Master Thesis

Adaptation and resilience after Hurricane Katrina and Hurricane Sandy: The Shortcomings of the Multiple Streams Approach in Explaining Policy Change after Natural Disasters: A Complementary Congruence Analysis

MSc International Public Management and Policy
Faculty of Social and Behavioral Sciences
Erasmus University Rotterdam

By: Cécile Reinkingh | 510554
First Reader: Dr. Asya Zhelyazkova
Second Reader: Dr. Michal Onderco

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Abstract

Climate change increasingly affects all regions around the world. The subsequent increased frequency and intensity of natural hazards poses risks to societies that have not yet adapted to this new reality. Hurricane Katrina and hurricane Sandy have served as examples for the importance and urgence of adaptation measures and simultaneously showed the importance of international communication when combatting these issues, as areas struck by change often lack resources to prepare and prevent for future events. Therefore, this research paper focuses on local impact of natural hazards but looks further than just local drivers of policy change, discovering international influences driving policy change. Although this master thesis tries to address this problem from a public administration perspective, it emphasizes the importance of a holistic, multidisciplinary approach in such matters.

This paper thus seeks to create a complementary framework that explains policy change after natural disasters. It does so by applying the two theories of policy change that are assumed to have explanatory value in the case of policy change after hurricane Sandy and hurricane Katrina. The Multiple Streams Approach (MSA) and theory of policy transfer are used, both theories provide tools to analyze policy change, but singly seem insufficient to provide a comprehensive explanation of policy change after natural disasters. Whereas the Multiple Streams Approach has significant explanatory power for policy change, it fails to incorporate the importance of international knowledge which has become essential for creating resilience to climate change. Therefore, this research paper compares the explanatory power of both theories and seeks to solve the gaps in the Multiple Streams Approach (MSA) with results and insights provided by theory of policy transfer.

"Scientific knowledge is as much an understanding of the diversity of situations for which a theory or its models are relevant as an understanding of its limits."
— Elinor Ostrom, Governing the Commons

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Chapter 1: Introduction

Why do policies change after natural disasters? Does their impact cause more attention for the flaws in the status quo? Do people seize the opportunity by redirecting their resources to gain attention for their preferred solutions, or does growing scientific evidence and (international) experience stimulate policy makers to adapt their policy frameworks? These questions become increasingly relevant concerning the growing impact of climate change and the need of decreasing vulnerability and exposure of amongst others coastal (urban) regions. Climate change has a direct impact on hurricanes and floods, which are driven by warmer sea surface temperatures, sea level rise and coastal surges (Center for Climate and Energy Solutions, sd). Natural hazards pose a great risk for human beings worldwide, enforced by the often-low level of climate adaptation and resilience. Therefore, there is a pressing need for increased resilience through sustainable solutions and climate adaptation policies. Unfortunately, affected areas often lack expertise and resources to create and implement policies that could solve these problems. Multiple cases like this have appeared in the United States, where reliance on federal response and consequent bureaucratic restraints have made it hard to shift to adaptive policies on state and local level. This has caused many problems that have repetitively been blamed on the Federal Emergency Management Agency (FEMA), while disaster risk management would likely be more successful in response and preparation, when being a task and responsibility of the entirety of federal, state, local, tribal and territorial organizations and also public-private partnerships, rather than just FEMA (Atkin, 2018). The transboundary and indiscriminate nature of natural disasters may cause them to strike a wealthy country, but the burden of recovery is often carried by the poor, driven by large economic losses (Mathew, 2007). Therefore, the need for resilient and tailor-made solutions is higher than ever. Together with the urge of the problem, the growing acknowledgement of natural disasters being caused by human activities has stimulated the search for new ways of policymaking. Since a couple of decades, we see a growing trend in international information sharing that contributes to climate adaptation, accompanied by an increasing popularity of evidence-based policy making (Minkman, van Buuren, & Bekkers, 2018). Examples hereof are the creation of the C40 network, the Climate Change Initiative (CCI) and multiple pathways of information sharing through international organizations like the United Nations. A remarkable phenomenon in this 'new' way of policymaking and sharing is Dutch expertise in flood control, which is increasingly exploited and used in other places prone to water-related problems. In *The Water Will Come: Rising Seas, Sinking Cities and the Remaking of the Civilized World*, Jeff Goodell

puts it as follows: the Netherlands is currently one of the most innovative and reliable sources in terms of water management which they are now "exporting around the world: wherever there is a city at risk of flooding, you'll likely find a Dutch engineer offering – or, just as often, selling – a solution" (Goodell, 2017, p. 295). The active spread of policy ideas like these is becoming more popular due to the increased popularity of evidence-based policy making (Minkman, van Buuren, & Bekkers, 2018; Legrand, 2012). To understand the corresponding processes, it must be investigated how governments, cities and local communities approach the problem of natural disasters and how and why policy change occurs. In this thesis, the process of policy change after natural disasters will be investigated by assessing two famous cases of natural disasters: Hurricane Katrina and Hurricane Sandy that respectively hit the United States in 2009 and 2012. The following two subparagraphs will discuss the problem statement and the research aim and question, after which the social and theoretical relevance of the research will be discussed. This chapter is concluded by an oversight of the structure of this thesis.

1.1 Problem Statement

The growing impact of natural hazards due to climate change asks for more research on how affected areas can respond and prepare for future hazards. To determine this, it is necessary that insight is gained in the process of changing policies and adaptation after past cases of natural disasters. Existing theories on policy change can hereby help, as they can provide a framework to explain how natural disasters led to policy change in these cases, which actors were important, how these policies were supported and what techniques were used to promote and implement these policies. It is highly likely that this research will tap into the different interpretations of natural disasters and their relation to climate change, which can be quite an influential obstruction to the level of policy change. The model of Multiple Streams Approach has been successfully applied to countless cases in order to explain policy change and it is therefore safe to assume that this model will have explanatory value for this paper. However, the growing interconnectedness between governments together with and due to growing global problems asks for international cooperation. Consequently, the standard application of the Multiple Streams Approach that only considers "domestic policy-agenda settings in conditions of high ambiguity" seems insufficient to provide a comprehensive picture of policy changes after natural disasters (Lovell, 2016, p. 754). Therefore, this thesis additionally tests the explanatory value of policy transfer theory. As a relatively new theory, limited research so far has been done on this specific issue, thus little evidence exists on what theory has the most explanatory power for policy change after natural disasters. Although this is a rather optimistic

aim due to the abundance of theories on policy change, testing the explanatory power of two theories provides a starting point for future research.

1.2 Research Aim and Question

By assessing two cases, this research paper tries to create a comprehensive explanation of policy change after natural disasters. The cases that will be studied in this paper are hurricane Katrina and hurricane Sandy, who struck the United States respectively in 2005 and 2012. These cases were picked deliberately because they both happened in the United States, which enables one to draw comparative conclusions over changes in government attitudes, contributing to the answer of the research question. Also, timewise this decision seems appropriate, as they did not happen too short after each other and thus one can incorporate influences on policy change such as Zeitgeist, national mood and political framework but also changes internationally in policies towards the topic of climate change. The explanatory value of the Multiple Streams Approach and policy transfer, eventually trying to create a comprehensive approach. In doing so, this thesis will point out the scope of the theories by testing where new policies come from and the incentives behind them. Also, this research aims to establish what actors are most important in this process as explained by the two different theories and which explanation is most comprehensive. This will lead to an answer on the following research question: *What theory best explains policy change after natural disasters?* This research paper uses congruence analysis and a complementing theories approach, testing two theories and four hypotheses. The technicalities will be further explained in chapter 3: methodology and research design.

1.3 Societal and Theoretical Relevance of the Research Question

This research helps to better understand the incentives behind policy change after natural disasters. Whilst climate change and natural hazards are interdisciplinary matters, this research aims to shine light on the public administration efforts behind changes in resilience and adaptation. The theoretical relevance of this research lies in its aim to synthesize the Multiple Streams Approach and policy transfer, or, at least, complementing the weaknesses of one theory with elements of the other (Lehnert & Wonka, 2007). While this specific combination of theories has been hinted upon before (Lovell, 2016), the application of this analysis to policy change after natural disasters provides an application to a new empirical domain (Lehnert & Wonka, 2007). The results of this thesis are important for future research on policy change as it will be clearer what factors should be taken into consideration and which actors should receive more attention than others when analyzing policy change after natural disasters.

As for the societal relevance of this research, one of the effects that this research might have is on policy makers and policy entrepreneurs, whose strength in the process of policy change will be determined and might provide different perspectives on where to gain information and on what to base their policy proposals (Lehnert & Wonka, 2007). Also, it is very well possible that the answer to this research question will help future research on policy change after natural disasters as it can incorporate a new approach of theories and therefore start their research with a more targeted focus. Finally, this research may contribute to the approach of natural disasters as it heavily emphasizes the relationship between climate change and natural disasters and aims to find examples of climate change adaptation policies that are adopted due to their success elsewhere. This might cause people to understand and believe the need of these policies.

1.4 Structure of the Thesis

This thesis will develop as follows. In chapter 1, a literature review will be provided in which preceding research on the topic and the used theories is analyzed in order to gain understanding of the gaps in knowledge that need to be filled. After, the theoretical framework will explain two theories that will be tested, and four hypotheses will be derived from the theories that will help to answer the earlier established research question. Two hypotheses will be derived from the Multiple Streams Approach and two hypotheses are derived from theory of policy transfer. After the theoretical framework, chapter 3 informs the reader about the methodology that is used and the research design, justifying the choice of methodology, cases, data and the research's validity. Chapter 4 and 5 are case studies in which the collected data is analyzed and short conclusions on each case study are drawn. Following, the findings of both cases will be provided in chapter 6 and a general assumption is provided from this, after which it will be determined which theory has most explanatory value when analyzing policy change after natural disasters. This will be based on the four hypotheses answered in chapter 4 and 5. Finally, the conclusion will present a recap of the aim of this thesis and the answer to the research question. Also, suggestions for future research will be made and additionally the limitations that were encountered during this research.

Chapter 2: Literature Review

In this chapter, an assessment of previous research will be provided, and the topic of this thesis will be placed within the context of this existing literature. As this thesis aims to provide an answer to the question *what theory best explains policy change after natural disasters?* this review will explore existing literature and find out how this research can possibly make a contribution to this. First, this literature review will discuss previous research on who is held responsible to take action and react after natural disasters. This will be useful for the rest of the thesis, when further work will on policy change after natural disasters will be analyzed and will highly likely use different perspectives on responsibility on different levels. Following, previous research on policy change after natural disasters will be analyzed and the relationship between existing literature and the topic of this research paper will be discussed, confirming the relevance of the research question. Finally, this chapter will provide interpretations and definitions of 'policy change' that are fitting to the topic of this thesis and will enable answering the research question as comprehensive as possible.

2.1 Natural Disasters and Responsibility

Disaster risk reduction can be defined as "an integral objective of environment related policies and plans, including for land use natural resource management and adaptation to climate change" (United Nations, 2014). It includes a wide variety of policies aimed at resilience, climate change adaptation and reconstruction. In fact, nowadays there is a widespread understanding that hazards in itself do not necessarily have to become disasters, but that damage largely depends on factors such as vulnerability and exposure of a certain area. Governments are considered key players in protecting their citizens through implementing and adapting protective and preventive policies; besides other risks that need to be addressed by governments, natural disasters due to their suddenness have a specific influence in agenda-setting and policy change (Birkland, 2016). Response to natural disasters belongs to national security. Research on government response after Hurricane Katrina provides some insight in the abilities of a government to respond, explaining the failure to do so to be a result of either rent seeking in bureaucratic processes or institutionalist restraints (Chamlee-Wright & Storr, 2010). Other literature discusses that the expectations of citizens for their government to rescue them in the aftermath of a disaster creates constraints to their own motivation to do so: officials and policy-makers in charge of relief are forced to provide more relief every time, which discourages individuals to undertake protective measures themselves (Michel-Kerjan &

Volkman Wise, 2011). This poses the question whether disaster management policies should be more efficient and effective in the long-run and also if the effect of these measures differs on the local, state and federal level. Clarifying expectations of government accountability, taking Hurricane Katrina as an example, media focused much more on government response than on responses of individuals, communities or public health roles: an analysis of 1590 articles on Hurricane Katrina showed that 40% focused on the responsibility of the federal government (Barnes, et al., 2008) – which was recognized as the institution that had the most responsibility, versus local governments, individuals or agencies (Barnes, et al., 2008). Nevertheless, natural disasters always strike at local level and the growing interconnectedness between cities (represented by climate summits for cities and international organizations such as the C40) demands more responsibility on local and state level (Mintrom & Luetjens, 2017). In order to create a comprehensive analysis of policy change after natural disasters and the motivations behind it, it is important to assess both policy change on federal, state and local level. For policy change to occur, however, events must first occur on the policy agenda. In the following paragraphs, previous research on natural disasters and agenda setting will be discussed and its relevance to this research.

2.2 Natural disasters as focusing events

The main and foremost work standing out when analyzing existing literature on this topic is that of Thomas Birkland. His work extensively discusses the process of policy change after natural hazards, or, more generally, 'focusing events' (Birkland, 2016). Birkland introduces the idea of natural disasters as focusing events and explains how focusing events are able to shed light on weaknesses in and of existing policies (Birkland, 2016). Birkland, corresponding with the previous paragraph on government responsibility, mainly focuses on government response after disasters and explains that action is often, but not always undertaken after focusing events (Birkland, 2016). The idea of focusing events is narrowly connected to theory of agenda setting. Agenda setting "influences public agendas and policies through deliberate coverage of events and issues, with the media prompting policymakers to take action and satisfy the public's interest or demand for answers" (Barnes, et al., 2008, p. 605). The need for policy changes in one field can end up higher on the policy-agenda than others. This is, as explained by DeLeo, because disasters are a social construct and it is the media, politicians, disaster managers and policy entrepreneurs that shape certain events to pursue their own interests (DeLeo, 2018). This is called framing, which can cause us to interpret a problem in a certain way, allowing for a connection to a certain policy solution, but not others (Knaggard,

2013). After natural disasters, light is shed on new information and more attention for the flaws in the status quo increases negative judgement thereof, creating more incentives for change amongst policymakers (Baumgartner and Jones, 1993; Birkland, 1998). An example thereof is analyzed by Birkland, namely airport security after 9/11, which did not seem sufficient to many people after the terrorist attacks of 9/11 and became highly criticized, whilst there was no such amount of criticism before (Birkland, 2006). This works similarly for natural disasters: they attain much attention when they occur, aggregating different actors, like interest groups, policy entrepreneurs, the media, etc. to realize flaws in the existing policy framework, after which solutions will be sought in order to solve these problems (Birkland, 1996). DeLeo (2018) goes on to describe the different theories of agenda-setting, of which amongst others Kingdon's (2003) multiple stream approach is mentioned, which is a useful theory in the case of natural hazards and policy change as it takes into consideration not only what drives policy change, but also the agenda-setting process, enabling to create a complete oversight of why an assortment of factors can lead to change (Birkland, 2016).

Together with Basher (2008) these articles recognize the fact that natural disasters or hazards do not necessarily have to become disasters, but whether or not they become disasters depends on the state of preparation of the affected area (Basher, 2008; Birkland, 2016; DeLeo, 2018). This adds to the previously encountered statement that the response to natural disasters is dependent on the way in which it is presented as a problem by interest groups, media, policy entrepreneurs and other stakeholders (Birkland, 1996). Both DeLeo and Birkland primarily focus on the role of the federal government in disaster response, which is emphasized by the fact that they both discuss the Multiple Streams Approach by John Kingdon, which is based on domestic policy only (Durant & Diehl, 2013). Already in the introduction, however, the establishment of international networks and information sharing was discussed. This thus brings about the question whether there are more approaches and researched that should be taken into account in order to figure out the best theories to compare when answering the research question.

While research by Birkland mostly focuses on the rather broad aspect of policy change after 'focusing events', there have been some researchers who have conducted empirical case studies and specifically analyzed policy change after natural disasters, but often use a more technical and statistical research design, or focus on a single policy and therefore hard to incorporate in this literature review (Zhang & Lu, 2018; Sapat, 2011; Alam, Alam & Mushtaq 2017). Most researchers pick one or two theories on policy change, Kingdon's Multiple Streams Approach (1984), or at least elements thereof occurring often. An example is the analysis of Zhang and

Lu (2018) on policy change on disaster management in China from 1949-2016 (Zhang & Lu, 2018). Zhang and Lu incorporate the MSA, but also hint on the practicalities of knowledge sharing and that this will contribute to the improvement of the Chinese disaster management policy framework, in this case connected to Sabatier's theory of Advocacy Coalition Frameworks (Zhang & Lu, 2018). This research is useful as it shows an empirical application of policy change theories to the topic of natural disasters, and although it acknowledges the growing influence of Nongovernmental Organizations on disaster management policies, it mostly neglects the influence of international networks and mostly focuses on domestic influences on policy change (Zhang & Lu, 2018). Zhang and Lu do emphasize the difference in disaster management on different levels of governance, which thus should be taken into account in this thesis. Similarly, this difference is indicated in research by Kristin O'Donovan, who assesses policy change on state level after natural disasters (O'Donovan, 2017). This fairly new article by O'Donovan contributes to the Multiple Streams Approach by analyzing the power of focusing events. More importantly, she introduces the idea of accumulated experience when focusing events reoccur and tests whether or not experience with a specific problem increase the probability of policy change (O'Donovan, 2017). The conclusion that (some) policy learning is existent after focusing events is significant to this research and confirms the relevance of incorporating the concept of policy learning when answering the research question. Research by Albright and Crow (2016) also suggests the influence of experience on policy change and how it can influence one's perception of disaster risk (Albright & Crow, 2016). However, possible influence from experiences on policy change or knowledge from outside of the domestic 'streams' remains undiscussed (Albright & Crow, 2016; O'Donovan, 2017). While this paragraph has established that previous research mostly focused on the domestic factors that influence policy change after natural disasters (response by stakeholders and media and degree of preparation), information on international networks and basic knowledge of globalization establishes the need to discuss research that provides a more international focus on policy change and considers influences from the outside that possibly affect or help policy change after natural disasters. Accompanying this is the need to investigate the influence of a growing (international) database of information and experience on policy making after natural disasters worldwide.

2.3 International policy sharing: scientific knowledge and experience

Researchers in the past have emphasized the need for further research on policy transfer as a contributor to policy change: the growing attention for international expertise and the effect thereof on policy change should be monitored (Zevenbergen, et al., 2013). This makes sense, considering the growth in international information sharing over the past decades, also in this policy field and contributing to climate adaptation, due to the increasing popularity of policy-making based on evidence (Minkman, van Buuren, & Bekkers, 2018). While the previous two paragraphs are based on the perception of natural disasters being "relatively uncommon", a definition used in most policy literature (Birkland 1998), perceiving natural disasters still as uncommon seems incorrect considering the reoccurrence of similar events in the same places as consequences of climate change. Also, it to a certain extent neglects the possibility and necessity of learning from best practices elsewhere or copying those due to possible lack of experience. Although of course it must be taken into consideration that disasters differ in all domains, there is overlap, particularly when an event occurs in the same area. There are multiple researchers that have focused on the idea of sharing policies between domains, even internationally. Schneider and Ingram have developed the concept of "pinching of ideas" which means that experts can draw lessons from other policy domains or even governments, or, policies can be 'transferred' on a global scale (May, 1992). Birkland in his book hints at a combination of Kingdon's theory and theory on policy learning, but explanation thereof mostly remains within the 'domestic' political sphere, focusing on experience of policymakers rather than other actors that might be able to influence the policy sphere (Birkland, 2006). This interpretation seems appealing for this paper, as it recognizes international policy networks but it is also understood that sometimes policies can be transferred as a one-time solution for an urgent issue: for example, countries that experience a lot of floods but are not used to this can borrow expertise and best practices from countries that are more experienced. This is where the idea of policy transfer seems a fitting approach considering the topic of this thesis, as it is likely to happen more and more in the future due to the cross-border character of climate change and natural disasters. According to McEntire and Myers (2004), preparedness for natural disasters can actually increase inter-organization coordination and communication. This is particularly interesting in the case of floods, where experience amongst policy makers and entrepreneurs is important in the process of recovering (O'Donovan, 2017; Albright & Crow, 2016). As mentioned in the introduction, examples hereof are the creation of the C40

network, the Climate Change Initiative (CCI) and multiple other international networks that aim to share knowledge and experience on increasing resilience and policies that anticipate climate change and subsequent natural disasters. For example, Zevenbergen et al. (2012) emphasize the importance of improving flood policies by learning from experience, international interventions and constantly improving practices (Zevenbergen, et al., 2013). Diane Stone's work discusses this as well, calling upon emerging 'international policy cultures', communities that develop when sharing information, experience and expertise, a kind of soft policy sharing in which knowledge, norms, interpretations and values accumulate and shape a new understanding of common issues (Stone, 2012; Teichman, 2007; Newburn, 2010). She elaborates on this by explaining what actors can be involved in sharing knowledge, whom she calls "policy transfer entrepreneurs" and represents a very extensive and diverse group of actors, like think tanks, NGOs, universities, business coalitions or philanthropic foundations that enable the share of (mostly scientific) knowledge between countries (Stone D. , 2012, p. 494). This can be both 'soft transfer' and 'hard transfer', the latter more about policy practices and legislation with mainly policy officials involved (Stone D. , 2012). Scientific evidence can serve as an important insurance of effectiveness in policymaking. Especially after natural disasters that are caused by climate change and thus likely to reoccur, it is important that policy makers learn from previous flaws in policy or mistakes in solutions; as educative experiences, they can provide valuable new information on potential reoccurrence and losses (Kousky, 2016). Since natural disasters remain to some extent unpredictable and the consequences uncertain, scientific evidence and international assistance and knowledge can help to create more effective policies. More importantly, scientific proof could possibly lead to policy change when it occurs to policymakers as better and feasible. This process can be placed under theory of policy learning and is seen as an essential process for the development of policies that protect the environment (Monpetit & Lachapelle, 2015). Globalization is ubiquitous and also present in environmental and disaster policy, which enables countries to share information and recall upon international assistance and policies

2.4 Measuring Policy Change

In order to make claims on the level of policy change after natural disasters, it is important to first define 'policy change' as a dependent variable. Definitions of policy change offer either a broad or narrow perspective. A clear and way to narrowly define policy change are constitutional amendments or the implementation of major legislation (Birkland, 2006). Other

ways to indicate change are to show changes in regulations or different modes of operation of procedures and shifts in behavior of bureaucrats (Birkland, 2006). In this research paper, the term 'policy change' represents not only both previous definitions of change, but proof of policy change is also seen as "enacted legislation and regulations" and more importantly the "movement in the direction of policy change' (Birkland, 2006 p.25) which is due to the fact that this research also focuses on policy transfer. Bennett and Howlett adopted a similar approach in defining policy change after natural disasters as "changing set(s) of beliefs, values and attitudes towards the flood problem' because of learning from past disasters" (Bennett & Howlett, 1992). Since it might be hard to assess policy change in a time frame of approximately ten years (as the process of implementing change can be lengthy), a movement in a certain direction or policy recommendations can be used as a valuable indicator, increasing the scope of useful data. Therefore, also policy recommendations and reports are important sources in this research. The use of the concept policy transfer needs an additional justification. Even when no clear evidence exists of an outcome of the process of policy transfer, engagement in policy dialogues can still evoke learning and thus result in change – despite 'tangible outcomes' therefore the process can still result in learning over time (Dabrowski, Musialkowska, & Polverari, 2018).

2.5 Conclusion

The literature review has provided some key definitions and perceptions that are necessary when conducting this research. First of all, it taught us that federal governments are mainly held responsible after natural disasters, but there is a growing need for involvement on every level of government. It has showed some gaps in previous research and it enabled to draw an idea of how this research and topic is contributing to existing literature. The lack of research and evidence in this field of study emphasize the importance of new empirical cases that investigate the influence of international assistance and the reasons for calling upon it. Not many researchers have yet explored the specific reasons behind these international interventions or the incentives that drive policy makers to incorporate international experience when creating new policies (Legrand, 2012; Benson & Jordan, 2011).

Chapter 3: Theoretical Framework

The following chapter will present and explain the two theories that will be used to conduct a proper congruence analysis. First, the theoretical framework is introduced by presenting some questions that have risen from the literature review and that can be answered by using theories. After, the two theories that will be contrasted and compared in this congruence analysis will be discussed: the aim of many policy analysis frameworks is to measure the incentives behind behavioral change (Johnson et al. 2005). Johnson et al. (2005) argue that in order to do so in an inclusive and complete way, it is important to apply multiple theoretical frameworks. Therefore, this section will describe two theories that will contribute to answering the research question.

3.1: What should the theories explain?

From the literature that was researched in the previous chapter, it has become clear that natural disasters are able to influence the policy agenda and can thus drive policy change. However, not all disasters cause change, nor is all change caused by disasters (Birkland, Policy Process Theory and Natural Hazards , 2016). According to previous research on policy change after natural disasters, more specifically in the United States between 1950 and 2015, new disaster policies are often, but not always, created based on the aftermath of major disasters (Birkland, 2016). What then are the causes of policy change after natural disasters? According to Howlett and Cashore, there has raised a “new orthodoxy” in policy studies, assuming that change is often due to radical shifts caused by disturbances outside of the policy agenda (Howlett, 2013). However, other theories see policy change as a product of slowly accumulated information, such as scientific proof, policy experience or cross-border information sharing (Grin & Loeber, 2007; Weis, 1977). This is described by some theories such as policy transfer, a theory of which limited research is yet available. However, policy transfer describes a process in which knowledge from anywhere can be used to create a better policy (or, ‘best practice’), while the traditional MSA by Kingdon mostly focuses on domestic streams of policymaking. However, this seems outdated due to the growing trend of transnational learning and communities since his framework was created. Therefore, this theoretical framework will focus on both Multiple Streams Approach and theory of policy transfer in order to find out which of the two has most explanatory power for the research question.

3.2 Multiple Streams Approach

In the previous chapter, it was mentioned that natural disasters can function as focusing events. The idea that focusing events can provoke policy change can be traced back to John Kingdon's Multiple Streams Approach (1984). The application of Kingdon's Multiple Streams Approach, focusing on its keystones such as policy entrepreneurs, focusing events and windows of opportunity is not new. However, often the application of the model is used as a tool for case studies but the value or strength of the key elements of the model remain unexplored (Zohlnhofer & Rub, 2016). The origin of policy ideas or the possibility of policy change outside or after a window of opportunity remains, herewith, unexplained. Focusing events are a crucial addition to Kingdon's Multiple Streams Approach (after this MSA), or, agenda setting, in which he states that policies can be changed during 'windows of opportunity'. Normally, these windows of opportunity are created when the three streams have developed and come together: a problem occurs, a solution is available and the political atmosphere is willing and capable of making changes (Brouwer, 2015). Because the window that then opens is only open for a short period of time, there is only a short-term action radius to aggravate policy change (Brouwer, 2015). Focusing events can function as a push in the direction of policy change, being a crisis or a disaster, a powerful symbol catching on, or personal experience of a policy maker (Kingdon, 1984). Following, the most important elements of the Multiple Streams Approach will be explained, starting with what happens in each of the three streams.

Problem Stream

The problem stream consists of multiple components that can be observed as problematic, thus indicating the need for policy change (Jones, et al., 2016). Focusing events have been discussed earlier: sudden, upsetting happenings that shift the collective attention towards it and the attached policy problem. While focusing events are more sudden and one-off, indicators are, according to Jones et al., ways in which actors perceive and monitor (possible) problems which can be issues like unemployment, immigration, etc. (Jones, et al., 2016). The last factors within the problem stream are feedback and load: whereas load refers to the capacity of organizations to solve problems, feedback is information gained from previous successful programs (Jones, et al., 2016).

Policy Stream

The policy stream refers to what Kingdon (1984) once called the 'primeval soup' of ideas and options when creating new policies: the new policy then can be either or not become successful based on the five components within the policy stream. Policy proposals should therefore be in coherence with the common values of a community (*value acceptability)*, they should be technically feasible within the context (*technical feasibility)*, and the resources to complete the new policy should be available (*resource adequacy)* (Jones, et al., 2016).

Political Stream

The third and final stream, the political stream, primarily refers to the context and community in which policy change can occur. The components of which this stream exists are *national mood*, *party ideology* and *balance of interest.* Each of these three components points out the importance of contextual and cultural factors namely the general perception of the problem of the public (*national mood*), the behavior and plans of political parties within institutions (*party ideology*) and *balance of interest* includes others that can possibly influence the process, i.e. advocacy groups (Jones, et al., 2016).

Policy Entrepreneurs

Policy entrepreneurs are the main actors for agenda-setting in the Multiple Streams Approach, developing new policies and coupling them to the problem stream (Knåggard, 2015). Policy entrepreneurs are individuals that take advantage of a policy window in order to create policy change that is in their favor. In order to do so, they are willing to invest their resources in order to help their preferences and interests, which they do through several different techniques and strategies, therefore serving an important purpose within the policy process (Reimer & Saerbeck, 2017). According to Kingdon (1984), policy entrepreneurs can be politicians, leaders of interest groups or other knowledgeable people that may present an unofficial coalition (Kingdon 1984).The international orientation of climate governance stimulates the cooperation between governments and policy entrepreneurs (Reimer & Saerbeck, 2017). However, the Multiple Streams Approach in its most original interpretation does not recognize influences outside the domestic streams. Therefore, one must look beyond the definition of policy entrepreneurs as given by Kingdon within the MSA and some adaptations might be necessary explain policy change after natural disasters.

Framing

Another very important factor within the Multiple Streams Approach is that of framing. Framing is a rather universal concept and can be interpreted as defining a problem or presenting a problem in a way that it has a certain meaning and as a crucial driver of policy change

(Knåggard, 2015; Mintrom & Luetjens, 2017). In general, it can be understood as picking specific elements or events and trying to make a connection between them in order to promote a certain perception, interpretation or solution: policy entrepreneurs thus use it for coupling and creating a definition of issues (Entman, 2004; Zohlnhofer & Rub, 2016).

According to Zahariadis, this technique is used policy entrepreneurs in order to promote their preferred policy outcomes (Zahariadis, 2016). With framing, policy entrepreneurs can use symbols or a certain way of presenting an issue to gain public support for the way in which they perceive the problem and the policies they find most suitable to solve them. Framing is thus the process in which actors thus 'enforce' or promote a certain interpretation or definition of a problem (Zahariadis, 2016). This is important because the options for policy change appear to be determined by the way in which a problem is perceived or defined (Stone, 2002). In this paper, the interpretation of 'framing' by Åsa Knaggård is used, who provides three elements of framing (2015). Important in this research paper is the fact that knowledge is crucial to framing and can be based on scientific evidence or personal or bureaucratic experience (Knåggard, 2015). On the other hand, values are important in the framing technique as well; policy solutions must be connected to some sort of value in order to show the importance of their policy preference and can be things like education, poverty or racism (Knåggard, 2015). Finally, emotions play an important part in framing a problem as they create the connection between people and the world (Knåggard, 2015) and can be used through symbols (think of images used in newspapers), indications about losses and gains, or creating urgency through fear (Knåggard, 2015). Also, the media is an important influencer in the framing process, as it is able to "shape and reflect public discourse" (Cody, Stephens, Bagrow, Dodds, & Danforth, Transitions in Climate and Energy Discourse between Hurricanes Katrina and Sandy, 2016, p. 87). Because media reflects the public discourse, it is a helpful tool in determining the 'content' of the streams when applying the Multiple Streams Approach. Also, because focusing events include every level of society and ask for solutions almost instantly, policy entrepreneurs are essential in coupling the streams thus enabling policy change and they use framing as a strategy to promote their own ideas, framing seems like a very important element for this theory and thus needs to be investigated further in the light of its importance compared to the rest of the Multiple Streams Model. Finally, according to Ingram and Lejano (2009), previous academic research has often focused on the policy stream, but the framing of problems and strategies of policy entrepreneurs is able to make much larger contributions to policy change (Ingram & Lejano, 2009). Therefore, the power of framing must be tested.

Windows of Opportunity

Windows of opportunity open when these the individual streams come together, and in order to change or access the policy agenda, policy entrepreneurs should act thereupon by bringing the streams together (Jones, et al., 2016). A window of opportunity can also open due to so-called focusing events, these windows tend not to be open for a long time and may already close due to another major issue before there has been a chance to solve the first (Cairney & Zahariadis, 2016). Policymakers thus must act upon the opening of the streams quickly, due to the brief nature of the window of opportunity (Cairney & Jones, 2016). If they fail to have an alternative policy ready, thus, to be prepared at the time the policy window opens, it will close before any substantial change is made (Weimer & Vining, 2017). This is due to the fact that policymakers can only pay attention to a fraction of the problems of society. Therefore, focusing events do not always draw all their attention (for a long time), unless these events shed light on policies through failure thereof, particularly when sensitive topics like inequality, education, or climate change (Cairney & Zahariadis, 2016). According to Kingdon, solution-production and problem solving are a separate process. Due to the fact that policy change takes time to develop and also, there is a constant interaction between a solution that can draw attention and an already established set of ideas that exists in the policy community (Cairney & Zahariadis, 2016; Cairney and Heikkila 2014). Whereas the original research topic of Kingdon was the US federal-level policy system, the elements of MSA have been formulated in such an "abstract" way that it is possible to apply the model quite universally (Cairney & Zahariadis, Multiple Streams Analysis: A Flexible Metaphor Presents an Opportunity to Operationalize Agenda Setting Processes, 2016). These elements are ambiguity for attention, an imperfect selection process and limited time, which are not quite as specific to a certain political model (Cairney & Zahariadis, 2016) and do not define any type of focusing event. Applying MSA to agenda-setting and policy change after (natural) disasters as focusing events is not new. Thomas Birkland has contributed with extensive analyses applying MSA to cases of (natural) disasters and crises. Herein he uses the Kingdon's perception of natural disasters as events that are able to "bowl over" everything that is on the policy agenda at the moment and take priority and attention of policy makers (Kingdon qtd. in Birkland, 2016). The MSA thus focuses on multiple aspects that are important in setting the policy agenda and therefore can be seen as an overarching theory for policy change. However, it misses out on some aspects that are covered by different approaches. MSA is specifically important to this research as it emphasizes the potential abruptness of most natural disasters, and more importantly the short amount of time that policymakers have to make use of the window that is created consequently,

which is one of the three basic elements of the approach. Therefore, other theories must be explored that focus on a broader scope of what can cause policy change and are not bound to time constraints such as the MSA. Theories focusing on a more gradual process of policy change could be policy learning or specifically policy transfer. In the article of Cairney and Zahariadis on the Multiple Streams Analysis that has been mentioned multiple times, several propositions on the MSA are presented, from which it appears that the MSA in its application to some extent shows room for connecting it to other theories that include elements as learning and experience as influencing the process of policy change. Their final proposition is that *"an issue's chances of making it to the top of the agenda increase when skilled policy entrepreneurs show policymakers, during open policy windows, that the problem can be solved by an already available solution which has been well received within policy networks"* (Cairney & Zahariadis, 2016, p. 22). The reference to skilled policy entrepreneurs and already available solutions are normal in applying the Multiple Streams Model, but it does raise questions about what influence experience can have on policy change and where and how these policy entrepreneurs gain information and available solutions. The Multiple Streams Approach seems to be universal enough to apply it to the issue of policy change after natural disasters. Natural disasters can be seen as focusing events, that are framed by policy entrepreneurs and the media and require the three streams to get together in order to evoke policy change.

Hypotheses

The end of the previous chapter presents several general ideas about natural disasters driving policy change. This research will focus on the idea of 'focusing events', derived from the theory of MSA since this is the best fit for the intended case selection of natural disasters. After reading into this theory and learning that there is only a short amount of time to evoke policy change after an event, a relatively short timeframe for change after natural disasters needs to be included in the hypothesis on focusing events. Therefore, the following hypotheses will be tested:

H1: Focusing events lead to policy change if policy entrepreneurs respond immediately

This hypothesis will test whether or not focusing events create only a relatively short 'window of opportunity' for policy change to occur. This hypothesis is derived from the conception of the Multiple Streams Model that windows of opportunity should be acted upon quickly and have a short-term radius of action to realize change (Brouwer, 2015).

H2: Policy change after natural disasters is heavily influenced by 'framing' of policy entrepreneurs

This hypothesis is derived from the importance of the policy entrepreneurs and the strength of framing in the literature of the Multiple Streams Approach. Policy entrepreneurs have the ability to frame a problem in a certain way that suits their preferred policy change or outcome. As stated by Deborah Stone (2002), the way in which a problem is perceived or presented, determines the options for policy change. The power of policy entrepreneurs and their framing strategies, plus the need for further research on this topic, is again emphasized by Ingram and Lejano (Ingram & Lejano, 2009). Therefore, it does seem like this is such a powerful tool that it is worth testing its influence on determining the level of policy change after natural disasters more than other streams. With 'influenced' in this sense, a process is meant in which one can see an emphasis on a certain topic and leaning towards that idea in policy making. This research paper recognizes policy entrepreneurs and the media as key players in problem framing after natural disasters. The dependent variable is the level of policy change from the status quo (before the focusing event). The independent variables are the timeframe after the disaster and the influence of policy entrepreneurs and their actions within the selected case.

3.2 Policy Transfer

As discussed earlier, this thesis needs a theory that acknowledges learning from abroad. This is the main deficiency of the Multiple Streams Approach in trying to answer the research question. Also, the interpretation of policy entrepreneurs only being successful when immediately responding to focusing events seems ignorant in the case of solving problems relating to climate change. Considering this, theory of policy transfer (although relatively new, underdeveloped and sparsely applied) seems an appropriate fit.

With awareness for climate change growing, so is the incentive to act upon it. The transboundary nature of climate change and its results, natural disasters, asks for international cooperation and experience. A quite advanced example is Dutch water governance: there have yet been several examples of Dutch water management experience inspiring other countries in their climate adaptation strategies (Minkman, van Buuren, & Bekkers, 2018). The acquisition of this mindset or framework of policies shows a movement of international policy cooperation and that learning does not necessarily have to happen within one political framework but can be a cross-country process. Richard Rose is one of the first theorists that came up with this perception of learning and argues that policy makers can actually gain from insights gained elsewhere (Grin & Loeber, 2007). Drawn upon by Schneider and Ingram (1988), policies can

transfer through ‘pinching of ideas’ (Grin & Loeber, 2007; Schneider & Ingram, 1988). This thesis will use theory of policy transfer: although it is possible that learning occurs from policy transfer, it is important to notice that there is no causal relation between policy transfer and policy learning (Minkman, van Buuren, & Bekkers, 2018).Policy learning can be defined as a process in which policymakers adjust their perceptions, understandings and beliefs on public policy (Moyson, Scholten, & Weible, 2017). Policy transfer can also occur when governments or local actors are indecisive about new policies, possibly due to political conflicts, policy failure or lack of scientific information and experience might stimulate them to look for experience from another place and can stimulate policy transfer (Stone D. , 1999). The following section therefore focuses on where exactly new information is gained and how it is implemented between domains and has an organizational and government-level approach. According to Dolowitz and Marsh policy transfer and defined the concept as a way in which knowledge (on policies) flows between governments and administrations and how these ideas are spread and implemented in other political organizations (Dolowitz & Marsh, 2000). Dolowitz and Marsh created a framework on policy transfer that evolves around multiple key questions: why do actors engage in transfer? Who are the key actors involved in the transfer process? What is transferred? From where are lessons drawn? What are the different degrees of transfer? What restricts or facilitates transfer? How is the process of policy transfer related to policy “success” or policy “failure”? (Dolowitz & Marsh, 2000, p. 8). Most important for the scope of this research is the fact that policy transfer can happen through elected officials, but the theory also includes international organizations, think tanks, transnational corporations, ideologies, institutions, attitudes and cultural values as possible ways of transferring policies, knowledge and ‘best practices’ (Dolowitz & Marsh, 2000). This is a pivotal difference between the Multiple Streams Approach and theory of Policy Transfer. Also, the scope of what is actually transferred is quite broad and correspond quite well with the definition of policy change in this paper (see Chapter 3 section 4.2): transferred can be policy goals, content, policy instruments, programs, institutions, ideologies, ideas and attitudes and negative lessons (Dolowitz & Marsh, 2000, p. 12). In order for policy transfer to happen, there are several factors determining the process. Since this research paper will be using complementary congruence analysis, the ‘environment’ is the most important factor group as environmental factors play a role throughout the entire process of policy transfer (Minkman, van Buuren, & Bekkers, 2018). Within the environment, Minkman, van Buuren and Bekkers describe contextual factors, of which the ‘policy arena’ is the most important factor, here defined as including the “Zeitgeist, existence or absence of competition with peers and the political climate” (Minkman, van

Buuren, & Bekkers, 2018, p. 229). Another reason to include this theory on research on policy change after natural disasters is based on knowledge that governments often lack experience and resources to deal with these events. Policy transfer offers a solution for this problem, acknowledging the possibility for actors, after policy failure, to start searching for new ideas that can replace or improve the status quo (Dolowitz & Marsh, 2000). Other perceptions of policy learning through the experiences of others emphasizes the growing popularity of evidence-based policymaking and beliefs that policy learning is transboundary and pay attention to the growing extend of globalization and importance of an international network of governments for policy transfer working on global (security) issues (Dolowitz & Marsh, 2000; Minkman, van Buuren & Bekkers, 2018). However, this relatively new perception of learning remains underdeveloped. This is also due to the fact that policy transfer is one of the many things that can contribute to policy change, other such things being some degree of coercion, a charismatic entrepreneur or a change in the composition of the government (Moyson, Scholten, & Weible, 2017). Therefore, in this paper, policy transfer will be treated as improving and extending the scope of the Multiple Streams Approach. After conducting the literature review, it became clear that the theory of policy transfer as explained by Dolowitz and Marsh provides a comprehensive and clear understanding when researching policy change after natural disasters, due to its inclusiveness. After natural disaster, failures of existing policies are highlighted. The methodology of this research paper, congruence analysis, requires that the tested theories are somehow contrasted, even though a complementary approach is used in this case. However, the following two hypotheses are therefore formulated in a way that they contrast the former hypotheses that were derived from the Multiple Streams Approach.

Considering the growing popularity of policy transfer and the growing awareness of the effects of climate change, plus an increasing scientific database of knowledge on these topics, the following hypotheses will be tested.

H3: Policy change after natural disasters is a gradual process driven by the growing availability of international scientific sources and experience

This hypothesis contrasts the Multiple Streams Approach in two ways. First, it states that policy change can happen after a longer amount of time, when possibly other issues have been presented on the policy agenda. Secondly, it includes influences and policy ideas from more actors than just elected politicians, leaders or unofficial spokespeople (Kingdon, 1984). If correct, theory on policy transfer can be complementary to the Multiple Streams Approach as that theory then lacks explanatory power about the origin information that drives policy change.

It is based on the idea that globalization and growing importance of international networks lead to an increase in policy transfer (Dolowitz & Marsh, 2000; Minkman, van Buuren & Bekkers, 2018).

H4: Policy transfer contributes to policy change when domestic actors lack knowledge and expertise

This should be visible particularly when there is a lack of experience or knowledge amongst local policy entrepreneurs. The hypothesis is derived from the element of the framework by Dolowitz and Marsh (2000) in which is asked why actors involve in policy transfer (Dolowitz & Marsh, 2000). Due to the need for information and new policies in addition to the growing network and increasingly integrated policy arenas internationally, natural disasters evoke policy transfer in order to change existing policies. This also corresponds with Stone's claim that uncertainty may be a potential stimulant for policy transfer (Stone D. , 1999). The dependent variable remains stable: the status quo policy. The independent variables are policies from abroad (the international policy network) on disaster management, mitigation and resiliency and everything that was implemented before elsewhere. These hypotheses are formulated in a way that they can possibly contribute to the MSA framework since they focus on elements of policy change that MSA ignores. For example, the MSA does not cover the possibility of gradual policy change after focusing events, nor the influence of international experience on policy adoption.

Chapter 4: Methodology & Research Design

This chapter will explain and justify the methods that were chosen to do the case studies. Also, the selection of data is justified by linking it to the method. The chapter starts by explaining which research design was decided to be most suitable and determining the dependent and independent variable. Following, this chapter will elaborate on the collection of data. After completing the literature review and theoretical framework, it has been established that the main aim of this research paper will be to create a more inclusive approach of the theory on focusing events in which attention is paid to the internationalization of the policy process. In order to do so, theory on policy transfer will be applied. However, before getting to improve an existing framework, the theories will be compared in order to see what each is lacking. Comparing these theories with a focus on reaching the aim of this paper demands a case study with an international focus.

4.1 Qualitative Research

In the introduction, literature review and theoretical framework, information that could contribute to solving the research question was provided. This paper will focus on explaining the reasons of policy change through different theories. In trying to explain this, this paper will encounter multiple factors that play a role in policy change in a complex social context. The focus lies on the relationship between theory and research (Bryman, 2012), which is best approached in a qualitative manner. Considering the limitations of quantitative analysis, or the limitations that might occur during it, qualitative research in this case is a way to avoid this. For example, it is often hard to determine whether or not the dependent variable is influenced by the independent variable when using quantitative research (Bryman, 2012).When researching policy change after natural disasters, it is stated that the dependent variable is the level of change in the existing policy framework after natural disasters and the independent variables are natural disasters and their direct effect on society. Therefore, qualitative research is more likely to support an inclusive framework of causality. Also, this research aims to include all four characteristics of small-N studies as described in Blatter and Haverland (2014): a small number of cases, many empirical observations per case, a large diversity of empirical observations per case and searching for a strong connection between empirical observations and theoretical concepts (Blatter & Haverland, 2014).

4.2 Congruence Analysis: A Complementing Theories Approach

This research paper uses congruence analysis. Picking congruence analysis was a relatively clear choice, as the research question corresponds with multiple examples on congruence analysis pro-typical questions in which theory provides an explanation in comparison to other theories or tries to provide new insights as compared to other theories (Blatter & Haverland, 2014). While the research question does not immediately suggest a complementary approach, this was a conscious choice because the thesis still aims to test the explanatory power of both theories as this will provide for a clearer insight in their weaknesses and eventually how they can complement each other. It thus tries to add to the existing literature on policy change, particularly in the relatively unexplored field of policy learning and change. Therefore, theories are used as "comprehensive explanatory frameworks," that are rather "specified through a set of constitutive causal propositions" than reduced to independent variables, as is mostly the case in a co-variational approach (Blatter, Innovations in Case Study Methodology: Congruence Analysis and the Relevance of Crucial Cases, 2012). This research paper uses the subtype complementary approach, which fits with the aim of the research. The research question of this paper, *what theory best explains policy change after natural disaster?* Will be answered by first contrasting the two theories through hypotheses and determining which theory has most explanatory power. Simultaneously, there will be searched for ways in which these theories can complement each other. Hypothesis 1 and 2 are derived from Multiple Streams Approach. Hypothesis 1 and 3 contrast each other. Hypothesis 1 tests the MSA claim that policy change happens within is short window of opportunity and that policy entrepreneurs should have their ideas ready at the time such a window opens. Hypothesis 3, however, is derived from policy transfer and assumes a more gradual accumulation of (international) knowledge and experience to cause policy change. Hypothesis 3 tests the idea that policy transfer happens more often due to the growing popularity of evidence-based policymaking and the need thereof. Also, it would mean that possibly, windows of opportunity can be opened or at least extended by policy transfer. Hypothesis 2 focuses on the importance of framing for the Multiple Streams Approach, which is done by policy entrepreneurs. Policy Transfer also gives much power to policy entrepreneurs. This hypothesis is used to test the possibility of complementing it with theory on policy transfer. If indeed policy entrepreneurs heavily influence policy change through framing, the fourth hypothesis will then test where these policy entrepreneurs gain their information and if international knowledge can also influence the level of policy change once they reach out.

By using a complementary approach, this paper does not solely focus on which theory offers better explanatory power for the research question, but rather seeks to find more inclusive explanations of phenomena by using multiple theories (Blatter & Haverland, Designing Case Studies , 2014). This thesis tries to contribute to the existing theoretical framework, for which congruence analysis is the most appropriate research design (Blatter & Haverland, 2014).
Therefore, the focus will be on two theories that could, according to the research in the literature review and theoretical framework, complement each other and thus form a more comprehensive theoretical framework to explain the level of policy change after natural disasters. Analyzing the Multiple Streams Approach, it only seems to be able to explain policies if policy entrepreneurs act immediately. However, theory of policy transfer does not concern such a short time frame for stimulating policy change. Also, policy transfer theory includes many more (international) possibilities for influencing policy change, while Multiple Streams Approach solely focuses on the domestic elements of policy change. Because both theories acknowledge the importance of policy entrepreneurs, the international approach of policy transfer can thus fill in the gaps in Multiple Streams Approach when assessing their influence. Considering the increased interest and need for international experience, policy transfer could thus serve as a useful addition to the Multiple Streams Approach in explaining policy change.

4.3 Case Selection

This paragraph will justify and explain the case selection in this research. It will explain how the case is related to the theories (Blatter & Haverland, 2014). The prerequisite for this paper was to select a case study that is related to public policy and had an international element. Although the research question in itself does not show significant international focus, the theories that have been selected, in particular theory on policy learning, do, as there is a focus on international influence on domestic policy change. When applying a congruence analysis, it is important that the selected cases are in a way related to the selected theories.
Many policy domains are subject to disaster. Nevertheless, not all policy domains are subject to, or in need of, globalization and policy transfer. Therefore, the selected cases had to be cases in which focusing events caused policy change, but also in which there are clear indicators that they make use of the international database of policy information. The growing awareness of the impacts of climate change in a globalized world enables the establishment of international networks of knowledge and policy sharing. The selected cases are two of the most (internationally) famous natural disasters that occurred in the 21st century in the United States, Hurricane Katrina and Hurricane Sandy. Specifically, this paper will take into account federal

policy changes and policy change on state and local (city) level of the areas that were hit hardest and thus of which most data was found. These cases are selected due to a couple of prerequisites for the success of the study. First of all, the cases had to be focusing events for the application of the Multiple Streams Approach. Also, theory of policy transfer is a rather new topic of study: combined with the recently growing popularity of international policy sharing and knowledge-based policy making, recent cases seemed the most relevant (Minkman, van Buuren, & Bekkers, 2018). Previous research by Birkland in the book *Lessons of Disaster: Policy Change after Catastrophic Events* has been used to help decide on the cases. Birkland argues why some events become focusing events and some do not: in order to be able to answer the research question, it is important that the cases could actually qualify as focusing events. Birkland argues that attention for certain events may be a result of the size of an event, which has to be large enough to draw attention and trigger discussion (Birkland, 2006). This helped to decide on hurricane Katrina and Sandy as the case studies for this thesis.

4.4 Data Collection

From the literature review it appeared that citizens have high expectations of their (federal) government or society after natural disasters. Therefore, the first type of data that will be used are governmental policy documents. As argued by Sabatier, the best way to investigate the content of policy belief systems include amongst others panels of observers, content analysis and other relevant documents (Sabatier, 1987). However, working on both a time constraint and the challenge of reaching out to observers in the United States, the main focus will be on document analysis. Because this is an empirical research, content analysis, government documents and interest-group data will be able to provide an inclusive description and argument to test the hypotheses (Sabatier, 1987). Therefore, this research will primarily rely on an extensive analysis of policy documents, reports, and media coverage. To assess the impact of the natural disasters as 'focusing events' and the power of framing, the database NexisUni will be used to provide information on media coverage. The data will not be entirely parallel for both cases. Rather, the data collection is based on pieces that were important during the time of both events. This includes US federal documents, FEMA reports, reports of policy entrepreneurs, Dutch government documents, media articles and journal articles.

4.5 Internal Validity

A plurality of theories in itself leads to internal validity as it enables the researcher to gain multiple insights in a chose case study (Mills, Durepos, & Wiebe, 2010). Internal validity is

also achieved by the case selection. As mentioned before, congruence analysis demands close attention to the case selection as it is important that in some way the theories relate to the cases. First of all, the chosen theories are quite broad and have no specific prerequisites. Therefore, it is clear that both will be applicable to the chosen cases. Second, focusing event theory fits very well with the case of natural disasters. The theory has been successfully applied in previous research to case studies involving disastrous and shocking events In order to reach full internal validity, there should be no alternative explanations for the findings of a study (Cuncic, 2019) While there are other theories that would have been able to explain policy change, the combination of Multiple Streams Approach and Policy Transfer provides a rather unique insight in the level of policy change after natural disasters. There are theories that might have had added complementary value, but these theories focus on different aspects of policy change. Also adding to the internal validity of this study is the focus on one kind of natural disaster (hurricanes and consequent flooding) which all happened in the United States, allowing for more specificity. For example, the Cultural Theory of Risk would provide a much better explanation is the approach would be focused on micro-level analysis of policy learning, as this more often focuses on individual learning and changes in their perception and policy preferences (Dunlop & Radaelli, 2013). Besides focusing on policy change theories, cultural theory would shed light on the (cultural) incentives behind policy change, but this is beyond the scope of this paper. However, it is suggested for future research.

Decreasing the internal validity of this research paper is the fact that both theories do not emphasize the change in government leadership. However, the Multiple Streams Approach does take into account the influence that the government can have on policy change and how it might affect the ‘national mood’, which will be discussed in the analysis.

4.6 External Validity

The selection of theories in combination with the selection of cases has provided a framework in which it is possible to go beyond explaining theoretical dominance (Blatter & Haverland, 2014). Instead, it is likely that this paper will be able to go beyond this while trying to shed light on an innovative approach and combination of theory of focusing events and policy transfer theory (Blatter & Haverland, 2014). As mentioned, this research focuses on two different theories. The application of multiple theories helps, providing different insights and a more in-depth analysis of a specific case. This research will try to provide an

innovative insight in theory on policy change by trying to merge, or at least create a more inclusive understanding of focusing events and policy transfer. It will try to provide an understanding of why either focusing events or theory on policy transfer better explain the reasons of policy change after natural disasters, but it also beliefs that policy transfer can be a result of focusing events. Limiting the generalizability of this study is the application of the Multiple Streams Approach, as theoretical framework focuses on idiosyncratic elements causing policy change (Cairney, 2007). First of all, the results of the study are influenced by the political system of the United States and particularly by the 'national mood' at the time of the discussed cases. Secondly, the tested hypotheses in relation to the Multiple Streams approach are not widely applicable and the outcome of these hypotheses would very likely differ when another natural disaster would be analyzed. The focus on one type of natural disaster – hurricanes – limits the external validity but does increase the internal validity.
By applying the theory of policy learning in a complementary approach, it might well be possible that the results of the study become more generalizable since the scope of the Multiple Streams Approach will be extended. The Multiple Streams Approach has a rather broad approach in its nature but focuses on domestic streams: when complementing it with theory on policy transfer it might also be applicable to cases in which international policy entrepreneurs or ideas play an important role. This would increase the generalizability of the research outcome.

Chapter 5: Case Study Hurricane Katrina

At the end of August 2005, Hurricane Katrina made landfall off the Louisiana coast and devastated large parts of United States' coastal areas. With a death toll of around 1,500, it is often defined as the most destructive natural disaster in the history of the United States. Katrina brought up many questions about the US government and their failure to prepare and respond to the storm (Committee on Homeland Security and Governmental Affairs , 2006). The four biggest failures that were determined after the storm were that governmental officials had neglected their tasks to prepare despite long-term warnings, they did not take sufficient action in the direct aftermath of the hurricane, support systems failed and, moreover, governmental officials in general lacked leadership and initiative (Committee on Homeland Security and Governmental Affairs , 2006). The lack of preparedness for a disaster of this magnitude primarily appeared from the failing levees in the areas it hit, of which a total of 50 failed and consequently flooded most of the city of New Orleans (Gibbens, 2019). Not only the federal government failed to prepare, Hurricane Katrina also shed light on additional, perseverant problems in the United States as her victims were in a disproportionate amount African American and living in poverty (Gibbens, 2019). The ineffectiveness of the response after Katrina is partly blamed on the coordination problems that occurred between the large diversity of networks and cross-sectoral organizations that contributed to the disaster management (Moynihan, 2014). Hurricane Katrina did not only heavily emphasize the weaknesses in the government's ability to response to the disaster, but was also, as President Obama quoted ten years after the storm, a "man-made disaster" that emphasized the economic inequality dividing the country (Neuman, 2015). When testing the hypotheses, particularly the ones that were derived from theory of policy transfer, it must be clear that this paper looks at both short and long-term solutions to the natural disasters. Expecting to see, particularly through policy transfer, a movement towards more sustainable and resilient policies, this is a relatively new interpretation of disaster policy (Birkland, 2006). Full implementation thereof might be hard to proof. Nevertheless, it has already been promoted for a long time in research while federal responses have conventionally focused on immediate relief, rather than mitigation purposes (Birkland, 2006).

In the following section, the data will be analyzed. Simultaneously, the four hypotheses will be tested by providing relevant data. Finally, after analyzing the data and testing the concerned hypothesis, it will be argued whether or not the hypothesis is confirmed or refuted.

5.1 Hypothesis 1
Focusing events lead to policy change if policy entrepreneurs respond immediately

This hypothesis tests whether or not the Multiple Streams Approach is right in stating that there is often only a (relatively) short window of opportunity to create policy change after natural disasters. Accordingly, policy entrepreneurs must have their policy ideas developed at the time of a window of opportunity so they can promote their preferences (Brouwer, 2015). Thus, it should be visible that policy changes are mostly created right after events. The hypothesis will be falsified if it appears that policy change is more likely to occur in the long run, which will limit the explanatory power of the Multiple Streams Approach.

After Katrina, the United States were divided in multiple groups of policy entrepreneurs with different interpretations on the causes of Katrina and what should be the response to it. To test this hypothesis, most important the group that had ecological economic policy solutions already before the hurricane struck which were based on scientific evidence of the causes of the disaster and the group of policy makers that are politically inclined (Farley & Miles, 2008). In the direct aftermath of Katrina, the expectations for the government were to help and relief the damage that was done. Hurricane Katrina was a focusing event that served as a catalyst for policy change on the federal level and the reorganization of several instances, primarily within the Department of Homeland Security (DHS) (Committee on Homeland Security and Governmental Affairs , 2006). The primary policy change that was enacted on federal level was the implementation of the "Post-Katrina Emergency Management Reform Act of 2006" which reformed the internal structure and the responsibilities of the Federal Emergency Management Agency (FEMA) (Committee on Homeland Security and Governmental Affairs , 2006). Additionally, the impact of Katrina led to amendments in the Robert T. Stafford Disaster Relief and Emergency Assistance Act (the Stafford Act) and five new statutes that impacted federal emergency policies in the long run (table 1).

Policy	**What**	**When**	**Level**	
Sections of P.L. 109-347	The Security and Accountability for Every Port Act of 2005	2006	Federal	
P.L. 109-308	The Pets Evacuation and	2006	Federal	

	Transportation Standards Act of 2006			
P.L. 109-63	The Federal Judiciary Emergency Special Sessions Act of 2005	2005	Federal	
P.L. 109-67	The Student Grant Hurricane and Disaster Relief Act	2006	Federal	
Sections of P.L .109-364	The John Warner National Defense Authorization Act for Fiscal Year 2007	2006	Federal	

Table 1: Key federal amendments and changes to existing policies after Hurricane Katrina (Committee on Homeland Security and Governmental Affairs , 2006)

The response to Hurricane Katrina involved an extensive network of actors on multiple governmental levels – federal, state and local – and stakeholders from the public, private and non-profit sector (Moynihan, 2014). The aim of response of these stakeholders were unanimous: direct disaster relief to reduce the suffering: it is complicated to lay out all action that contributed to this process as, according to a House Report 2006, as more than 500 organizations were involved in it (U.S. House of Representatives, 2006; Moynihan, 2014).

The policy changes that happened quickly after Katrina were primarily on federal level. This is likely due to the fact that the federal authorities have the biggest capacities. Also, short-term emergency response policies are those that are most visible, as the attention of the media, public and policymakers tends to shift or fade after a while (the window of opportunity closes).

However, Hurricane Katrina appeared not to be a case that solely caused policy changes in its direct aftermath. Longer than at least two years after Hurricane Katrina, there are still movements towards policy changes based on the event. While it immediately became clear that there were many flaws in the United States' system both in terms of its resilience and response, it was not until much later, 2012, when Dutch experts were called into the region to help with

their expertise on flood management. Workshops were held in amongst others New Orleans, "Dutch Dialogues", provided policy information for innovative developments that would enlarge the resilience of the city. Still in 2017, the State of Louisiana published a report *Louisiana's Comprehensive Master Plan for a Sustainable Coast* keeps being updated, in which policy recommendations are provided to increase resilience and prevent flood risk – based on the impact of Hurricane Katrina in 2005. This shows that the focus of the state of Louisiana has shifted less quickly than the government's policy priorities and thus the Multiple Streams Approach fails to make explain or point out a difference between different levels of governance.

The hypothesis is therefore only partly supported. There were changes in policy, on federal level, directly after Hurricane Katrina. These policies were mostly aimed at emergency responses and there were more than 500 organizations that immediately came into action. This means that the Multiple Streams Approach has explanatory power for policy change directly after natural disasters: the relatively short window of opportunity and the interest of policymakers. Yet, it appears that the window of opportunity is exploited still long after the event, but on different levels and through different perceptions of policy entrepreneurs and policymakers. The policy preferences that are carried out longer after the event are more aimed at long-term improvements and are focused on resilience and take into account environmental concerns. Therefore, an additional theory is needed to explain policy change in the long run. The third and fourth hypothesis will test policy changes that happen outside these windows and do not seem to rely on focusing events.

5.2 Hypothesis 2

Policy change after natural disasters is heavily influenced by 'framing' of policy entrepreneurs

This hypothesis tests the power of framing by policy entrepreneurs after natural disasters. The hypothesis tests if the way in which a natural disaster, or focusing event is framed influences the level of policy change after the disaster. Framing contributes to agenda-setting and thus is an important influence on policy change. If the hypothesis is correct, the way in which a natural disaster is framed can thus determine what policies change and if framing has enough power to cause change. In doing so, it will also show the power of policy entrepreneurs in the process of policy change and how they are able to push their own preferred policy solutions onto the policy agenda or prevent other policies from getting there (Zahariadis, 2016). In the case of Hurricane Katrina, there are different groups of policy entrepreneurs, or, ways in which the

problem was framed the problem in different ways to promote their preferred policy solutions. Two predominant groups can be distinguished. The first group were government officials that needed to ensure reelection and therefore focused on the quickest way to pleasure their voters, while the second group were ecological engineers, economists and biologists (Farley, Baker, Batker, & Koliba, 2006).The issue of climate change brought the latter group to the policy table: while research had already pointed out the correlation between global warming and its results (intensified hurricanes), Hurricane Katrina was the first natural disaster that drew the attention of the media and framed it in this way to bring it on the political agenda (Farley, Baker, Batker, & Koliba, 2006). Under the Bush administration (2001-2008), the Federal Emergency Management Agency had lost significant power (Moynihan, 2014). Historically, the FEMA had been run by political figures with little knowledge of disaster response, while being the single biggest network of federal response to natural disasters until the Clinton administration appointed J.L. Witt as the director of the agency (Moynihan, 2014). The experience was much praised, until the Bush administration cut much of the resources of the agency, causing it to loose political influence and many of its experienced personnel: all having significant influence on the way the agency acted after hurricane Katrina struck (Moynihan, 2014). For the political stream, therefore, Katrina happened in a policy and political environment of declining federal involvement with issues such as education, welfare or health (Mueller, Bell, & Chang, 2011). Additionally, as stated in earlier research, the political benefits for immediate relief are much bigger than spending the same money on more targeted policy making on mitigation (Birkland, 2006). Consequently, the interest for disaster mitigation of the Bush Administration was particularly low and even less effective than it had been during the Clinton Administration due cuts in budget and human resources (Birkland, 2006). The US Senate report of 2006 acknowledged the failure of the FEMA at the time of hurricane Katrina, stating that it was responsible for

> *"(1) multiple failures involving deployment of personnel; (2) not taking sufficient measures to deploy communications assets; (3) insufficient planning to be prepared to respond to catastrophic events, (4) not pre-staging enough commodities; (5) failures associated with deployment of disaster medical assistance teams and search and rescue teams; (6) failures involving evacuation; (7) failure to establish a joint field office quickly enough; and (8) failure to take measures prior to landfall to ensure proper security for emergency response teams" (U.S. House of Representatives, 2006)*

With even the Senate criticizing the way in which a federal instance had reacted to Katrina, the disaster and its aftermath were framed as federal failures by both policy entrepreneurs and the

media. Media framed Hurricane Katrina primarily as a problem on governmental level and emphasized terms such as 'inequality', 'environmental injustice', focusing merely on evoking an emotional reaction – policies aimed at sustainability were thus more stimulated by an emotional response rather than a scientific and evidence-based considerations. On federal level, the NAACP report *Housing in New Orleans: One Year after Katrina* primarily focused on poverty and reports policies focused on providing federal housing for low-income families (Washington, Alvarez, Smedley, & Reece, 2006). In the case of Katrina, the issue being framed as a matter of inequality and unequal distribution and more importantly a responsibility of the federal government, caused the problem stream, on federal level, to be predominantly focused on redistributive policies (housing, insurance), rather than long-term ecological and technical solutions. However, as seen in table 1, legislative changes on federal level were quite limited and policy change in the area of for example housing appeared difficult due to inadequate preparation and improbable expectations (Sapat, 2011). Also, bureaucratic hurdles limited the extend of policy change after hurricane Katrina, particularly due to the fact that advocates of policy change on housing were rather small, unorganized and lacked political power as policy entrepreneurs (for example, the National Low Income Housing Coalition) (Sapat, 2011). Although framing by the media provided a platform for these coalition groups pushing for social reconstruction and redistributive policies, actual policy change (and implementation) takes more resources and political power (Sapat, 2011). Meanwhile, the policy stream for the second group – the scientists – was rather stable at the time of Hurricane Katrina. Amongst them, there was a strong agreement on what were the problems that caused the severity of Hurricane Katrina but as the previous paragraph shows, there is a big difference between the way in which both groups defined the problem. Articles from 2005 on Hurricane Katrina mostly frame climate change as a debate and controversy rather than hard evidence or an incentive to make adaptive changes (Cody, Stephens, Bagrow, Dodds, & Danforth, 2016). The scientific frame, which can serve as a powerful factor for framing (Knaggard, 2013) was thus undermined by the 'national mood' in the politics stream and the media that used emotions and values in their problem framing rather than science (Knåggard, 2015). Also, the gap between science and public policy at the time was too large and the proposed solutions were too specific to receive large support (Stone, 2002; Farley, Baker, Batker, & Koliba, 2006). Thus, while Katrina did cause attention for the connection between climate change and natural disasters and the, Katrina itself was not approached that way (Knaggard, 2013)

As suggested by Kingdon's Multiple Streams Approach (1984), there is a need for an already existing perception of an issue before a focusing event can provoke policy change (in the policy

stream): although Hurricane Katrina might have brought ecological issues to the political agenda, the issue of poverty that was primarily brought to agenda was not perceived as an issue that had to be solved through a steady natural ecosystem rather than a growing economy (Farley, Baker, Batker, & Koliba, 2006). Worsening the perception of failing government at the time was the fact that prior to Hurricane Katrina, while it was known that the coast was eroding, funding for improving of drainage and projects by the Army Corps of Engineers were continuously cut – while oil royalties were "bypassing the state" (Wiley, 2007 , p. 5).

The way in which the problem was framed was decisive in not focusing attention on adopting the policy suggestions of the *ecologists and environmental groups*. According to the database of LexisNexis, "Hurricane Katrina" was named 3,786 times in the New York Times between 2006 and 2012 (NexisUni, 2019). Hurricane Katrina pointed out many failures of the United States' Government and additionally brought to the attention the matter of inequality. In general, between 2005 and 2019, there were 2,914 articles published with "Hurricane Katrina" in combination with "inequality", while in the same timeframe only 254 news articles with "Hurricane Katrina" and "climate change" have been written (NexisUni, 2019). Therefore, possibly, the narrative surrounding Hurricane Katrina is more focused on the social aspects of the disasters' aftermath rather than technical problems or feasible, climate related solutions. President Bush quoted that "This poverty has roots in generations of segregation and discrimination that closed many doors of opportunity," and that it was the government's duty to "clear away the legacy of inequality" (Bush, 2005).

It thus appears that the way in which an issue is framed have considerable influence on how an issue is perceived, related to the political strength of the group in the political stream and the relevance of a policy – or the national mood towards a certain policy. However, the political stream was pretty much aligned with the way in which hurricane Katrina was framed. Framing in this case might as well have been pivotal due to its correspondence with the political stream (Palmer, 2014). Altogether, however, the legislative changes made after Katrina were quite limited and mostly aimed at short-term relief. It appears that while framing can be a powerful instrument for policy entrepreneurs and also a powerful tool of keeping non-preferred options off the agenda (in this case ideas of ecologists and environmental groups), after hurricane Katrina the political stream was still a pivotal actor for policy change. Framing the federal government as having the biggest responsibility is an important element in this analysis as changing attitudes towards climate change caused people to consider state and local actors to be promotors of resilient policies, thus having more responsibility for this problem (see introduction). Therefore, this hypothesis is partly confirmed. While policy entrepreneurs and

media are able to shed light on certain problems in society and gain attention for their preferred solutions, from this case it has appeared that often only the issues that are in line with the political stream (national mood, party ideology) will make it. Nevertheless, the power appeared a powerful tool in keeping certain policy preferences off the agenda.

5.3 Hypothesis 3
Policy change after natural disasters is a gradual process driven by the growing availability of international scientific sources and experience

In answering the previous two hypotheses, it became clear that policy entrepreneurs had a hard time realizing policy change after Hurricane Katrina due to the fact that there was a lack of capacity, political support, but also knowledge and expertise. Many articles thus state that Hurricane Katrina's impact failed to provoke much sustainable policy change as federal response mostly focused on immediate disaster relief and the legislative changes (table 1) are also based on relief rather than preventive measures. However, this accounts mostly for the period directly after it occurred – but it did provoke a big interest and research on the failures after Katrina (Sapat, 2011). Rather than assuming that policy entrepreneurs can only act upon windows of opportunity, this hypothesis is derived from theory of policy transfer, which does not consider such strict time constraints but states that policy change can occur due to gradually collecting information and experience. As seen in testing hypothesis 1, there have been policy changes on federal level rather quickly after Hurricane Katrina. These federal changes (table 1) were not caused by a general process of learning but were created right after Katrina and thus generated by the disaster instead. Also, these policies were more aimed at immediate relief rather than long-term mitigation solutions, confirming previous research saying that flood events are often solved with responses that are quickly decided on and deliver little innovative or resilient solutions (Zevenbergen, et al., 2013; Brown, Ashley & Farrelly, 2011). In order for this hypothesis to be confirmed, there must be some sort of accumulation of knowledge on the topic of flood management that has led to a change in beliefs and approach to the flood problem (Bennett & Howlett, 1992). This can be seen by looking at affected states reaching out to international experience in addition to the scientific base that was already created by ecologically inclined scientists prior to Hurricane Katrina, which proposed policy changes based on a "steady natural ecosystem" (Farley, Baker, Batker, & Koliba, 2006). A change in attitude towards the problem of hurricanes and climate change can be seen as well. It is clear that for example the state of Louisiana has made some serious efforts toward adopting policies based on scientific knowledge. For example, Waggonner & Ball, an architectural company

from New Orleans started work visits to the Netherlands as early as in 2006 in order to see potential solutions for New Orleans water management, which led to the establishment of the *Dutch Dialogues* partnerships, sponsored by the Netherlands Embassy and the American Planning Association (H+N+S Landschapsarchitecten , 2015). New Orleans in the end asked H+N+S, a Dutch landscape architecture company, to work out the city's new Water Management Policy (Elsevier, 2017) and in 2010 developed the Urban Water Plan, a cooperation between multiple international and local water management experts, funded by the State of Louisiana's Office of Community Development Disaster Recovery Unit (Greater New Orleans Urban Water Plan , 2010). Policy entrepreneurs were actively trying to promote their solutions: Waggonner planned the first dialogues together with the Dutch ambassador in order to create awareness amongst local politicians and non-profit organizations for the urgent need for better water management policies (van Mengen, 2017). In 2010, the first funding of 2 million dollars was requested and this request was adopted the same year by the state of Louisiana: the Office of Community Development Ramp Recovery Unit, showing the success of accumulation of knowledge for policy change (van Mengen, 2017). In 2013, the first example projects have been developed to assess the functionality and to make changes where needed to create an optimal model for further implementation on bigger scale. (van Mengen, 2017). Despite the effort to incorporate international assistance on local level and create international knowledge networks, this accumulation of (scientific) knowledge still seems to be subordinate to the fact that the implementation of innovative approaches that for example were proposed during *Dutch Dialogues* are often hindered by the fragmented nature of the institutional context, in addition to little political dedication to make any significant changes or investments (Zevenbergen, et al., 2013). Nevertheless, *Dutch Dialogues* offers an example of policy change due to an accumulation of information, having influenced multiple policy decisions and still operating and policies and project for resilience that have been created by it already implemented in New Orleans, Norfolk V.A. and Bridgeport C.T. (Ashley, 2019).

Additionally, while the previous examples were mostly based on the collection of international knowledge, there exists another vivid example that shows accumulative knowledge, or, experience, can lead to a different policy approach in similar events. Not long after Hurricane Katrina, Hurricane Rita struck Texas in September 2005. There, it appeared that policies and attitudes towards similar events change due to experience; many Texas Gulf Coast residents claimed that Hurricane Katrina had changed their evacuation decision and local officials ordered for evacuation much quicker than in the case of Katrina (Zhang F. , 2007).

It appears that this hypothesis can be both refuted and confirmed, as the veracity of the hypothesis depends on the level of observation. First of all, it appears that on federal level most policies that are adopted after natural disasters are immediate responses that are politically more beneficial and there is a shorter time in which policymakers are interested because the federal agenda is full. On the contrary, on state and local level – where the disaster is most felt – the interest in the problem remains longer and there is a bigger effort to create more suitable and resilient policies. Therefore, international help is requested. While the *Dutch Dialogues* already came into action a couple of weeks after Katrina (van Mengen, 2017), the implementation of the projects started in 2013, showing that the development of policies that are aimed at resilience and preventive measures can take time, in addition to implementation. The data proves that policy change on state and local level can be evoked by policy transfer, but this does not necessarily have to happen within a tight timeframe. Also, policy transfer can cause policy change after natural disasters on state and local level. Nevertheless, innovative solutions can sometimes be hindered by the unwillingness to move away from familiar practices.

5.4: Hypothesis 4
Policy transfer contributes to policy change when domestic actors lack knowledge and expertise

This hypothesis assumes that when there is a deficiency or inconsistency on any level for policy change, help can be sought outside of the standard set of policy entrepreneurs rather than a shutdown of the process of policy change to draw lessons from best practices elsewhere (Dolowitz & Marsh, 2000). On federal level, the inadequate response by FEMA in the aftermath of Katrina showed the lack of knowledge and new policy ideas in the policy stream at the time of Hurricane Katrina on a federal level. When New Orleans' levees broke, FEMA was not ready: not in terms of capacity to help disaster relief, nor in terms of technical knowledge for policy change when the disaster relief had to be taken over by recovery (the agency had been primarily controlled by political actors after the Clinton administration). From multiple interviews it appears that the perception of FEMA was that they were not ready to take on a task, or disaster, of this magnitude (Rainey, 2016). There was no knowledge of the city's topography, reports from the only FEMA employee at the site were dismissed and they turned down offers for supplies from the Department of Interior – later on, when recovery efforts started, again the lack of technical knowledge showed as trailers were installed in toxic resins (Rainey, 2016). Deputy FCO for Louisiana stated that there was no staff, no expertise

and no “operational training folks” that were needed to carry out work (U.S. House of Representatives, 2006). More importantly, the ‘FEMA brain drain’ (due to its merger with the Department of Homeland Security) since 2003 caused three directors of the preparedness, response and recovery department to leave the agency and a shortage of 500 employees (500 vacancies at the time of Katrina) (U.S. House of Representatives, 2006). On federal level, it thus can be seen that policy makers adopt policies that have been used in the past and are hesitant to try new things that might turn out to be less cost-efficient. Often, money is reserved for short-term restoration purposes but no budget is provided for research on long-term protective measures: in 2007, Bush attempted to veto a bill that funded projects for reconstructing levees in New Orleans and Louisiana (CNN Politics , 2007). The political climate for resilient policy change was thus was far from optimal on federal level. On state level, there is evidence of policy transfer that was used in order to fill the gap of domestic knowledge after Hurricane Katrina. Directly after Katrina, Jan Hoogland, at the time director of the Dutch Public Water Works stated to Congress that flood protection policy should be their new priority and should develop through learning (Zevenbergen, et al., 2013). Katrina thus provoked the idea that there was need for a more adaptive approach to flood risk and opened the discussion for new, interdisciplinary solutions which caused a longer timeframe of attention for the case than just the hurricane’s immediate aftermath. Policy entrepreneurs included in this case were thus international, trying to share their experience with flood risk and transfer their ideas. This led to a transfer of knowledge between Dutch experts and local experts in *Building Resilience Workshops* in March 2011, resulting in support and ideas for Louisiana’s Coastal Plan and New Orleans’s Water Plan (Zevenbergen, et al., 2013). During these workshops, Anne Loes Nilleson gave presentations on water resilience and helped New Orleans to implement innovative and sustainable water protection policies (Defacto, 2011). Additionally, in the aftermath of hurricane Katrina, the U.S Army Corps of Engineers (USACE) New Orleans District requested the help of Dutch engineers in New Orleans, to develop strategies that could protect the area from future category 5 storms (Louisiana Protection and Restoration , 2009). This was followed by visits to the Netherlands by key policymakers to meet Rijkswaterstaat engineers (Louisiana Protection and Restoration , 2009). During a visit to the Netherlands in 2006, Governor of Louisiana, Kathleen Blanco, stated that they needed to “learn from the know-how” that was already acquired by the Dutch (Associated Press International , 2006). This shows how a lack of expertise and knowledge can cause politicians to actively seek for solutions abroad. Additionally, in early 2006, Senator Landrieu together with the Dutch Embassy organized an official visit to the Netherlands to explore their

coastal protection policies and innovative technologies that could help to solve the problems within the USACE such as delay and cost inefficiency (Goldenberg, 2009). This corresponds with Stone's reasons that enable policy transfer; lack of information and policy failure inspired (and forced) Landrieu to seek for solutions abroad (Stone D. , 1999). A report by Knowledge for Climate (Asselman, et al., 2012) states that in fact, New Orleans in 2012 scored low on knowledge of systems for flood management but instead used expertise of other countries and for innovation and experimentation also relied primarily on international expertise (Asselman, et al., 2012). Also, instead of relying on local or national policy entrepreneurs, research on networks and institutions shows that an increasingly diverse set of institutions and organizations is used to create and change disaster policies (Asselman, et al., 2012). Media coverage provides useful data to test this hypothesis; headlines like "The Dutch Have Solutions to Rising Seas. The World is Watching" (New York Times, 2017), "US Politicians Visit Netherlands to Study Flood Defenses" or "The Dutch Understand Flooding, Why Can't the US Get it?" (NexisUni , 2019) show that after hurricane Katrina, policymakers were drawn to international resources in order to solve the problem.

It also reconfirms the previously made statement in this research that the influence of the federal government is very large, creating difficulties to implement new policies on local level due to regulations or reporting duties (Asselman, et al., 2012). The reliance on federal action therefore is still big and also seems to create serious struggles in moving forward with innovative disaster policies, as also stated by Zevenbergen et al. (2013). However, the Dutch did manage to promote a different attitude towards the problems with water encountered after Katrina: Governor Blanco's visit to the Netherlands shows that Hurricane Katrina provoked a change in attitude towards natural disasters, as she acknowledged the need for sustainable solutions for which the State of Louisiana lacked knowledge and expertise.

The data analysis confirms this hypothesis. There are multiple pieces of evidence that show policy change or a movement towards a new sort of policy that is acquired after a lack of knowledge on the spot is recognized. It is thus confirmed that after natural disasters, when there is a lack of (scientific) knowledge and insecurity about new policies, policymakers can call upon policy transfer for policy change which is a reason for transfer (Dolowitz & Marsh, 2000).

5.5 Conclusive Remarks

For the case of hurricane Katrina, three hypotheses were partly confirmed, one fully. It has appeared that the Multiple Streams Approach provides a basic and clear framework through which policy change after natural disasters can be explained. First of all, not much changed

after hurricane Katrina. On federal level, most policy changes were stimulated by the framing of Katrina as a federal failure and aimed at quick relief: Katrina emphasized already existing poverty and inequality, two powerful symbols used by the media and policy entrepreneurs that called upon government investment in redistribution and public investment rather than investments aimed at recovery and prevention (Farley, Baker, Batker, & Koliba, 2006). However, the political stream appeared to be very strong and decisive for policy change, which could be explained by the MSA: policy entrepreneurs that based their policy proposals on scientific evidence lacked support, due to the specificity of their proposals that did not fit within the 'national mood'. MSA also explained policy changes quickly made after Katrina. However, it lacked explanatory power when studying policy change that is based on Katrina's lessons long after the event. This is where policy transfer theory provided useful insights: it showed that international policy experience and policy entrepreneurs from abroad were able to influence the process of policy change in multiple states and cities in the United States after Katrina. Although framing, national mood and political willingness remain important stimulants or obstructions for policy change, we can conclude from this case that when attention on federal level fades, the drive for policy change lives on in the lower levels of government, showing the inadequacy of the strict conception of the short windows of opportunity as argued by Kingdon's Multiple Streams Approach (Kingdon, 1984).

Chapter 6: Case Study Hurricane Sandy

Affected areas: Eastern United States

In October 2012, Hurricane Sandy hit the mid-Atlantic and northeastern region of the United States. Causing 147 direct fatalities in across the Atlantic, 72 of these deaths were in the mid-Atlantic and northeastern US (Blake et al., 2013). The impact of Sandy was the largest after its predecessor Hurricane Katrina in 2005 and the debate on the position that federal government should take in disaster relief and prevention under the Federal Emergency Management Act (FEMA) has been ongoing ever since. What added to the impact of Sandy was that it primarily struck two very densely populated areas in the United States; New Jersey and New York. Also, the hurricane damaged Critical Infrastructure Systems (CI's), which include both physical entities like roads, bridges and hospitals and the services that are provided through these physical elements (Hanseth, 2010). As a result, the natural disaster was highlighted in media non-stop in the months that followed and on both federal and state level huge emergency operations were exercised in order to mitigate the impact. Over all, it became very clear that most states were not adequately equipped to deal with its enormous impact. In the direct aftermath of Hurricane Sandy, the United States grouped together in attempts of disaster relief and the Federal Emergency Management Agency (FEMA) responded quickly as well by providing $60 billion in emergency spending (Bucci, et al., 2013). This large amount of disaster relief money spent by a federal institution aims shows the importance and responsibility of such instances. It is likely that the response to Hurricane Sandy is partly shaped by previous disasters: particularly the response to Hurricane Katrina. Despite that fact that of course every natural disaster is unique in its impact, the United States has been experiencing Hurricanes for longer, which should provide an accumulation of at least experience and knowledge.

6.1 Hypothesis 1
Focusing events lead to policy change if policy entrepreneurs respond immediately

This hypothesis tests the conception in the Multiple Streams Approach that states that there is often only a short period of time for policies to change after a window of opportunity has opened. When Hurricane Sandy hit in October 2012, changes that happened in the direct aftermath after Hurricane Sandy included a new hurricane warning policy by the National Oceanic and Atmospheric Agency (NOAA) and the implementation of Public Law 113-1 and Public Law 113-2 acts which focused on the improvement of disaster assistance for Hurricane Sandy and included policy recommendations for future disasters and the provision of immediate assistance. These acts were signed by President Obama in January 2013, hardly three months after the disaster struck. Public Law 113-1 aims at the Federal Emergency Management Agency (FEMA) and provides a temporary increase in borrowing authority (US Congress , 2013). This act enabled FEMA to keep refunding flood-related insurance claims (Ladislaw, 2013). Public Law 113-2, better known as the Disaster Relief Appropriations Act, covered the rebuilding of the areas affected by Hurricane Sandy by providing $50 billion in disaster relief funds (Ladislaw, 2013). Money was divided over multiple sectors and included recommendations on how to improve resilience of local communities (Congress, 2013). In response to Sandy, a year after the event, Obama issued the Executive Order 13653, which was the first order that brought attention to the growing issue of climate change and its impact on societies on a national level. This order called for the establishment of the Hurricane Sandy Rebuilding Task Force. This Executive Order called for multiple new policies in which the main thought was for federal agencies to cooperate with state and local actors in order to discuss vulnerabilities in infrastructure and community resilience in case of future natural disasters (Ladislaw, 2013). Whereas Katrina was an example of federal focus on direct disaster relief that was mostly politically beneficial, the narrative after hurricane was slightly different in terms of ‘goals’ of policy improvement, also because Sandy offered the first opportunity to apply lessons learned from Hurricane Katrina (Olshansky & Johnson, 2014). However, it was not until August 2013 that President Obama released his Hurricane Sandy Rebuilding Task Force strategy report, including 69 recommendations divided over multiple policy priorities. These priorities over all were aimed at creating more resilience on a federal level as well as within communities (Table 3).

	When	What	Level
PL 113-1	January 2013	FEMA increased borrowing authority	Federal
PL 113-2 (disaster relief appropriations act	January 2013	Disaster relief and rebuilding damaged areas	Federal
Hurricane Sandy Rebuilding Task Force	August 2013	69 policy recommendations for rebuilding and resilience	Federal (suggestions for state and local level)
Executive Order 13653: 'Preparing the United States for the Impacts of Climate Change'	November 2013	Response to climate change: preparing the Nation for growing environmental impact	Federal
National Oceanic and Atmospheric Administration (NOAA)	November 2013	Issuance of tropical storm and hurricane watches and warnings	Federal

Table 3: Key Policy Changes on Federal Level after Hurricane Sandy

The main purpose of these 69 recommendations was a more resilient approach to problems and rebuilding. While the data up till here is in favor of the hypothesis, there is some other information that refutes the idea that the window of opportunity of a natural disaster is small and thus change can only happen in the direct aftermath of the event. These changes were mostly focused on disaster relief, such as the increase in the FEMA budget and a total of $60 billion in emergency spending. However, from the data, there appeared to be a trend in changing and adapting climate change resilience policies. Although the Multiple Streams Approach assumes that there is only a short window of opportunity for policy change – which in the case of Hurricane Sandy allowed policy changes in budget capacities – these were not the only policy changes that were provoked in the aftermath of the hurricane. The possibility that policy changes can be made a while after focusing events becomes visible considering the

fact that nowadays still policy changes are being made that are based on Hurricane Sandy. Very recently, New York City released its 2019 NPCC report, which still used lessons learned by Hurricane Sandy in providing feasible policy adaptations which are based on the most recent scientific findings (Earth Institute, 2019). New York City has also been a frontrunner in the creation of an international network between cities that shares data and information of post-disaster management and mitigation. By testing hypothesis 3 and 4, more data will be provided that points out how hurricane Sandy has had a long aftermath of policy change. This hypothesis is partly confirmed. It is indeed true that, particularly on federal level, policy changes are made in the direct aftermath of a natural disaster due to their urgent nature. Policies on climate change adaptation, considering Obama's ideology towards the topic, were not new. Thus, when hurricane Sandy struck, policy entrepreneurs were able to profit from the alignment problem stream with the politics and policy stream (Becker, 2019). Accordingly, the window of opportunity allowed for policy change in the direct aftermath of the hurricane.

This hypothesis is partly confirmed. As indicated by the data analysis, policy changes can happen when policy entrepreneurs have their policies ready and act upon the opportunity immediately. Nevertheless, referring back to the example provided above (the NPCC report 2019), there are still many examples of Sandy affecting current policy changes. Therefore, the perception that natural disasters, or, focusing events offer only a short-term window of opportunity seems negligent of the long-term impact that natural disasters can have. Hypothesis 3 will provide more evidence that contributes to this claim.

6.2 Hypothesis 2

Policy change after natural disasters is heavily influenced by 'framing' of policy entrepreneurs

While theory on policy transfer puts more emphasis on the policy arena for transfer to happen, Multiple Streams Approach argues for all streams to come together. Therefore, this hypothesis tests the power of framing and therefore the power of policy entrepreneurs in the process of policy change. According to Birkland, the response to hurricanes often lacks a strong, organized community which results in the adaptation of mostly relief policies (Birkland, 1997). However, policy entrepreneurs can still try and present a problem in a certain way that is in correspondence with their preferred policy solution (Zahariadis, 2016). The additional knowledge (compared to the knowledge present in the aftermath of Katrina) on climate change and floods would suggest a different way of framing of the problem. A sketch of the federal

political climate considering natural disasters at the time of hurricane Sandy will help to answer this hypothesis.

While the United States on federal level has only started with plans for climate change adaptation in the 1990s, mostly in the form of ad hoc responses, Hurricane Sandy has changed this into a rapidly developing policy field (Becker, 2019). Executive Order 13653 added to Executive Order 13514 "Federal Leadership in Environmental, Energy and Economic Performance" that was adopted by Obama in October 2009, both showing the good intentions of the Obama Administration considering environmental protection (FedCenter, 2009; Obama, 2013). In Section 1, 'Policy' of EO 13653, the Order calls for the incorporation of resilient strategies into all policies throughout the Federal Government and Section 3 establishes the Working Group on Climate-Resilient International Development, which primarily focuses on collecting data on climate-change impact and developing strategies to cope with it: it calls upon agencies with international development programs to share information within multilateral entities (Obama , 2013). In this way, an international network will be created based on climate-change information sharing and:

> "Work through existing channels to share best practices developed by the Working Group with other donor countries and multilateral entities to facilitate advancement of climate-resilient development policies" (Obama , 2013)

Consequently, the politics stream had already altered in favor of climate change adaptation policies with the change in government from the Bush to the Obama administration, as Obama showed clearly more willingness and understanding towards climate change and its consequences. Also, the growing acceptability of scientific evidence framing the case of Hurricane Sandy in the context of climate change becomes clear, as the Executive Order thus aimed for a transnational approach to the problem of climate change, based on information gained from 'science and security agencies and entities' (Obama , 2013). This change in attitude is also seen on city level. Contributing to this perception might be the fact that since 2005 the problem of climate change has increasingly been framed as not only a federal government responsibility but cities being fundamental players in combatting the results thereof (Mintrom & Luetjens, 2017). This happened during the World Cities Leadership and Climate Summit in London, where Ken Livingstone emphasized the vulnerability of cities to climate change and their responsibility in fighting climate change (Mintrom & Luetjens, 2017). New Orleans and New York City both joined this international network, which shows how policy entrepreneurs succeeded to create an interpretation of climate change as a problem that should be solved through international cooperation. Also, it shows how (framing) influences

from abroad can influence policy agenda's, based on scientific evidence and experience. While Hurricane Sandy did provoke a focus in policy change towards a more resilient approach to issues, the national mood seemed to be somehow problematic. This national mood, in the case of Hurricane Sandy, can be linked to the risk perception of individuals and organizations towards natural disasters. Considering this, it has proven to be quite an issue in the United States and at the same time one of the reasons that it is hard to provide for any policy change that assumes climate change as a danger and the cause of (more) natural disasters. In an interview from 2012 with Dawn Zimmer, the mayor of Hoboken, New Jersey since 2009, it becomes clear that there remains a huge misunderstanding considering natural disasters. She states that even in the city of Hoboken (which was under water for 80% after Sandy), residents assumed that the storm would be a once in a lifetime event and therefore preparations for a potential next one would be unnecessary (Ovink & Boeijenga, 2018). Also, in contrast to media framing after Hurricane Katrina, little attention was paid to the systemic problems behind Hurricane Sandy and its impact, neglecting the issue of inequality and the wealth gap (Gebreyes, 2015). Research on four prominent newspapers, however, showed a large increase in articles on the topic of 'adaptation', to which response to Hurricane Katrina contributes to a large extent (Barnes, et al., 2008). This shows the overwhelming focus on Hurricane Sandy and the need for climate change adaptation, rather than the problem of inequality that was predominant after Hurricane Katrina. This can also be seen in the Climate Change Adaptation Plan published by the Environmental Protection Agency (EPA), in 2012 through 2014. These reports present policies committed to Executive Order 13653 and aim to prepare the United States for "the impact of climate change" (Environmental Protection Agency, 2012). The reports both mention "Hurricane" and "Sandy" close to 50 times which shows the impact of Hurricane Sandy on federal level and the fact that these policy changes were clearly a result of the disaster and clearly show a focus on resilience, mentioning it to be a key component in future policies and climate change-related projects (Environmental Protection Agency, 2012). The focus on resilience shows the reframing of the problem of natural disasters, resulting in the adaptation of new policies. This shows that framing can very much influences policy decisions (Becker, 2019).

Similar policy efforts can be seen on state level. Whereas Hurricane Katrina was framed, primarily by the media, as a failure on the part of federal government and its dramatic impact as a result of the wealth gap in the United States, in addition to ongoing racism. This resulted, on federal level, in policies that were mostly aimed at these issues, such as direct disaster relief. On the contrary, Hurricane Sandy was framed as a problem of climate change and with the

question how federal, state and local level could best prepare for the next disaster. This created the opportunity for policy entrepreneurs that aimed at more resilient solutions to push their ideas to the agenda, resulting in a novel approach to resiliency. Nathaly Agosto Filion, resiliency manager, stated likewise that while climate adaptation used to be "an exercise in looking at the future", the new way of framing natural disasters, Sandy in this case, created resiliency to be "a part of our current world" (Becker, 2019, p. n.p.). Through framing, the support from the public for a new type of policies was increased, so did the interest on state level for a new approach: Filion stated that the renewed and different way of framing enabled climate adaptation after Sandy (Becker, 2019). It has become clear that framing heavily influences the policies that are picked. This is mainly visible due to the stark difference in problem-framing after Hurricane Katrina and Hurricane Sandy and the different policies that were adopted on federal and state level in their aftermath. It has helped, probably, because Hurricane Sandy was framed in an equal way by both political actors in the political stream and was in accordance with the public mood, which was expressed by the media. This hypothesis is therefore confirmed. Policy entrepreneurs have the power to bring attention to a, by them preferred, interpretation of a problem. In this case, this frame corresponded with the interpretation that the federal government already had, which resulted in policy recommendations on climate change adaptation. Testing this hypothesis has discovered more evidence of how influences from abroad (the C40 network) and the way in which foreign actors frame problems can affect policy agendas.

6.3 Hypothesis 3
Policy change after natural disasters is a gradual process driven by the growing availability of international scientific sources and experience

This hypothesis was set up to show the differences between the Multiple Streams Approach, which states that focusing events only open short windows of opportunity and policy entrepreneurs should act quickly, and the idea of policy transfer which provides no set timeframe. As seen in hypothesis 1, it is possible for policy change to occur longer than just within a short time after a focusing event. New York City has also been a frontrunner in the creation of an international network between cities that shares data and information of post-disaster management and mitigation (see hypothesis 4: international networks joined since hurricane Sandy). Although attention amongst policymakers (particularly on federal level) might be most focused in the direct aftermath of a natural disaster, it seems very well possible for policy entrepreneurs (international and national) to bring their preferred ideas to the table

after attention has shifted. Contradicting the Multiple Streams Approach, of which the first hypotheses were derived, policy transfer includes many more types of policy entrepreneurs than just (elected) officials, interest group leaders or spokespeople for specific issues (Cairney, 2015). In policy transfer, the definition of who can be policy entrepreneurs is more extensive, including consultants, think tanks, or NGO's promoting their policy ideas of best practices on international level (Cairney, 2015). Most reports that have been published after hurricane Sandy focus on future recommendations to increase resilience. This proves that in order to actually change policy, it is needed that information is collected. In the aftermath of Sandy, president Obama established new task force that brings together state, local and tribal actors and officials that will advise the government on ways to become more resilient and prepared for future natural disasters (Ladislaw, 2013). He then appointed Shaun Donovan, at the time secretary of Housing and Urban Development, as the chair of the Task Force. Immediately after his appointment it became clear that Donovan was motivated to create innovative policy solutions based on experience and knowledge, gathering a diverse group of actors for his board. Chief of Staff Laurel Blatchford, e.g., was hired because of her long time residence in the affected area and her "unmatched awareness of the issues and the players involved" (Donovan, 2013). The holistic approach became more obvious when Henk Ovink, director of the Dutch office of Spatial Planning and Water Management office joined the Task Force in 2012 as Donovan's senior adviser (Shorto, 2014). Like Governor Blanco did after hurricane Katrina, again Dutch help was called upon in the aftermath of Sandy (Associated Press International , 2006). The federal effort to create thought through policy changes after hurricane Sandy, however, seems much more extensive than after Katrina. Reports by the FEMA that still build upon the experiences of Hurricane Sandy confirm the long-term effect of Sandy on policy change. The hurricane Sandy Task Force stated that "although current scientific knowledge does not generally provide a single, clear answer to complicated questions" such as climate change adaptation and rebuilding, evidence-based research and risk analyses would lie at the foundation of their future actions and policies (Task Force Advisory Group , 2013, p. 28). This shows the increase in time that is accepted for policies to take and thus the inconsistency considering time constraints for policy change in the Multiple Streams Approach. In 2014, an update on the implementation of the Hurricane Sandy Rebuilding Strategy showed that 50 out of 69 recommendations were implemented. Most successful is the implementation of recommendations on 'promoting resilient rebuilding through innovative ideas and thorough understanding of current and future risk' (3/3), 'building state and local capacity to plan for and implement long-term recovery' and rebuilding (5/5) (Brown J. T., 2014). These changes

and adaptations in policies on federal level show the increased importance of climate resilience put on the agenda of federal agencies such as the FEMA and EPA. Also, there is an ongoing effort towards implementing resilience policies, showing that some policies take an accumulation of information and experience and do not necessarily have to happen within the short timeframe right after a focusing event. This data corresponds with conclusions of previous research on policy transfer, it has appeared that there is a growing popularity of evidence-based policy making (Minkman, van Buuren, & Bekkers, 2018). On state and local level, cities that had been affected most by the storm were quicker to implement adaptive measures. New York City for example, where Hurricane Sandy caused 43 fatalities, was by this time a prominent leader in the determination of climate risks and focused on climate change adaptation (Rosenzweig & Solecki, 2014). The New York City Panel on Climate Change (NPCC) was already established in 2008, focusing on climate adaptation policies on i.e. infrastructure, hurricane Sandy being a tipping point that caused the intensification of their climate adaptation policies (Rosenzweig & Solecki, 2014). Next to NPCC, in 2012 the Special Initiative for Rebuilding and Resiliency (SIRR) was established, focusing on long-term protection against climate change in infrastructure and rebuilding after Sandy (NYC Special Initative for Rebuilding and Resiliency , 2019). Also, a second New York City Panel on Climate Change was held in 2013 (NPCC2), which resulted in updated policies on climate change adaptation using the Coupled Model Intercomparison Project Phase 5 (CMIP5), for example, which is a tool providing framework for global protocols on climate modeling which outcomes are used in the IPCC assessments on adaptation (Rosenzweig & Solecki, 2014). The use of this tool was actually advised by the IPCC. These models provide information on which new climate policies are based and were used in New York City's climate projections (Flato & Marotzke, 2013; Rosenzweig & Solecki, 2014). The adaptation and implementation of this type of policy shows a slightly more ambitious approach than the federal policy changes that were made in the direct aftermath of Hurricane Sandy. Also, it confirms the possibility of policy change long after the actual event. More importantly, there is likely a connection between the evidence-based nature of the policy and the timeframe in which it can be realized.

This hypothesis is confirmed. After Hurricane Sandy, it seems that on federal, state and local level there has been an increase in desire for evidence-based policy making in developing new policies and implementation thereof. There are strong links between the data and the theory of policy transfer like the definition of policy entrepreneurs, evidence-based policymaking, and the conditions under which the transfer occurs (Dolowitz & Marsh, 2000). Additionally, the

6.4 Hypothesis 4
Policy transfer contributes to policy change when domestic actors lack knowledge and expertise

From hypothesis 2, it has appeared that science and knowledge have played a significant role in framing Hurricane Sandy. Therefore, it can be assumed that after natural disasters, policy entrepreneurs can be influenced by scientists and, applying the larger scope of what can be policy entrepreneurs according to policy transfer, also scientists themselves can influence the policy agenda. Based on this information, this hypothesis can test if this knowledge is called upon after natural disasters if there is a lack of information and experience amongst domestic policy entrepreneurs. Groups like the ICLE-Local Governments for Sustainability have brought together cities and strive to help local governments to become "more sustainable and resilient" through "collaboration and inspiration" (ICLEI Local Governments for Sustainability , 2019). The ICLE Local Governments for Sustainability network currently includes Canada, Africa, East Asia, Europe, Japan, Korea, Mexico, Central America & the Caribbean, Oceania, Southeast Asia, South Asia and the USA. Other groups promoting global information and policy sharing are C40 Large Cities Climate Group (C40) or the World Mayors Council on Climate Change (WMCCC): the C40 joined forces with the Clinton Climate Initiative and the World Bank in 2013. Since, multiple cities within these networks, like London, Tokyo, Mexico City and Quito and multiple other cities have copied or been inspired by New York City's 'flexible adaptation' policies (Rosenzweig & Solecki, 2014). Scientific evidence and growing knowledge play a lead role in the development of these policies. Another corresponds with both the conception of Dolowitz and Marsh that policymakers often look for knowledge from abroad (D&M), that globalization has created incentive to share policies globally and that
Finally, another project shows the new focus on international cooperation, a strong narrative of climate change as a threat to future society and the growing interest for long-term solutions and scientifically supported policies. Bringing these trends together are the efforts within Sandy Rebuilding Task Force to launch a designing project called "Rebuild by Design", which created policies focused on design and were inspired by Dutch water management expertise. For this effort, President Obama sent Shaun Donovan, the secretary of Housing and Urban Development (HUD) at that time, to the Netherlands in order to observe the Dutch flood-control and prevention measures. This project resulted in a designing competition in which companies, experts and policy entrepreneurs from all different countries worked together on policy change in New Jersey, New York, New York City and Connecticut – six resulted in

projects funded and are (being) implemented (Rebuild by Design , 2019). Henk Ovink, a Dutch water management expert, diplomat and appointed as the Senior Advisor US Presidential Hurricane Sandy Rebuilding Task Force (Ministerie van Buitenlandse Zaken, 2014). In 2013, the United States and the Netherlands signed a *Memorandum of Understanding between the United States and Kingdom of the Netherlands* on "sustainable urban development, water management and integrated planning and cross sector collaboration" (signed by Shaun Donovan and M. Schultz van Hagen) for the Department of Housing and Urban Development (HUD) (Government of the Netherlands , 2013). Ovink's analogy of "sabbatical detour" policy greatly influenced the projects that were established through Rebuild by Design and distinguished it from other, earlier and more traditional recovery efforts (Urban Institute, 2014). Based on the extensive network of policy entrepreneurs and experts on disaster management that has been created and was joined after Hurricane Sandy (i.e. the second New York Panel on Climate Change in 2013). While FEMA and flood insurance policies that have been extensively used by the US federal government after disasters mostly focus on helping people to rebuild, they usually do this in an unsustainable way, rebuilding in the exact same place in the same style (Beesley, 2018). This strategy obviously lacks a focus on resilience, which is where international expertise on similar situations is needed in order to establish renewed policies. The most prominent example of policy transfer due to a lack of expert knowledge in this case is the *Memorandum of Understanding between the United States and Kingdom of the Netherlands* that was signed in 2013 (Government of the Netherlands , 2013). Policy transfer can be used by policy entrepreneurs to be informed about global policies and best practices that have been implemented in the same context elsewhere. When analyzing the collected data, it is clear that as well on a federal as a local level, the United States has benefitted from international assistance in creating new policies after Hurricane Sandy. Also, international assistance (for example *Rebuild by Design*) has resulted in policy change and is still resulting in policy change. Based on the extensive network of policy entrepreneurs and experts on disaster management that has been created and was joined after Hurricane Sandy (i.e. the second New York Panel on Climate Change in 2013). While FEMA and flood insurance policies that have been extensively used by the US federal government after disasters mostly focus on helping people to rebuild, they usually do this in an unsustainable way, rebuilding in the exact same place in the same style (Beesley, 2018). Whereas, as seen in the previous hypotheses, there is a movement and increased interest in more resilient policies aimed at (climate change) adaptation, which is where international expertise on similar situations is needed in order to establish renewed policies. The most prominent example of

policy transfer due to a lack of expert knowledge in this case is the *Memorandum of Understanding between the United States and Kingdom of the Netherlands* that was signed in 2013 (Government of the Netherlands , 2013). Policy transfer can be used by policy entrepreneurs to be informed about global policies and best practices that have been implemented in the same context elsewhere. When analyzing the collected data, it is clear that as well on a federal as a local level, the United States has benefitted from international assistance in creating new policies after Hurricane Sandy. More importantly, international assistance through for example Rebuild by Design has resulted in policy change and is still resulting in policy change.

The hypothesis is therefore confirmed. It has appeared that actors can reach out to international policy entrepreneurs and that their experience can be decisive for the adoption of new policies or for a renewed perception of and change in attitudes towards a (flood) problem (Bennett & Howlett, 1992).

6.5 Conclusive Remarks

Testing the four hypotheses based on the case study of Hurricane Sandy has provided useful insights in the effort to answer the research question. One hypothesis was partly confirmed, the other three confirmed. Not all hypotheses were easy to answer. It has appeared that in order to answer hypothesis two on framing, it is hard to distinguish the influence of policy entrepreneurs as compared to the strength of the political stream. The data was hard to collect and not all data was valuable or contributed to the answer. Framing, however, helps to establish who is held responsible to respond to disasters: the following case study provides evidence of the shift in ‘blaming’ from solely the federal government towards cities being key players in climate change adaptation. This was influenced by policy entrepreneurs from abroad, something that the classic Multiple Streams Model does not take into consideration. In the case of Hurricane Sandy that the preference in policy changes, on both federal and lower levels has shifted towards a science-based interpretation of the problem. Cities joining international working groups and official cooperation show that foreign expertise is used when local actors lack that. Particularly Dutch experience stands out and their expertise is used sometimes solely but also in combination with local actors to create sustainable policy change anticipating for future natural disasters.

Chapter 7: Discussion of Findings

Case study results, relevance and additional findings

The aim of this research paper was to provide an answer to the question what theory best explains policy change after natural disasters. The two cases that were used to answer this question showed that while the Multiple Streams Approach generally offers a clear answer that indicates multiple influences and reasons behind policy change, it has strong limitations that can be solved by adding elements of the theory of policy transfer. The inability of the Multiple Streams Approach to fully explain policy change after Hurricane Katrina and Sandy appeared from its focus on short time frames and its negligence towards foreign influences. Little research has used theory on policy transfer together with MSA in a congruence analysis nor as an extension of the Multiple Streams Approach. Considering the growing danger of climate change and the need for evidence-based policy making, the Multiple Streams Approach falls short in explaining some important, sometimes decisive, influences on policy change.

As stated earlier in this thesis, the Multiple Streams Approach has yet been extensively used and applied to many cases including natural disasters. Nevertheless, it is often applied to case studies and the assessment of the key elements then does not lie within the scope of those researchers. Key elements included framing and policy entrepreneurs, but the power thereof was relatively untouched in previous research that has been encountered in the literature review and theoretical framework. In both cases it appeared that the hypotheses were testable and that often similar data could be found to test them.

Overall, this thesis can be concluded with the following findings. Testing hypothesis 1, it has appeared that the MSA has considerable explanatory power, as it is true that policy change can happen right after natural disasters. On federal level, policy officials are sometimes more interested in economically beneficial solutions that quickly solve problems for a large audience. Nevertheless, in both case studies, it appeared that more complicated policy changes and shifts in attitude towards the problem also happened long after the event and that policy changes in this field of study are still based on lessons learned from Katrina and Sandy. Primarily on state and local level, evidence-based policy change was seen, as was discovered that on state and local level the interest of policy entrepreneurs often lasts longer. In the case of Katrina, the federal desire for evidence-based policy making was small, while for Sandy this increased under the Obama administration, showing the importance of the party ideology for policy change.

Also, this paper found that framing is a powerful tool that policy entrepreneurs can use to promote their preferred policy outcomes or to prevent other policy ideas to reach the agenda. Nevertheless, testing it on the case of Hurricane Katrina, it appeared that framing is often subject to what fits within the Zeitgeist and party ideology of the politics stream. After Katrina, the way of framing that was most widely accepted was the one based on emotional arguments, which caused policy making to be mainly focused on the corresponding policy failures (housing for the poor, inequality). In the case of Hurricane Sandy, the power of framing was harder to determine since the way in which it was framed – as failure of climate change adaptation policies – was generally accepted. On federal level, the response to Sandy was much more thorough and based on the necessity of green infrastructure and resilience than after Katrina, promoted by the Sandy Rebuilding Task Force. However, in both cases, it appeared to be true that the attention of policy makers fades rather quickly after the event. On state level, policy entrepreneurs keep pushing for change and trying to gain information for a long period after the event: this results in both cases in international cooperation, visits to the Netherlands and the creation of international networks. Also, the research shows that the way in which a problem is framed internationally by policy entrepreneurs increasingly influence the behavior and attitudes of policymakers in areas affected by natural disasters, which is an additional influence proven to be necessary to take into account when assessing policy change after natural disasters nowadays. The way in which Hurricane Sandy was framed shows a stark difference with Katrina, as the responsibilities of state and local level in disaster response were emphasized, rather than just federal responsibility. This was stimulated from abroad, which emphasized the power of international policy entrepreneurs and networks.

This influence from abroad is an important finding as it appeared that after natural disasters, there is a growing interest in international expertise and different policy entrepreneurs are included and find platform. Policy transfer theory has showed that in contrast to what Multiple Streams Approach indicates, there is more than just a short timeframe in which there is attention for a problem after natural disasters, particularly on state and local level. Nevertheless, it is true that most federal policy change after natural disasters is seen in the direct aftermath of the event and most policies seem to be based on direct relief and triggered by the event, rather than a growing amount of research.

The growing awareness of climate change and its consequences has created an incentive for international cooperation on natural disaster management. Both Hurricane Katrina and Sandy provoked not only international assistance in disaster relief, but also an international interest in

the topic and ongoing bilateral and multilateral partnerships. This is also influenced by the international narrative that calls for cooperation and the responsibility of cities and individuals to implement resilience policies. The Netherlands in both case studies offered a good example of bilateral policy transfer caused by lack of domestic knowledge, while New Orleans for example offered an example of mostly implementing innovation that has been developed abroad. This example emphasizes the need for these international networks and the importance of the theory of policy transfer in climate change adaptation policy change.

Combining the findings of both cases, however, one can establish that policy transfer after natural disasters has relatively little to do with policy learning. This is likely due to the fact that policy transfer in these cases is used as a supplement for the lack of knowledge that is experienced domestically: put simply, the need for a 'solution' is urgent and while the efforts by the international policy entrepreneurs are big, it appears that additional international help is requested upon after every event.

It has appeared to be true that transfer can contribute to policy change when local actors lack skills and knowledge. It can be concluded that areas that are affected by natural disasters are open to, and actively seeking for international assistance and innovation. In both the case of Hurricane Katrina and Sandy, there is evidence that international help was requested after the events. After these requests for international assistance, we see a shift in attitude towards the problem and an increase in investments for innovative policies (Hoboken, New York City, New Orleans). Using policy transfer to fill the gaps of the Multiple Streams Approach has provided a comprehensive understanding of policy change after natural disasters. In an increasingly globalizing world, it appears outdated that theories on policy change do not take into consideration influences from abroad or a broader scope of policy entrepreneurs than just domestic. This new framework proposes that windows of opportunity can be open for a longer period of time, supposedly due to the constantly growing amount of information, promoted and transferred by international networks and policy entrepreneurs.

7.1 Unaccounted Findings

This thesis aimed to explain what causes policy change rather than to find what is most influential in the process of policy change after natural disasters. In both cases, however, it has appeared that the political stream is a decisive element in this process and that party ideology is an important determinant of policy change, despite the power of policy entrepreneurs and the media.

Another finding that was not accounted for is the fact that it seems that the attention on federal level fades quicker than interest in policy change on state and local level. Similar to the previous unaccounted finding, this is probably due to the interest of the US government system at the time, as we have discovered big differences in the way the Bush and Obama administration handled disasters. Although it seems logical due to the fact that those areas are closest, and this thesis hinted on the shift in responsibility from federal level to state and local level, exact reasons for this should be further explored, preferably through interviews with federal, state and local officials through the lens of risk perception.

Chapter 8: Conclusion

The goal of this thesis was to determine what theory has most explanatory power for policy change after natural disasters. This was attempted by trying to answer the question "*What theory best explains policy change after natural disasters?"* In doing so, the Multiple Streams Approach and theory of policy transfer were tested on the basis of four hypotheses: two derived from each theory. Overall, the Multiple Streams Approach appeared to have more explanatory power, mostly because it is a more complete framework and takes into account more 'factors' driving policy change. Also, because policy transfer is relatively new as a theory, there are not yet many applications of the theory as a framework for policy change. However, it contributed to the MSA of the level of policy change as it added more dimensions and factors that explained policy change. This research paper has confirmed that the Multiple Streams Approach has the most explanatory power for policy change after natural disasters but needs to be updated and complemented. Theory of policy transfer has proven to be a useful addition in the two studied cases. The Multiple Streams Approach has significant power in explaining policy change as its key concepts are widely applicable. This was the case for studying policy change after Hurricane Katrina and Sandy as well. In particular, concepts as policy entrepreneurs, framing and window of opportunity have helped to find several main incentives behind policy change and provided a steady foundation for two of the four hypotheses. It also helped to differentiate between different levels of government, which appeared to be helpful and necessary throughout the rest of the research. Nevertheless, its claims about time constraints for policy entrepreneurs and sole reliance on the streams as only influenced by domestic actors appeared limiting to this research. If solely the Multiple Streams Approach was applied, there would be no explanation for later policy changes and the influence from 'outside' the policy streams would have been neglected, resulting in an incomplete explanation of policy change after natural disasters. By formulating four hypotheses, two derived from each theory, it was possible to find gaps in the MSA and find ways of complementing it with policy transfer. The hypotheses contradicted each other in some way but were also formulated in a way that made it possible to use the data found to answer them to create a comprehensive answer. For example, when the first hypothesis in both cases found that policies can be made both quickly and longer after a focusing event, the third hypothesis confirmed that policies after natural disasters are often the result of a gradual process of accumulating information. The second hypothesis proves the importance of policy entrepreneurs, which was already acknowledged by both theories but did provide an opening for policy transfer to complete the MSA, as framing influences from abroad

were discovered (the C40 international network). The research question was thus answered, be it not with the precise answer that might have been the result when using a competing congruence analysis as methodology. However, the complementary approach has enabled us to determine policy transfer to be an explanatory tool and addition to Multiple Streams Approach, revealing information that it would not have revealed otherwise (Blatter, 2012).
This research paper has contributed to the literature on policy change, specifically policy change aimed at resilience and climate change adaptation. It should be tested whether or not this new use of MSA supplemented with policy transfer is applicable to other policy areas but completing knowledge deficits in domestic policy streams with international assistance seems to be a general trend that should be closely followed and assessed.

8.1 Limitations, recommendations and links to relevance

During the course of this research, several limitations were encountered. First of all, theory of policy transfer is relatively new and has not been applied to many cases yet, in contrast to the Multiple Streams Approach. Therefore, the application of policy transfer as a tool to explain policy change was based on personal choices: although the application relied mostly on Dolowitz and Marsh's framework (2000), it was a matter of picking the elements thereof that were best applicable to this case. This thesis can help in future research as a guideline for applying the theory. Time constraint was another limitation to the thesis, together with the difficulty of approaching people relevant to this study for interviews. This decreased the internal validity of this thesis because no expert opinions support claims on policy change or the process thereof, which would have been a valuable addition. Finally, this research solely focuses on policies that changed after natural disasters. Based on that, the framework that is created here when combining the Multiple Streams Approach and theory of Policy Transfer is not generalizable for every type of policy change. However, future research should investigate the possibilities of application of this framework in other policy areas to test the generalizability of this approach. Linking the findings of this thesis to the societal relevance, some practical insights have emerged. First, it has provided more insight in why to engage in policy transfer. The framework by Dolowitz and Marsh (2000) included this question and this research has confirmed that policy entrepreneurs actively seek for policy transfer when lacking information and when pressure is high (Dolowitz & Marsh, 2000). Applying this to a new empirical case has provided more detailed information on how this happens, and this thesis has provided information on existing networks. Additionally, future research can immediately focus on the importance of policy entrepreneurs, as these have appeared to play a pivotal role (according to

both theories) and thus should be incorporated and emphasized. Finally, future research should investigate what the potential is for applying a combination of MSA and policy transfer in other policy fields. In conclusion, this thesis has provided a framework in which the Multiple Streams Approach is complemented with the explanatory power of policy transfer and this approach can be used and further explored applying it to new empirical cases.

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