Stability and change in flood risk governance: on path dependencies and change agents

M. Wiering[1], D. Liefferink[1] and A. Crabbé[2]

1 Institute for Management Research, Geography, Planning and Environment, Nijmegen, The Netherlands
2 Faculty of Political and Social Sciences, Society and Environment, Antwerp, Belgium

Correspondence
Dr. Mark Wiering, Institute for
Management Research, Geography,
Planning and Environment, PO Box 9108,
Nijmegen, 6500 HK, The Netherlands
Tel: +31(0)243615567
Email: m.wiering@fm.ru.nl

Abstract

This article presents a theoretical framework for the analysis of stability and change in national flood risk policies. Based on thorough scrutiny of existing theories on stability and change in the literature, we want to offer guidance for empirical studies on flood risk governance. On one hand, we elaborate theories of path dependency and institutional stability. On the other hand, we focus on the role of policy entrepreneurs and actor coalitions bringing in new ideas on how policies should be adjusted. We translate both angles to the realm of flood risks. Furthermore, we consider the role of trends and shock events. By integrating these perspectives into one comprehensive theoretical framework, we aim to offer guidance to empirical researchers searching for forces of stability and change in flood risk governance.

Introduction

Flood risk management around the world is facing many challenges: it has to deal with the increasing risks autonomously created by economic development, population growth, and urbanisation 'behind the dikes', it has to cope with climate change which is expected to lead to increasing discharges of rivers, the rise of sea-levels as well as new periods of droughts, and – on top of this – it has to deal with new governance layers (e.g. Europe) and new 'fashions' in the governance of the public domain. At the same time, flood risk management is highly determined and marked by long-term historical choices, in building technical infrastructures, and creating flood risk expertise systems. These are the pressures we want to address in this Virtual Special Issue of the Journal of Flood Risk Management: what makes the governance of flood risk relatively stable in some countries and what makes it more dynamic in others? How do relatively stable systems of flood risk governance accommodate changes of both hydro-physical and societal nature? Or, alternatively, under which circumstances do such forces make flood risk governance change course?

With regard to the overall arrangements dealing with flood risks, we deliberately speak of the 'governance' of this domain, because this refers – more than 'management' – to the contributions of different public and private actors to dealing with flood risks. More and more, we think of flood

risks (again) as not only a governmental management task, but also a relational and communication task and a shared responsibility of individuals, communities, businesses, and governmental authorities. Therefore, we look at very different tasks and responsibilities that are part of a variety of flood risk strategies and are embedded in a variety of governance arrangements involving actors from state, market, and civil society.

With 'arrangement' we refer to the 'temporary stabilisation of the content and organisation of a policy domain' (Van Tatenhove *et al.,* 2000, p. 54). Any arrangement has four dimensions: a dimension of the 'agency', referring to the actors and coalitions, the division of power and resources within the domain, the formal and informal rules of the game and the policy discourses that are ruling the policy domain. These first three dimensions refer to organisational aspects of the arrangement, whereas the latter addresses ideas, concepts, vocabularies, in short, the content of the policy domain. In light of driving forces, such as climate change or the Europeanisation of flood risk approaches, flood risk governance is forced to adapt to new circumstances. Social science and institutional theories can help to understand the reasons why the flood risk approach of countries is (perhaps suddenly or gradually) changing, or why it stays the same. They can also help to understand why and how stabilising forces in the field of flood risks may nevertheless adapt to a changing environment.

Theories of institutional change and stability can give further insight in what happens 'backstage' of certain flood risk strategies.

This theoretical framework builds upon the FP7 project STAR-FLOOD, which was conducted over the past 3.5 years and compared the resilience and dynamics of flood risk governance arrangements in six countries in Europe (Hegger *et al.*, 2014). This research project produced a special feature in Ecology and Society (Hegger *et al.*, 2016) in which we mainly discuss flood risk strategies in light of the resilience of societies. We distinguish five main flood risk strategies, following the safety cycle: prevention (to be understood as proactive planning), defence, mitigation, preparation, and recovery.

The investigated countries covered in the present Virtual Special Issue in Journal of Flood Risk Management are Belgium, France, the Netherlands, and Poland. Our starting point is the observation of a considerable stability of flood risk arrangements in some of the countries in our sample over a longer time period. In the Netherlands, for example, we see the continuation of flood defence as a crucial, 'hegemonous' strategy, although this strategy also adapts to new situations and circumstances (Gralepois *et al.*, 2016; Kaufmann *et al.*, 2016a). Belgium, on the other hand, has shown quite some changes over the last decades, related to institutional and administrative adjustments and reforms (Crabbé *et al.*, 2015). Our central question is: what explains stability and change of flood risk governance and what is the role of mechanisms of *both* path dependency and agents of change? To phrase it more dramatically: how do countries change path in a domain where path dependencies tend to be strong? What is breaking the paths, how are paths bowed in another direction?

In the next Perspectives on Stability and Change section, we will discuss explanations for stability and change drawn from the literature on policy analysis and political theory. We focus on theories of path dependency and institutional stability as well as on theories of actors, policy entrepreneurs, visionaries, or actor coalitions bringing in new ideas on how policies should be organised, often with reference to crucial trends, events, or shocks in society and/or the physical environment. We notice that perspectives and hypotheses of stability and change, respectively, are often discussed in isolation. While ideas on path dependency, reproduction mechanisms, and gradual change fit into a more structure-oriented view on policy, theories focusing on change relate more closely to an agency perspective (Giddens, 1984). In the Combining Structure and Agency Perspectives section, we try to bring structure-oriented and agency-oriented perspectives together and introduce a set of shades between incremental paths and radical change (Streeck and Thelen, 2005). In Towards an Integrated Framework for Analysing Flood Risk Management

Arrangements, we introduce the so-called policy arrangement approach that can serve as an operational framework to 'map' and characterise stability and change in different dimensions of flood risk governance. This framework will provide the analytical basis for the empirical (country) studies that follow in the remainder of this Special Issue.

Perspectives on stability and change

In this section, we will first discuss the features of the policy domain that prefers relative stability in policy development and discuss related theories of path dependency. Then, we discuss features that might lead to accelerations in policy developments, and again connect the relevant theoretical notions. To conclude, we link them and present other varieties of change.

Path dependencies and reproduction mechanisms

Path dependency refers – in the realm of policy analysis – to policies in which 'preceding steps in a particular direction induce further movement in the same direction' (Pierson, 2000, p. 252). Path dependency thus points to the tendency of persistence and self-reinforcement of paths and, by implication, the difficulty of changing a path once chosen. Path dependency is especially powerful at 'a more macro level that involves complementary configurations of organisations and institutions' (Pierson, 2000, p. 255).

Path dependency refers to more than only 'history matters'. The notion of path dependency becomes helpful for *explaining* developments if we conceive paths as difficult to exit or change, for different reasons, and if we understand the *mechanisms* of stability. What are then the main self-reinforcing (or reproduction) mechanisms? One of the key authors on path dependency in economics, focusing on competing markets and technologies, is Arthur (1988). North (1990, p. 94) summarised the consequences of the four main self-reinforcing mechanisms proposed by Arthur as follows:

> (1) large setup of fixed costs, which gives the advantage of falling unit costs as output increases; (2) learning effects, which improve products or lower their costs as their prevalence increases; (3) coordination effects, which confer advantages to cooperation with other economic agents taking similar action; (4) adaptive expectations, where increased prevalence on the market enhances beliefs of further prevalence.

Although it is generally acknowledged that one must be careful transplanting ideas of economic or market-based

path dependency to the world of policy and politics (Mahoney, 2000; Pierson, 2000; Torfing, 2009) most scholars agree that institutional development can be characterised by strong self-reinforcing mechanisms too. North concludes that the 'interdependent web of an institutional matrix produces massive increasing returns' (North, 1990, p. 95; see also Pierson, 2000, p. 255).

We argue that it is very useful and even refreshing to think of flood risk management in terms of these mechanisms. In a range of cases in Australia, Barnett *et al.* (2015) show that the path-dependent nature of institutions dealing with natural resources and public goods can function as barriers to adaptation to climate change, slowing down necessary changes. Van Staveren and Van Tatenhove (2016) discuss the difficulty of deviating from the path of classical river embankment protection within the Dutch Delta Programme. On a more analytical account, many of the characteristics mentioned by Arthur (1988) and North (1990) are recognisable in relation to flood risk management, particularly in countries were flood defence plays a consistently dominant role, such as the Netherlands and Poland:

1. *Fixed costs.* The governance of flood risks is almost always accompanied by large investments in flood infrastructures. These are – almost literally – fixed costs. The more and longer we use dikes and dams, the more efficient they become (taking into account a certain life cycle, of course). This is often referred to as infrastructures' sunk costs.

2. *Learning effects.* Investments in water and flood infrastructure go together with important investments in research and development, thus creating a body of knowledge in which learning processes lead to specific directions. For example, the more we know of flood defence, the more we educate the staff in the policy field in this direction, the stronger the voice of a specific (expertise-based) epistemic community becomes and the less alternatives will be brought up and discussed seriously.

3. *Coordination effects.* The gradual institutionalisation of flood policy domain produces specific divisions in governance structures. This pertains to the multi-actor dimension, leading to a selection of involved actors; to the multi-level dimension, leading to specific roles of governance layers; and to the multi-sector dimension, leading to a division of sector responsibilities versus generic governance responsibilities. As a result, subsequent governance choices lead to a lack of responsibility and urgency, as well as knowledge, in *other*, adjacent domains and governance levels, e.g. in the environmental field or spatial planning.

4. *Adaptive expectations.* The institutional history of flood risk management in a country leads to specific expectations by the broader public. People believe and trust in

the advantages of a certain flood technology and flood infrastructure, and the accompanying governance structures. They expect the involved parties to continue on this path, if no problems occur.

As pointed out above, these forces of stability most strongly manifest themselves in countries where flood defence with a dominant role for the state appears as the prevalent strategy in a country. But the same path dependency mechanisms can also be applied to other strategies of flood risk management which are characterised by another division of public and private responsibilities, such as the role of the insurance market in flood recovery in, for instance, England (Alexander *et al.,* 2016). Studying path dependency in policy analysis often comes down to the study of institutional inertia in the face of calls for reform.

Taking a more neutral point of departure, our reasoning starts from certain environmental and societal challenges that put pressure on flood risk governance in the investigated countries. To what extent change is considered desirable or not depends on the political, public, and private choices that are made in the face of these challenges. What we are after, is to make these governance choices more explicit and to analyse to what extent and how they lead to either maintenance of the status quo or change – or in fact a combination of both.

In some cases, a call for change is not obvious and not shared by all parties. These parties need to agree on the existing policy being 'suboptimal' (Torfing, 2009, p. 75) in order to create conditions for and willingness to change. The more people move towards interpretations of a suboptimal nature of the existing policy, the more likely it is that change will occur. In what follows, we further explore the idea that change can be induced by so-called change agents, by new discourses gradually becoming dominant or by pressures from societal trends and shock events.

Agents and their contribution to change

Various well-known analytical frameworks provide factors for explaining policy dynamics by highlighting the role of agency. Among the most notable ones are the Multiple Streams Framework (MSF) (Kingdon, 1984; Zahariadis, 2007), the Advocacy Coalitions Framework (Sabatier and Weible, 2007), and discourse analysis (Hajer, 1995; Hajer & Versteeg, 2005). We will discuss these frameworks briefly, as they offer important building blocks for the conceptual framework that will be presented in the Combining Structure and Agency Perspectives section.

The MSF, originally developed by Kingdon (1984), is a prominent framework conceptualising policy change. Key concepts of the MSF are: the three core streams of information (the problem stream, the politics stream, the policy – or solutions – stream), the idea of the opening of policy

windows and the role of policy entrepreneurs (Zahariadis, 2007, p. 71). According to the MSF, the three information streams are often not connected. The main role in connecting *problems*, *politics*, and *policies* is reserved for *policy entrepreneurs* who make use of *policy windows* presenting themselves from time to time.

Policy windows, or windows of opportunity, are critical moments when advocates of new policies have opportunities to get attention for their problems or to get new solutions or policies accepted and adopted. Typical examples of such windows are shock events, such as floods, or the election of a new administration. Policy entrepreneurs may exploit these windows by linking solutions to problems or vice versa, and by trying to get political support for this package (Zahariadis, 1999; Sabatier and Weible, 2007, 2014).

At the core of the *Advocacy Coalition Framework* (ACF) lies the assumption that in each policy sub-system we may find coalitions of actors that converge in their ideas and compete with other coalitions. These advocacy coalitions typically consist of interest group leaders, agency officials, legislators, applied researchers, journalists, and politicians. Actors within these coalitions share certain policy beliefs as well as certain resources (Sabatier and Weible, 2007, p. 203). More precisely, the ACF states that actors in advocacy coalitions share a set of normative and causal beliefs and show a non-trivial degree of coordinated behaviour to realise their objectives and policy proposals (Sabatier, 1998). Deep core beliefs are ontological and normative convictions on fundamental values and norms. Policy beliefs concern the basic perceptions of the seriousness of a problem, its main causes, and perceptions about the appropriateness of institutional arrangements to deal with the policy problem, etc. Secondary aspects of a belief system are beliefs concerning problems, causes, and remedies that do not relate to the entire sub-system.

Advocacy coalitions debating core and policy beliefs often have a 'dialogue of the deaf': they tend to misunderstand each other because core and policy beliefs are deeply anchored in the value system of the actors involved (Dudley and Richardson, 1996). Deep core beliefs of coalitions normally do not change. They in fact tend to contribute to path dependency as long as external circumstances do not disturb the deep core and policy beliefs. Consequently, *if* there are changes in deep core and policy beliefs, for instance as a result of a major flood or another shock event, they are an important explanatory factor for policy change. Secondary beliefs are expected to be more amenable to change. Coalitions may incorporate some secondary aspects of belief systems of opposing coalitions in their own belief system. The ACF presents several specific hypotheses on conditions conducive to such cross-coalition learning, referring for instance to the presence of professional forums prestigious enough for members of opposing coalitions to participate in (Jenkins-Smith and Sabatier, 1993).

Following Hajer (1995), *Discourse Analysis* draws attentions to the battles in which actors 'manoeuver' themselves and their ideas on policy in order to reach a so-called 'hegemonial position'. Actors and their coalition partners try to gain discursive power (power over the vocabularies around flood risks, the core policy concepts, the way of framing issues) and look for support for their definition of reality. If actors, united in discourse coalitions or not, succeed in anchoring their discourse in rules and structures, it is legitimate to talk about an institutionalised discourse.

According to the discursive approach, change may occur when actors succeed in convincing other actors to join their ideas, framing, and new policy concepts. The more open and ambiguous the discourse or story line, the bigger the chance that a variety of actors can be convinced to join (Kaufmann *et al.,* 2016b). Uniting a large number of actors in a discourse coalition, however, does not automatically induce institutional change. To achieve change, resources and power are needed as well as willingness to change the rules in vigour (Hajer, 1995). New ideas (incorporated in new policy concepts or vocabularies) will be able to 'break the path' only if they infuse and mobilise also the other dimensions of the governance arrangement.

Changes following shock events

In the above analytical frameworks, specific events play an important role to explain deviations from the incremental. According to the ACF, a perturbation external to the policy sub-system is necessary for radical policy change, i.e. a change involving alterations of the core aspects of a policy program. For Kingdon, in his MSF, focusing events bring different streams of information together (highlighting problems, delegitimising existing policies, triggering politics).

Focusing events (Kingdon, 1984), triggering events (Kagan, 1989), or shock events (Wiering, 2008) are particularly important in the field of flood risk management: floods often act as triggering events that catalyse policy development (Johnson *et al.,* 2005; Penning-Rowsell *et al.,* 2006). An important flood event can lead to changing advocacy coalitions and power relations in policy. It can create a window of opportunity for policy entrepreneurs that have been waiting 'for the big wave' (Kingdon, 1984, p. 165) to connect problems and preferred policy solutions. Thus, major flood events can increase the salience of floods as a political and societal problem and trigger change, but do not necessarily move policy or institutions in another direction in the long run. Flood events can just as well lead to consolidation of policies and strengthen the position of hegemonous policy elites (Boin *et al.,* 2005, 2008; Rosenthal and 't Hart, 2012). Boin *et al.* (2005) give the example of

the 2002 floods in Germany that helped Chancellor Schröder to get re-elected as it offered him the opportunity to stress the solidarity of the Western and Eastern parts of the country. Furthermore, flood events are often seen as strengthening the discursive turn towards 'Space for Water' in many countries (Wiering 2008; Meijerink 2008; Kaufmann *et al.,* 2016a). How this takes place, and to what extent changes are radical, depends on many variables, including the original framing of the event, the 'framing contest' (Boin *et al.,* 2008; Kaufmann *et al.,* 2016a) and the strength and nature of the existing policy structures. We will come back to this in the Towards an Integrated Framework for Analysing Flood Risk Management Arrangements section.

Combining structure & agency perspectives

In the Path Dependencies and Reproduction Mechanisms section, we discussed the perspective of path dependency. It helped us to explain why policy structures tend to reproduce themselves and thus to persist over longer periods of time. We then introduced in Agents and Their Contribution to Change section, a number of approaches with a stronger focus on agency, including the MSF, the Advocacy Coalitions Framework and Discourse Analysis, in order to understand how actors or coalitions of actors may nevertheless bring about change. Finally, in Changes Following Shock Events section, we paid attention to the role of shock events – a particularly important phenomenon in the field of flood risk management – and how they can stimulate either change or stability.

The logic of the previous section reflects the idea of a *duality of structure*, which claims that policy actors are both enabled and constrained by the structure in which they act (Giddens, 1984). Actors reproduce policy structures (rules, discourses, power relations, etc.), but also have some possibilities to change these structures through their actions. Considering this, it would be a huge simplification to equate structures with stability and actors with change. In fact, actors and structures are inextricably intertwined; their permanent interaction results in both stability and change. In the present section, we will discuss two approaches which, although in quite different ways, try to bridge the gap between primarily structure-oriented and primarily agency-oriented perspectives. The Punctuated Equilibrium Framework (PEF) (Baumgartner and Jones, 1993; True *et al.,* 2007) attempts to explain how long periods of stability may suddenly be 'punctuated' by brief periods of radical policy change. Streeck and Thelen (2005) propose a typology for more 'gradual but nevertheless transformative' forms of change (Streeck and Thelen, 2005, p. 19).

The PEF developed by Baumgartner and Jones (1993) and True *et al.* (2007) explains policy stability by the existence of an institutionalised policy monopoly. Such a monopoly is supported by a powerful idea or policy image which generally is connected to core political values and can be easily communicated to the public (True *et al.,* 2007). In line with the perspective of path dependency, a monopoly of this kind can for a long period reinforce itself. However, policy change can be brought about if policy opponents manage to fashion new 'policy images', i.e. new perceptions, discourses, or frames of the issues at stake, and are able to gain support for these new ideas (Pralle, 2003; True *et al.,* 2007). For this to happen, issues first have to be redefined or new dimensions have to be added to a prevailing policy image. Subsequently, the advocates of policy change have to search actively for venues where chances for getting support for the new policy image are high. This strategic behaviour is called 'venue shopping' (True *et al.,* 2007). If – but only if – advocates succeed in mobilising support, particularly at higher administrative levels, this may induce significant and potentially rapid policy change. As soon as the new policy image becomes widely accepted, this is generally followed by the institutionalisation of a new policy monopoly and the beginning of another lengthy period of policy stability.

According to the PEF, 'like earthquakes or landslides, policy punctuations can be precipitated by a mighty blow, an event that simply cannot be ignored, or by relatively minor events that add up over longer periods of time' (True *et al.,* 2007, p. 160). The latter part of this quote implies that change may in fact always be underway. Each event at every point in time may contribute to change. Consequently, change can be both incremental and disruptive.

In line with this argument, some scholars have pleaded for a less dichotomous understanding of policy dynamics, in which more varieties of institutional change are possible. Streeck and Thelen (2005), in particular, argue that welfare systems in post-war liberal democracies have seen significant transformations over the past decades in the absence of major disruptions. They propose five modes of *gradual transformation*, which are summarised in Table 1.

It is common to all five modes that existing institutions are not radically swept away and replaced by entirely new ones, but instead significantly transformed, extended, or eroded in a slow, incremental process. In the cases of *displacement* and *layering*, existing institutions basically remain in place but gradually come to be dominated by new ones (displacement) or existing and new institutions accumulate (layering). Also in the case of *drift*, existing institutions may formally remain in place (Streeck and Thelen, 2005, p. 29), but they are hollowed out 'from below' because actors on the ground start to develop alternative ways for dealing with the issues at stake. In the two remaining modes, the existing institutions themselves are affected

Table 1 Five modes of gradual transformation (adapted from Streeck and Thelen, 2005, p. 31)

Mode	Definition	Mechanism
Displacement	Slowly rising salience of subordinate relative to dominant institutions	Defection
Layering	New elements attached to existing institutions gradually change their status and structure	Differential growth
Drift	Neglect of institutional maintenance in spite of external change resulting in slippage in institutional practice on the ground	Deliberate neglect
Conversion	Redeployment of old institutions to new purposes; new purposes attached to old structures	Redirection, reinterpretation
Exhaustion	Gradual breakdown (withering away) of institutions over time	Depletion

and transformed. Under *conversion*, they are adapted to new goals or interests. *Exhaustion*, finally, denotes a process by which an institution begins to yield declining rather than increasing returns (Streeck and Thelen, 2005, p. 30), leading to a process of institutional self-undermining.

Streeck and Thelen's model of gradual transformation on one hand retains close connections to the path dependency literature. On the other hand, most of the processes of gradual transformation described by Streeck and Thelen are in fact induced by specific change agents – policy makers, implementers, social groups – who perceive the current institutional arrangements as suboptimal, due for instance to newly emerging actors, a shifting balance of power or new scientific insights.

Inspired by the PEF and by Streeck and Thelen, we see a continuum ranging from highly stable arrangements via various processes of gradual yet significant transformation to – actually quite rare – instances of abrupt, radical change. In the next section, we will explore in more detail how institutional arrangements in the field of flood risk management can be 'mapped', where the main determinants of stability are located and how change may nevertheless occur.

Towards an integrated framework for analysing flood risk management arrangements

In the foregoing sections, we discussed various views on forces of stability, reproduction, and policy change. We also touched upon a sociological perspective of structure and agency, postulating that policy actors in a given field, for instance flood risk management, play a role in both stabilising and changing their institutional environment. In this section, we have the ambition to bring these views together in an integrated analytical framework, which enables us to

combine path dependency mechanisms and change agents in the policy domain of flood risks. In order to do so, we need a framework that (1) incorporates both stability and change in policies; (2) connects to the dual perspective on structure and agency (Giddens, 1984); and (3) has the character of a formal analytical model that can be applied to all countries in our sample. The starting point for this framework is provided by the policy arrangements approach (PAA) (Van Tatenhove *et al.,* 2000; Arts and Leroy, 2006).

Based on the assumption of a duality of structure, the PAA assumes that institutions within a given policy domain and in a given country are to some extent stabilised and that the institutional arrangement shows specific characteristics. First, there is a set of *actors* or actor coalitions that are important or sometimes even hegemonous (dominantly ruling) within the domain. Second, these actors and coalitions have specific *resources* (e.g. budgets, knowledge, assets, land) that determine the power division within the domain. The interactions of these actors and actor coalitions are, third, guided by *rules of the game*, encompassing both formal rules (e.g. flood risk standards laid down in a law, legal procedures) and informal, unwritten rules (e.g. rules of access to informal consultations, hierarchical, or consensual modes of decision-making). Fourth and finally, actors and actor coalitions share specific *policy discourses*, for instance about the character, causes, and solutions of problems prevalent in the domain and about preferred modes of governance.

The four dimensions of a policy arrangement are interrelated (Liefferink, 2006). With the help of the interplay of the four dimensions it is possible to describe, quite in detail, stabilising factors on the one hand (path dependencies, fixed costs, lock-in etc.) and change agents on the other (policy entrepreneurs, possible shock events, upcoming, or changing actor coalitions), as well as combinations of both sets of factors. The PAA was applied in a series of, mostly environmental, policy fields, for example, forest

policy (Veenman *et al.*, 2009) nature policies (Van der Zouwen, 2006) and water policy (Wiering and Arts, 2006; Wiering and Crabbé, 2006; Wiering *et al.,* 2009; van Eerd *et al.,* 2015).

In the Perspectives on Stability and Change section, inspired by Arthur (1988) and North (1990), we described four self-reinforcing mechanisms of path dependency and stability and made a first attempt to apply them to the field of flood risk management. Each of these four mechanisms may in fact be anchored in a particular dimension of the policy arrangement, as set out in the left column of Table 2. The right column of the table, in turn, endeavours to associate various change factors with particular dimensions of the policy arrangements. The table, with its systematic reference to forces of stability and change in relation to the PAA, summarises the main conclusions of this Introduction and will be used as guidance for the empirical investigation of the dynamics of flood risk governance in four European countries in the remainder of this Special Issue.

The PAA not only provides us with the tools to describe and characterise flood risk governance arrangements. It also enables us to analyse the internal *coherence (congruence)* or, in the opposite direction, *fragmentation* of these arrangements. In an important contribution to the development of the PAA, Boonstra (2004) distinguished between the *internal congruence* of the four dimensions of the policy arrangement and its *external congruence* with the wider societal and political environment. The latter may entail arrangements and practises in adjacent policy fields as well as the broader (national or international) social or political context. The degree of internal and external congruence of an arrangement can be an important variable for explaining its stability

and its viability to change. For example, an arrangement that is *internally incongruent* (e.g. discourses do not align with the rules of the game or major actor coalitions) or *externally incongruent* (the policy arrangement does not or no longer respond to broader political or societal demands) is more likely to become subject to processes of gradual transformation (Streeck and Thelen, 2005; see above) than an internally and externally highly congruent arrangement.

Applying the analytical framework: analysing and comparing FRMS's in four countries

From the FP7 project STAR-FLOOD, empirical research was carried out on flood risk governance in six European countries. In this Special Issue, we focus on four of them: Belgium, France, the Netherlands, and Poland. These countries were selected because of their partly similar, partly divergent characteristics of flood risk governance. In the context of the project, flood risk governance in each of the countries was analysed, making use of the PAA. As described in the detailed country reports of the project, some countries turned out to have a strong overarching flood management arrangement, whereas others had a set of more loosely coordinated sub-arrangements (Kaufmann *et al.,* 2016a; Larrue *et al.,* 2016; Matczak *et al.,* 2016; Mees *et al.,* 2016). The empirical studies in this Issue focus on stability and change within and between arrangements and sub-arrangements for flood risk management in the selected countries. The idea is to trace the four dimensions of the PAA over time. The PAA allows us to see, for

Table 2 Forces of stability and change, associated with the dimensions of policy arrangements

Forces of stability	Dimensions of policy arrangements	Forces of change
– *Coordination effects*: governance is sedimented in specific divisions of accepted responsibilities	Policy actors and coalitions	– Entrepreneurs highlighting perception of sub-optimality of governance and approach – Strong pressure by specific interests (actor coalitions)
– *Fixed costs* and *increasing returns* through large investments in flood infrastructure (sunk costs)	Power and resources	– Doubts on increasing costs of flood infrastructure/ maintenance or sudden financial cutbacks, opening alternative options
– *Learning effects*: evolution of strong expert body of knowledge and strong epistemic community		– New expertise (learning)
– *Law* has an important stabilising effect in the formalisation of rules and procedures	Rules of the game	– Decreasing legitimacy of rules – New rules (e.g. European Floods Directive)
– Strong historical narratives	Policy discourses	– Diminishing trust in existing institutions and their efficiency
– *Adaptive expectations:* public trust in existing institutions and their efficiency		– New ideas, new problem definitions and policy concepts leading to counter-narratives

instance, (1) which dimensions (actors, rules, resources, or discourses) are more stable than others, (2) where change starts (e.g. in new discursive moves, in new EU directives, etc.) and how it spreads through the policy arrangement, or (3) alternatively: where change starts but gets 'extinguished' in other (more stable) dimensions. This integrated and comprehensive analytical framework helps to identify drivers of change or reasons for stability in flood risk governance. A comparative analysis of the findings of the four country studies, leading to a number of more theoretical reflections, will be presented in the concluding paper of the Special Issue.

Acknowledgement

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