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Change and Progress in Disaster Risk Reduction

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Abstract

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Human-induced climate change is projected to increase the frequency and magnitude of natural hazard events, posing a growing global threat to lives, livelihoods, and assets. Much past research on disaster risk reduction (DRR) has focused on failures of disaster management, while less attention has been devoted to how DRR has changed or improved over time.

This dissertation advances our understanding by empirically investigating under what conditions countries can achieve progress in DRR, including measures and policies for managing and reducing the risks of disasters. In that way, it contributes to efforts of sustainable development and climate change adaptation.

Article I explores the variety of change and progress under the Hyogo Framework for Action, the international regime for DRR from 2005 to 2015. In addition, the article assesses the prospects of the effectiveness of international environmental regimes built on soft law arrangements consisting of voluntary obligations and non-binding provisions while refraining from sanctions.

Article II statistically investigates drivers of progress in DRR for understanding why some countries exhibit positive change.

Article III complements the large-scale quantitative analyses of the previous studies with an in-depth case study to unveil the development of DRR policy regimes in two vulnerable countries. The article focuses on Fiji and Nepal as two cases of progress to advance our understanding of how changes in DRR materialised over time.

The dissertation makes several contributions to disaster research, theories of institutional and policy change, and development studies. First, this dissertation represents one of a few mixed-methods approaches in DRR research, conducting a comprehensive analysis of progress in DRR. Second, the dissertation systematically documents changes in DRR efforts, which confirms a positive global trend, detects countries that deviate from this trend, and identifies cases of outstanding progress. Third, the three studies highlight the importance of continued participation in and compliance with international regimes, governance effectiveness and accountability mechanisms, continuous leadership and knowledge diffusion, as well as large-scale hazard events for the expansion of DRR. Fourth, the findings demonstrate how positive changes were achieved even under adverse circumstances in developing countries.

The findings underscore the need for future research on positive change in DRR, particularly on how accountability mechanisms and regime types may shape policies and policy-making.

Keywords: public policy, sustainable development, disaster risk reduction, adaptation, international environmental agreements, soft law, regime effectiveness, Hyogo Framework for Action, Fiji, Nepal

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List of Papers

This thesis is based on the following papers, which are referred to in the text by their Roman numerals.

- I. Wanner, M. S. T. (2021). The effectiveness of soft law in international environmental regimes: Participation and compliance in the Hyogo Framework for Action. *International Environmental Agreements: Politics, Law and Economics*, 21, 113–132. <https://doi.org/10.1007/s10784-020-09490-8>. *
- II. Wanner, M. S. T. (2020). Drivers of change in national disaster governance under the Hyogo Framework for Action. *Politics and Governance*, 8(4), 256–269. <https://doi.org/10.17645/pag.v8i4.3062>. *
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Abbreviations

CRED	Centre for Research on the Epidemiology of Disasters, Université catholique de Louvain
DRR	Disaster risk reduction
EM-DAT	Emergency Event Database
IER	International environmental regime
IPCC	International Panel for Climate Change
GNDR	Global Network of Civil Society Organisations for Disaster Reduction
gologit	Generalised ordered logit, a specific type of statistical models
HFA	Hyogo Framework for Action 2005-2015: Building the resilience of nations and communities to disasters
PET	Punctuated equilibrium theory
QoG	Quality of Government database, provided by the Quality of Government Institute at the University of Gothenburg
UN	United Nations
UNDRR	United Nations Office for Disaster Risk Reduction, formerly UNISDR
SIDS	Small island developing state
TC	Tropical cyclone

1. Introduction: From disasters to change and progress

States have a duty to protect their citizens and residents from harm (Birkland, 2016). This goes back to social contract theory and the theory of the state. In light of global environmental change and social trends such as expanding urbanisation and growing interconnectedness, governments and policy regimes around the world are coming under greater and greater pressure to address increasing exposure and vulnerability (Di Baldassarre et al., 2018; Stern, 2007; Wilkinson, 2012).

As the latest report from the International Panel for Climate Change (IPCC, 2021) on the physical science aspects points out, scientists have concluded with a high degree of confidence that human-induced climate change has increased the likelihood of frequent and worsening extremes of weather across the globe. These include heat waves, droughts, monsoons, and heavy rainfalls. Lives and livelihoods in developed countries are also under threat, as wildfires in California and floods in Germany show. Likewise, major tropical cyclones are likely to become more frequent and sea-level rise will further continue causing more coastal flooding and erosion (IPCC, 2021), and affecting small island nations in particular. Developing countries are expected to bear the brunt (of the consequences) of climate change due to their geographic exposure and high vulnerability (Adger, Barnett, et al., 2013; Heltberg et al., 2009; Liou & Kapucu, 2014; Parks & Roberts, 2010; Truelove et al., 2015; Zorn, 2018). In general, economic losses caused by natural hazards are on the rise in many regions of the world (Di Baldassarre et al., 2018).

If national efforts and systems for disaster risk reduction (DRR) are to prevent hazard events from turning into disasters, they will often need to change and adapt. Advances may be needed both in DRR efforts – such as risk assessments, early-warning systems, and educational efforts, – and in the overall DRR policy regime – i.e., the governing arrangements, which reflect the institutional arrangements, policies, actors, and underlying paradigms in the policy field (May & Jochim, 2013). Yet, despite the expansion of DRR research, we do not know how DRR efforts and their corresponding policy regimes develop, and how change towards an improved state – what I call positive change

or progress – can be enabled. In this thesis, I aim to remedy these shortcomings by empirically investigating conditions for positive change that can facilitate future improvements in DRR to the benefit of sustainable development.

In recent years, we have seen an increase in interest in studies of successful institutions and policies (e.g., Boin & Fahy, 2021; M. Compton et al., 2022; M. E. Compton & 't Hart, 2019; Luetjens et al., 2019; McConnell, 2010; Nemaokonde & Van Niekerk, 2022). Within DRR, however, much attention has been paid to disasters and failures (Birkland, 2016; Di Baldassarre et al., 2018), likely due to the visible impacts and devastating consequences of natural hazards and the existential dangers they pose to lives, livelihoods, and assets. DRR successes may be invisible, while numbers are put more easily on losses and on recovery efforts, providing perverse incentives to policymakers (Healy & Malhotra, 2009). As a consequence, previous research in this area has mostly consisted of single-case studies of failure – failure of policy, of planning, of prevention, of mitigation. Learning from mistakes has been the key approach. A considerable amount of knowledge has thus been generated on what has caused failure, what has been lacking, and what is needed to prevent disasters.

What we also know is that there are many possible explanations and pathways for how change in DRR policy regimes can occur. For instance, international regimes can pressure national actors to make stronger efforts and strengthen the national DRR policy regime, or citizens may demand action (Adger, Quinn, et al., 2013; Sen, 1999). Incrementalists like Charles Edward Lindblom (1959) argued that change is achieved slowly through iterative processes of gradual improvements. Stephen D. Krasner (1984) stressed the transformative potential of large-scale crises in contrast. Theories of punctuated equilibrium and of focusing events build heavily on Krasner's approach, highlighting windows of opportunity for change that arise due to increased attention, disrupted systems, and revealed shortcomings (e.g., Baumgartner et al., 2002; Birkland, 1997; Boin et al., 2008; B. D. Jones & Baumgartner, 2012). New institutional theorists, citing 'critical junctures', stress the combination of path dependency and exogenous shocks (Stark, 2018). Scholars have also looked at what impedes changes in DRR, and pointed out various barriers to adaptation (e.g., Eriksen et al., 2015).

What we do *not* know, however, is how DRR efforts and policy regimes develop. Nor is it clear how the needed changes can be facilitated, especially under adverse circumstances. So far, we have paid little attention to how widespread positive changes in DRR may be. Similarly, we lack an understanding of the enabling factors – the drivers of change – in this policy area. The over-

arching aim of this dissertation is accordingly to contribute to our understanding of DRR, by taking lessons from positive changes – especially where we do not see or expect them. (Matt Andrews (2015) calls such cases ‘positive deviants’.)

In Section 2, immediately below, I present the research questions and objectives I have chosen in view of this gap in our knowledge. These questions and objectives have guided this whole inquiry and the three included studies. Following, in Section 3, I set out the object of investigation – change in DRR and its regime – in greater detail. Section 4 presents my theoretical points of departure and specifies some potential enabling factors. In Section 5, I lay out the research design of my studies, including methods and data. Section 6 offers brief summaries of the individual articles included in this overall research. In Section 7, I discuss the contributions of these articles and of the thesis as a whole. The concluding section, finally, explores the broader implications of the research endeavour for the study of DRR and change from a political science perspective, and suggests several avenues that may be worthwhile to pursue in future research in the attempt to make development more sustainable.

2. Research objectives and research questions

Given my firm belief that as much can be learned from positive experience as from failure, and given the prevalent lack of attention to progress and change in DRR, the purpose of this collective research is to empirically investigate the conditions for positive change. This adds to past research that identified shortcomings and changes needed by providing insights into how positive changes could be brought about. NB: in the context of this dissertation, the term ‘change in DRR’ refers to changes in DRR efforts and in the DRR policy regime in general. Section 3 discusses change in DRR in more detail.

With this work, I aim to contribute to the knowledge about the variation and understanding of change in DRR in the world with a comprehensive investigation of the phenomenon. To achieve this goal, this thesis encompasses three separate studies, which employ distinct approaches and methods to fulfil the three following research objectives.

1. To map change and progress in DRR in the world.
2. To identify driving factors of change.
3. To identify potential pathways of substantial positive change.

Each of these three objectives is investigated in one of the three included studies, guided by one specific research question each. The three questions can be summarised as *what*, *why*, and *how*.

The *what* question lays the foundation for my comprehensive investigation of change in DRR. It aims at locating and identifying change and progress, thereby facilitating future studies. We can formulate the question as follows: what does change in DRR look like in the world? Or more specifically: how has DRR developed in the world? For this global assessment, it needs to be acknowledged that national DRR efforts and regimes are not independent of the international context. The international environmental regime established by the Hyogo Framework for Action¹ (HFA) provided much guidance for national developments between 2005 and 2015, while employing a soft law approach – i.e., relying on voluntary action and non-binding commitments. At

¹ Full title: ‘Hyogo Framework for Action 2005–2015: Building the Resilience of Nations and Communities to Disasters.’ Henceforth abbreviated as ‘Hyogo Framework’ or HFA.

the same time, in a global inventorying effort, the HFA collected data on national DRR measures. Some reviews of the state of DRR in the world have been produced – e.g., by the United Nations Office for Disaster Risk Reduction (UNDRR, formerly UNISDR) and by the Global Network of Civil Society Organisations for Disaster Reduction (GNDR) – but there have been only limited research efforts to analyse change in DRR on a global scale.

Addressing the *what* question through a large-N approach, Article I provides empirical data on global developments in DRR. It seeks as well to study the prospects of soft law for the effectiveness of international environmental regimes at the example of the HFA.

After the identification of patterns of change, mapping and locating progress, we are able to investigate enabling factors by asking questions of *why* and *how*. To fulfil the second and third research objectives above, we should ask: why did the progress occur? Or: what explains the variation in progress and change in DRR that are seen in the world? As to the third objective: how did these changes unfold over time? Finding answers to these questions requires distinct research designs and an understanding of theories of change, by which I mean theories that conceptualise processes relevant for change in DRR and which provide theoretical assumptions on potential factors that facilitate change. Section 4 lays out my theoretical points of departure for seeking to understand change in DRR.

The statistical analysis in Article II addresses the *why*. This article investigates potential drivers of progress and seeks to explain variations in change in DRR across the world. Article III examines two instances of change, thereby complementing and enriching the quantitative approach. It sheds more light on the role of enabling factors within two countries that helped to overcome barriers to change. Addressing the question of *how* these changes came to be, it refines theoretical assumptions and explores developments within the two countries in an in-depth manner.

However, the three articles do not each stand alone. Taken together, they tell of human advancement in the fight to make livelihoods and development sustainable – development here being understood in the broadest sense, meaning that humankind is always developing and in flux, creating new ideas, knowledge, and technology, and changing the (socio-political) systems in which we live. The articles do not just examine progress in DRR that has been achieved around the world (that is the *what* question, addressed in Article I); it also tests hypotheses for explaining that progress (the *why* question, addressed in Article II), and it investigates how progress has unfolded in certain developing countries under adverse circumstances (the *how* question, addressed in Article III). Moreover, the articles employ distinct approaches and

methods: descriptive and conceptual (Article I); quantitative and explanatory (Article II); and qualitative and exploratory (Article III). In combination, I believe, the studies achieve the overarching aim of this thesis, which is to paint a rich picture of positive change in DRR that both scientists and practitioners in the field should find informative.

3. Change in disaster risk reduction and its regime(s)

In this dissertation, I study change in DRR from several different perspectives, putting the spotlight on various aspects. The object under investigation thus varies, as do the methods and approaches employed. In this section, I discuss what I mean by change and DRR in this thesis, and I differentiate between layers of my investigation.

To start with, “there is a continuum of significance for changes – some may be of little consequence, whereas others may redirect entire political regimes” (Birkmann et al., 2010, p. 641). Accordingly, it is of importance what kind of changes are relevant for this research endeavour. First, there is a need to separate impact from change. Impacts from natural hazards such as damage are considered passive consequences of such events. In contrast, changes are considered active, encompassing formal and informal responses to such impacts (Birkmann et al., 2010). However, impacts or even potential events can also lead to change (Birkmann et al., 2010), acting as triggers, accelerators, or enabling factors. Consequently, this thesis does not concern itself with the impacts of disasters, but with active changes in DRR efforts and in the corresponding DRR policy regime. In all the studies included, I am particularly interested in positive change, i.e., change toward an improved state of DRR, which I call progress. In addition, of interest are also changes against the odds – i.e., changes made under adverse circumstances, which I specifically investigate in Article III but which play a role in Article II as well. However, there is a need to point out that the separate articles investigate changes in different aspects of DRR.

According to the UN Office for Disaster Risk Reduction, DRR includes everything “aimed at preventing new and reducing existing disaster risk and managing residual risk, all of which contribute to strengthening resilience and therefore to the achievement of sustainable development” (UNDRR, n.d.). I use the term ‘DRR efforts’ to refer to the sum of all measures and activities for achieving this policy objective. The variety that the term encompasses can be illustrated by the multitude of indicators and variety of priorities for action employed by the Hyogo Framework for Action (HFA) and its successor, the

Sendai Framework for Disaster Risk Reduction. In the HFA, DRR measures include: (1) institutional strengthening; (2) risk assessment and early warning systems; (3) education, information, and public awareness; (4) reducing underlying risk factors by mainstreaming DRR into other policy domains; and (5) preparedness for effective response. These DRR efforts are the object of investigation in Article I and Article II, wherein I examine how the engagement with these efforts changed in the world under the HFA (Article I) and test hypotheses on what may have facilitated the changes and variations identified (Article II). Here, change can be understood as a difference in engagement with the suggested measures that materialises in different indicator scores. An increase in said indicator scores, then, demarcates progress in DRR measures, and, thus, in DRR efforts.

However, these DRR efforts do not exist in a vacuum. They are dependent on policies, institutions, and arrangements that create frameworks for the implementation of the aforementioned efforts. Actors and interests affect them with their ideas and beliefs giving rise to underlying paradigms and unfolding in processes of planning, decision-making, and implementation. Hence, when I refer to the DRR policy regime, I mean the governing arrangements that reflect “the constellations of ideas, institutional arrangements, and interests” (May & Jochim, 2013, p. 446) for addressing policy problems connected to the reduction of disaster risk. Article III sheds light on the development of such DRR policy regimes in the two instances of Fiji and Nepal. There, I explore the mechanisms that facilitated development and change in the DRR policy regimes time. Change in the DRR policy regime can materialise, for example, through the introduction of new laws and legal provisions, through modifications of disaster (risk) management structures and institutional arrangements, and/or through changes in the underlying paradigms that determine the course of action (such as a shift from reactive response efforts to proactive risk mitigation).

While DRR is situated in national contexts, there have been global frameworks or international regimes that have guided national developments. Not to be confused with the aforementioned policy regimes under investigation in Article III, international DRR regimes do not create national policy; rather, they serve as guiding frames for the development of national policy regimes. On the international level, “regimes are social institutions governing the actions of those interested in specifiable activities (or meaningful sets of activities)... [that] may be more or less formally articulated” (Young, 1980, pp. 332-333). In the policy domain of DRR, the International Decade of Natural Disaster Reduction (1990-2000), the Yokohama Strategy and Plan of Action for a Safer World (adopted 1994), the Hyogo Framework for Action: Building

the Resilience of Nations and Communities to Disasters (2005-2015), and the Sendai Framework for Disaster Risk Reduction (2015-2030) are the most significant international regimes. They have provided much impetus for national developments (Tozier de la Poterie & Baudoin, 2015). All of these regimes have been under the UN umbrella, specifically under the UN Office for Disaster Risk Reduction (UNDRR). Of these international frameworks, it was the Hyogo Framework that popularised the notion of DRR and shifted the focus from reactive response and post-disaster recovery to proactive risk reduction and preparedness (Tozier de la Poterie & Baudoin, 2015). The HFA also served as an inventory of national DRR efforts across the globe, supplying us with comparable data for further analysis. The three articles all include this international perspective.

Article I reviews the effectiveness of the Hyogo Framework and provides new interpretations of core concepts in the context of soft law designs of international regimes. In contrast to hard law regimes, which include modest but binding commitments typically based on the lowest common denominator (Bernauer et al., 2013; Parker, 2011; Victor, 1997), soft law regimes utilise mechanisms such as voluntary action, wide-ranging provisions, non-binding commitments, and the absence of sanctions. In this study, I redefine two necessary aspects of effectiveness, namely continued engagement and participation on the one hand and compliance, understood as change in behaviour in accordance with the goals, on the other. This study identifies patterns of change in DRR efforts and extraordinary cases of progress and decline. Article II tests hypotheses in an attempt to explain patterns of change under the HFA that can be seen in the DRR measures and indicators reported. Article III explores further the role of international regimes and external actors in the development of national DRR policy regimes in two specific instances finding them of great importance for national developments.

In sum, this thesis focuses on change in DRR. Different perspectives and aspects are investigated in the three articles. The first investigates whether and how DRR efforts changed, employing an international regime perspective. Article II tries to explain these changes by resorting to a diverse set of theories. The third article zooms in on two specific countries, allowing for an in-depth exploration of the national DRR policy regimes and the role of potentially enabling factors. I draw throughout on a variety of theories, which I present in the next section.

4. Theoretical framework

To investigate change and progress in DRR empirically, I draw on several theories. The first subsection presents the most important theoretical streams on the change of relevance here, as discussed in the previous section. I put the emphasis on incrementalism and punctuated equilibrium theory (PET) in connection with the theory of focusing events. Taken together, I refer to these as theories of change. The subsequent subsection lays out the theoretical background for my analysis in the three articles of specific conditions and enabling factors, starting with disasters as triggers for change.

Theories of change

The political science literature offers a variety of theories that try to explain change: change in institutions, in policies, and in policy regimes. Most theories of change can be considered in terms of a time dimension on a spectrum from slow, gradual, and incremental processes to rapid alterations and sudden transformations. At the two ends of the spectrum, we find theories of institutional or policy change that are often presented as dominant: incrementalism and punctuated equilibrium theory (PET), both of which are of great relevance for this thesis. While these predominant theories have been reconciled to a large extent, they are potentially competing in explaining changes in specific instances. In the field of DRR, we have not yet systematically investigated the potential explanations on a larger scale, but rather focused on single-case studies explaining and learning from failure rather than from change. Here, we have gained insight into the transformative potential of disasters, but also gained much knowledge about barriers to and requirements for change (e.g., Eriksen et al., 2015), since not all disasters cause large-scale changes as the next subsection discusses.

Incrementalism suggests that authorities may gradually adjust their DRR efforts and the corresponding policy regime to adapt to changing circumstances and/or to integrate lessons learned. Going back to Charles Edward

Lindblom (1959, 1965),² change is seen as rather slow or “more or less constant” (Stark, 2018, p. 24). Back in the 1950s and 1960s, the predominant view on change in political orders and policy subsystems was that the decision-making processes are stable, that they follow heuristic rules, and that they only result in minor, incremental adjustments over time (B. D. Jones & Baumgartner, 2012). Historical institutionalism and the scholarship on path dependency and policy feedbacks emerged as important streams. If we combine these approaches, we can think of change in terms of institutional evolution in response to changing environmental (i.e., contextual) conditions and ongoing political manoeuvring which is constrained by past trajectories (Thelen, 1999). Accordingly, change occurs in slow, gradual steps.

In the case of DRR, these theories would assume that adaptation of measures and policy regimes takes place in response to frequent and possibly intensifying hazard events. Having experienced such reoccurring events, which increase in magnitude at most only slightly, actors learn to prepare for events yet to come in order to minimise future losses (see Nohrstedt & Nyberg, 2015). Frequent hazards and recurring damages can raise awareness and increase pressure on authorities (Brody, 2003; Brody et al., 2009; Muller & Schulte, 2011; Russell et al., 1995). As Amartya Sen noted concerning the logic of famines and democracy, citizens are unlikely to support authorities that do not act to minimise or at least to moderate damages and losses (Drèze & Sen, 2003; Sen, 1999). Instead, accountability mechanisms ensure that the electorate can hold the authorities responsible and vote politicians that act against the will of the citizens out of office (Adger, Quinn, et al., 2013). However, retroactive support and aid for the affected in the recovery and reconstruction process can increase citizen support and, thus, provide perverse incentives to policymakers, placing aid over DRR efforts (Healy & Malhotra, 2009; Rios et al., 2020). On the other hand, politicians have an interest in investing in some DRR efforts: namely, visible public goods such as hard infrastructure (Dolšák & Prakash, 2018; Mani & Mukand, 2007).

By investigating change over long periods of time, the three studies enable an assessment of whether changes have been implemented gradually and incrementally. Hereby, the timeframe varies between the articles. Articles I and II investigate change over a ten-year period, between 2005 and 2015 (the HFA’s period of operation); Article III extends the focus beyond the HFA, following the developments between 2005 and 2021, while at the same time looking back at previous developments since the establishment of DRR policy

² For a comprehensive review of incrementalism see, for example, Michael Hayes contribution to the *Oxford Research Encyclopedia of Politics* on incrementalism and public policy-making (Hayes, 2017).

regimes in the respective countries. Articles II and III also take an incrementalist approach in their analysis of why and how changes are introduced into DRR efforts and the policy regime. The statistical analysis of the second article investigates whether frequent events or accountability mechanisms can explain improvements in DRR efforts. Article III explores more explicitly how changes in DRR policy regimes materialised over time in the cases of Fiji and Nepal.

At the other end of the spectrum are theories which assume that external shocks trigger rapid change. According to punctuated equilibrium theory (PET) and the theory of focusing events, such perturbations – which fall outside the range of normal and expected disturbances – disrupt periods of long stability drastically, so that the system opens up for far-reaching change (Baumgartner et al., 2002; Baumgartner & Jones, 1991; B. D. Jones & Baumgartner, 2012; Krasner, 1984). Large contingent events – including “seemingly random processes such as a natural disaster” (Mahoney, 2000, p. 514) – have been theorised and acknowledged to have an agenda-setting potential because of their scope, their suddenness, and the media attention they draw (Birkland, 1997, 2016). When they demarcate times of policy failure, such events can provoke major change in policies, instruments, and actions, as well as in underlying ideas and paradigms (Hall, 1993). They can thus serve as ‘focusing events’, opening up ‘windows of opportunity’ for policy change³ (Birkland, 2016; Birkland & Warnement, 2014; Nohrstedt, 2005). The two concepts adopted by John Kingdon (1995)⁴ emphasise the attention-grabbing potential of sudden shocks that possibly reveal failure and “the necessity for rapid policy change to prevent the recurrence” (Birkland & Warnement, 2014, p. 41), as well as the importance and brevity of critical periods for policy change in critical times. Thomas A. Birkland (Birkland, 1997) defines a potential focusing event as an event that is

sudden, relatively rare, can be reasonably defined as harmful or revealing the possibility of potentially greater future harms, inflicts harms or suggests potential harms that are or could be concentrated on a definable geographical area or community of interest, and that is known to policy makers and the public virtually simultaneously. (1997, p. 22)

Here again, suddenness, rarity, potential impact, and attention are key to the transformational potential of the event. Birkland adds the feature of harm, including specifically hazard events. Some scholars have found that environ-

³ Also called ‘policy window’.

⁴ The first edition appeared in 1984.

mental issues have indeed created openings for the development of new institutions (van Eijndhoven et al., 2001). Others agree that, in contrast to smaller crises, major disasters and large crises have the potential to “catalyse structural and irreversible change by creating new conditions and relationships within environmental, socioeconomic and political structures, institutions and organisations” (Birkmann et al., 2010, p. 638) by enabling critical review and revision of dominant ways of thinking and acting. In particular, rapid-onset hazard events and disasters have the potential to induce policy change when institutions are responsive (Birkland, 2001). However, despite the potentially transformative power of extreme hazard events and large-scale disasters, it needs to be acknowledged that in most cases “learning [and, with that, policy change] is an iterative and accumulative process” (Birkland, 2016, p. 18). Such cases support incrementalist explanations.

Scholars have argued that the two approaches are compatible, since both modes of change are likely to occur over longer timeframes. Kathleen Thelen (1999), for instance, acknowledges that times of major change disrupt periods of incremental change from time to time. This goes hand in hand with the notion of critical junctures, dating back to the study by Ruth and David Collier (Collier & Collier, 1991), which highlights the potential of ‘moments of contingency’ in determining future trajectories of policy and institutional development. The merit of the synthesis is also recognised in the analysis of post-crisis situations, which open multiple potential critical junctures (Stark, 2018). As Stark points out, the outcome – even in this messy grab bag of forks in the road – may be a combination of outcomes from gradual and large-scale changes (or even no change at all) with regard to different parts of the disaggregated policy space (subsystem).

Thus, the argument persists that the different theories of change are complementary. This is why they are explored and investigated in my articles at the same time. Articles II and III incorporate the notion of complementarity, by including aspects of both theoretical points of departure in their analysis. Neither of the two articles assumes that only one of the approaches is right; rather, change can occur in both ways. Taken together, the two articles contribute to a nuanced understanding of the role of hazard events and their impact on incremental adjustment, as well as to a refinement of the theories of change in the specific case of DRR.

In sum, dominant theories assume that change can unfold incrementally over long periods, whereas disrupting events have the potential to trigger rapid changes (although the mechanisms involved are not yet fully understood, as the subsequent subsection shows). Where DRR is concerned, there have been few efforts so far to empirically explore, utilise, and test these theories of

change on a large scale and over extended periods (Birkland, 2016). My articles, with their long-term perspective, make a contribution here. Article II, for example – with its large-scale statistical analysis – offers some answers regarding which factors are of relevance for change. Article III explores two cases in search of explanations for change.

Insights gained from positive change have remained limited, since the majority of research has been conducted on major disasters across the world (Birkland, 2016). Similarly, generalisability has remained low, due to the dominance of single-case studies in DRR research (Albrecht, 2017; Parker et al., 2020a). I attempt in this thesis to address these gaps, by utilising a mixture of large-N approaches and in-depth case-study design, and by focusing on the factors that enable positive change. I hope thereby to contribute to development studies, the DRR literature, and the refinement of theories of change. In the following subsection, I take a look at some potential enabling factors.

Conditions and enabling factors for change

Reflecting these two complementary perspectives on how change can unfold, a fragmented but expanding body of literature focuses on factors that facilitate or obstruct change. Researchers have identified several different paths and processes of change, such as learning and updating through incremental adjustment on the basis of path dependency (Hall, 2009; Hall & Thelen, 2009; Mahoney & Thelen, 2009; Pierson, 2000; Thelen, 2009). Only rarely, however, have such processes been studied in connection with DRR. At the same time, it has long been acknowledged that many changes have been introduced after disasters had struck. In response to such events, new building codes may be drafted, new institutional arrangements put into place, or completely new institutions created (Moore, 1956). As noted earlier, disasters are extraordinary disturbances that can serve as focusing events, because they expose vulnerabilities and disrupt established processes and systems (Baumgartner et al., 2002; Birkland, 1997, 2016; Boin & 't Hart, 2003; Dekker & Hansén, 2004; B. D. Jones & Baumgartner, 2012; Krasner, 1984).

While many theories such as PET support the idea of disasters as triggers for change, the occurrence of a disaster – or of a disruptive crisis in general – is often not considered sufficient (Parker & Dekker, 2008; Sabatier, 2007). Researchers have pointed out that opportunities for reform may be smaller than is often thought (Boin & 't Hart, 2003; Nohrstedt & Parker, 2014). There is a growing stream of literature focused on the conditions and requirements for policy windows to be used (Solecki & Michaels, 1994). Learning how to deal with future events from past experience is constrained by a variety of

social and political factors (Boin, 2009), such as processes of communication and organisational infrastructure (Nohrstedt & Parker, 2014). Specific circumstances may be needed if proposed changes are to be implemented successfully; otherwise, undesirable effects may occur.

A shared perception among policymaking and policy-implementing actors that reform is necessary is one condition mentioned in the research (Boin & Otten, 1996). It matters, Birkland (2006) argues, whether or not the policy subsystem is characterised by ongoing controversies between competing coalitions. An absence of publics in the field of disaster risk reduction may also undermine prospects for change, by leaving decisions in the hands of elites (Birkland, 2016; May, 1991). In addition, we need to bear in mind that “not all changes to policies related to natural disaster are made in direct response to such events. Rather, other things also happen in the political realm that influence change in disaster policies” (Birkland, 2016, p. 2).

However, anecdotal evidence (mostly from single-case studies) has provided much support for the transformative power of extreme events (e.g., Gawronski & Olson, 2013; Koivisto & Nohrstedt, 2017; Nohrstedt & Parker, 2014; Walch, 2019). Longitudinal research such as Birkland’s (2016) study of change in disaster policy in the US between 1950 and 2015 shows that “change... is often, but not always driven by major disasters that act as focusing events” (p. 1). A remaining question thus concerns when such windows of opportunities are used, and when incremental changes are implemented instead. Yet, questions that are even more important to ask include: What makes change possible? How and why does it occur? Despite the many obstacles in this area, not all hope is lost! Scholars have namely identify a number of mechanisms and factors which – perhaps triggered by a hazard – can facilitate change.

Severity and frequency of hazard events

Some have held out the severity or magnitude of the shock as crucial for the impact of hazard events (Gawronski & Olson, 2013). Whether it is the death toll, the number of people injured (Zahran, Brody, Vedlitz, Grover, & Miller, 2008), or the financial losses (Brody et al., 2009), there seems to be some consensus that the specific impact of hazard events plays a crucial role for the political aftermath and for the prospects that changes will be made in DRR efforts and the DRR policy regime. Others, by contrast, stress the importance of frequency. Relatively small hazard events that occur regularly can prompt adaptation and learning (Birkland, 2016); however, frequent low-impact incidents can also decrease awareness (Mileti & Brien, 1992). High-impact events that occur frequently may overburden the system (Koivisto & Nohrstedt,

2017), leading to inertia and potential collapse (Smit & Wandel, 2006). Employing a diverse set of indicators in its statistical analysis, Article II seeks to explain the role played by the frequency and impact of disasters in the development of DRR efforts. Article III adds to the discussion by exploring the role of hazard events in the development of DRR policy regimes in Fiji and Nepal, especially in connection with some of the most extreme hazard events in the history of those countries.

Leadership

The role of policy entrepreneurs is another factor that many observers consider to be relevant. Some contend it is necessary but not sufficient (Solecki & Michaels, 1994; Walch, 2019); others focus on the different forms of leadership that can emerge (Eisenack et al., 2014). Leadership roles can be assumed by international organisations (Vij et al., 2018); by governmental departments or agencies (Smith et al., 2009); by NGOs or civil society actors (Gibson & Wisner, 2019; Moore, 1956); or by individuals such as elected officials, prime ministers, or interest group leaders (Birkland, 2016; S. Jones et al., 2014; Moore, 1956). Leadership can materialise in a variety of ways. Policy entrepreneurs can help focus attention, generate consensus, and promote coordination, cooperation, and collaboration (Moore, 1956; Olsson et al., 2004). Moreover, changes in the locus of authority can be a critical component in furthering changes (Hall, 1993). In its qualitative analysis, Article III focuses on the role of leadership in enabling change in national DRR policy regimes, and highlights the part that a variety of actors played in the national developments.

Diffusion

Where international organisations are concerned, diffusion needs to be considered. The idea that knowledge and experience gained in one country can affect decision-makers elsewhere has been widely accepted (Gilardi, 2010). Often associated with heuristic processes of learning, the diffusion of public policy innovation is known to be a rather slow and gradual process, involving elements of emulation (Berry & Berry, 2007). The mechanism of greatest relevance for DRR may be learning from earlier adopters (Shipan & Volden, 2008). Events and experiences in one country can have a direct impact on policy on the other side of the world, as seen in 2011 in connection with nuclear meltdowns in Fukushima in the aftermath of the Tōhoku earthquake and the corresponding tsunami (Wittneben, 2012). Thus, by revealing either shortcomings or successes, exogenous shocks can spark immediate action and change (Boushey, 2012).

Other experiences are filtered through international arenas, such as regional and international DRR forums or international regimes like the Hyogo Framework. Through the sharing of experiences and knowledge, ideas and beliefs about problems and solutions spread across borders. This propagates underlying paradigms, general strategies, specific approaches, and policy solutions. Participation in such arenas can build pressure on national actors to adhere to global trends and to adopt best practices, in hope of attracting funding and spurring development in their countries (R. B. Mitchell, 2003; Vij et al., 2018). Exposure or pressure may prompt national actors to incorporate global trends – decentralisation, community-based participation, the integration of traditional knowledge, etc. – into their national strategies (Flórez Bossio et al., 2019; Granderson, 2017; McMillen et al., 2017; Nakamura & Kanemasu, 2020; Tierney, 2012).

These considerations figure in all three of my articles. Article I focuses on changes made in DRR efforts according to suggestions offered by the applicable international regime (i.e., the Hyogo Framework). Article II analyses engagement with the international regime as a potential driver for change in DRR efforts. Article III highlights the role of diffusion – especially in connection with international regimes – in the development of national DRR policy regimes. All three articles accordingly throw light on the role of the international DRR regime in national DRR development.

Politicisation and accountability

Many scholars have focused on the attention-grabbing or agenda-setting potential of disasters and external shocks, emphasising the political aftermath (Baumgartner & Jones, 1991; Boin et al., 2008, 2009; Olson, 2000). Major disruptions and system breakdowns can draw attention to shortcomings in management, preparedness, and risk reduction. The political aftermath of a disaster may include blame games, framing contests, and politicisation (Boin et al., 2017; Liechty, 2020; Olson, 2000). For good or ill, such attention to a crisis can be exploited in the political contest: leaders may try to defend their decisions, to consolidate their power, or to push for their preferred policies (Boin et al., 2009). Mark Liechty (2020) notes that governments may attempt to rally the nation around the flag, presenting the nation as a victim, generating a feeling of national unity, and seeking to defend the status quo against a presumed extraordinary threat to the nation. Such exploitation of crises by governments can undermine the prospects for effective reform (Boin & 't Hart, 2003). Most of all, incumbents seek to avoid blame, because they may be punished by the electorate otherwise (Rubin, 2020). This reflects Amartya Sen's contention (Sen, 1999) that incumbents can and will be held accountable for

large-scale disasters such as famines if mechanisms of accountability like free media and elections exist (Rubin, 2020). This effect has been supported by research findings regarding developments in Japan, among other places – on the importance of civic freedoms and mechanisms of accountability for the country’s reduced reliance on nuclear power after the Fukushima meltdowns (Aldrich et al., 2019).

According to A. Cooper Drury and Richard Stuart Olson (1998), political unrest after a disaster tends to increase according to the number of people killed in the event. Disasters may foster social change and alter voter preferences (Cassar et al., 2017; Rubin, 2020), and citizens may hold authorities responsible for failing to protect them (Adger, Quinn, et al., 2013). Researchers have raised concerns, however, that voters in fact reward incumbent parties for relief spending, not for investing in disaster preparedness and risk reduction (Healy & Malhotra, 2009); or that they reward ruling groups for symbolic acts and empty rituals that do not actually contribute to lasting change (Rubin, 2020). Studies on the political aftermath of disasters in Fiji and Russia have found that government spending did indeed positively affect citizens’ perception of government performance (Lazarev et al., 2014; Rios et al., 2020), providing support for the ‘attentive citizen theory in disaster contexts’.

What is clear is that disasters unlock opportunities for change in public discourse, and that at times they even open up radically new epistemological fields (Liechty, 2020). However, knowledge of these conditions remains theoretical or anecdotal. This dissertation contributes additional insights into the effects of disasters on DRR efforts and their corresponding policy regimes. In particular, Article II investigates the role of voice and accountability mechanisms while Article III looks closely at changes in the aftermath of disasters in Fiji and Nepal.

Previous research, then, has identified a number of mechanisms and conditions that may promote successful change in DRR efforts or DRR policy regimes. However, it is only recently that large-scale global analyses or tests of theories have been conducted (e.g., Nohrstedt et al., 2021). Article II is one of these few. It analyses several enabling factors as triggers for change, including the frequency of hazards, the magnitude of shocks, and the existence of mechanisms of accountability. Article III emphasises the importance of leadership, the role of diffusion and of international pressure, and the transformative power of focusing events. The long-term perspective of this thesis also makes it possible to carry out a thorough investigation – to put changes in the aftermath of disasters in the context of long-term shifts in the DRR policy regime.

In the next section, I describe how I operationalise these theoretical considerations in the three articles. I also explain certain features of my research design and case selection.

5. Research Design and Methods

Each of the three articles sets out to answer one of the research questions presented in Section 2. I hope thereby to contribute to our understanding of the conditions for progress in DRR. The three articles use distinct methods and approaches, which I present in what follows. I expand on the specific research designs of the individual studies, including their theoretical starting points, their empirical approaches, and certain other methodological features. Subsequent subsections provide further information on the data and the case study. While each method and analysis makes a contribution on its own, it is only when combined that they suffice for achieving the overarching aims of this dissertation.

Article I, which addresses the *what* question, can be considered descriptive and conceptual. It analyses descriptive statistics and adapts the concept of regime effectiveness to soft law regimes. The Hyogo Framework for Action, which guided DRR development between 2005 and 2015, is examined as a specific case of such a regime. Reconceptualising the central aspects of participation and compliance for the context of soft law, Article I analyses the international DRR regime from the standpoint of regime effectiveness. At the same time it offers a more nuanced evaluation of the HFA based on the empirical evidence, using data from national reports submitted under the HFA on the state of DRR measures. It measures continued participation by the number of reports submitted, and assesses compliance by the indicator scores reported. Analysing changes in compliance and in DRR measures over time, it groups the 22 indicators according to the framework's five priorities for action, thereby yielding insights into specific areas of progress. It furthermore expands on these findings, disaggregating the data so as to localise changes in space and time, thus identifying shifts in specific countries and periods. Applying a large-N approach, it assesses national developments over four reporting periods during the ten years of the international framework – identifying patterns of change, documenting variations on the country level, and detecting extraordinary outliers.

In contrast, Article II can be classified as quantitative and explanatory. However, it still employs a large-N approach. Based on the findings of Article I, it tests hypotheses derived from theories of change in the field of DRR. The

article seeks thereby to answer the *why* question. The study investigates how specific factors such as magnitude and frequency of hazard events in relation to government effectiveness and voice and accountability mechanisms are associated with changes in DRR measures. The data employed are taken from the above-mentioned HFA reports, as well as from the Emergency Events Database (EM-DAT)⁵, and the Quality of Government (QoG) database⁶. To increase the number of observations and facilitate a more in-depth analysis of change over time, I use change between country-reporting periods as my unit of analysis. In the ideal case, this results in three different data points per country. I categorise changes as negative, negligible, or positive, with thresholds of one standard deviation from the mean. Straightforward regression models, such as standard ordinary least square (OLS) regressions, might have been preferable from the standpoint of readability, but I have refrained from using them, due to the ordinal nature of the scales in HFA reports. Instead I have used generalised ordered logit (gologit) models, so as to fit the ordinal logic of the data and accommodate the violation of parallel lines. Brant tests made identification of the latter possible, revealing that effects of the predictors may vary depending on the category of change. The article provides a detailed description of the intricacies of the statistical analysis involved. In sum, Article II offers novel insights into the association between enabling factors and change in DRR. However, further in-depth analysis is needed of how the correlations between drivers and change play out in detail.

Lastly, Article III, taking a qualitative and exploratory approach, investigates two cases of progress in DRR policy regimes. I seek in this article to answer the *how* question, by providing in-depth descriptions and analyses of developments over time. I highlight mechanisms and factors that have enabled barriers to be overcome and changes to be introduced. In addition, drawing on secondary literature and research on the two countries in question, Article III covers national policies, frameworks, and policy documents such as acts, plans, policy statements, and strategy papers; as well as reports from relevant international actors such as UNDRR, the World Bank, and the Global Network of Civil Society Organisations for Disaster Reduction (GNDR). The national reports submitted under the HFA serve as the starting point for identifying relevant material. In the second subsection below, I present the design of my case study and the logic of my case selection in greater detail.

These three articles, with their differing approaches and varying methods, have been key for providing answers to the research questions, and thus for

⁵ EM-Dat is provided by the Centre for Research on the Epidemiology of Disasters (CRED) hosted by the Université catholique de Louvain, Belgium (Guha-Sapir et al., 2020).

⁶ QoG is provided by the Quality of Government Institute at the University of Gothenburg (Teorell et al., 2020).

achieving the overarching aim of this thesis. A large-N approach and a global analysis do not just make a valuable contribution to the field, due to the scarcity of such studies; they are also needed if we are to gain a comprehensive picture of the development of DRR in the world. A qualitative analysis would not easily have afforded comparable insights into these matters from a global perspective. Article II, in order to answer to the *why* question, has had to take an explanatory approach. Its statistical analysis in turn has enabled large-scale testing of hypotheses that have been put forward in the literature. For a large-N approach and a global analysis to be possible, however, information must be compressed and complexity reduced. The role of the qualitative case study in Article III, accordingly, is to provide enriching information, to illuminate the processes at play, and to make it possible to evaluate the assumptions and findings of previous studies. Article I, for its part, points to the extraordinary progress that Fiji has achieved, thereby setting the stage for the choice of that country as a case study for the third article. Without the exploratory and qualitative approach of Article III, however, insights into how this progress as unfolded would not have been possible.

A note on data

The data connected to disasters, DRR, and adaptation is heterogeneous and contested. Perhaps that is one of the reasons why scholars time and again focus on case studies and go rather in-depth than broad. Comprehensive, complete, and comparable data are largely missing, which impedes large-N analyses. Even one of the most comprehensive databases on disaster impacts available, EM-DAT, lacks important information and contains contested numbers for the number of deaths, affected, and losses. Media, governments, and organisations involved may report different numbers either because of uncertain or incomplete information or to deflate or inflate the impacts for a variety of reasons. However, in the absence of complete information, this is one of the best sources for comparative time-series data on disasters since 1900, which are defined as disastrous events that fulfil at least one of the following criteria: 10 or more people dead; 100 or more people affected; the declaration of a state of emergency; a call for international assistance.

Similar issues can be stated for data stemming from the national progress reports under the Hyogo Framework for Action. Here, on a voluntary basis, countries prepared and sent in documents and assessments over four reporting periods. These reports reflected the status of DRR in a barrage of 22 indicators grouped under the five priority areas of (1) institutional strengthening, (2) risk assessment and early warning systems, (3) education, information, and public

awareness, (4) reducing underlying risk factors by mainstreaming DRR into other policy domains and (5) preparedness for effective response. The indicators follow an ordinal logic with scales from 1 (Minor progress with few signs of forward action in plans or policy) to 5 (Comprehensive achievement with sustained commitment and capacities at all levels). In addition, the reports included valuable qualitative data such as evaluations leading to the indicator values, insights into country challenges, strategic goals, and outlooks into the future. The website PreventionWeb, hosted and managed by UNDRR, processed and provided the data of the Hyogo Framework for Action. As Article I elaborates, the reports were expected to measure progress; however, the indicators reflected more on the status of DRR at one point in time, necessitating at least two submitted reports to evaluate changes over time.

In some cases, international organisations such as the World Bank or UNDRR may be (co-)authors, in others, they are authored solely by ministries or governmental agencies. There may be reason to believe that some of the data provided did not reflect the actual conditions. Countries may present themselves as paragons of progress attempting everything in their power to protect their citizens, so that donors support their efforts even further in the adverse circumstances the country has to face. Others may understate their progress depicting themselves as vulnerable and in need of international assistance for safeguarding lives and livelihoods. However, as reflected upon in Article I, these two forces may also be negligible, since the most accurate presentation may be the most valuable for a country in order to obtain the needed support and maintain its reputation. Furthermore, there are no funds connected to the reporting and donors may conduct their own analyses and evaluations. Most aid and funding is usually rather provided in the aftermath of disasters.

Even if we leave these considerations aside, we need to acknowledge that different actors around the world may have interpreted questions and indicators in the reports differently, resulting in disparate scores. The addition of questions and indicators after the first reporting period may also be indicative for some adjustments. In general, there seems to have been some learning from one reporting period to the next, and it is of note that the HFA and UNDRR succeeded in recruiting more countries in later reporting periods. Because of this learning effect, later data may even have greater comparability than information at the beginning of the HFA.

In addition, the ordinal logic of the indicators needs further consideration. Distances between scores are difficult to interpret, leading to methodological challenges. Where misinterpretation by the authorities in different countries is concerned, it is an advantage that the dependent variable here is change in

DRR. Using quantitative data from the HFA reports, the first two articles focus on the change in DRR measures – i.e., the scores from one period minus the scores from the previous period. Taking changes in scores as the dependent variable may render differences in how to interpret the indicator scores less relevant. The different countries may have interpreted indicator scores similarly over time, making only the changes (as opposed to the absolute scores) relevant.

A last caveat that needs mentioning about the HFA data has to do with reporting periods. That is, data were not provided on a yearly basis. Reports from a country could be sent in at the end of one reporting period and the beginning of the next, with just a year in between. In other cases, there could be up to four years separating individual national reports, although the reports were attributed to the same periods. This, of course, makes comparability between specific years and timeframes difficult. However, since my aim is not to compare countries but to investigate global change, this may not be much of a problem. An issue more crucial for Article II and the explanatory value of its analysis is that it cannot be validated without close investigation of every single report whether a hazard event occurred before or after a report was submitted. Such validation was beyond the time and scope of this study. An in-depth analysis could reveal important relationships between these two factors as Article III shows.

Still, EM-DAT and HFA data are crucial for making preliminary assessments of the status and development of DRR in the world. There need to be words of caution and strategies in place to reduce uncertainties and ambiguities. In the absence of availability of perfect data, however, scientists need to make do to support decision-makers and societies around the world to the best of their knowledge, while acknowledging and trying to minimise the limitations of themselves, the analysis, and the data. By utilising the best available data and fitting methods and approaches, useful insights can be gained, as the articles show.

At the beginning of this research project, I considered using data from the Sendai Framework (the HFA's successor). However, there were and still are two major problems that made it virtually impossible to do this. First, using data from the Sendai Framework would only have made sense if it could be integrated into the analysis of the Hyogo Framework. However, this is not possible, since – as many scholars have pointed out – the two frameworks differ largely regarding indicators and emphases (Aitsi-Selmi et al., 2016; Cutter & Gall, 2015; Tozier de la Poterie & Baudoin, 2015; Zaidi, 2018). Second, the data from the Sendai Framework, six years after its adoption, are still sketchy at best; impractical or even useless at worst. At the time of writing

(June 2022), more than 20 reports have not been validated for even one of the years since the inception of the Framework. Reports and data from the Framework, in contrast with those the HFA produced, are not easily or intuitively accessible, despite the introduction of the Sendai Monitor. It remains to be seen how useful data from the Sendai Framework will be for future research.

Complementary case study

Large-N studies reveal patterns of covariation, and they hinge on theoretical assumptions about causation. This is why they are often combined with in-depth longitudinal case studies that explore and provide evidence for causal mechanisms (Levy, 2008). Taking this latter approach, Article III complements the large-N analyses of the previous articles. It looks at two instances of change in DRR policy regimes, and investigates the enabling factors thereof. In this way, my case study throws light on such questions as how change unfolded in the two countries, and how the enabling factors came into play. It provides some evidence for the relationships theoretically assumed to apply between different factors, and it helps to refine those assumptions further. Indeed, by testing the validity of these assumptions empirically, it identifies some other matters that call for future investigation. In what follows, I discuss the purpose and design of my case study, I explain my selection of cases, and I review my methods of data collection.

Purpose and case selection

Case studies can fulfil multiple purposes at the same time (George & Bennett, 2005b; Kaarbo & Beasley, 1999). The one presented in Article III serves two. On the one hand, since it aims at exploring, describing, understanding, and explaining developments in the two cases at hand, it represents a theory-guided idiographic case study (Levy, 2008). While focusing on the specific cases, it makes “explicit and structured use of theory to explain discrete cases [that can] often provide[...] better explanations and understandings of the key aspects” (Levy, 2008, p. 5). Due to the small number of cases I examine, my ability to generalise beyond them remains limited. My focus is rather on gaining further insights into specific elements: in particular, the factors that enable change in DRR policy regimes.

One might say that my examination of the two cases serves as a plausibility probe. Such an approach is common in exploratory studies, where relatively little is known empirically and theories remain largely untested (George & Bennett, 2005b; Kamkhaji & Radaelli, 2017). Using this method can help us

refine theories (Eckstein, 1975; Kaarbo & Beasley, 1999; Levy, 2008). As such, Article III calls attention to matters that warrant more intensive testing in future (Eckstein, 1975; George & Bennett, 2005b). Functioning as ‘inductive feedback devices’, studies of this kind help determine “whether the posited relationship or relationships between and among variables are consistent with expectations” (Kaarbo & Beasley, 1999, p. 375). Thus, my examination of Fiji and Nepal is more than just an illustrative case study – i.e., a study that gives a feel for a theoretical argument (Levy, 2008). It presents, namely, a great many empirical details while it scrutinises theoretical assumptions.

In pursuit of these purposes, then, I have chosen two specific cases. This case selection has involved two distinct logics. First, I have chosen the two cases because of the change in national DRR policy regimes that they exhibit. I fasten on Fiji as a case of extraordinary progress, judging from its quantitative scores on DRR measures reported under the HFA. Qualitative data from Fiji’s reports also pointed to substantial change and expansion in the DRR policy regime in that country, as furthermore corroborated by additional material reviewed in Article III. Nepal, for its part, stands out as an instance of paradigm change in DRR. Earlier research has highlighted the advances that Nepal’s policy regime made in that regard (Vij et al., 2020). Moreover, further investigation – as noted in Article III – has confirmed the substantial changes made in that instance.

It has been noted that there is a ‘problem of selecting on the dependent variable’, especially in cases with extreme values (King et al., 1994, p. 128-139). While both of the countries examined here made changes in their DRR policy regime, said changes were qualitatively different. Whereas a wide-ranging and comprehensive expansion of the DRR policy regime took place in Fiji, the changes in Nepal were less comprehensive (although they did substantially alter the foundations as well as specific parts of the DRR policy regime, with important implications for implementation). Furthermore, “selection on the dependent variable can serve the heuristic purpose of identifying the potential causal paths and variables leading to the dependent variable of interest” (George & Bennett, 2005a, p. 23). This approach is justified because the enabling factors investigated are not necessary conditions for change; rather, they open up *potential* pathways to change (George & Bennett, 2005a; Levy, 2008).

Future studies beyond this theory-guided idiographic plausibility probe may include a larger variation on the dependent variable. For instance, the inclusion of negative cases, i.e., cases that do not exhibit a change in the DRR policy regimes, could yield further important insights (Levy, 2008). Such an approach will make it possible to investigate whether the factors identified are

sufficient or even necessary conditions for change in DRR policy regimes. While the values of the dependent variable were quite evident before the study, little was known *a priori* about the independent variables – i.e., about the role played by enabling factors in the development of the DRR policy regime in the two countries.

The second logic behind the case selection involved the important contextual similarities the cases exhibit. This increases the comparability of cases and potentially enables lesson-drawing (Levy, 2008). At the same time, substantial barriers to change were present in both cases. Indeed, due to the barriers that Fiji and Nepal faced, reviewed below, the two countries can be said to qualify as least likely cases: unexpected changes materialised under adverse conditions.

While there are differences in the portfolio of natural hazards that Fiji and Nepal face, both countries are among the most vulnerable in the world – characterised by high level of exposure and vulnerability to multiple natural hazards and an eventful history of devastating occurrences (Guha-Sapir et al., 2020; Petzold, 2016; UNDP, n.d.; Vaidya, 2017). The two countries are quite different in their level of development, but neither belongs to the group of developed countries. Fiji is classified as a small island developing state (SIDS), while Nepal is considered one of the least developed countries in the world. As a SIDS and a landlocked least-developed country respectively, Fiji and Nepal are both heavily dependent on international aid for dealing with large-scale disasters. Both countries also face challenges in reaching remote areas with aid, and in spreading knowledge and information among their citizens.

Furthermore, both are highly divided societies that struggle to uphold civil liberties and democracy (Anthony, 2021; Coppedge et al., 2020; Nightingale, 2017). According to the Democracy Index⁷, the two countries classify hybrid regimes – both established in the aftermath of violent turmoil in the 2000s – located somewhere on the spectrum between flawed democracy and authoritarianism. Article III examines the development of the DRR policy regime in the two countries after these events, when the situation in both states was somewhat similar, and both were subject to the same external stimuli such as the international regimes in place. I do consider the history of the DRR policy regimes before the above-mentioned turmoil; however, the most significant changes in the DRR policy regimes have taken place in the last two decades. It is also important to note that Fiji and Nepal both experienced their most extreme hazard events in their history during the 2010s: the tropical cyclones

⁷ The Democracy Index is published by the Economist Intelligence Unit (Economist Intelligence Unit, 2020).

(TC) Evan and Winston swept over Fiji in 2012 and 2016 respectively; and the Gorkha earthquake shook Nepal in 2015. We can thus examine changes in the two countries in the aftermath of severe events.

Change in DRR in developing countries

Focusing on these two countries allows me to apply the theories of change to a wider context. The theories in question have been developed “almost entirely in high-income countries, and with their contexts in mind” (Bertelli et al., 2020, p. 741). Developing countries, for their part, are said to possess traits which make it hard to apply these theories, even as they offer “opportunities to extend and enrich these theories for the benefit of the field as a whole” (Bertelli et al., 2020, p. 741). Two questions are therefore in order: Given that the theories were largely developed in and for other contexts, *what do we know* about change in the context of developing countries? And *what do we need to keep in mind* when using these theories outside the context where they were developed?

According to a common perception in the 2000s, institutional reforms in developing countries rarely work: despite international funding and the introduction of best practices, many governments in such countries remain deeply dysfunctional, so that institutional reforms fail or are not carried out (Andrews, 2013c). In his interdisciplinary research, Matt Andrews (2013d) has brought institutional theory to the study of developing countries, with the aim of enriching the dialogue on development issues through an investigation of why institutional reforms fail so poorly in many developing countries. He finds that “reforms are limited when governments adopt them as signals to garner short-term support” (Andrews, 2013c, p. xi) – i.e., when they print laws on paper for show, without properly implementing them. By contrast, in cases marked by ‘problem-driven iterative adaptation’ – where reforms are crafted to fit the context and “emerge through a gradual process of step-by-step experimentation” (Andrews, 2013a, p. 3) – functional solutions were actually implemented (Andrews, 2015). As Bacharach, Bamberger, and Mundell (1993) note, substantial change seems to take place most readily when large-scale disruptions occur in a context marked by a weak institutional order at the same time that alternative logics are readily available and are supported by change agents (Andrews, 2013b). Hence, Andrews provides evidence both for the incrementalist perspective and for the transformative potential of shocks.

Researchers in DRR have called for attention to be paid to the specific context of developing countries. As Kathleen Tierney puts it, “problems associated with disaster vulnerability and governance are inextricably linked to

broader development challenges” (Tierney, 2012, p. 347). An expanding body of literature has established that change is impeded by a variety of barriers, challenges, obstacles, constraints, and hurdles – including but not limited to the role of power, conflicts of interest, and political dynamics such as bureaucratic politics, institutional capacities (or lack thereof) (Biesbroek et al., 2013; Dolšak & Prakash, 2018; Eisenack et al., 2014; A. Kenis & Mathijs, 2014; Mikulewicz, 2019; Scoville-Simonds et al., 2020). Researchers are cautioned to take into account the need for data collection, the role that international and non-governmental organisations play, and the necessity for both qualitative information and mixed-methods approaches due to the heterogeneity of variables (Bertelli et al., 2020; Green, 2017). Particularly in fragile and conflict-ridden settings, it is said, the dynamics of change are marked by critical junctures driven by a combination of ideas, interests, and institutions (Green, 2017). Scholars have paid less attention to endogenous processes of change in developing countries; opportunities are missed to investigate critical junctures, positive deviation, political economy, the role of power, or the importance of non-state actors (Green, 2017). Green (2017) further acknowledges both the role of gradual changes (which according to him only happen rarely in such contexts) and sudden transformations (which are created through steady built-up of social pressure and triggered by a shock) in fragile and conflict-ridden settings.

Thus, scholars have already applied theories of change to developing countries, about which they have drawn conclusions similar to those they have drawn about developed countries, while at the same time highlighting barriers to change. Yet, due to the strong focus on barriers, disasters, and failures, research remains limited on endogenous elements and on factors that enable change in DRR policy regimes, particularly in the context of developing countries. This dissertation forms part of the effort for which scholars have called to extend our understanding of processes of change beyond the developed world. In particular, Article I and Article III highlight the positive developments which, without attracting much attention, can unfold even in contexts where they are least expected.

In accordance with the recommendation of Bertelli and his co-authors (Bertelli et al., 2020), I use mixed methods and in-depth descriptions in this dissertation. In order to gather as much information as possible and to enrich my analysis with the necessary details, I have collected, processed, and examined a variety of materials and data. The role of non-state actors, which I highlight throughout this thesis, is one focus of my analysis, especially in connection with international influences. With my focus on progress in DRR in developing countries, moreover, I follow the example of Matt Andrews (2015),

who investigated ‘positive deviants’ – i.e., successful cases of public sector reform in places where we do not see them or where we least expect to find them.

Materials

In my third article, it would have been interesting to look as well at public discourse and parliamentary debates. Similarly, correspondence between government authorities, ministries, and agencies might have enriched the material still further. Interviews with experts and with actors involved would have afforded much insight. That, however, would have gone beyond the scope of the article, especially since access and language barriers may have been unsurmountable within the allotted time. In view of the pandemic, for instance, fieldwork has been problematic.

I discarded the idea of online interviews, for several reasons. First, the ministries, agencies, and organisations involved in DRR were often engaged in responding to the pandemic, and so had other priorities at the time. Second, scholars studying the countries under investigation argue that close contact – preferably over an extended period of time – is needed to build up the trust between researchers and practitioners that is required for gaining valuable insights, (e.g., Johnston, 2015; Nagoda & Nightingale, 2017; Nightingale, 2017). This was not possible to arrange for this study, and, thus, my prospects of significant insights as an untrusted outsider were small. Nor could I have acquired the same understanding that renowned researchers have done who have spent decades building up networks and trust with locals and other actors, and gaining experience in penetrating the intricacies of the cultural contexts in question. Thus, while I have not been able to formulate and ask questions myself, I have benefitted greatly from the far-reaching research on Fiji and Nepal that such scholars have carried out. Their profound understanding of the two countries has been invaluable for this study, and provided insights that would not have been attainable otherwise.

In addition, I have specifically searched for information and materials not authored or provided by government agencies or officials. These include reports and studies put out by the media and by international organisations such as the World Bank and GNDR. These materials complement the policies, frameworks, and policy documents produced by the national governments in question, such as acts, plans, policy statements, and strategy papers. In sum, I have relied on an extensive body of materials from multiple sources – in order to triangulate and to impart nuance to my analysis of national policy regimes (Kaarbo & Beasley, 1999).

6. Summary of the articles

In this thesis, I set out to find, investigate, and understand change and progress in disaster risk reduction. The three articles each contribute with an answer to one of the questions of *what*, *why*, and *how*. The first article sets out to map changes around the world and to throw light on progress from a rather conceptual perspective, with a focus on regime effectiveness in light of the soft law approach of the Hyogo Framework for Action. By analysing participation in and compliance with the international regime, Article I identifies patterns of change and localise these changes in countries and periods. Article II considers explanations for differences in these patterns of change, testing a number of hypotheses connected with various theories of change. Lastly, Article III zooms in on how changes in the DRR policy regime unfolded in two countries, and provides detailed descriptions and qualitative analysis. Thus, while it refines theoretical assumptions, it expands on the data from the HFA's reports by including policy declarations, legal provisions, international reports, scientific papers, and government documents setting out national strategies and plans. With their distinct approaches and methods, the three articles each help to achieve the overarching aim of this thesis: to paint a comprehensive picture of the global development of DRR.

Article I: The effectiveness of soft law in international environmental regimes: Participation and compliance in the Hyogo Framework for Action

The first article lays the foundation for the dissertation as a whole, by situating disaster risk reduction within its global regime and investigating global changes empirically. It examines the prospects for effectiveness of an international environmental regime that takes a soft law approach – i.e., that features voluntary action, non-binding commitments, and a wide spectrum of suggested measures for participants. As the concept of regime effectiveness stems from the evaluation of hard law regimes that rely on sanctions to enforce compliance, the article offers a new interpretation of key concepts. Regime effectiveness may be understood in terms of participation and compliance; such elements are namely crucial for the effectiveness of a regime. In the absence

of either, a regime cannot be considered effective. These two concepts need in turn to be adapted to the soft law approach of the regime. A more demanding interpretation of participation – focused on continued participation instead of simple ratification – is needed. Compliance needs closer attention, and it must be understood as a change in behaviour along lines called for by the regime. In this thesis, I examine the Hyogo Framework as illustrative of a soft law regime connected to sustainable development. Other such soft law regimes include the Paris Agreement, the Sustainable Development Goals (SDGs), and the Sendai Framework. On the basis of data collected from national HFA reports, I find that the soft law regime inspired compliance and continued participation, as seen in the increase in submissions and the overall increase in scores, especially when it came to mainstreaming DRR into other policy domains. However, various aspects of compliance were more multifaceted and ambiguous, which can be seen in the differing nature of change across countries. Negative change took place in a few countries – Armenia, Brazil, Kenya, Mexico, and Togo – but positive change was prevalent. Some countries, in fact, showed extraordinary progress in DRR, including – in descending order – Fiji, Ecuador, Morocco, Senegal, the Dominican Republic, and Guatemala.

Hence, Article I documents variations at the country level. At the same time, it strengthens the empirical usefulness of the concept of regime effectiveness, by adapting it in a novel way in light of changing characteristics of international regimes. The article also serves as a guide to interesting cases, by identifying countries that report remarkably positive and negative changes respectively.

In sum, Article I describes variations in change and progress in DRR efforts around the world. It highlights cases not previously mentioned in the literature, and it answers the *what* question about change in DRR. Progress in national DRR efforts is linked to the international regime that guides these developments. The effectiveness of said regime can translate into national progress, but such progress is contingent on continued participation and changes in behaviour in accordance with suggested measures.

Article II: Drivers of change in national disaster governance under the Hyogo Framework for Action

Building on the findings of Article I and the theories of change, this statistical study investigates what motivates countries to expand their measures for disaster risk reduction. It uses HFA, EM-DAT, and QoG data; and it utilises generalised ordered logistic regression (gologit) models. The results – which are

important for policymakers, governments, and scientists – point to the importance of effective governance and accountability mechanisms. More effective governance increases the probability of a country's being in the neutral or positive change categories, while a high frequency of hazard events reduces the effect. In turn, the diminishing effect of hazard events is offset by greater government effectiveness. Interestingly, the analysis also points to a strong positive association between positive change and the number of people affected, in particular when mechanisms of voice and accountability exist. This suggests the population holds the incumbent government responsible for the impact caused by the hazard event; or that, contrary to previous research findings, governments in more responsive systems take stronger DRR measures. In this regard, the larger the proportion of the population that is affected, the stronger the effect is likely to be. Furthermore, the results suggest that measures of a hazard event's impact, such as death tolls and financial damages, are not interchangeable. Death tolls have a negative effect on such measures; financial damages are associated with positive change. However, in-depth studies that look into the temporal sequence are needed to prove the direction of the effect. Development aid too seems to conduce to positive change, suggesting that aid is used to enhance DRR efforts.

Article II brings in a variety of theoretical assumptions about enabling factors and drivers of change, and it tests these hypotheses on a global scale. While caution is advised in reading the results (in particular because of the nature of the data), the article does provide some support for several theories about the mechanisms at play. Change may be stimulated by disasters if they cause extensive financial losses, by effective governance in low-impact contexts, or by mechanisms of accountability when large parts of the population are affected. There is evidence, then, to support both incrementalism and the punctuated equilibrium theory. Integrating the two theoretical perspectives into my research design has thus proved to be valuable.

Article III: Change in policy regimes for disaster risk reduction in Fiji and Nepal

Article II concludes with some words advising caution and stressing the need for qualitative in-depth analyses of cases of change. Article III then looks at how changes have unfolded, and at how mechanisms have facilitated change in national DRR policy regimes (even in adverse circumstances). The article thus serves as a theory-guided idiographic plausibility probe, exploring and refining theoretical assumptions through a detailed analysis of changes in national DRR policy regimes over time. In particular, it investigates changes in two hybrid regimes in a developing context, namely those in Fiji and Nepal.

It analyses document analysis and provides detailed descriptions of how factors such as leadership, diffusion, and focusing events help to overcome barriers to change. The materials examined include policy declarations, legal provisions, international reports, journalistic sources, scientific papers, and government documents setting out national strategies and plans.

The article highlights the importance of continuous political leadership in the case of Fiji, and of global trends and international pressures in the case of Nepal. The narratives of change in the two cases differ, which may stem from the distinct regime types in the two countries. In both cases, however, my findings offer evidence for the theory of focusing events in the case of developing countries.

Unlike the other two articles, this one zooms in on two countries. One of its main contributions is to highlight the connection with the three mechanisms examined in the cases of Fiji and Nepal. It finds that, notwithstanding the grave challenges they faced, the two developing countries – chosen on the basis of their progress, their high degree of exposure and vulnerability, their struggle to uphold liberal democracy, and their history of (violent) turmoil in the 2000s – made considerable progress. In the case of Fiji, the improvements can be credited to continuous leadership and political support, along the lines suggested by incrementalism. In the case of Nepal, external pressures brought about repeated changes in the DRR policy regime. In both cases, finally, large disasters accelerated the changes, supporting the idea that exogenous shocks can cause rapid change.

7. Contributions

The empirical point of departure for this thesis was the observation that we know most of what we know about DRR from failure. So far, however, we know little about change in DRR, and even less about progress in it. We do not know where, why, and how progress occurs.

The three articles in this thesis bring theories of change from a political science perspective to the table. They shed light on important processes of positive change in measures, paradigms, policies, and institutions in the DRR field. Taken as a whole, this dissertation fills an important empirical gap in the literature, contributing to the fields of DRR research, development studies, and political science.

Articles I and II offer, with their large-N approach, important insights into global developments in DRR. In this they contrast with past research efforts, which have been dominated by single and small-N case studies (Albrecht, 2017; Parker et al., 2020b). Article I makes empirical contributions to DRR research, mapping changes in DRR measures, detecting interesting patterns of progress, and singling out countries that are outliers in terms of the extraordinary changes they have seen (both positive and negative). The article thus answers the *what* question, and its findings can serve as a guide and a point of departure for future studies.

Building on the findings of Article I, Article II offers explanations at the country level. Addressing the *why* question, it tests hypotheses on the impact of such factors as past experiences, government effectiveness, mechanisms of voice and of accountability, and the severity and frequency of disasters. The findings suggest that certain theoretical assumptions need refinement.

First, death tolls from hazard events may not be interchangeable with damages incurred as a measurement of severity. Only the latter is associated with an expansion of DRR efforts; death tolls, by contrast, appear in fact to have a negative impact. Future researchers may want to investigate the reasons for the difference; however, scholars and practitioners alike should be aware of it, and take care to be specific when using measures of disaster severity. As to governance effectiveness, Article II supports the established idea that it conduces to positive change in DRR, while a high frequency of hazard events reduces the effect. It will be important to investigate the limits of government

effectiveness further, and to identify which aspects of it are key for change in DRR. In addition, the article provides evidence that mechanisms of voice and of accountability are important for the implementation of DRR measures when a large proportion of the population has been affected by a hazard event. This implies that, all else being equal, democratic regimes are more responsive to disasters. That would mean, that the strengthening democratic institutions might support DRR reforms in disaster-ridden contexts. Furthermore, the small but expanding literature on voter preferences in the wake of natural hazards can benefit from this finding, taking the proportion of the population affected as a specific factor of relevance.

In contrast to the first two articles, Article III takes a small-N approach. It takes a close look at two cases of change in DRR policy regimes, thereby shedding light on the crucial question of how change-inducing processes work – research urgently needed (Birkmann et al., 2010). We have learned much about barriers to change (Eisenack et al., 2014), but we know little about the mechanisms that help overcome them. Investigating how change took place in Fiji and Nepal does not just contribute to filling this empirical gap; it also offers answers to the wider *how* question. How did changes come to be over time despite adverse circumstances? My findings identify that continuous domestic leadership drives such processes forward, and that external influences like international regimes and organisations infuse the national sphere with ideas and solutions. The two cases examined suggest that the former (supported by the latter) is sufficient for change, whereas the latter is not. The evidence in both cases, however, bolsters the theory of focusing events – that extreme hazard events can catalyse or accelerate change if certain ideas are prevalent. Thus, Article III lays out potential pathways for change in more detail and with greater nuance.

These findings are of particular interest for development studies, since developing countries are often considered the least likely to adapt to disasters, due to the barriers and adverse circumstances they face (Berrang-Ford et al., 2011; Burton, 2009; Fankhauser & McDermott, 2014). While Article I could identify mixed results concerning compliance (i.e., advancements in DRR measures) in particular in developing countries, Article III shows how two developing countries overcame challenges and made substantial changes in their DRR policy regime against the odds. The article focuses on the role of enabling factors such as leadership and focusing events. Also through pressure and mechanisms of diffusion can international regimes and organisations provide important spurs for change in national DRR regimes. The nature of the political regime might also be significant for the processes and should be investigated further in future. It bears stressing that several developing countries

expanded their DRR efforts under the HFA. The factors identified in Article II and Article III can serve as the point of departure for further investigations.

Article I also makes an important theoretical contribution to political science, especially regarding international relations and international environmental regimes (IERs). Due to a shift in the institutional characteristics of said regimes, central concepts of regime effectiveness need redefining. While IERs of the past took hard law approaches – i.e., strong regulation based on the lowest common denominator, and with sanctions in case of non-compliance – recent IERs afford substantially greater leeway with regard to precision, obligation, and delegation. In light of the emergence of these environmental soft law regimes (including the Paris Agreement, the Hyogo Framework, the Sendai Framework, and Agenda 2030 with its Sustainable Development Goals), Article I offers a timely redefinition of past concepts for a changing context.

While participation and compliance are still essential for the effectiveness of an IER, these concepts have been adapted to the new institutional design. Soft law IERs no longer need ratification, so participation should be thought of as continued engagement with said regime. The previous understanding of compliance as rule-following behaviour becomes obsolete in a context of voluntary action; it can now be seen as change in behaviour aligned in line with and guided by the goals and targets of the IER. How far these reconceptualisations can travel beyond the context of IERs will be for future research to determine. However, they may serve as a basis for assessing all kinds of regimes and agreements when legal arrangements are weakened along one or more of the aforementioned dimensions of precision, obligation, and delegation.

The three articles do not just contribute to the literature separately; they also enable and complement each other. Article I sets the foundation for Article II, and it identifies one of the cases investigated in Article III. Article III shows that progress in Fiji did indeed materialise during this period, thereby confirming the reliability of the HFA's data, even in the case of extreme outliers.

Taken together, the articles paint a rich picture of human development in the area of disaster risk reduction, particularly between 2005 and 2015. With their distinct approaches – descriptive and conceptual (Article I), quantitative and explanatory (Article II), and qualitative and exploratory (Article III) – the three articles complement each other, providing valuable insights and contributing theoretically and empirically to the field. With its combined- or mixed-methods approach, moreover, this dissertation imparts methodological nuance to the research, by showing how these distinct approaches can complement each other and generate more holistic DRR studies. Article I and Article II

demonstrate that DRR research can indeed make use of global and large-N analyses. Article II and Article III illustrate how the different theories of change can be integrated, yielding valuable insights thereby.

In sum, without this threefold approach, it would not have been possible to provide such a comprehensive analysis of change and progress in DRR, or to answer the questions of *what*, *why*, and *how*. It is thanks to its variety of approaches and methods that this dissertation has been able to identify, investigate, and understand change and progress in this public policy area.

8. Conclusions

In an effort to support sustainable development, I have sought in the three articles to identify, understand, and learn from the progress – i.e., positive change – that has been achieved around the world in respect of DRR. Taken together, the articles do not just answer the *what*, *why*, and *how* questions regarding change and progress in DRR; they also provide a comprehensive analysis of the phenomenon and its development over time. They also suggest some wider implications and some avenues for future research.

Especially now, in light of the findings of the latest IPCC reports that we are not on track to limit climate change to recommended levels (IPCC, 2021, 2022) – although we may be able to limit warming to 2° C (Meinshausen et al., 2022) – research on adaptation to changing circumstances is essential. The collective action problem persists. Climate-mitigation efforts lag behind what is necessary and has been promised, and humankind continues on its way into an uncertain future. Scientists warn that we will reach and transgress tipping points in the near future – not all of which we fully understand – and irreversible consequences will follow (Lenton et al., 2019). In this scenario, our survival will depend on human ingenuity in adapting to changing circumstances. While (political) leaders will have to make crucial decisions in order to protect lives and livelihoods, researchers and scientists can help by giving advice and identifying possible ways forward. These include not just technical solutions, but also adaptations of socio-political structures and systems.

I believe our prospects for finding solutions will be best if we bring together perspectives, approaches, and theories from a wide range of disciplines and fields. Many scholars have called attention to the potential synergies resulting from combining sustainable development, climate change adaptation, and disaster risk reduction (e.g., Kelman, 2015; Lemos et al., 2016; Schipper & Pelling, 2006; Solecki et al., 2011). DRR is not just technical. It is also – based as it is on human and political decisions (Albrecht, 2017) – inherently social.

There is much to learn from applying theories beyond the context in which they were developed and for which they were devised. It can lead to major refinements of theories, and to the development of comprehensive ones. Careful attention must be paid to existing scholarship on similar phenomena in a

different context. Bringing theories together can enhance both our theoretical understanding and our empirical analysis.

For political science, there is a need to get rid of the artificial divide along ambiguous socioeconomic faultlines. Developing countries should figure more prominently in theory-building, beyond development studies and ideas of good governance. All societies are in constant flux and development, and some developing countries have been catching up (Assa & Kvangraven, 2021; Popov & Jomo, 2018). In future research, other characteristics than socioeconomic level – e.g., regime types – may be revealed as more important factors than GDP. Moreover, by increasing the number of cases and reconceptualising selection criteria, we may be able to refine theories and to adapt them to a wider spectrum of cases. That will bring us closer to a holistic and comprehensive theory of change – change in behaviour, processes, policies, institutions, and systems. Similarly, separate theories that emerge from the study of developing countries might be broadened, and more comprehensive theories formulated. DRR is just one of many areas where political theories can help make development more sustainable, and lives and livelihoods safer.

Continuing the work on reconceptualising adaptation (Wise et al., 2014), we can apply a variety of theories of change. This will enable us to see change in a different light, and to find ways to facilitate needed developments. For instance, marrying insights from the literature on adaptation with theories of change (these essentially look at similar processes) can provide much-needed synergies for both empirical analysis and theoretical advancement.

Whereas adaptation has long been understood in biological, anthropological, or technical terms as change in certain environmental conditions, its social aspects have recently come under scrutiny. Given changing climate conditions, increasing vulnerability, and the consequent need to adapt, this focus has become more and more pronounced. Scholars have pointed out many important elements and mechanisms that merit inclusion in the study of institutional development and change. These range from barriers to change (Adger et al., 2009; Birkmann & von Teichman, 2010; de Leon & Pittock, 2017; Dolšak & Prakash, 2018; Eriksen et al., 2015; Forino et al., 2015, 2017; Grothmann & Patt, 2005; A. Kenis & Mathijs, 2014; Mikulewicz, 2019; T. Mitchell & Van Aalst, 2008; Rivera, 2014; Rivera & Wamsler, 2014; E. L. F. Schipper et al., 2016; Scoville-Simonds et al., 2020) to adaptive capacity (Adger & Vincent, 2005; Wamsler & Brink, 2014). In particular, the concept of adaptive capacity may prove highly useful in the study of policy regime change, as indeed it already has in the study of collaborative governance (Emerson et al., 2012; Nabatchi et al., 2015). Scholars may thus be able to make more effective use of the theoretical literature on causal and constitutive

explanations, which provides us with a more universal vocabulary to talk about these changes in a variety of contexts (e.g., Ylikoski, 2013). The literature on adaptation, which has portrayed adaptation as a highly political matter (e.g., Eriksen et al., 2015), may in turn profit from paying greater attention to the political processes that shape development (e.g., Leftwich, 1995).

The empirical contribution of this thesis lies in its large-scale analysis. Its focus on the positive, moreover, has been rare in previous research, particularly where DRR and developing countries are concerned. We have learned much about shortcomings and barriers in this area, but we need to know more about how needed changes can be brought about. This dissertation shows that countries can achieve progress even in adverse circumstances. This finding can serve as a point of departure for future efforts at highlighting stories of success in the developing world. There is much we can learn about how these successes came about, and how they might be emulated elsewhere.

For DRR research, there is a need to zoom in on the implementation of changes. How do these actually materialise on the ground? The Global Network of Civil Society Organizations for Disaster Reduction (GNDR) has provided us with *Views from the Frontline*, with numerous reports, and with a database that can be used more in comparative or large-scale research in future (GNDR, 2009, 2011, 2013, 2019). Sendai data too will hopefully be useful at some point, thereby providing insights on developments in DRR beyond the HFA. Evidence suggests that leadership is key to achieving change, but we need more empirical data. What *type* of leadership is needed, for example, and from which actor?

What has become clear, once more, is that reducing disaster risk is not a singular effort. Many different actors fill the stage. DRR offers an important field in which to test theories of networks, collaborative governance, and the relationship between central and subnational units (White, 2011). Some research has started on how coalitions and networks affect DRR outcomes (e.g., Bodin et al., 2019; Bodin & Nohrstedt, 2016; Gazley, 2012). An unexplored ocean lies ahead of us for investigation. Modes and forms of network governance may figure centrally in future DRR research (P. Kenis & Provan, 2009; Nabatchi et al., 2015; Powell, 1990; Provan & Kenis, 2007). How do such networks operate under different regimes? What are their outcomes? How might they be of benefit for sustainable development and disaster risk reduction? Adaptive capacity is important to consider here, and it may need to be reconceptualised.

Research in this area is highly relevant, then, for achieving progress in human development. Efforts to make lives and livelihoods more sustainable may profit from insights into the drivers and mechanisms of change, into soft law

and international environmental regimes, and into possible ways to overcome barriers. Leadership and the diffusion of knowledge on the global level will doubtless be central.

However, while opportunities for future research are vast, time is limited. We need to learn from our strengths, our successes, and our best practices. Innovations will be needed to make development more sustainable, and lives and livelihoods safer. We must not hesitate, moreover, to utilise theories that have been developed for analysing similar but not identical processes. There is no need to reinvent the wheel! Borrowing and adapting such theories can generate synergies for both empirical investigation and theoretical advancement. Future researchers will do well to heed the call to study ‘positive deviants’ (Andrews, 2015) – i.e., cases of progress and success, where we do not see it or least expect to find them.

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