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Revisiting the role of disasters in climate policy-making

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ABSTRACT

A general malaise exists today about the prospects for timely and effective climate action. This calls for increased attention to factors that enable climate policy change. Among these enabling factors are hydrological, climatological, and meteorological disasters, including floods, extreme temperatures, drought, wildfires, and storms. What impacts these disasters have on climate policy-making is contested; some view them as potential focusing events leading to unique opportunities for policy learning and reform, while others anticipate no or limited effects. Recent research, however, has yielded few advances to document and explain these diverging outcomes. This article revisits research on how climate disasters shape climate policy-making to identify knowledge gaps and future research directions. The article highlights past research foci as a basis for pinpointing unresolved puzzles, questions, and phenomena. Future research directions are identified, including the general association between disaster events and climate policy-making, policy design and quality, and the potential for ripple effects from different disaster types and across policy issue areas. These research directions aim to widen the perspective regarding how post-disaster politics may shape climate policy-making and the factors that matter in this process. Redirecting the focus from documenting types and patterns of policy change to identifying policy designs that lead to positive outcomes is a particularly promising avenue for advancing this research and contributing to climate policy-making.

Key policy insights:

- Efforts to improve post-disaster policy learning and reform need to recognize that disasters are political events where policy actors often must respond to public criticism while at the same time identifying policy lessons.
- Whether disasters enable constructive policy-making depends on how events are framed by stakeholders and in public debates, including the allocation of responsibility for failure in risk reduction, planning, preparedness, and response.
- Policy change prompted by disasters may be elusive because it sometimes results from subtle learning, diffusion effects from distant events, heightened risk awareness, and only materializes over the long term.
- The political atmosphere of post-disaster episodes increases the risk of maladaptation and misdirected policy reforms. Therefore, policy-making should be targeted at measures that actually reduce vulnerability and enhance disaster mitigation, preparedness, response, and recovery.

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1. Introduction

The need for urgent climate action, recently emphasized by the 2023 Intergovernmental Panel on Climate Change (IPCC) synthesis report, has brought renewed attention to circumstances that enable significant

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policy change towards more ambitious climate mitigation and adaptation. The climate policy research field is crucial in this work as a bedrock for knowledge about drivers of climate policy action. Within this field, disaster events are often cited as potential windows of opportunity for policy action, but this effect has been debated; some view disasters as potential focusing events that enable transformative policy changes, whereas others suggest that effects on policy-making will be negligible. Meanwhile, recent research has presented few new insights regarding whether disasters actually have this effect and why.

In this article, we revisit the scholarship around disasters as potential triggering events for climate policy-making, which here refers broadly to any formal public action (e.g. strategies, laws, regulations, etc.) associated with climate mitigation and adaptation (Pielke, 1998). Disasters are also a potential driver of community-led adaptation (McSweeney & Coomes, 2011) but the focus of this work is on policy actions initiated by formal public institutions and organizations, which span any measures related to adaptation and/or mitigation. We summarize established insights in previous literature – drawing from climate policy, public policy, public administration, crisis management, and disaster studies – and categorize future research directions to advance knowledge about how disasters may shape climate policy-making.

Using experience from extreme events to inform policy decisions is crucial to reduce risks, build preparedness, and provide safety and protection for citizens, which is a core function of the state. In disaster risk reduction, for instance, the so-called 'build-back-better' approach urges societies to use catastrophic events as opportunities to reduce vulnerability and build community resilience. Returning to 'normal' is, therefore, not a desirable outcome. Rather, disaster experience should, ideally, serve as a springboard for ambitious measures to reduce vulnerabilities that contributed to the disaster in the first place (Kelman et al., 2016; Manyena et al., 2011). The IPCC, in its 2022 report (IPCC, 2022), also depicts extreme weather events as catalyzing conditions for policy-making associated with climate action. Exploiting extreme events for climate policy-oriented learning and change is thus a practical priority in pursuing good governance, sustainable development, and climate action globally.

The notion that extreme events can trigger policy change is well-established in several research fields, including, for example, institutionalism (Pierson, 2000), social-ecological systems (Gunderson, 2010), geography (Birkmann et al., 2010), public administration (Boin et al., 2008), and public policy (Birkland, 2006). This is also an established topic in climate policy research, which has demonstrated a range of outcomes and called for greater attention to intervening causal processes, such as, e.g. public awareness, stakeholder mobilization, and other factors that help explain why some disasters enable significant policy actions while others do not (Albright, 2020; Boudet et al., 2020; Peters et al., 2017; Pralle, 2009; Ricke & Caldeira, 2014; Rowan, 2022; Zhang & Maroulis, 2021). In addition, more recently, the notion of extreme events as windows of opportunity for societal change has received renewed attention through the rapidly evolving literature around sustainability transitions (Becker & Reusser, 2016) and transformation (Nohrstedt, 2022), including transformational adaptation to reduce losses from extreme climate events (Kates et al., 2012). Other works cover the potential agenda-setting effects of non-climate disasters, including biological (e.g. epidemics) and geophysical hazards (e.g. earthquakes and volcanic eruptions). Our study pulls together ideas and insights from these different fields.

The article is structured as follows. First, we present a brief overview of factors that typically are assumed to influence policy-making in the wake of disaster events. These factors are general and apply across different hazard types, not only climate disasters. Second, we categorize three directions to advance future research about the relationship between disasters and climate policy-making. These research directions summarize gaps, themes, and questions with the potential to generate new insights about how climate disasters can enable and constrain policy action.

2. Factors influencing disaster policy-making

Past research has predominantly relied on single or comparative case studies, which describe a variety of effects disasters have on policy-making in specific locations, ranging from significant changes in, e.g. climate adaptation policy to policy stasis. Some large-n studies have also been conducted, but these generally compare the role of disasters alongside other potential drivers of climate policy action and are usually limited to certain geographical regions, mainly Europe and North America.

Table 1. Disaster policy-making: explanatory perspectives.

Perspective	Logic	Ref.
Extreme Event Attributes		
Magnitude	Large-scale events (in terms of damage, fatalities, and affected populations) are more likely than smaller-scale events to bring heightened attention and add pressure for learning and policy reform.	(Birkland, 2006; Giordono et al., 2020; 't Hart & Boin, 2001)
Novelty	Previously 'unimaginable' events expose neglected risks and capacity needs that cannot be addressed via routine policy-making. Shocks provide temporary reform opportunities by lowering political-institutional opposition, empowering certain policy actors, and adding pressure on political and bureaucratic leaders. Yet, policy actors may also debate the probability and potential consequences associated with various contingencies.	(Parker & Stern, 2022; Rochefort & Cobb, 1984; Schneider, 1995)
Frequency	Recurring events can build pressure for policy change over time. Meanwhile, recurring events can sustain 'tyranny of the urgent' (maintaining a focus on short-term response and recovery instead of policy-making for enhanced risk reduction, preparedness, and adaptation).	(Birkmann et al., 2010; Delaney & Shrader, 2000)
Sociopolitical reactions		
Legitimacy	Widespread public questioning of incumbents, public organizations, and institutions creates pressure for policy change. Loss of legitimacy can feed defensive responses to maintain the status quo or lead to disproportionate or 'symbolic' policy measures.	(Alink et al., 2011)
Framing	Policy change results from public battles fought over emotive labels (e.g. success vs. fiasco) and competing narratives (focusing on, e.g. underlying causes, responsibility, and reform needs) imposed on past events. Key actors span from individual policy entrepreneurs to advocacy coalitions.	(Boin et al., 2009; Huitema & Meijerink, 2010; Nohrstedt, 2013)
Agendas	Events get high agenda prominence as policy actors start exploring potential actions in response. The 'focal' power of events depends on, e.g. magnitude, severity, and subsystem characteristics. The importance of some risks will fade in the 'issue-attention cycle' as other risks emerge and alter agendas.	(Birkland, 2006; Downs, 1972)
Emotions	Defining characteristics of crisis, including threat and uncertainty, can incentivize rigid and inflexible responses but also lead to policy change to demonstrate political decisiveness. This sometimes feeds disproportionate policy reactions. Fear among leaders, e.g. of negative publicity, can serve as a motivating factor for policy action.	(Boin & 't Hart, 2022)
Policy-making context		
Subsystem	Policy change is likely in subsystems where pro-change actors and stakeholders are relatively well-organized and capable of exploiting events as they occur. Yet, emergent advocacy coalitions (actor constellations forming in relation to events) can also influence policy-making.	(Birkland, 2006; Crow et al., 2021; Nohrstedt & Weible, 2010)
Centralization	Extreme events provide an opportunity for centralized leadership, enabled by increased popular support and 'rallying-around-the-flag' dynamics. Moreover, delegation of policy decisions to specific authorities can reduce the number of veto points and open space for major reforms.	(Keeler, 1993; 't Hart & Boin, 2001)
Capacity	Pre-existing resources facilitate the implementation of policy changes. Conversely, a lack of governance resources (e.g. institutional, financial, and technological) likely constrain policy change.	(Becker & Reusser, 2016; Fankhauser & McDermott, 2014; Mockrin et al., 2018)
Learning	Disruptive events can be followed by organized efforts to learn, manifested by policy change building from insights concerning causes and consequences. However, post-crisis learning can be inhibited by accountability (feeding defensive behaviour) and biased assimilation (pre-existing beliefs block dissonant information).	(Smith & Elliott, 2007; Stern, 1997; Toft & Reynolds, 2005)

Table 1 summarizes insights from previous studies concerning factors that influence policy-making after extreme events, focusing on three categories: event attributes (magnitude, novelty, and frequency); sociopolitical reactions (legitimacy, framing, agenda-setting, and emotions); and policy-making context (subsystem, centralization, capacity, and learning). Some of these factors, for example, event attributes, have been treated as potential independent variables to explain variance in policy outcomes of disasters, ranging from inertia to significant changes in goals and means. Other factors associated with socio-political reactions are intervening causal mechanisms, which shape policy-making given the occurrence of disasters. It should also be noted that some of the factors in Table 1, specifically capacity and learning, may in fact also be studied as dependent

variables, defined as key attributes of climate adaptation policy (Tschakert & Dietrich, 2010). This summary is not exhaustive but represents a selection of complementary perspectives that have received recurring attention in past research.

One common premise that underpins some of these factors is that disaster events are precursors of policy-making and partially constructed political phenomena whose outcomes depend on how they are depicted in political discourse (Boin & 't Hart, 2022; DeLeo et al., 2021). Several of these factors may interact to build momentum for policy action. For example, high-magnitude climate disasters, such as the1970 Great Bhola Cyclone, floods along river Elbe and the Donau in 2002, Hurricane Sandy in 2012, and prolonged droughts in different world regions (Biswas & Daly, 2021; Friedman et al., 2019; Petrow et al., 2006; Wilhite et al., 2014), among others, bring heightened attention, including potential framing-contests and loss of legitimacy, and shift policy agendas, which can influence policy learning and change (DeLeo et al., 2021; Nohrstedt & Weible, 2010).

Disaster here refers to the continuum of low-probability, high-impact (manifestations of intensive risk), and high-probability, low-impact events (manifestations of extensive risk). While it has been acknowledged that responding to these disaster risks requires different capacities (Manyena et al., 2019), large-n studies have found no significant relationship between event frequency and severity and policy change (Nohrstedt et al., 2021, 2022), indicating that other factors also mediate the effects of these events on policy-making.

These factors derive from a variety of subfields and studies. Large-n studies (Anbarci et al., 2005; Hsiang & Narita, 2012; Keefer et al., 2011; Neumayer et al., 2014; Nohrstedt et al., 2021, 2022; Onuma et al., 2017; Peterson, 2021), by comparing policy outcomes of disasters within larger samples of e.g. cities or countries, typically focus on a subset of disasters and either investigate their effects in specific policy areas (e.g. climate policy, energy policy, emergency management) or compare the influence of disasters with other drivers of policy-making. Hence, these studies focus primarily on event attributes but are mostly silent on intervening factors and mechanisms mediating the impact of disaster events in policy processes. Conversely, case studies provide detailed accounts of the aftermath of disasters, confirming the role of socio-political reactions and factors associated with policy-making contexts. Besides some comparative case studies (Crow et al., 2023; Huitema & Meijerink, 2010; Huntjens et al., 2010), these analyses display a variety of policy outcomes of extreme events, ranging from examples of major policy changes (Haque et al., 2019; McSweeney & Coomes, 2011; Pahl-Wostl et al., 2013) to inertia or more incremental change, path dependency or the reinvigoration of past ideas, and solutions (Birkland, 2006; Johnson et al., 2005; Kinol & Kuhl, 2023).

Some recent work has synthesized empirical insights into integrated analytical frameworks. So far, these works remain narrowly focused within specific fields (Brundiers & Eakin, 2018; Giordono et al., 2021; McHugh et al., 2021; Novalia & Malekpour, 2020), for example, sustainability science, environmental governance, and public policy resulting in redundancy and limited theoretical innovation overall. What is missing is concerted efforts to merge theoretical insights across fields as a basis for theory-driven empirical work to investigate drivers and mechanisms of policy change across cases. This is an essential step in advancing the climate policy field towards a better understanding of the factors that may shape ambitious policy actions for adaptation and mitigation.

3. Future research directions

The factors highlighted in Table 1 have received widespread attention in previous work, yet the literature on, e.g. public administration and public policy offer additional insights that have not yet gained equal attention. These insights span several puzzles, questions, and analytical perspectives with the potential to advance knowledge about climate-related disaster policy-making. Here, we synthesize these insights by categorizing three general research directions focusing on (i) the general association between disaster events and climate policy-making, (ii) policy design and quality, and (iii) ripple effects.

3.1. The general association between disaster events and climate policy-making

Is climate policy change a more or less likely outcome of disasters? Are some hazard types more or less prone to generating policy change? And to what degree do policy changes initiated in the wake of disasters reduce risk

and enhance the ability of societies to prepare for, respond to, and recover from future climate extremes? Most available evidence about policy-making in the wake of disasters derives from single- or comparative case studies, illustrating the breadth of potential outcomes from minor incremental changes to more ambitious policy initiatives. Meanwhile, we do not have a particularly good overview of how common it is that disasters are followed by policy change. The available evidence from large-n studies suggests that consolidation of the status quo or minor change is the most common response (Boin et al., 2008). However, studies that seek to identify policy change as an outcome of disasters focus narrowly on cases within the same policy domain, geographical area, and hazard type. Thus, the field clearly needs a better overview of the frequency of policy change after disasters more generally.

The most typical case study of the climate disaster-policy change relationship involves a single event and its aftermath. Studies focus, for example, on a major flood or storm and analyze how the event provided momentum or incentive (or not) for learning and change associated with, e.g. hazard planning, mitigation, and response. These actions may include specific measures targeted at the hazard type experienced as well as generic measures to strengthen preparedness and response in relation to any hazard (Nohrstedt et al., 2022). Meanwhile, some other studies show how policy learning and change emerge from repetitive shocks from multiple events (Birkmann et al., 2010b; Dilling et al., 2017; Nohrstedt et al., 2022). There is growing scientific interest in multiple 'compound' disaster events (Tortajada et al., 2021), including climate extremes (Aghakouchak et al., 2020) but so far, this has mainly attracted attention in the natural sciences.

In contrast, few social science studies analyze the potential combined effects of multiple extreme events on policy-making, including dynamics of vicarious learning from events happening elsewhere. Thus, an important step is to document what climate events actually provide impetus for policy action. Part of this is to assess whether experiences from multiple events serve as 'repeated reminders' of the need for reform, which differs from the dominant focus in the literature on policy change as a reaction to single events.

Policy change after disasters is partially conditioned by learning among policy actors, including lessons about the viability of existing policies and strategies for gaining influence (May, 1992). However, policy learning is often elusive, and studies may easily overlook critical learning and policy change processes that are difficult to document in empirical research. It has been noted that much learning after a crisis is often less visible than commonly assumed; it is often long-term, focuses on technical improvements and bureaucratic adaptation, and takes place away from the media spotlight (Boin & 't Hart, 2003). Therefore, studies targeted at spectacular policy reforms may overlook potentially consequential measures and actions derived from subtler policy-oriented learning processes. These actions include less spectacular policy measures that do not gain much public attention, but nevertheless are potentially important in building community preparedness and resilience, including, for example, public information and education campaigns to enhance flood mitigation (Brody et al., 2009). Experiences drawn from these processes may result in minor policy changes but could also spur more substantive policy changes after some time. A related scenario is when disasters lead to increased vigilance or heightened awareness among actors about risks and hazards more generally (Nohrstedt, 2022). Heightened awareness about problems and solutions may not directly lead to concrete policy changes, but can strengthen mental preparedness and contribute to justifying consequential policy decisions over time.

One common assumption about the aftermath of disasters is that disruptive events bring intense political scrutiny, which can constrain policy-oriented learning and reform. These episodes sometimes revolve around 'existential questions' regarding preparedness and response, placing public organizations and institutions as well as political and bureaucratic leaders, under intense public scrutiny. Such politicization has been assumed to harm learning by feeding defensive behaviours (Argyris, 1986; Senge, 1990). Still, the empirical evidence for this effect is limited and mixed, and more work is needed to examine the relationship between politicization and learning more closely. While some studies show disasters constrain learning due to blame (Aldrich et al., 2019; Bohensky & Leitch, 2014), other work has suggested that learning is plausible despite intense public scrutiny if political decision-makers commit to specified structural reforms and closely monitor their implementation (Dekker & Hansén, 2004). One example of the former scenario is the policy fiasco after Hurricane Katrina in the US after which the Bush administration opposed calls for an independent commission to investigate the federal response, resulting in a lack of policy reforms at the federal level (Boin

et al., 2010). Another example is the 2011 floods in Brisbane, Australia, which the media framed in terms of failure, resulting in limited learning and few measures for long-term flood resilience (Bohensky & Leitch, 2014). An illustration of the opposite scenario is the 2007 floods in the United Kingdom, which brought several major reforms of UK flood management policy despite widespread public blame and criticism (Nohrstedt, 2011). Thus, whether and how policy-makers balance defensive strategies for blame avoidance with constructive, evidence-based policy learning is an essential topic for future studies. Part of this work is to continue assessing concerted efforts by, e.g. advocacy coalitions to pressure for policy change, including how such demands are met in public framing-contests and the formation of competing coalitions defending the status quo (Boin et al., 2009; Nohrstedt, 2013).

3.2. Policy design and quality

Studies of policy-making after disasters generally pay more attention to the level of change than to the quality of policy measures. Hence, whether policy measures initiated in response to disaster actually represent an improvement is mostly neglected. Change alone is not synonymous with success, and in fact, there is a risk that policymakers and the public can overvalue symbolic or even substantive change, which can lead to overconfidence. A vivid example is the overconfidence government authorities placed in the flood protection infrastructure of New Orleans prior to Hurricane Katrina, which contributed to a lack of preparedness and the inadequate collective response to a long-predicted, upper-category hurricane (Parker et al., 2009). Therefore, understanding the impact of post-disaster measures is vital for issues such as assessing the risk of maladaptation, where policies might result in unintended outcomes that increase vulnerability (Magnan et al., 2016). For this reason, it is essential to explore whether policy changes undertaken after disasters actually matter in enhancing future capacity and reducing vulnerability (Birkmann et al., 2010).

Evaluating the quality of policy responses requires attention to measurement of effectiveness and 'success' – especially in cases where this is contested among stakeholders and policy actors (McConnell, 2010). In this perspective, policy design merits more attention, for instance, if policy changes are targeted at 'all hazards' approaches, limited to specific hazards, or, ideally, a combination of these principles (Boin & 't Hart, 2010; Nohrstedt et al., 2022). 'Paired events' designs – studies that analyze whether and how policy changes from one event impact the response to subsequent events –are one useful approach for addressing some of these challenges (Kreibich et al., 2017; Nohrstedt & Parker, 2014; Parker, 2015).

Understanding the outcomes of disaster policy-making also calls for greater attention to certain aspects of the policy process. One familiar premise is that policy change in the wake of disaster is conditioned by various attributes of the policy-making process, i.e. how governments and other actors identify problems, evaluate alternatives, and arrive at collective choices in the public interest. From this, it follows that policy change is often attributed to a more or less successful policy process characterized by a broad supporting coalition, high legitimacy, and limited opposition. Conversely, the lack of policy change has been explained by fragmented support, de-legitimization, and public opposition to reform (Boin et al., 2009; Crow et al., 2021; Dolk & Penning-Rowsell, 2021; Nohrstedt & Weible, 2010). However, the relationship between these process factors and policy outputs is more complex; in practice, we are likely to find contradictions where sometimes flawed processes result in productive outcomes and vice versa (McConnell, 2010). However, this relationship is understudied, and examining cases that display the range of these divergent outcomes is thus a crucial frontier for future research.

In public policy-making, the responsibility to analyze experience, draw lessons, and craft policy measures in the wake of disasters is often centralized to, e.g. committees, commissions, departments, and ministries, which display different behaviours in response to public pressure and reform expectations. Examples of such centralization can be found around the world, including cases from both the Global North (e.g. the Congressional inquiry after the 2023 Lahania wildfire disaster in Hawaii) and the Global South (e.g. the government-led post-disaster needs assessment in Pakistan after the 2022 floods). Studies focusing on such centralized venues can offer valuable insights into how disaster experience is translated into policy-oriented learning and recommendations for improvement. To date, not many studies in the climate policy area have focused on whether and how these venues enable or constrain policy reform in the wake of disasters. More knowledge

can be gained by studying different motivations regarding impartial learning, blame management, and the symbolic manifestation of a fair and rational evaluation procedure (Parker & Dekker, 2008).

3.3. Ripple effects

Most previous work on disaster policy-making examines the impact of disasters in single policy areas, such as energy policy, climate adaptation, or hazard preparedness. Meanwhile, most studies offer limited insights regarding the extent to which one disaster leads to policy changes in multiple policy areas (Nohrstedt & Weible, 2010; Quarantelli, 1999). Such 'ripple effects' can be triggered by relatively unique events that disclose previously unknown or neglected risks and vulnerabilities in several policy fields. Candidate cases include high-magnitude events with widespread effects and public attention, such as the Covid-19 pandemic (Weible et al., 2020). Enhancing knowledge of ripple effects is a critical next step in light of the emphasis on transformative responses to climate change, which turn the spotlight on profound policy changes across multiple policy areas (Novalia & Malekpour, 2020).

Non-climate disasters can have direct agenda-setting effects in the climate policy domain by incentivizing adaptation and mitigation measures. First, given an inclusive view of adaptation as involving disaster risk reduction measures, non-climate disasters can provoke measures to enhance capacity for disaster preparedness and response to any hazard type. Second, experiences from non-climate events, such as geological hazards, can diffuse into climate policy subsystems and trigger major policy changes. This is illustrated by the shift towards renewable energy and electricity production in Japan and Germany after the Tohuku earthquake and tsunami, and the ensuing accident at Fukushima nuclear power plant (Skea et al., 2013).

Similarly, the Covid-19 pandemic impacted the climate policy agenda around the world, with international organizations such as the IMF, OECD, and IEA advocating for a green recovery, including steps toward decarbonization and enhanced climate resilience (Corfee-Morlot et al., 2021). Within the European Union, for example, the pandemic, in contrast to expectations from past research that climate and environmental goals would be shoved aside for other urgent needs (Gravey & Jordan, 2016; Lenschow et al., 2020), instead served as a focusing event to accelerate the European Green Deal (Dupont et al., 2020; Eckert, 2021). The Green Deal was framed as a lifeline out of the pandemic, and a large portion of the recovery funds, which amounted to the largest stimulus package in EU history, was mandated for a green transition and achieving climate goals (Bongardt & Torres, 2022; Dupont et al., 2020). Moreover, rather than seeing the Union's 2050 climate neutrality goal be sidelined in the wake of the pandemic, the adoption of the European Climate Law makes it a legally binding obligation and adds an intermediate goal of slashing greenhouse gas emissions by at least 55% by 2030 (Bongardt & Torres, 2022).

In addition, disruptive disasters not only shape policy-making in those geographical areas that are immediately affected (i.e. a city, region, or country) but can also influence agendas and policy action elsewhere via transfer, diffusion, and lesson drawing. That is, experiences from events affecting one location could serve as a wake-up call for actors in other locations by drawing attention to risk, vulnerability, and preparedness (Friedman et al., 2019; Solecki et al., 2019). These potential 'second-order' diffusion effects provide opportunities for efficient policy-making since any given society can take informed action to enhance preparedness and reduce disaster risks without actually paying the costs of past disasters. How these processes of vicarious policy-oriented learning unfold is, therefore, a crucial question (Stern, 1997), yet we currently lack an overview of how common it is that distant disaster events shape policy change in other locations. Studies should, therefore, develop explanations as to why some disaster events become focal-points for debate and policy-oriented learning in some locations, while other events do not have any effects.

4. Conclusion

The need for policy solutions to mitigate the effects of climate extremes has spurred renewed interest in disasters as a potential pathway to climate policy change. However, while this effect is debated in the scientific literature, research into the dynamics of disaster policy-making has not kept pace, resulting in a paucity of truly new insights in the past decades. In an effort to revitalize the debate, this article suggests three research

directions to advance knowledge about disasters as a driving force in climate policy-making. These directions focus on uncovering the general association between disaster events and climate policy-making, policy design and quality, and ripple effects.

The article suggests that a purely functional approach to post-disaster recovery, such as a 'build back better' approach, which outlines activities and principles for reducing vulnerability, is insufficient and needs to be paired with a political approach to climate policy-making. This involves careful attention to the political aftermath of disasters, particularly the ability of policy actors to draw informed lessons under conditions of public arousal, critique, and demands for reform. These conditions can infuse polarization, feed defensive behaviours, constrain evidence-based learning and policy change, and provoke over-reactions or symbolic policy measures to demonstrate decisiveness and leadership. Enhancing the understanding of post-disaster politics can potentially reduce the risk of maladaptation or misguided policy reforms that do not address the core problems.

Studies addressing the policy effects of disasters have mainly focused on types and levels of policy change and less on actual outcomes of policy change. Change for the sake of change is not desirable. Therefore, more work should be devoted to whether policy measures are actually appropriate in reducing vulnerability to climate disasters and enhancing capacities for disaster mitigation, preparedness, response and recovery. What these measures are is partially context-dependent but they generally span efforts to identify and meet the needs of vulnerable populations, specifying actionable emergency management plans, developing early-warning systems, and ensuring institutions and resources for public assistance and restoration. Ideally, these measures need to be accompanied by effective climate adaptation policies, including, e.g. measures to manage losses, mitigate the effects of specific hazards (flood control, for example), efforts to address knowledge gaps and behavioural change through education and information (McBean & Rodgers, 2010). Studying how climate-related disasters can be leveraged to promote these and other actions that actually lead to positive outcomes is essential to avoid the pitfalls of policy actions leading to maladaptation and a false sense of security (Anderson et al., 2018; Plümper et al., 2017). By shifting the focus from types and patterns of policy change to policy design and quality, there is the potential to significantly advance the understanding of disaster policy-making in the climate policy field and beyond.

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