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Discussion: What disasters can tell us about governance for resilience and sustainability

A confluence of case-studies from New Zealand, Chile and the Netherlands
Chapter 6

Abstract

Disasters are disruptive events that overwhelm societies. Nevertheless, through their inherent shock effect, disasters also have the capacity to trigger changes. In this respect, disasters present an opportunity for innovations and enhancements of governance systems. Prevalent governance systems in society are often part of the reason why a hazard can grow into a disaster. This observation relates to the social factor in the creation of disasters that is nowadays widely recognized. In this article, we unpack the interrelationships between disasters and governance with the aim to obtain insights in how governance can both lead to, and/or exacerbate a disaster, and can be improved to ‘build back better’ after a disaster. We do this by exploring governance processes in three cases: 1) the post-earthquake recovery process in Christchurch, New Zealand, 2) governance processes in Chiloé, Chile, after the ISA virus in the salmon industry, and 3) governance of earthquakes caused by gas extraction in Groningen, the Netherlands. In all three case-studies, initiatives and forms of innovative governance are observed that can be the fertile ground from which transitions can grow. However, in reality these post-disaster transitions do only rarely occur. We conclude that an integral and inclusive understanding of disasters and governance can allow multi-level linkages between actors in different areas, which are needed to use disasters as a trigger for transitions to more resilient and sustainable societies.

Keywords: disasters; governance; institutions; innovation; transformation; case-studies
6.1 Introduction

For a long time, disasters were believed to be natural events. This belief is manifested in the focus of disaster scientists and practitioners on the biophysical and technical aspects of a disaster. However, in the last decades the understanding matured that disasters are just as much social constructs (Wisner et al., 2004). Social factors in the creation of disasters include aspects related to socio-economic vulnerability, politics, human capital, governance and culture, among others (Hilhorst, 2013; Usamah et al., 2014). Terms such as ‘social-ecological’ or ‘natural-technological’ (‘nat-tech’) disasters have been coined to capture the ‘social creation’ of disasters in its combination with natural, technological and social factors (Adeola, 2012). Yet, these hybrids, or – as we call them – socio-natural disasters, are still primarily analyzed from either a natural or social perspective (Scolobig and Pelling, 2016). Moreover, response to disasters is still considered mainly as “a matter of science, technology and the appropriate resources” (Hilhorst, 2013, p. 5), despite the fact that social and political issues are impossible to separate from natural and technical characteristics (Jones et al., 2016; Tierney, 2012). These interdependencies create a complex and uncertain reality that asks for integrated approaches to understand and deal with disaster governance processes (Becker, 2009).

Despite the physical destruction and socio-psychological damage caused by disasters, they present societies as well with an opportunity: governance innovations and the stimulation of transitions towards enhanced resilience and sustainability (Blackburn, 2018). Research by Adger et al. (2005) shows how the collective rethinking of recovery processes, from the prism of resilience and sustainability, can help to study disasters and to mitigate future disasters in a more integral way. Moreover, social experimentations in post-disaster recovery processes can stimulate a reconfiguration of governance relationships and modes of coordination between state and non-state actors on multiple levels. These sites of social experimentation can trigger the institutionalization of change at a larger scale (Mehmood and Parra, 2013; Olwig, 2012). In this article, we analyze the interrelationships between the role of governance and the entangled natural and social dynamics leading to the creation of disasters. Looking through multi-level governance lenses, we aim to contribute to debates on disaster governance, by investigating which forms of socially innovative governance contribute to post-disaster resilience and sustainability transitions.

There is a variety in types of disasters. The common understanding of a disaster in science and practice is reflected in the definition by the UNISDR (2018) as “a serious disruption of the functioning of community or society at any scale due to hazardous events interacting with conditions of exposure, vulnerability and capacity, leading to one or more of the following: human, material, economic and environmental losses and impacts”. This definition is broad and able to encompass a wide variety of disasters, yet it can also be criticized on various
grounds (e.g. Alexander, 2016). First, this definition refers mainly to sudden disaster events. However, processes such as soil erosion, environmental degradation and even climate change can also be regarded as disasters with a more gradual character. The slowly unfolding disasters are not explicitly part of this definition. Second, the definition is silent about differences or unevenness in the impact of disasters. As can be observed in current societies, disasters impact societies in an uneven way. The same disaster might mean a complete disruption for some people whereas others hardly have any damage (Bakema et al., 2017). Consequently, when a situation is not labelled as a disaster because it does not fit the general definition, the opportunity that a disaster can offer to be a trigger for change and improvement can be missed as well. As such, labelling a situation as a disaster appears to be fundamental. Political processes usually influence the choice of labeling (or not) a situation as a disaster. Heijmans (2013) describes this as disaster politics, or “the ways in which actors frame and explain disaster events, questioning who can be held responsible and how resources are allocated to whom, where and for what purpose after disasters hit” (p. 225). However, the designation of a situation as a disaster implies that emergency management and disaster governance systems have to be designed and installed. This implies a change in governance from a system of status quo to a crisis situation, including reshuffling of institutions, strategies and powers (e.g. Sarmiento et al., 2015). In this article, we investigate what disasters can tell about governance, in general, and about governance for resilience and sustainability transitions, in particular.

We explore disaster governance processes in three cases: 1) the earthquakes in Christchurch, New Zealand, in 2010 and 2011; 2) the Infectious Salmon Anemia (ISA) in the salmon industry in Chiloé, Chile, which caused a socio-natural disaster in 2007 and 2008; 3) the earthquakes that occur in Groningen, the Netherlands, since mid-2012 due to gas extraction. In all three disaster cases, the specifics of the disaster made that the institutions in place were overwhelmed by and/or not prepared for the particular kind and location of the disaster. The three cases also share the common characteristic that they trigger changes in governance, observed through the emergence of initiatives and innovative forms of collaboration and negotiation between different actors and institutions. Through a triangulation of the cases, we found that when a disaster situation is not labelled as such, there are no disaster forms of governance in place and no institutional structures that are necessary to deal with the complex situations. This can result in a lack of adequate governance response and of recognition of the scope of a disaster. Moreover, the institutionalization of change can be hindered, referring to the embedding of experiences of socially innovative post-disaster practices in prevalent governance systems in order to facilitate transitions. The investigation of these disaster governance processes provides insights in the interactions between various actors and their roles in disaster governance.
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After a theoretical consideration on the governance of disasters, social innovation, risks and disaster politics, our study is centered on the three disaster case-studies. We analyze the governance responses, as well as socially innovative practices, at different levels in the aftermath of the disasters. After presenting our empirical findings, we discuss these in relation to theory and draw conclusions on what we can learn from disaster contexts about factors that shape governance processes and that can trigger transitions towards greater resilience and sustainability.

6.2 Analyzing disaster governance for resilience and sustainability

Disasters are expected to increase in frequency and duration. Despite technological and scientific advancements in our understanding and prediction of hazards, societies are confronted with the consequences of climate change, vulnerability of societal groups, hazards and disasters (Stewart and Donovan, 2008). It is therefore important that societies develop the capacity to learn from past disasters to better prevent and mitigate future disasters. Since it has been argued that disaster situations can also trigger transitions, this section discusses three main theoretical contributions on mechanisms that influence the facilitation of transitions to more resilient and sustainable societies.

6.2.1 Multi-level, inclusive and innovative governance

Inclusive and innovative multi-level governance form the first theoretical contribution to post-disaster transitions. Societies impacted by a disaster often show their ability to adapt and to be innovative (Olwig, 2012). Social innovation refers to innovation in social relations to satisfy the (new) needs of different actors in society. This innovation can be initiated by public, private and/or civil society actors, and can take place at different spatial scales, from the local to the global level (Paidakaki and Moulaert, 2017). Combining the perspectives of social innovation and sustainability, Mehmood and Parra (2013) broaden the understanding of social innovation to the actions that (groups of) actors can undertake “in response to the problems of unsustainable practices and unsatisfied social needs while also focusing on the challenges of environmental degradation and climate change” (p. 53). As such, innovative governance practices can trigger transitions to more resilient and sustainable societies (Olwig, 2012). Consequently, it is important to have a governance system that is open to, and that allows, the embedding of new governance arrangements and modes of coordination. In such a governance system, experiences and experiments can be institutionalized to be scaled-up into wider governance improvements (Rotmans, 2005). Two capacities of these kinds of governance systems can be characterized: inclusive and empowering, and allowing for the main crucial aspects of resilience and sustainability (Blackburn, 2018).
First, multi-level governance is essential for inclusive governance. Inclusive governance refers to the inclusion of social engagement, capital building and participation in governance processes (Albright, 2015). These acts of engagement are nowadays acknowledged as highly important in disaster governance processes, notably as a step towards building enhanced resilience and sustainability (Davoudi, 2012; Tierney, 2012). In governance debates, there is a shift from governing mainly by state actors, to shared governance roles between a plurality of actors (Parra and Moulaert, 2016; Swyngedouw, 2005). This shift can also be observed in disaster scholarship. Disaster studies focus increasingly on disaster governance and disaster risk reduction with a sharing of governance roles between a range of both state and non-state actors prior, during and in the aftermath of disasters (Tierney, 2012). The underlying line of thought for shared decision-making and collaboration, is the importance of the integration of different kinds of knowledge in disaster mitigation and recovery processes (Gaillard and Mercer, 2012). Different actors and institutions on multiple levels have different kinds of knowledge and experiences related to both the natural and social characteristics of disasters. Multi-level interaction between these different actors is important for the integration of their knowledge and experience (Albright and Crow, 2015; Bakema et al., 2018a; Folke et al., 2005; Sarmiento et al., 2015). Moreover, when governance roles, responsibilities and powers are trusted to different kinds of actors, the integration of the variety of their sustainability aims in recovery processes that are offered in a post-disaster setting is more likely to succeed (Lechner et al., 2016; Lockie, 2016).

Second, resilience needs to comprise its three main elements of learning, adaptation and transformation (Bakema et al., 2018a; Pelling et al., 2015). Where adaptation only deals with change within the limits of a system, transformation goes a step further by describing processes and actions that are beyond the limits of adaptation (Pelling et al., 2015). Transformation can open “adaptive possibilities for organizations or individuals, either forced by systems failure or chosen in anticipation of collapse and movement to a novel social-ecological systems state” (p. 113-114). It therefore defines the shift to a “new” system. The shift forward presents the opportunity to reform former practices and regulations into more resilient and sustainable ones (Alexander, 2013). For sustainability, there is a prevailing focus on the economic and, to a lesser extent, on the environmental pillars of the concept, to the detriment of social sustainability (Parra and Moulaert, 2011). As for resilience, sustainability needs to integrally capture the three P’s of ‘people, planet and profit’ (Shove, 2010).

Nevertheless, we see a variety of obstacles in the reality of enabling post-disaster transitions. First, there remains a gap between emphasizing the importance of different kinds of knowledge and social engagement, and their actual integration in disaster governance (Gaillard and Mercer, 2012). As a consequence, knowledge and experiences obtained
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through, for instance, innovative post-disaster practices are not integrated in decision-making processes (Bakema et al., 2018a). Second, there is insufficient institutionalization of learning processes. For instance, knowledge and experience gained through innovative grassroots practices seldom lead to wider societal learning and transformation, because they are not scaled-up and embedded in an institutional system. Third, the vulnerability of some groups and the unequal distribution of wealth and power in societies constrain the access to important assets. The availability of financial resources, human capital, technology and political willingness are crucial factors in the implementation of sustainability aims in practice. Fourth, there is a lack of common understanding of what resilience and sustainability goals mean. Economic, environmental and social dimensions are central to sustainability. Yet, either the economic or the environmental pillar is often privileged at the expense of the social (Lockie, 2016; Parra, 2013). The same challenge of a lack of universal understanding is applicable to resilience. In disasters studies, resilience is often described as ‘bouncing-back’ to the pre-disaster state (Davoudi, 2012). However, bouncing-back after a disaster is not only impossible in practice, it also ignores the possibilities to transform to a better situation (Folke et al., 2010; Walker et al., 2004). Further acknowledging the social side of resilience, evidence from post-disaster recovery processes shows that resilience is mainly strengthened through the collective and often innovative actions of communities themselves (Imperiale and Vanclay, 2016; Kwok et al., 2016; Lechner et al., 2016; Paidakaki and Parra, 2018). Public knowledge and awareness about the risks that communities face influence these collective actions and the resilience of communities, as discussed below.

6.2.2 The role of risk awareness and risk acceptance in governance

Risk awareness, perception and acceptance form the second theoretical debate that influence transitions to more resilient and sustainable societies. Similar to regarding disasters as social constructs, risks can also be defined as socially created. Risks are influenced by a combination between the probability of hazards, techniques for disaster mitigation, and social, political and institutional factors (Birkmann and Von Teichman, 2010; Scolobig and Pelling, 2016). Contemporary societies are increasingly faced with a multitude and complexity of risks due to growing uncertainties and interdependencies between socio-natural processes. People that live in hazard-prone places are generally highly aware of the risks they face (Renn et al., 1992). High risk awareness often goes in parallel with high risk acceptance, particularly when disasters become normalized to people. As we know from communities living near volcanoes because of the availability of fertile soils, in for instance Indonesia, or in low areas exposed to typhoons in the Philippines, people with high risk awareness are also more likely to accept the risks they face (Renn et al. 1992; Usamah et al., 2014). Although we would assume from a disaster management perspective that high risk awareness and risk acceptance is a good combination for disaster risk reduction, it can in reality lead to problematic situations. In
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particular, high risk awareness as well as acceptance can lead to lower incentives to avoid, prepare for and increase resilience to disasters (Burningham et al., 2008; Howard et al., 2017). This might especially be harmful for stimulating incentives among different state and non-state actors for longer-term resilience and sustainability activities aims.

The risk awareness and risk acceptance of people is also influenced by the characteristics of a disaster. The cause of a disaster, and, specifically, whether a disaster is nature- or human-induced, determines to a great extent the public awareness and acceptance of it. In the case of human-induced disasters, disasters are not ‘normal’ events that occur regularly and/or traditionally. This makes public awareness of the risks for these kinds of disasters low, since people are not used to the potential threat. Moreover, an actor such as a private party can often be held responsible for the damage caused by a disaster. In these cases, the low public acceptance of the risks posed to them is exacerbated by the reality that people do not have the position nor power to influence political decision-making processes (Pelling and Dill, 2009; Van der Voort and Vanclay, 2014). These specificities in the kinds of disasters lead to the differences in risk awareness and acceptance for nature- and human-induced disasters.

6.2.3 The influence of politics in disaster governance

A third concept influencing post-disaster governance transitions is disaster politics. Politics plays an important role in risk awareness, acceptance, trust, and, more generally, disaster governance. Because politics is inherent to governance processes, and especially prominent in post-disaster situations, the influence of political processes in disaster governance is increasingly receiving attention (Heijmans, 2013; Lawhon and Patel, 2013; Maes et al., 2018; Patterson et al., 2017). Yet, politics not only influences post-disaster recovery processes, it is also inherent to perceptions, framing and trust building, among others. Disasters can therefore to a certain extent be regarded as political constructs (Warner, 2013).

In addition, people perceive disasters in very different ways; what for some people is a disaster, does not necessarily have to be a disaster for other people. These perceptions are formed by the physical impact of a disaster, which can be very different in different areas, on the one hand, and by the values and perceptions of people, on the other hand (Bakema et al., 2018b). Moreover, differences can often be observed between the framing and perception of a disaster on higher spatial scales and what people at the local level perceive and frame as a disaster. As Warner (2013) emphasizes: “not all major events are labelled catastrophe, and not all publicly declared catastrophes are major events” (p. 77). Political processes are thus on the basis of designating a situation as a disaster, since there might be interests to either push for the declaration of a disaster, or to hinder and discourage this declaration (Warner, 2013). For instance, “those seeking to break the
status quo” (Warner, 2013, p. 89) might encourage the labelling of a situation as a disaster, whereas others who do not want to have external help, and therefore to keep business-as-usual, act with reticence vis-à-vis the labelling. Even more so, the proclamation of a disaster or of an emergency situation might result in a governance reconfiguration giving extraordinary powers to the state. Although these powers are considered to be necessary for planning in a crisis situation, they can also lead to dismantling of civil rights and neglecting inclusive planning procedures (Alexander, 2016). Consequently, how a disaster is perceived and framed significantly influence the kind of governance response (Renn, 2008). In the next sections, we will explore these political dynamics and innovative post-disaster governance practices in three disaster cases.

6.3 Methodology

Several forms of qualitative data collection form the basis of this article. The case-study on Christchurch was conducted during two periods of fieldwork in New Zealand in late 2012 and early 2014, in which we conducted forty in-depth interviews. The interview respondents consisted of officials from the central government and various local municipalities, private sector entrepreneurs and representatives of community and civil society organizations. In the case of Chiloé, we conducted 37 interviews late 2014 and mid-2015 with respondents from various levels of government and different government departments related to the salmon industry. Also, we interviewed representatives from salmon companies and from various NGOs engaged in social and environmental issues. For the case of Groningen, we interviewed twelve actors involved in the gas extraction and earthquake related issues mid-2016. Our respondents in the case of the Netherlands consisted of officials from all levels of government (central, provincial and municipal), representatives from the private sector, civil society organizations and other interest groups. We used prior informed consent in all in-depth interviews, which were recorded, transcribed and open-coded in order to obtain an accurate and complete understanding of the data. Appendix 6.A shows a full list of interview respondents. In addition to in-depth interviews, we conducted participant observation in all cases. We attended and participated in several community meetings organized by the government or research institutes, workshops and other formal and informal community activities. Furthermore, we consulted and analyzed multiple secondary sources, including plans and strategies for the recovery and future development of the places, among other relevant documentation.
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6.4 Results: Change and lock-in for resilience and sustainability in three disaster cases

In this section, we explore what the cases of Christchurch, Chiloé and Groningen can tell us about governance for resilience and sustainability. In the three case-studies we could observe innovative governance practices in response to the disasters. From theory, these signs of experimentation are said to be triggers for transformation on a wider scale. In the three case-studies discussed, we will explore if the post-disaster governance practices can indeed grow into more systemic transitions towards enhanced resilience and sustainability.

6.4.1 Post-earthquake governance in Christchurch

New Zealand is a highly active tectonic country where natural hazards are not rare. The earthquakes in the province of Canterbury, located close to its capital city Christchurch, however, occurred very unexpectedly. People expected a big earthquake to happen in the capital city of Wellington, but were not aware of the active tectonics of the fault lines close to Christchurch. In September 2010, the first earthquake with a magnitude of 7.1 on the Richter scale caused a big shock to the city and surrounding regions. The earthquake caused a lot of material damage, but there were no casualties. The local government (municipalities) was consequently the main responsible for the reconstruction. Although people and experts in Christchurch expected earthquakes in other parts of the country, they did not prepare for an earthquake in their city. So, the awareness of the risk of earthquakes was rather low at the time of the first earthquake. Half a year later, the city was again shocked by a strong earthquake with a magnitude of 6.3. Despite the lower magnitude of this earthquake, its epicenter was closer to the city center and at a shallower depth, causing much damage and 183 casualties. The second earthquake and over a thousand aftershocks disrupted the lives of many people. Moreover, it resulted in the decision of the central government to declare an emergency situation for the city and surrounding region. As a consequence, the central government set up a special central government ministry to lead the recovery of province of Canterbury, the Canterbury Earthquake Recovery Authority (CERA) (based on respondents from CERA, Christchurch City Council and Lincoln University, 2012 & 2014).

After the state of emergency management in the aftermath of the second earthquake, the responsibility to lead the recovery process of the wider Christchurch area was given to the central government ministry CERA that had to collaborate with the local government. A few months after the February earthquake, the Christchurch City Council organized the public participation project ‘Share an Idea’. Many people participated in this co-creation event and shared ideas for the future of their city. The event was regarded as innovative, since people could participate in many different, virtual and new ways in the recovery
process at a very early stage when there was not even a rough draft of a plan for recovery. 106,000 ideas were raised that served as input for drafting the Christchurch Central Recovery Plan, which was later transformed by CERA into the final recovery plan. Whereas our respondents stated that people in the city were very happy about the draft of the plan and the innovative ways in which they could participate in the preparatory phases of the plan, dissatisfaction emerged as they observed that CERA did not act inclusively during the phase in which the final version of the plan was produced. Citizens believed that CERA concentrated too much power and that their voice and ideas were not really integrated in the final plan (based on respondents from CERA, the Christchurch City Council and civil society organizations, 2012 & 2014).

The ways in which the state institutions involved the public in the recovery process did, consequently, not meet the needs and expectations of those willing to participate more actively. Hence, the citizens of Christchurch took the leadership in organizing different kinds of initiatives themselves. Groups such as ‘Gap Filler’ – that literally filled the empty spaces in the city left by the destruction caused by the earthquakes – and ‘Greening the Rubble’ organized many innovative, cultural and creative activities, such as urban gardens, open air cafes and a shopping mall in sea containers. The aim of these civil society initiatives was to make people feel part again of their city under transformation, to give people a voice in the recovery process, and to bring life back to the city center (based on respondents from e.g. Gap Filler, Greening the Rubble and the Christchurch City Council). Moreover, through the processed leading to the implementation of these various projects, they increasingly became a group of actors with an appreciated role in the governance system and a more official partner to the government. People in community organizations also directed their activities to the post-earthquake recovery, by initializing activities in their neighborhoods. The different ways in which people in Christchurch organized themselves, besides the response from the state to set up the special government ministry CERA, show the value of allowing different forms of top-down steering and bottom-up initiatives in post-disaster governance (based on respondents from Gap Filler, Greening the Rubble and civil society organizations, 2012 & 2014).

6.4.2 Governance of the ISA-disaster in the salmon industry in Chiloé

The archipelago of Chiloé in the south of Chile hosted for a long time a community of artisanal fishermen, and wood and wool craftspersons. This changed in the 1990s when the first salmon farms were introduced in the inner sea between the islands and the mainland of Chile. The optimal biophysical and geographic characteristics of the Chiloé region for the production of Atlantic salmon positioned Chile as the world’s second biggest salmon exporter. In addition, the salmon sector grew to the second biggest industry in Chile. The market-oriented regime of Chile under Pinochet, with few environmental and social regulations, provided an ideal context for the salmon industry to grow. The industry
created job opportunities for the local population and contributed to the transformation of a traditional society into a more modern one (based on respondents from research institutes, SERNAPELCA and NGOs, 2014 & 2015).

The year 2007, however, marked the end of the heydays of the salmon industry. This was caused by the outbreak of the Infectious Salmon Anemia (ISA). The virus led to a very high fish mortality, forty percent production decline and loss of 10,000 jobs. High unemployment and lack of income alternatives generated a socio-economic crisis in Chiloé and beyond. To control the spreading of the virus and future disease outbreaks, the salmon companies chose to intensively use antibiotics and other chemicals. This led to very high levels of pollution and degradation of the sea and other ecosystems. Consequently, where the ISA disaster was first primarily regarded as a biological virus, gradually it was understood as a socio-economic and environmental disaster by local people and (international) NGOs. The ISA disaster reflects the limits of an extractive industry by highlighting that corporate interests in financial benefits resulted in the overexploitation of nature. On top of that, there were and still are hardly any regulations to control the salmon companies, and the state has low willingness and courage to constrain the production space and power of the companies (based on respondents from Intesal and research institutes, 2014).

In a way, the socio-natural disaster in Chiloé uncovered socio-institutional fragilities that led to the situation in which this disaster could grow. Moreover, the ISA disaster revealed that the persisting belief in and resilience of bio-technological solutions hindered wider changes and improvements of the governance system, as there were no real institutional changes in the governance set-up. The ISA disaster did, however, trigger the installation of *La mesa del salmon* [The Salmon Table]. This new, temporary, institution brought companies and the government together, to discuss potential solutions and negotiate new regulations to control the production of salmon and the practices of companies in their use and transformations of the various concerned ecosystems. The Salmon Table mainly gave attention to biotechnological solutions, yet some governance changes were introduced as well. For instance, local governments were given larger capacity to control the salmon companies in their production practices. Moreover, the ISA disaster led to the call among consumers and NGOs for sustainable and responsible food and food production. In order to acquire a label, such as ASC (Aquaculture Stewardship Council), companies had to comply with cleaner, greener and more socially responsible production rules. However, a further institutionalization of these incremental changes and new initiatives – from both the local people, the state and companies – is needed to trigger transformation of the salmon industry and wider society in a more fully resilient and sustainable direction (based on respondents from NGOs, Salmon Chile and Aqua Chile, 2014 & 2015).
6.4.3 Governance of gas-quakes in Groningen

In Groningen, gas extraction takes place since 1963 and is conducted by the Nederlandse Aardolie Maatschappij (NAM) [Dutch Oil Company], a joint venture of the oil companies Shell and Exxon Mobil. Every five years, the Dutch government agrees upon the amount of gas that the NAM can extract and has to deliver for the Dutch market and for export. This makes the Dutch government and society highly dependent on the Groningen gas (Van der Voort and Vanclay, 2014; interview respondents from the NCG and local municipalities in Groningen, 2016). In the first decades of the gas extraction, people in Groningen regarded the gas with pride and the industry provided a lot of direct and indirect employment to the area (interview respondents from the Groninger Bodem Beweging and Stichting Groninger Dorpen, 2016). However, the other side of the coin started to be revealed in the last decade. There was increasing evidence for soil subsidence and, in August 2012, the first ‘big’ earthquake with a magnitude of 3.6 near the village of Huizinge occurred. This earthquake is regarded as the turning point in the success of the gas extraction in the North. Although the earthquakes in Groningen are relatively of a low magnitude, compared to the earthquakes in other parts of the world, they do cause damage as the built environment is not constructed according to seismic standards. Earthquakes do not occur naturally in the north of the Netherlands and, moreover, the epicenter of the earthquakes lies at a much shallower depth than earthquakes induced by movements of tectonic plates (based on respondents from the NCG and the Groninger Bodem Beweging, 2016). The situation in which the relationships between companies and the government are very much interwoven, and whose interests are perceived to be different than those of the local people, leads to many tensions. These tensions are mainly fed by the long denial of the causality between the gas extraction and earthquakes by the NAM and the Dutch government. Moreover, the damage assessments of the properties of people led to widespread societal frustration and stress, as people did not trust the damage assessments that were conducted. This distrust was worsened by the persisting and non-transparent entanglement between the Dutch state and the NAM (based on respondents from the NCG and local municipalities, 2016; Brandsma et al., 2016).

There are several new, and rather innovative, governance practices in the earthquake situation in Groningen. One of the institutions set up to regain trust in the government, was the Dialoogtafel [Dialogue Table]. This table was aimed to provide a structured opportunity and obligation to all stakeholders to meet and discuss on a regular and equal basis, and to be at the front of decisions. It consisted of representatives of the NAM, the Ministry of Economic Affairs, the local mayors, the province and a variety of civil society organizations, such as interest organizations for agriculture, monuments and the Groninger Bodem Beweging [Groninger Ground Movement]. This latter organization was set up specifically to represent the citizens affected by the gas extraction in the region. As such, the table was an innovative governance form to deal with the situation. However,
the table ended after a year, mainly because the members from the public sector – the Ministry, province and to a lesser degree the municipalities – were not used nor able to such an innovative form of governance (based on participants of the Dialoogtafel and NCG, 2016).

Citizens and the state increasingly realized that there was a need for an institution with a bigger mandate and more power to lead the processes. So, the central government installed the Nationaal Coördinator Groningen (NCG) [National Coordinator Groningen]. Not being an institution with a formal recognition in law and democratic structures, the NCG did not have many powers. Instead, its aim was to coordinate the earthquake related processes, including public, private and civil society actors and institutions. Some interview respondents argued in this regard that more power needed to be given to the NCG to make the necessary decisions and to discuss and negotiate with the Ministry and the NAM (based on respondents from the province of Groningen, the Groninger Bodem Beweging and the Dialogue Table, 2016). However, the position of the NCG as part of the Ministry of Economic affairs complicates the situation; the NCG cannot be completely independent as long as it is part of the Ministry of Economic Affairs, since this same Ministry also has an interest in the continuation of the gas extraction for energy supply and export revenues. These interrelationships between the state and private companies can be blamed for hindering a transition towards a more resilient and sustainable situation. The question can be raised whether these entangled interests also influence the still pending designation of the situation as a disaster.

6.5 Discussion: Multi-level and multi-actor disaster governance

In the three cases-studies of this research, a disaster unfolded due to the overwhelming impact of the disaster on society. Although the three disaster cases were located in rather well-developed countries according to international institutional development standards\(^\text{17}\), this apparently does not mean that having well-developed institutions is enough, nor that the institutions are necessarily suited and equipped to prevent or deal with all kinds of disasters. Moreover, post-disaster processes can trigger innovative governance practices, but when there is no institutional system that can allow the institutionalization, embedding and durability of these processes of experimental learning, more systemic transitions might be hindered.

\(^{17}\) International institutional development standards from for instance the UN Development Index, the OECD, Social Development Indicators and the Food and Agriculture Organization (FAO).
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Building on the insights from the case-studies of this research, we can distill four elements that influence the creation of a disaster: (socio-political) institutions, (technical) expertise, the type and place of a disaster (see also table 1.1 in chapter 1 of this PhD thesis). Following from this, the ingredients to prevent, prepare for, and – if necessary – cope with, and learn from disasters are present in all three disaster cases. However, all four elements are needed for preventing that a disaster is created and for consequent appropriate disaster governance. As such, the lack or insufficient capacity of one element can lead to the malfunctioning of the whole governance system. More specifically, in the Christchurch case, New Zealand as a country has highly advanced technical expertise in dealing with for instance earthquakes, but no such event was expected in Christchurch. In the case of Chiloé, Chile has a lot of technical expertise in typically natural hazards, yet expertise in bio-environmental disasters is limited. And in the case of Groningen, the Netherlands has advanced technical expertise in water-related challenges, but little or no expertise in addressing earthquakes as no such a disaster was expected.

Moreover, whereas the earthquakes in Christchurch are induced by natural processes and exacerbated by human actions, the disasters in Chiloé and Groningen are both induced and exacerbated by human activities. This has an influence on the risks associated to human-induced disasters, which are often much less accepted than the risks posed by nature. In Christchurch, however, the frustration and lower acceptance of the risk is directed to the governance of the earthquakes. Whether disasters are induced by nature or human actions consequently influences the awareness and acceptance among people of the risks they face (e.g. Birkmann and Von Teichman, 2010; Renn et al., 1992). Nevertheless, whether it should differ for the disaster governance response is a debatable question.

In terms of governance and modes of coordination, the disaster situations revealed socio-institutional mistakes that led to the situation in which a hazard could grow into a disaster. For the role of the government, in the case of Christchurch, the earthquakes overwhelmed the local government to such an extent that a different governance structure was enacted. CERA was set-up in Christchurch as a central government ministry to lead the recovery process, and was by many people regarded as too powerful. In Groningen, the NCG was set up as central government agency to coordinate the activities between the different levels of government, yet this institution is by many people perceived as powerless. Although the new governance structure in Christchurch with a special authority leading the recovery brought its own problematics, the need for unconventional governance in this other-than-normal situation was widely understood. In the cases of Chiloé and Groningen, however, labeling the situation as a disaster was not that straightforward. Consequently, a governance structure for dealing in a more optimal way with the scope of the problems was not installed. The knowledge that the problems are human-induced might lead to the assumption that these disasters can be controlled and managed by
people. Moreover, affected people and governments at the local level argued that the scope and intensity of the material, environmental and mental damage that the ISA disaster and gas-earthquakes caused, were disregarded for a too long period of time. As a result, the disasters were mainly governed according to business-as-usual modes, and lacked disaster governance structures required to institutionalize the learning processes that were obtained through the post-disaster governance practices (e.g. Howard et al., 2017; Sarmiento et al., 2015; Warner, 2013).

In terms of the civil society, people in all three cases felt that they did not have a voice in decision-making processes. After/during the three disasters, the frustration among people was mainly driven by the ways in which decisions were made by the (central) state and private institutions. The difficulty to participate in decision-making processes directly influenced the trust among people in the governance system. People argued that the government gave limited acknowledgement to the value of local knowledge, reduced room for public participation and rather dis- than encouraged the initiatives they wanted to implement. Driven by this experience, local people and NOGs organized themselves and experimented with new governance arrangements and platforms for participation. A more extensive devolution of governance roles, responsibilities and powers to local government levels, (small) businesses and the local civil society would therefore help to stimulate a governance reconfiguration from which a more resilient and sustainable system can grow.

6.6 Conclusions: What disasters can tell us about governance for resilience and sustainability

In our research, we investigated the roles of state actors, the private sector and the civil society in governance responses to different kinds of disasters. We did not limit our research to rather ‘traditional’ ‘natural’ disasters, but also investigated disasters that relate to the broadened definition of the concept. More specifically, we analyzed governance processes of nature- and human-induced, and of sudden and more gradual kinds of disasters. We found that the (socio-political) institutions in the three cases were prepared for different kinds of disasters, or in different places than the ones that actually occurred. This made the (technical) expertise for dealing with disasters inadequate and insufficient. Based on our findings from the disaster cases combined with theoretical insights on disasters, governance, social innovation, risk, resilience and sustainability, we can argue that labelling a situation as a disaster might sometimes be needed to install governance systems that are more optimal to deal with a disaster situation. In this way, a disaster could be used to transition to a reconstruction with resilience and sustainable development as goals. However, the declaration of a particular situation as a disaster is a highly political
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decision, directly influencing the installment (or not) of an ‘other-than-normal’ governance mode of coordination.

The case-studies analyzed in this research showed how disasters introduced important transformations in governance. Some of these changes can be qualified as innovative, especially when new sites of experimentation and learning were born and led by ‘on the ground’ groups with a resilient or sustainable post-disaster transition goal. There are, however, also processes that might limit the possibility to use disasters as opportunities for change. First, the contemporary definition of a disaster, combined with political underpinnings in processes to designate a disaster as such, might lead to a situation in which the labelling of a disaster does not take place. Second, resilience of some parts of a system can hinder resilience of other parts or subsystems. For instance, a persisting belief in technological solutions to control nature can hinder wider governance changes and transformation of a system. Disasters, nevertheless, have the potential to uncover institutional mistakes that are hidden in normal situations. These aspects often reflect realities that contributed to the unfolding and exacerbation of the disaster, and that can also trigger changes in these realities. An adequate identification of the causes, underlying mechanisms of the causes, and consequences of disasters, is therefore needed to assess a situation on its ‘disaster characteristics’ and whereas this calls for different forms of governance than in a normal context. The different – often innovative – governance practices, generally carried out by local level actors and institutions, can stimulate a wider societal transformation as well.

Although they do not directly fit in the definition of a disaster of the UNISDR, the disasters in, for instance, Chiloé and Groningen can be regarded as a slow-onset disasters. Disasters highlight that governance in times of disaster, as well as in normal times, takes place through multi-level interactions. Instead of regarding situations as normal and keeping status quo governance structures, disaster governance roles for state, market and citizens can trigger and enable transitions. In particular, collaboration and shared decision-making roles for all levels are needed to institutionalize learning processes into wider resilience and sustainability transitions. Linkages and bridges between top-down and bottom-up governance actions and the representation of the local level are therefore important. Moreover, an ongoing dialogue between different state, private and civil society actors enables and maintains mutual trust in normal times, but especially in disaster times. The importance of trust is often underestimated, but when public perceptions lead to distrust in state actors, it can undermine the governance system. Trust among state actors, the private sector and the civil society is crucial and needs to be pertained or restored through independent, inclusive and transparent governance processes. This might help societies in embracing the opportunities for innovative governance to foster and institutionalize resilience and sustainability transitions.
Chapter 6

References


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Paidakaki, A. and Moulaert, F. (2017). Disaster resilience into which direction(s)? Competing discursive and material practices in post-Katrina New Orleans. *Housing, Theory and Society*, 1-23.
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Appendix 6.A. List of interview respondents

A.I Christchurch case-study

<table>
<thead>
<tr>
<th>Stakeholder group</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public sector</td>
<td>Members of Parliament (MP), Canterbury Earthquake Recovery Authority (CERA), Christchurch City Council (CCC), Waimakariri District Council, Stronger Christchurch Infrastructure Rebuild Team (SCIRT), Environment Canterbury</td>
</tr>
<tr>
<td>Private sector</td>
<td>Company Boffa Miskell, architecture company, Enterprise North Canterbury</td>
</tr>
<tr>
<td>Civil society and NGOs</td>
<td>Gap Filler, Greening the Rubble, Life in Vacant Spaces, CanCERN, WeCan, Canterbury Business Leaders Group, Sumner community organization, Mount Pleasant community organization, ReNew Brighton, ReBuild Christchurch, Avon-Otakaro Network, Aranui community organization, Lyttleton community organization</td>
</tr>
<tr>
<td>Research</td>
<td>Lincoln University, University of Canterbury, Landcare Research</td>
</tr>
<tr>
<td>Other</td>
<td>Independent journalist</td>
</tr>
</tbody>
</table>
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A.II Chiloé case-study

<table>
<thead>
<tr>
<th>Stakeholder group</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public sector</td>
<td><strong>Servicio Nacional de Pesca (SERNAPESCA, local and regional)</strong> [National Service of Fishery], <strong>Servicio Evaluación Ambiental (SEA)</strong> [Service of Environmental Evaluation], <strong>Corporación de Fomento de la Producción (CORFO)</strong> [Corporation for the Development of Production], <strong>Oficina Nacional de Emergencia del Ministerio del Interior y Seguridad Pública (ONEMI)</strong> [National Office of Emergency of the Ministry of Internal Affairs and Public Safety]</td>
</tr>
<tr>
<td>Private sector</td>
<td><strong>Instituto Tecnológico del Salmon (INTESAL, Salmon Chile)</strong> [Technical Institute for Salmon], Salmon Chile, Aqua Chile, Los Fiordos, <strong>AC Taller de Redes</strong> [firm producing nets], Marine Harvest, Polychem, Kaji</td>
</tr>
<tr>
<td>Civil society and NGOs</td>
<td><strong>Observatorio Laboral y Ambiental de Chiloé (OLACH)</strong> [Observatory for Labour and the Environment of Chiloé], <strong>El Canelo de Nos, Centro de Estudio y Conservación del Patrimonio Natural (CECPAN)</strong> [Center for Research and Conservation of the Natural Heritage], <strong>Confederación Nacional de Trabajadores del Salmón (CONATRASAL)</strong> [National Confederation for Salmon Workers], Ecoceanos, WWF, Fundación Terram</td>
</tr>
<tr>
<td>Research</td>
<td><strong>Universidad Católica de Chile, Universidad de Los Lagos, Universidad Austral, Instituto Nacional de Estadísticas</strong> [National Institute for Statistics], <strong>Universidad Metropolitana de Ciencias de la Educación, Centro Nacional de Investigación para la Gestión Integrada de Desastres Naturales (CIGIDEN)</strong> [National Research Center for the Integrated Management of Natural Disasters]</td>
</tr>
<tr>
<td>Other</td>
<td><strong>Comisión Económica para América Latina y el Caribe (CEPAL)</strong> [Economic Committee for Latin America and the Caribbean], <strong>Tercer Tribunal Ambiental</strong> [Third Environmental Court], Regional Museum of Ancud, Consensus Building Institute</td>
</tr>
</tbody>
</table>
### A.III Groningen case-study

<table>
<thead>
<tr>
<th>Stakeholder group</th>
<th>Organization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public sector</td>
<td><em>Gemeente Loppersum</em> [Municipality of Loppersum], <em>Gemeente Delfzijl</em> [Municipality of Delfzijl], <em>Provincie Groningen</em> [Province of Groningen], <em>Nationaal Coördinator Groningen (NCG)</em> [National Coordinator of Groningen] (central and local)</td>
</tr>
<tr>
<td>Private sector</td>
<td><em>Nederlandse Aardolie Maatschappij (NAM) &amp; Shell</em> [Dutch Oil Company &amp; Shell], <em>Centrum Veilig Wonen (CVW)</em> [Center for Safe Living], Economic Board Groningen</td>
</tr>
<tr>
<td>Civil society and NGOs</td>
<td><em>Groninger Bodem Beweging</em> [Groninger Ground Movement], <em>Stichting Groninger Dorpen</em> [Foundation of Villages in Groningen]</td>
</tr>
<tr>
<td>Public, private sector &amp; civil society</td>
<td><em>Dialoogtafel</em> [Dialogue Table]</td>
</tr>
<tr>
<td>Research</td>
<td><em>Katholieke Universiteit Leuven</em> [Catholic University of Leuven]</td>
</tr>
</tbody>
</table>
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