutional change. Institutions have been described as the “taken for granted or legitimate models” that underlie social interaction (Clemens and Cook 1999: 444). Because they are reproduced through social interaction, institutions have a strong autonomous influence that is able to resist change (North 1990). In a public policymaking context, institutions refer to institutionalized policy discourses, which structure how problems are perceived and acted upon in public governance (Hajer 2005). Because policy institutions are rooted in practice, they are continuously reproduced and hard to change. When policy institutions change, this usually has large implications for the organization of a policy domain, as not only the content of policies but the whole understanding of the policy problem as well as institutionalized practices changes, including the division of costs and responsibilities in that domain.

Rather than seeing institutional change in terms of “big shifts” produced by certain “shock events” that undermine the logical appropriateness of existing institutions and create room for political agency to challenge and change these institutions (Kingdon 1995, Birkland 1997), this thesis adopted a “micro-perspective” on institutional change. In this micro-perspective, institutional change is understood as an ongoing process of gradual “institutional adaptations” to changing conditions (Hall and Hall 1993, Taylor 1996, Mahoney and Thelen 2010, Gray et al. 2015). These conditions relate to changes in the external context of institutions, such as shifts in the dominant political ideology, economic growth

or degradation, or the development of incremental problems such as climate change. But these conditions can also relate to “agency” factors, as actors continuously react to changing conditions, which they can use to challenge and change institutions. In a micro-perspective, institutional change is understood as the outcome of a continuous struggle between the structural focuses embedded within existing institutions on the one hand and the interplay between changing external-contextual and agency factors on the other hand.

To grasp institutional change in this micro-perspective, the policy arrangements perspective was used (Van Tatenhove et al. 2000, Arts and Van Tatenhove 2004, Arts et al. 2006). This framework distinguishes between different dimensions of a policy institution, or policy arrangement: a “discourse” dimension that structures the content of policy approaches developed in a policy field and three organizational dimensions that structure the organization of policymaking and governance practices in that field. The “actor” dimension arranges the collection of actors involved in the policymaking and governance practice, the “rules” dimensions sets out the formal and informal rules and codes of conduct for these practices, and the “resources” dimension structures the resources made available to different (groups) of actors in the policy field, including the division of costs and responsibilities between these actors. In the policy arrangements framework, all dimensions are interrelated. When one of these dimensions of the policy arrangement changes, this change can trickle down to other dimensions and gradually cause the whole framework to change. The speed and direction of this change are, however, structured by the internal forces embedded at each dimension of the policy arrangement.

Expert-influence was understood as being formed and shaped through this “micro-process” of institutional change. It was linked to the actor dimension of the policy arrangement, which means that it is constituted as part of the larger institutional framework in a policy field where it supports the policy discourse and

the organizational arrangements that structure policymaking and governance practices. At the same time, changes in expert-influence at this actor dimension can trickle down to other dimensions. A new constitution of expert-influence at the actor dimension can change the “content” of policy discourses and the “organization” of governance practices in a policy field. That is, it can change the common understanding of a policy problem and set out new rules for a division of costs and responsibilities over different governance actors.

7.2.2 Framing as an analytical perspective

To analyze these “micro-level” processes underlying the constitution and effects of expert-influence in public governance, the concept of framing was used. A frame denotes a “mental map” that actors use to grasp the world around them as well as their own role in it (Goffman 1974). In public governance, actors use “policy frames” to grasp and deal with the complexity of governance situations; policy frames are the “stories” that actors build around these situations in which they define aspects of these situations as problematic, identify their underlying causes, and target policy solutions to address these causes (Verloo 2005, Hajer 2006). In the theory on framing, the policymaking process is conceived of as a discursive struggle between different actor-groups over the interpretation of public problems, and policy frames are the discursive means used by actor-groups to gain support for their version of the truth (Gamson and Modigliani 1989, Rein and Schön 1993, Benford and Snow 2000). Sense-making and interest-advocacy closely interact in framing activities (Fischer 1995: 111). Policy change, or institutional change, is explained from this strategic battle; new policy institutions reflect the hegemonic discourse of the “winning” party. Expert-knowledge is generally constructed as one of the resources actor-groups can use to strengthen their framing activity. It attaches credibility to their policy frame, which increases the trustworthiness of this frame in the public policymaking process.

By placing framing in a wider context of institutional change, a more nuanced view on the role of framing in public policymaking and institutional change emerges. Rather than understanding framing as being disconnected from the larger social, political, and cultural context in which public policymaking takes place, framing occurs in a situated policy context where such larger-scale contextual factors are embedded within the existing institutional arrangement in a policy field (Entman 1993, Steinberg 1998, Van Hulst and Dvora 2016). While new policy frames may be produced to challenge this existing institutional context, this context structures the degree and direction of change brought forward by these new policy frames. Institutional change, then, should also not be understood as the end result of the discursive battle between actor-groups where the new institutional arrangement reflects the policy frame that “won” this battle. Rather, it is the result of a more multifaceted process in which strategic agency collides with collective sense-making that is structured by the existing institutional context (Dewulf et al. 2004, Dewulf et al. 2009, Dewulf and Bouwen 2012). In this more nuanced view on framing, expert-knowledge is no longer only a strategic resource used by actor-groups to strengthen their frames. It is part of the institutional structure that is constituted by and shaped through collective sense-making and strategic framing in public policymaking and governance processes, which it shapes at the same time in turn.

7.2.3 Case studies and data collection

It was through this theoretical, analytical lens on the role of framing in institutional change that the constitution and effects of expert-influence in the turn to spatial planning measures in flood governance was analyzed. The analysis concentrated on two case studies, one on Dutch flood governance and one on flood governance in the US. In both countries, spatial planning measures have been implemented, but this occurred at a very different time and to a different degree. In the Netherlands, a safety paradigm had been dominant up to the late

decades of the 20th century, and spatial planning measures have only recently been implemented. In the US, a spatial planning approach already emerged in the 1940s, which has characterized US flood governance since then. A case study design was chosen to incorporate the multitude of factors at play in shaping expert-influence and its effects in processes of institutional change. Case studies allow the exploration of such multifaceted phenomena because they delimit the research context (Yin 2003: 13).

Dutch and US flood governance were selected as “extreme” cases in the general transition to spatial planning measures in flood governance that is currently taking place around the world. Because Dutch flood governance has so long depended on a safety paradigm whereas a spatial planning approach has dominated US flood governance since the 1940s, these cases may generate insightful information about the role and effects of expert-influence in the turn to spatial planning measures that would be harder to detect in other countries that represent more typical cases of this turn (Yin 2009: 52, Seawright and Gerring 2008: 298, Flyvbjerg 2006).

In order to capture the (changed) constitution of expert-influence in the process of turning to spatial planning measures in Dutch and US flood governance, and in order to fully grasp the implications of expert-influence for distributive decision-making, the case studies covered over a century of policymaking on floods. This thesis used a three-step approach to data collection (see table 1 in the first chapter of this thesis for an overview of data sources). First, the main policy developments in 20th and 21st century Dutch and US flood governance were mapped out based on a literature analysis. Second, the analysis zoomed in on certain moments in this evolutionary path during which important building blocks of the institutional arrangement in Dutch and US flood governance were formed or shaped. For these periods, the policymaking processes were reconstructed to trace back how expert-influence was constituted and how it impacted distributive

decision-making based on transcripts of parliamentary and congressional records. In the Netherlands, the case study zoomed in on the policymaking process underlying the construction of the Dutch Zuiderzee Works (1890-1932), which marked a formative moment in the development of the Dutch safety approach to floods. In addition, the case study concentrated on the development and (near) implementation of three spatial planning measures: the Room for the River Program, flood insurance, and the Second Delta Program. The US case study started out with the development of the National Flood Insurance Program in the 1940s, which has since that time embodied the spatial planning approach in US flood governance. It also analyzed the changes made to this insurance program over time. The conclusions of each case study were checked and fine-tuned through stakeholder interviews and discussion meetings. In the Dutch case study, the discussion meetings mainly served to check the findings with (knowledge) actors involved in the “executive” domain of Dutch policymaking on floods; in the US case, the interviews were used to generate insight into the contextual factors that impacted recent policy developments.

7.3 Integrated flood risk management in the Netherlands

7.3.1 The Dutch engineering approach to flood protection

In the Netherlands, the first centralized flood management activities emerged in the late 19th century. Against the backdrop of an internationally rapidly developing science on floods and water management, engineers, who up to that moment were primarily employed in the state’s executive water agencies, expanded their influence on Dutch flood governance by highlighting the relevance of their engineering expertise to this policy field (Lintsen 1980, Toussaint 2009). Organized into different professional associations, engineers joined hands with macro-economists to develop large-scale water engineering plans for the Netherlands. In these plans, not only the technical aspects of engineering solutions to flood Dutch governance were specified, but just as

important, these plans also spelled out the national costs and benefits of these solutions for society as a whole (Den Hoed and Keizer 2007).

These engineering plans dovetailed well with the political aspirations of the emergent progressive-liberal strand in Dutch politics around the end of the 19th century, whose members preferred a more active role of the central state in public affairs (Baneke 2011). Close bonds developed between members of this new political elite and engineering associations. Through their mutual interactions, engineering plans were better tailored to specific political interests and further solidified to better deal with “conservative” financial or technical concerns raised against their plans. These collaborative efforts between policymakers and experts often generated the necessary amount of public and political support for the realization of engineering plans in Dutch flood governance.

A good example of this process is provided by the Zuiderzee Works, on which the second chapter of this thesis focused. Inspired by successful inland land reclamations in the second half of the 19th century, Dutch engineers started to explore the possibility of damming a whole sea—the Zuiderzee—with a 32-kilometer long dam—the Afsluitdijk. The construction of the Afsluitdijk would enclose the former inlet of the Zuiderzee and turn at the time a devastating sea into a large freshwater lake with rich plots of newly reclaimed agricultural land. Organized into the “Zuiderzee Society”, engineers closely collaborated with national economists, business leaders, and members of the Dutch landed gentry to advocate the importance of their Zuiderzee Works for the country. At first, the plan encountered resistance. It was technically unprecedented, required vast governmental investments, and would dissolve the fisheries sector reliant on the Zuiderzee. By building strong bonds with the rising progressive-liberal elite, the Zuiderzee Society became well aware of the doubts and questions that obstructed the realization of its plan. The organization put a lot of effort into

addressing these concerns. Numerous reports were produced in which the technical aspects were worked out in more detail (Zuiderzeevereniging 1892), the costs were better specified, the long-term benefits were quantified (Van der Houven van Oordt and Vissering 1901), the “bad shape” of this fisheries sector was underlined (Zuiderzeevereniging 1905), the urgency of the project for flood protection (Zuiderzeevereniging 1916) and economic growth (Plate 1914) was highlighted, and the project’s contribution to compensating the neutral status of the Netherlands during the First World War by showing the international community that this small country could conquer land through peaceful means was emphasized (Zuiderzeevereniging 1920). By tailoring their knowledge to political concerns, the Zuiderzee Society managed to generate political acceptance for the Zuiderzee Works. The plan was formally approved in 1918 and the Afsluitdijk was completed in 1932.

The Zuiderzee Works represents a formative moment in the history of Dutch flood governance. The policy discourse that developed can best be described as “social-technocratic”, in which floods were understood as an external threat to the optimal functioning of society, to be dealt with by the state in its capacity as guardian of the public interest. Policy solutions rested on a combination of engineering and macro-economic expertise that specified the national costs and benefits involved with engineering solutions to flood governance. The national cost-benefit balances produced by these experts provided the framework through which these engineering solutions were judged. To the extent that the local-level implications of engineering plans were highlighted in these cost-benefit analyses, such as in the case of the Zuiderzee fishermen, dealing with these temporary and local impacts was usually left to Dutch parliament, as this involved questions of national solidarity. The Zuiderzee Works were justified from this perspective. The national cost-benefit balance worked in its favor, and fishermen were partly compensated for their losses through a ministerial arrangement.

This policy discourse significantly shaped the further evolution of Dutch flood governance. It, for example, underlay the realization of the Dutch Delta Works, a series of “movable floodwalls” constructed after a devastating storm surge in 1953. The organizational arrangements through which these engineering projects were implemented gradually institutionalized. In the Netherlands, flood governance developed as a national-state responsibility, where decisions are made based on national cost-benefit analyses produced by engineers and macro-economists. These expert-groups came to occupy pivotal positions in Dutch water management, creating structural connections between these experts and Dutch policymakers. Under this national planning tradition, “distributive issues” were settled on an ad hoc basis by parliament. Over the years, a generous damage compensation practice emerged in which the national government not only compensated for the negative effects of flood protection measures, but increasingly also for the damage done by flood events themselves (Kuks 2004: 96).

7.3.2 The spatial turn in Dutch flood governance

As a flood control strategy, spatial planning measures were for the first time discussed in the 1990s. In this decade, high water levels in some of the country’s main rivers accumulated into riverine floods in 1993 and a near-flooding disaster 1995. In addition, recurring rainfall extremes between 1998 and 2002 led to a number of flood incidents that caused repeated damages. A policy advisory committee set up in 2000 in response to these events argued that rather than continuing to try to prevent floods, the Dutch needed to start accepting floods from time to time and focus on reducing their consequences by reserving more space for water in the national landscape (Commissie WB21 2000). Following this advice, a number of policies were introduced that implemented spatial planning measures in Dutch flood governance (Jong and Van den Brink 2013, Van Buuren et al. 2012). The third chapter of this thesis discussed three of these policies in

more detail: the Room for the River project, flood insurance, and the Second Delta Program.

Under the general header of Room for the River, several river-widening projects were launched to create more space for water. As these Room for the River projects started out in 1996, the national government assumed a leading role. Based on the technical intelligence of engineers, it designated areas suitable for river-widening and restricted building activities in riverbeds. In practice, however, Room for the River projects often conflicted with local spatial planning goals (Kuks 2004: 121-129). In response to such conflicts, the central government increased its grip on local spatial planning decisions (Needham 2005) but also loosened its building restrictions for winter beds and started to emphasize the responsibility of local actors in these areas to take precautionary measures against flooding and face the consequences of the choices they make in this regard. Flood insurance was proposed as a means to help local actors cope with this responsibility.

Flood insurance was also discussed as a new policy instrument in the domain of flood damage compensation. The 1990 floods demonstrated the structural character of flood risks in the Netherlands. Especially because climate change would increase the flood risk, this structural character challenged standard flood damage compensation arrangements. On the one hand, the arbitrary nature of the ad hoc damage compensation arrangements usually erected after a flood was seen as problematic. On the other hand, this practice was linked to the creation of a moral hazard, because people have no incentive to prevent damage as long as they know the government will pay for their losses (Kamerstukken II 1996/1997c). Flood insurance would solve these issues by providing an orderly method of damage compensation and offering incentives for damage mitigation by decentralizing responsibilities to the local level, where location and building choices are made. While different proposals were made to set up a public-private

flood insurance scheme, these proposals never effectuated. They always encountered resistance, as policymakers felt that flood damage compensation was a matter of national solidarity that should be dealt with by parliament (Kamerstukken II 1995/1996).

Instead, a new damage compensation law was adopted in 1998 that combined legal security, individual responsibility, and national solidarity by laying out standard rules for damage compensation in case of a calamity but also preserving the national government's freedom to adjust these rules to specific cases and situations. Insurable damage was excluded from the right to damage compensation, and the law explicitly only arranged for partial damage compensation to address local-level responsibilities. Applications of this law have been much criticized. In 2004, an advisory committee concluded that responsibilities for damage compensation remained unclear under the law (Commissie Tegemoetkomingen bij Rampen en Calamiteiten 2004). Since that time, opportunities for implementing a flood insurance scheme continue to be explored (Kamerstukken II 2013).

In 2008, a national advisory committee tasked with analyzing the future challenges for Dutch water management rang the alarm bell with a report that concluded that Dutch protection standards were out of date (Vink et al. 2013). That same year, the Second Delta Program was launched to bring Dutch flood protection up to speed with climate change. Under this program, a new norm-setting method was adopted. Developed by a group of professionals affiliated with a Dutch engineering organization, this method forwards new "economically efficient" flood protection standards for the Netherlands (Eijgenraam et al. 2014). Although these norms will provide every Dutch citizen with a basic safety level expressed as a chance of being killed by a flood of no more than once every 100.000 years, under these new norms flood protection will be reinforced in areas that represent important economic value or where there are a lot of people

at risk. In low-risk (mainly rural) areas, the Delta Program forwards spatial planning measures as a more cost-efficient alternative. According to the Delta Program, spatial planning measures require “shared ownership” and “self-regulation” to match the decentralized responsibility structure of Dutch spatial planning (Delta Program 2014: 8).

Since the 1990s, institutions in Dutch flood governance gradually changed. The policy discourse on floods shifted from understanding this problem solely as an external threat to also incorporating local-level planning and building decisions as causes underlying flood risks. The spatial policies that were developed to address these causes altered the organization of Dutch flood governance. Through the Room for the River projects, discussions on flood insurance, and the spatial planning measures forwarded in the Second Delta Program, room has been created for the implementation of a more decentralized responsibility structure in Dutch flood governance. The implications of this change have, however, not always been recognized in the policymaking process. For example, the fact that the spatial planning measures in the Second Delta Program require a larger contribution of individuals and businesses in low-risk areas than in high-risk areas was not highlighted at all in the policy discussions. Similarly, in the policy discussions on flood insurance, questions about the options individuals actually have to prevent flood damage were barely raised. This is especially striking considering that the Room for the River projects demonstrated conflicts between national water goals and local planning practices.

The fact that these distributive implications were not sufficiently highlighted in the policymaking process underlying the spatial turn in Dutch flood governance was explained by the fact that in the Netherlands, spatial planning measures have largely been developed through “institutionalized” science-policy interactions that granted authority to the expertise of engineers and macro-economists. Their national cost-benefit analyses were no longer only used to determine optimal

flood protection levels but increasingly also to identify economically efficient land-use options to create space for water in the Dutch national landscape. While the national-level focus of these expert-groups fit well with the centralized responsibility structure formed under safety institutions, this type of knowledge tends to ignore local-level policy effects because these effects were always dealt with by parliament in direct response to specific situations under the old arrangement. Decentralizing responsibilities to the local level, however, requires an up-front evaluation of local-level policy implications. Over the last two decades, such local-level implications of spatial planning measures in the Netherlands have been analyzed and discussed within geography and spatial economy departments of Dutch research institutions (e.g., Wolsink 2006, Neuvel and Van der Knaap 2010, Aerts and Botzen 2011, De Moel et al. 2014). However, because this knowledge was not incorporated in the policymaking process underlying the implementation of spatial planning measures, distributive changes in Dutch flood governance were not always recognized by policymakers. Did similar problems emerge in the spatial turn in US flood governance?

7.4 The US spatial planning approach to floods

7.4.1 The emergence and institutionalization of the spatial planning approach in US flood governance

Similar to developments in the Netherlands, US flood governance was characterized by a reliance on engineered flood protection in the early decades of the 20th century. Contrary to the Netherlands, however, these engineering solutions met with a great deal of controversy in American society, as they conflicted with leading political principles, such as individual responsibility and the local autonomy of states (Barry 1997). Their implementation involved a continuous struggle over the level of state funding vis-à-vis that of “local contributions” of states, and rising federal payments on disaster relief met with increased opposition as well (Arnold 1988). The fourth chapter of this thesis

started out with a description of how social geographers emerged as new experts in US flood governance with an alternative spatial planning approach to flood governance.

In the 1940s, a new group of experts connected to the Chicago school of behavioral sciences—a scientific movement that studied possibilities for adjusting behavioral patterns through governmental policy—started to criticize the safety approach in US flood governance. It was in particular social geographers who argued that levees make people feel safe and therefore allow value to concentrate in flood-prone areas. Absent in the engineering approach, these geographers argued, was a consideration of the costs of flood damage; because these costs were usually shouldered by the federal government through disaster relief, there was no incentive to mitigate flood damage at the local level, where spatial planning choices are made (White 1945). In the geographers’ “rational floodplain management” alternative, these costs would be reflected in price incentives that would encourage local actors to make a rational trade-off between the costs and benefits involved with living in a floodplain. While in some cases flood protection would still be cost effective, in many other cases damage mitigation would provide a better alternative. This idea of rational floodplain management was tested out in practice, based on which social geographers further elaborated their spatial planning approach to flood governance.

The geographers’ spatial planning approach sided well with US politics. A proposal was drafted for a National Flood Insurance Program (NFIP) that would use insurance premiums as price incentives. By linking the availability of flood insurance to local communities’ enactment of building and zoning regulations for flood-prone areas, further incentives for rational floodplain management were provided. However, when the insurance program was discussed in Congress, worries arose about the price of flood insurance in high-risk areas. People in these areas did not anticipate these costs (House of Representatives, 1967b:

17279), and coastal zones sustained vital parts of the national economy (Subcommittee on Housing and Urban Affairs 1973: 47-70). When the insurance program was adopted in 1968, Congress therefore decided to subsidize the premiums of existing properties in high-risk areas. The adoption of the insurance program did not mean no levees were build; levees were included as a “damage mitigation” option available to local communities to lower the insurance premiums of their residents.

From the start, the program struggled with low participation rates. This not only undercut the program’s incentives for rational floodplain management but also its capacity to build up sufficient resources to cover damages in the event of a flood (Pasterick 2000). Flood risk mapping has posed another persistent problem, because local flood hazard data was not readily available and had to be collected while the program was already in operation (Riebau 2000). Without these flood risks being known, premiums could not be calculated and insurance could not be sold, so both problems reinforced each other.

In the 1970s, support for the program was upheld by the active backing of the environmental movement whose nature conservation goals coincided well with the NFIP’s aim to limit developments in coastal and riverine areas. Environmental organizations were involved actively collaborated with geographers in the Water Resources Council, a federal advisory body on water management. This council continuously (re)developed building and zoning guidelines for the NFIP to improve the program’s rational floodplain management structure (e.g. US Water Resources Council 1969, 1971). The increased emphasis on spatial-planning within the NFIP elicited concerns from local-communities in high-risk areas, who feared federally imposed land-use requirements would bring “economic disaster” to their regions (Subcommittee on Housing and Urban Affairs, 1973, p. 85).

Under the sustained support of environmentalism, the federal government strengthened its role in the NFIP in the 1970s (Arnell 1984). On the one hand,

stricter land-use and building regulations were required from communities participating in the insurance program and in these communities, flood insurance was mandated for federally-backed properties in high-risk areas. On the other hand, recognizing that flood-risk areas sustained vital parts of the national economy, federal subsidies on insurance premiums were increased and federal hazard mitigation grants were offered to individuals and local communities to support the implementation of local flood damage mitigation measures (Subcommittee on Housing and Urban Affairs, 1973, p. 47-70). Thus, a new trade-off was made in which the federal government extended its influence on local planning and increased its financial contributions to the program.

In the 1940s to 1970s, US flood governance “turned” from a safety to a spatial planning approach. Under this turn, policy institutions changed. A new policy discourse emerged in which not so much floods themselves but rather flood damage was seen as the key problem. This understanding relied on the geographers’ often paraphrased insight that while “[f]loods are the acts of God, flood damages are the results of the acts of men” (HUD 1966: 14). The policy solution that was developed (the NFIP) addressed the human causes behind the creation of flood damage, by encouraging individuals and local communities to not build in high-risk areas. This new policy fundamentally altered the constitutions of actors, rules and resources in the policy field. Important responsibilities and costs for dealing with floods shifted from the federal to the local level as a result of the implementation of the NFIP.

This institutional transformation was supported by a new structure of scientific expertise connected to the work area of social geographers connected to the Chicago school of behavioral sciences. These experts provided information about local flood risks and about local construction and building options to mitigate flood damage. In doing so, these experts provided insight into the local-level implications of new spatial planning measures, which facilitated an evaluation of

their distributive consequences at the federal level. For example, a trade-off was made between sending effective price signals for rational floodplain management choices at the local level and ensuring the affordability of flood insurance at this level in the decision to federally subsidize insurance premiums in high-risk areas. Moreover, under the institutionalized patterns of interactions that emerged between policymakers and social geographers in US flood governance, knowledge was continuously updated, which allowed policymakers to continually reevaluate the subsidies structure in the NFIP. Thus, while experts were extensively involved in the development of the spatial planning approach to floods in the US, the distributive implications of this shift were recognized in the policymaking process.

7.4.2 The role of experts in policy reforms after hurricane Katrina (2005)

The efforts made in the 1970s helped to increase participation (Platt 1968). However, many insurance policies were subsidized and FEMA regularly had to borrow money from the federal treasury to pay out claims. When Reagan's liberal-conservative regime rose to power in the 1980s, important changes were made to the program. Links with the Water Resources Council were cut off and daily management tasks were delegated to the insurance directorate of the Federal Emergency Management Agency (FEMA), a newly created federal agency for disaster management, in 1981. Under FEMA's stewardship, the program was redirected toward fiscal independence. By raising subsidized premiums, FEMA managed to obtain this status in 1986. These positive developments generated trust in FEMA's management capacities. As security and terrorism demanded the attention of policymakers in the 1990s, floods gradually moved to the background of emergency management in the US.

Attention to the insurance program was given again after hurricane Katrina, which broke through all records as the costliest natural disaster ever experienced in the US (Michel-Kerjan et al. 2012: 645). After having maintained financial independence for over 19 years, FEMA borrowed the exceptional amount of \$19

billion from the federal treasury to cover all claims (Michel-Kerjan 2010: 176), and Congress appropriated over \$88 billion for disaster relief (Michel-Kerjan et al. 2012: 645-646). Soon after the hurricane, questions were raised about the functioning of the program; wasn't the NFIP designed to reduce flood damage and the role of the federal government in damage compensation? The fifth chapter of this thesis analyzed the role of experts in policy discussions on NFIP reform after Katrina

In Congress, this mismatch between expectations and policy outcomes was linked to climate change. Different experts highlighted that the NFIP's rate-setting structure, which was based on historical loss calculations, had become outdated by the new flood risks posed by climate change (Subcommittee on Housing and Community Opportunity 2007). There was widespread agreement on the need to modernize the program (152 Cong. Rec. H4566, 2006, 154 Cong. Rec. S3947, 2008). NFIP reform proposals focused on restructuring the program's rate-setting method. By eliminating discounted rates and implementing a risk-based pricing structure that took into account future catastrophic events like Katrina, the program would have better incentives for damage mitigation while also making sure sufficient revenue was generated to cover future losses. While there were concerns about the impacts of these reform measures on the affordability of flood insurance in high-risk areas, these concerns were generally addressed by allowing risk-based rates to be phased in over a number of years. In the long-term, the idea was that risk-based rates would restore the effective operation of the program, where affordability was ensured by the program's effective damage mitigation incentives (Subcommittee on Housing and Community Opportunity 2010: 1-9).

In 2012, the Biggert-Waters Flood Insurance Reform Act was passed, which moved the program closer to risk-based rates. The implementation of these reforms caused quite the disturbance. Premiums went up more than expected

and sky-rocketed in some cases, but no one could really explain what had caused these extraordinary rate increases (Subcommittee on Economic Policy 2013). In 2014, Congress adopted a new reform package—the Homeowners Flood Insurance Affordability Act—which scaled back the rate increases caused by the Biggert-Waters Act. After hurricane Sandy in 2012 again cut into the NFIP’s budget, which was still in debt from Katrina, new directions began to be explored in US flood governance; with projects such as “rebuild by design”—a design competition between different options for a resilient rebuilding of Sandy-affected areas—more emphasis seems to be placed on engineered solutions to flood risks.

Based on these more recent developments in US flood governance, a challenge was identified related to the difficulty of maintaining science-policy interactions in a spatial planning approach to floods over time. After management tasks were transferred to FEMA in the 1980s, there was little reason for policymakers to stay involved in questions regarding the functioning of the insurance program, and the interaction between social geographers and policymakers also came to an end. While on paper the NFIP’s balance continued to match up, in practice the flood risk had exacerbated because of a complex combination of factors, including climate change, overdue technical maintenance of levees, a difficult enforcement regime for damage mitigation regulations, and population dynamics. However, the program was not reevaluated in light of these changed circumstances. Partly because of this, the impact of Katrina was unanticipated and its distributive implications were hard to grasp under subsequent policy revisions, as was shown in chapter 5.

7.5 Conclusions

As the first centralized flood governance strategies developed in the Netherlands and the US at the end of the 19th century, they were based on the expertise available at that time (i.e., engineering expertise) to streamline rivers and build levees to ward off floods. This expertise brought a policy discourse in which

floods were presented as an external risk that posed a threat to society as a whole, which was to be dealt with through collective state responses. As the case studies in this thesis described, spatial planning measures were introduced in both countries as part of a new policy approach to cope with increased flood risks. They also described how these spatial planning measures were supported by a new policy discourse on floods, one in which flood risks were no longer defined in terms of probabilities but also in terms of potential impacts, and the root cause of the problem was no longer only placed in external factors but partly also in anthropogenic factors (human location and building choices) that increased vulnerability to flooding. With the implementation of spatial planning measures in Dutch and US flood governance, the distribution of costs and responsibilities shifted as well. But what was the role of experts in (re)shaping the policy institutions in Dutch and US flood governance? And what did this imply for the recognition and handling of the distributive implications brought forward by the implementation of spatial planning policies? Considering that these changes occurred in very different temporal and political contexts, what general and context-specific conclusions can be identified in this respect?

A *first* conclusion drawn in this thesis is that the influence of experts on the development of Dutch and US flood governance can best be understood as “contextually embedded.” The case studies confirmed that in the policy domain of flood risk governance, Dutch and US policymakers were indeed very dependent upon experts; experts handed over the basic guidelines that allowed policymakers to act on the problem of floods. This dependency provided experts with an important source of influence in the policymaking process. At the same time, the case studies also revealed that policymakers set limits around the influence of these experts. Both in Dutch and in US flood governance, experts had to tailor their knowledge to prevalent political goals and ideals to get their expertise recognized by policymakers. This was so, for example, in case of the Zuiderzee Works, where engineers constantly adjusted the presentation of their

plan to important contextual events in the Netherlands at that time (i.e., rising unemployment, the 1916 flood, the First World War). Similar developments were found in the development of the spatial planning approach in US flood governance, where social geographers discredited the safety approach to floods for being “un-American”. The case studies furthermore showed that “recognized experts” also continuously adjusted their expertise to incorporate new political goals and values in order to ensure their expertise remained a valid source of knowledge in the policy domain. In the 1970s, ecological values were incorporated by Dutch engineers and American social geographers in a similar fashion. When market regulation became the cornerstone of US politics in the 1980s, trust was placed in the management capacities of the Federal Emergency Management Agency (FEMA), a new regulatory agency in US disaster management created to improve the internal coordination of this policy field; important management responsibilities for the NFIP shifted to FEMA in the 1980s. Thus, while experts significantly influenced the policy strategies that emerged in Dutch and US flood governance, their influence was shaped by their interactions with policymakers, who drew up the boundaries within which experts outlined their solutions for dealing with floods.

From this contextually embedded understanding of expert-influence, differences in the development of spatial planning measures between both countries can also be better understood. While the safety approach developed by engineers fit the political landscape of the Netherlands in the late 1900s, where the rise of progressive liberalism pushed for larger state involvement in Dutch flood governance, it never took full shape in the US, where values of individual responsibility and local state autonomy were prioritized over large-scale state involvement. The safety approach institutionalized in Dutch flood governance, but in the US, policymakers embraced the alternative floodplain management approach developed by social geographers in the 1940s. In this process, new structures of (geographical) expertise were set up. Practically embodied in a

federal insurance program, this spatial turn significantly changed the policy discourse in US flood governance, the policies and rules set out to govern the problem of floods, and the division of costs and responsibilities in this policy domain. In comparison to the US, the first steps in the direction of a spatial planning approach in the Netherlands remained rather limited. Policy institutions also only partly shifted. Dutch spatial planning measures have largely been developed through institutionalized interactions with engineers and macro-economists, who stressed the need for spatial planning measures to deal with the impacts of climate change and the unregulated character of developments in flood-prone areas, but whose solutions continued to imply a large role for the national government. At first, in the Room for the River project, responsibilities actually remained largely governmental. Gradually, however, the policy discourse on floods started to change, and individual location and building choices were increasingly recognized as a cause underlying flood risks. The spatial planning solutions that have been developed and discussed also increasingly addressed these local-level causes by emphasizing the responsibility for preventing and anticipating flood losses at the local level.

A *second* conclusion drawn in this thesis is that because of the contextually embedded nature of expert-influence, close relationships between experts and policymakers emerged in Dutch and US flood governance. Through these relationships, strong policy frames were created that, by identifying problem causes and specifying policy solutions to address these causes, constructed a coherent story around the problem of floods. In these policy frames, normative and operational arguments strongly overlapped. In the Netherlands, the institutionalized safety approach not only rested upon arguments about the effectiveness of engineered flood protection in the particular context of this low-lying delta country, but also upon arguments about the normative appropriateness of collective state solutions for dealing with the external risk of flooding. In the US, the institutionalized spatial planning approach not only

provided a more “cost-efficient” alternative to engineered flood protection, but this approach was also valued for better addressing the local-level responsibilities of communities’ planning and individuals’ building decisions in exacerbating the flood risk.

This thesis *thirdly* concludes that, contrary to general assumptions, the involvement of experts in Dutch and US flood governance did not automatically imply that the distributive implications of policy approaches were overlooked in the policymaking process. Although, through their strong relationships with policymakers, experts greatly influenced the normative principles underlying the policy approaches that were developed in both countries, the case studies described that experts were also continuously pushed by policymakers to better outline the practical (distributive) consequences of their policy solutions, often to help the political proponents of these solutions to do away with alternative views and to counteract criticism. The specification of practical consequences actually helped policymakers identify the distributive impacts of the policy solutions proposed by experts, and the potential conflicts and value and interests that these solutions could create.

This was so in the Netherlands, where the specification of the practical consequences of flood protection measures in the national cost-benefit analyses provided the Dutch national government with the necessary information to identify and deal with areas of conflicting needs and interests. In the US, the interaction with social geographers connected to the Chicago school of behavioral sciences provided policymakers with information on local insurance premiums and (the costs involved with) local damage mitigation measures. Based on this information, the goals of sending effective price signals for rational floodplain management could be traded off against other federal policy goals, such as providing access to flood damage compensation and facilitating economic growth. Although clearly normative and unmistakably directional, expert-

influence in Dutch and US flood governance thus also provided policymakers with a blueprint for grasping and judging the distributive implications of policy measures.

However, as a *fourth* and more practical conclusion, this thesis concludes that a spatial planning approach requires another type of expertise than standardly incorporated under a safety approach to floods. The nationally-oriented expertise of engineers “fits” safety institutions; by specifying the costs and benefits connected to the building of large-scale engineering works directly, their negative (national to local-level) implications could always be dealt with by the Dutch national government on an ad hoc basis. In the Netherlands, local-level disadvantages have mostly been compensated for by the national government case by case, which was, for example, demonstrated by the situation of the Zuiderzee fishermen. In the Netherlands, it were the engineers who called for the implementation of spatial planning measures to cope with the increased spatial claims made on land in an era of climate change. Under their nationally-oriented focus, Dutch spatial planning measures were justified based on their “cost-effectiveness”; spatial planning measures are currently accepted as a legitimate (i.e., more cost-efficient) option for low- to moderate-risk areas where the investments in structural flood protection do not outweigh the expected benefits created by these defense works. Spatial planning measures shift responsibilities to the regional and local level. They therefore require an “up-front” evaluation of distributive impacts. Such “up-front” insights into local-level policy implications, as was demonstrated by the US case study, can be offered by social geographers and (micro- or behavioral) economists, whose expertise is oriented to local and regional processes. In the US, this focus was given by the Chicago school of behavioral sciences, which was dedicated to analyzing individual (environmental) behavior. In the Netherlands, the costs and benefits of spatial planning measures have only been outlined at the national level. Consequently, the local-level

distributive impacts of spatial planning policies have gone by largely unnoticed in Dutch parliament.

In the US, the challenge was different. While new forms of “geographical” expertise were organized into the policymaking process on floods in the mid-20th century, the main challenge in this context has been to uphold the interaction between spatial experts and policymakers in flood governance. As the US case study demonstrated, confidence was placed in the self-operating potential of the regulatory policy solutions that characterize the US spatial planning approach to floods. Under the guidance of FEMA’s “operational” expertise, the focus came to lie on the operational running of the program and institutionalized interactions between policymakers and geographical experts that were formed during the initial phases of the US spatial-planning approach broke down. As the analysis of the policymaking process after Katrina demonstrated in particular, the normative underpinnings of the spatial policy framework were not reevaluated in the new context of a changing climate, social vulnerabilities, and the increased development of floodplains.

7.6 Contributions and limitations of this thesis

This thesis provided an empirical account of expert-influence in the transition to a more spatially oriented flood governance strategy in the Netherlands and the US over the course of the 20th-21st century. The aim was to analyze **how expert-influence was constituted in the policymaking process underlying the turn from safety to spatial planning measures in Dutch and US flood governance, and how this has influenced distributive decision-making in this process** as a contribution to the often more theoretically-oriented literature on this topic. What contributions has this thesis delivered to the theoretical debate on expert-influence in public policymaking? And what is the practical relevance of the conclusions drawn in this thesis? But just as important, what limitations can be set to these contributions?

7.6.1 Theoretical contributions and limitations

The results of this thesis indicate that there is a lot more to be said about how experts actually impact distributive decision-making than is usually credited for in the literature on this topic. This thesis, for example, found that expert involvement in public policymaking is not necessarily problematic, as it can in some cases facilitate the recognition of distributive implications of new policy approaches. However, it did find considerable differences between how different expert-groups impacted the extent to which and the way in which distributive policy implications were recognized and dealt with in Dutch and US flood governance. As such, it calls for further research that looks beyond the role of experts as a general category in public policymaking, and instead focuses on the effects of the inclusion of specific types of expert-groups in a contextualized governance setting in order to improve our understanding of the implications of involving experts in public policymaking institutions.

The “micro-perspective” on institutional change adopted in this thesis helped to understand how, in the turn to spatial measures in Dutch and US flood governance, expert-influence was constituted by the interplay of external-contextual factors, political agency, and the structuring force within institutions themselves. The policy arrangements framework provided a useful conceptual schema to grasp and analyze this interplay. By distinguishing between different dimensions of an institutional arrangement, changes brought about by the turn to spatial-planning measures in Dutch and US flood governance could be positioned at these dimensions to analyze their mutual relationships in the process of institutional change. The policy arrangements framework thus provided an orderly method to analyze the complex set of factors, and their interactions, at play in micro-processes of institutional change. The constitution of expert-influence was linked to the “actor” dimension and could therefore be analyzed as part of this process. By linking the distribution of costs and responsibilities to the

“resources” dimension, the policy arrangements framework provided the conceptual tools with which to grasp both the “constituting” factors in and the effects of expert-influence in a micro-oriented process of institutional change.

Framing was used as an analytical framework to analyze the mechanisms behind micro-processes of institutional change. Framing was understood as an activity in which external-contextual, political-agency, and internal-institutional factors come together in different “policy frames” that compete in and structure the public policymaking process on floods. This perspective contributed to a nuanced and “contextually embedded” understanding of expert-influence in public policymaking as being formed not only by political agency but also by relational and collective sense-making factors, which are generally not recognized in traditional framing accounts. In emphasizing the importance of relational and sense-making factors, political agency factors behind expert-influence have received less attention in this thesis. This strategic side is not only relevant theoretically, as it helps to better understand what expert-influence in public governance entails, but a better insight into the strategic elements underlying framing in flood governance may also provide a more complete picture of the dynamics underlying the turn to spatial planning measures in flood governance. Therefore, another interesting direction for future research would be to perform more in-depth analyses of the link between political agency and the utilization of certain forms of expert-knowledge in the turn to spatial planning measures in flood governance, in light of anticipated effects on the extent to which and the way in which the distributive shifts underlying this turn are recognized and dealt with.

7.6.2 Practical contributions and limitations

By conducting a comparative case study analysis of two “extreme” cases of the turn to spatial planning measures—Dutch and US flood governance—this thesis aimed to generate insights into the constitution and effects of expert-influence

that are relevant to other countries turning to a spatially oriented flood governance strategy as well. It is important that the effects of expert-influence on distributive decision-making in this turn are better understood. When new allocations of costs and responsibilities produced by the turn to spatial planning measures are not sufficiently recognized and discussed in the policymaking and decision-making process, responsibilities may not be sufficiently clarified in spatial planning policies and actors may be unaware of the new responsibilities assigned to them under a spatial planning approach, which may hamper an effective implementation of spatial planning policies. Relatedly, it may undermine the legitimacy of new spatial planning policies, as their distributive outcomes may be unanticipated by actors who shoulder more costs and/or more responsibilities in flood governance under a spatial approach. The chapter on recent policy reforms made in US flood governance (chapter 6) demonstrates the possible consequences of a policymaking process in which the distributive implications of new spatial planning measures are not sufficiently recognized.

In this regard, this thesis highlights the importance of diversifying the knowledge base in the policymaking process of the implementation of spatial planning measures in flood governance. This is not because spatial planning cannot be effectively designed by other expert-groups—the case study on the Netherlands demonstrates that an important and successful spatial planning strategy (Room for the River) was developed by engineers—but more because different types of experts have different implications for the extent to which distributive implications of spatial planning policies are recognized in the policymaking process. Both in the Netherlands and in the US, a lack of inclusion of “spatial expertise” in the policymaking process on spatial planning measures hampered a good recognition and understanding of the distributive implications caused by their implementation.

Dutch flood governance compares well to the situation in most other countries, where not so much a complete turnover to a spatial planning approach, as occurred in the US, is pursued, but rather an “integrated” governance approach is sought that includes both safety and spatial planning measures. The Dutch case study indicates that traditional safety institutions may assert a strong influence on the direction of the transition to spatial planning measures, and on the constitution of expert-influence in this process. The engineering expertise that institutionalized under a safety approach may remain the dominant source of knowledge in flood governance and may block the inclusion of new types of spatial experts. For countries that seek to “integrate” spatial planning measures into traditional safety approaches to floods, a general lesson learned from the Dutch case study is that integrated flood risk management not only requires a diversification of policy approaches but also of policy expertise. At the same time, the conclusions of the US case study highlight the importance of national-level policy reflection to ensure that (the distributive implications of) policy trade-offs are reevaluated when circumstances change. Countries that are currently moving toward spatial planning measures could actually profit from their nationally-focused safety institutions in this respect.

At the same time, the limitations of the case study approach should be recognized. By focusing on two very different national contexts, political-contextual differences were highlighted as a major factor in explaining the dominance of different types of expert-groups in both countries, and resultantly their effects on the recognition and handling of distributive shifts in the policymaking process. Because Dutch and US flood governance presented two extreme cases in the turn to spatial planning measures, the context-specific challenges identified against these different backgrounds may have been magnified in these contexts. To refine the conclusions of this thesis, future research could examine the effects of expert-influence in more “common” cases of the turn to spatial planning measures in flood governance. For example,

“typical” cases of integrated flood risk management could be analyzed in order to better understand the extent to which the context-specific challenges outlined in this paper also apply in these settings.