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SPECIAL ISSUE • Transformational change in Public Policy

research article

When do disasters spark transformative policy change and why?

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Floods, earthquakes, droughts, and other recurrent disasters around the globe have sparked renewed interest in whether and how disasters can be leveraged as turning points for transformation toward more sustainable and resilient societies. As the transformative potential of disasters increasingly gains prominence in different research fields, it is important to describe how different scientific approaches view the relationship. This article synthesises key insights from the policy sciences and public administration scholarship regarding the link between disruptive disaster events and policy activity aiming towards societal transformation. Key explanatory perspectives are discussed, including dynamics associated with institutional crisis, policy subsystems, agenda-setting and issue salience, governance capacity, policy-oriented learning and concentration of power, and situated in relation to four scenarios of potential disaster impacts on policymaking aiming at transformation. The results of this synthesis seek to enhance our understanding of when disasters may spark transformative change. Based on these findings, the article identifies priorities for future research into policymaking in the wake of disaster.

Key words disasters • transformation • scenarios • learning • policy change • policy action • resilience

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Introduction

While the need for transformation is widely acknowledged in international discourse around sustainability and resilience through, for example, the Intergovernmental Panel on Climate Change (IPCC) and the 2030 Agenda, concrete transformation pathways are less well articulated in scientific literature. In its 2022 report (Begum and Lempert, 2022), the IPCC acknowledges that transformation has many interpretations and defines it broadly as 'a change in the fundamental attributes of a system including altered goals or values' (p 64), which is in contrast to minor and incremental changes. These changes, in

turn, relate to issues of 'power, politics, capabilities, culture, identity, and sense-making' as well as 'equity, climate justice and large-scale institutional and societal change' (pp 65–66).

In the research community, calls have been made to explore how knowledge from different research fields can be leveraged to support transformational societal change to address these crucial challenges (O'Brien, 2012; Park et al, 2012; Loorbach et al, 2017). The point of departure for this article is that transformation can be enabled by public policy action for incentivising and regulating behaviour towards specific goals. That is, in order to begin transforming system attributes, such as rapid decarbonisation, profound policy changes are required, which span statues, laws, regulations, executive decisions and programmes (Weible et al, 2011). It is therefore crucial to unveil factors and dynamics that condition major policy change in pursuit of transformation towards a more sustainable future. This effort is part of a more ambitious research agenda within the social sciences, focusing on political feasibility and ways by which governance at different levels can enable and support transformation in different political contexts (Biermann et al, 2012; Patterson et al, 2017; Fazey et al, 2017).

Disaster events are frequently viewed as an important driver for changes in policy, institutions, attitudes and values (Birkland, 2006; Michaels et al, 2006; Folke et al, 2010; Pelling and Dill, 2010; O'Brien, 2012; Burch et al, 2014; Gibson et al, 2016; Becker and Reusser, 2016; Dilling et al, 2017). The 'disaster-reform hypothesis' (Nohrstedt et al, 2021) has received traction in the broader transformation literature, which often depicts disasters (for example, floods and wildfires) as important external drivers that enable major changes (Pelling, 2010). Meanwhile, there is also empirical evidence as well as theoretical arguments that question whether disasters actually constitute an important driver of policy change. Some studies have found that disasters merely play a peripheral role in climate adaptation, sustainable development and disaster risk reduction (Yeganeh et al, 2020; Nohrstedt et al, 2021; Zhang and Maroulis, 2021; Boin and 't Hart, 2022). Research also points to several barriers, for example, recurrent disasters, politics of blame, and declining political salience and attention, which reduce the likelihood for encompassing policy reversals in the wake of disasters (Boin et al, 2008).

The disaster-transformation nexus has been widely theorised and studied across different cases and contexts. Meanwhile, since these ideas span diverse fields, they are difficult to overview and thus far, few efforts have been made to explicate and synthesise existing knowledge. Particularly, there is a vast literature within the broader climate science field on forms of transition and transformation, which tend to underemphasise public policymaking. This limitation partially stems from a systems perspective, which conceptualises change and transformation in relation to overlapping social, ecological and technical domains. One example is the 'Pareto-principle', which has been the predominant explanation attributing transformation to 'social tipping-points' where large enough minorities tip over the logic of the majority (Rockström, 2020). While this explanation allegedly has received widespread empirical support (Winkelmann et al, 2020), such accounts tend to oversimplify the role of politics, governance and policymaking (Loorbach et al, 2017).

This article seeks to promote closer dialogues across these disparate fields. It summarises insights from policy and public administration scholarship regarding the circumstances under which disaster events may spark major policy change. Thus, the study does not aspire to build new theory but sets out to synthesise existing approaches. Also, given recent reviews concerning policy implications of disaster events (Brundiers and Eakin, 2018; McHugh et al, 2021; Giordono et al, 2021) the study does not provide

a systematic overview of the available empirical evidence. Rather, the aim is to draw on insights in the policy and public administration fields to explore theoretically and conceptually the link between disaster events and transformation. To this end, the study discusses prescriptive, descriptive and explanatory perspectives on transformation and illustrates key insights regarding post-disaster policymaking and elaborates four scenarios of how disasters may shape policy action towards transformation over time.

Disasters and transformation

Existing literature offers diverse approaches addressing potential relationships between disaster events and transformation. These span prescriptive, descriptive and explanatory perspectives.

The *prescriptive* perspective emphasises that societal transformation is urgently needed to support sustainable development and disaster risk reduction globally. Accordingly, societies need to take steps to reduce vulnerabilities and measures to address underlying risk drivers as well as capacities to prepare for, respond to, and recover from disruptive disasters. To achieve this, fundamental changes targeting, for instance, power relations, dominating narratives and interests that perpetuate marginalisation, inequality and poverty, are needed (Thomalla et al, 2018). This perspective sets out from the observation that disasters occur as natural hazards intersect with societal vulnerability, which is reinforced by poverty and inequity. In return, encompassing changes of different aspects of society is crucial and the only way to support development that contributes to equality, sustainability and resilience (Thomalla et al, 2018; L. Schipper et al, 2020). In international policy discourse, this perspective has brought a shift in focus from risk management approaches to respond to external risks, to long-term efforts to address underlying risk drivers associated with development.

According to the *descriptive* perspective, transformation is a policy option, or 'mode of governance', and transformation is not necessarily inherently better or worse than other options, including the status quo or incremental adjustment (Matyas and Pelling, 2015; Nalau and Handmer, 2015). What option is ultimately preferred depends on the context. Transformation is associated with several benefits, including the possibility to take advantage of new policy responses to address root causes of risk and vulnerability, as well as drawbacks, including secondary costs and the risk to undermine the stability of economic, environmental or societal systems. In addition, transformation brings ethical and procedural challenges to policymakers, such as who should have the right to determine pathways and objects of change (Pelling, O'Brien, and Matyas, 2015). Hence, in this perspective, transformation is a category of actions along with other policy approaches to enhancing disaster risk management. For example, some scholars have depicted transformation to be a fourth option to the triumvirate of mitigation, adaptation and suffering (O'Brien, 2012; Matyas and Pelling, 2015).

The *explanatory* perspective focuses on the potential causal role of disaster events as a trigger of change towards transformation (Glass and Newig, 2019). This assumption is a recurrent focus in different literatures and attracts attention in, for example, environmental policy (Novalia and Malekpour, 2020) and sustainability science (Brundiers and Eakin, 2018). Some of this work links the transformative potential of disaster events to the concept of tipping-points, referring to episodes of regime

shifts, thresholds and critical transitions. Recent work has translated this logic to changes in social systems to unveil changes in economies and resource governance institutions. Yet, to date, these studies have largely ignored policy actors and drivers of policy change (Scheffer et al, 2012). Others argue that research on 'climatically influenced social tipping points', that is, whether and how climate extremes shape social transformation, is still at an early stage (Kopp et al, 2016), suggesting that more work is needed to examine the relationship. The remainder of this article focuses on the explanatory perspective by exploring conditions for policy change in the wake of disasters.

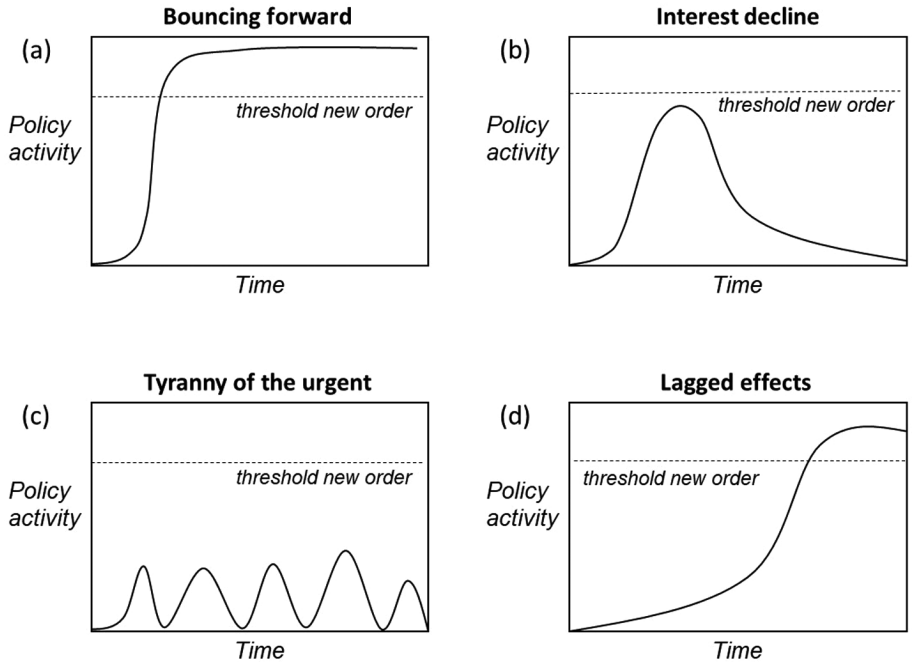
Scenarios of disasters, policy activity and transformation

Impacts of disaster events on major policy change, and ultimately transformation, depend on a variety of factors and circumstances. In this section I sketch four simplified theoretical scenarios to articulate alternative trajectories of disaster impacts on policy activity and transformation.

These scenarios set out from three premises. First, here, 'policy activity' refers to a range of actions and phases typically associated with the policy process: stakeholder mobilisation, agenda-setting, framing-contests, evaluation, consensus-building and decision-making. Second, each scenario can follow different temporal trajectories. The period for response, relief and recovery differs in scope from one case to another (Hsu, 2017). In addition, periods of heightened policy activity may be more or less drawn-out; in some instances, collective decisions toward societal change unfold at a rapid pace while in other cases they take more time. Third, in these scenarios transformation is understood as an outcome characterised by fundamental societal change and the introduction of novel practices that represent a shift from one order to another. Here these outcomes are defined narrowly as a potential product of public policymaking, which can be contrasted to changes enabled by social collectives outside the state or without the involvement of central authority (Matyas and Pelling, 2015). Thus, in these scenarios, public policymaking represents one plausible pathway towards transformation. Identifying ways by which changes in public policies actually contribute to long-term, permanent changes in multiple systems (for example social, economic, ecological, technological) is beyond the scope of this study.

The first scenario (Figure 1, panel a) is the reference case of a simplified episode where a disaster event sparks immediate policy activity toward profound change, resulting in the establishment of a new order that meets the defining elements of transformation, including a radical and irreversible regime change (Pelling, 2010). In contrast, the second scenario (Figure 1, panel b) portrays a period of intense policy activity followed by declining public attention and waning reform support. A third scenario (Figure 1, panel c) that may either interrupt or prevent transformation in the wake of disaster is the frequent occurrence of subsequent disaster events, which turns the spotlight on short-term disaster response and recovery at the expense of long-term changes aiming at risk and vulnerability reduction. In the last scenario (Figure 1, panel d), experiences from one or several disaster events may accumulate gradually and result in increased policy activity toward transformation after some time. Next, each scenario is elaborated in some detail.

Figure 1: Illustration of four simplified theoretical scenarios of policy activity and transformation after disasters



Bouncing forward

This scenario is closely linked to the dynamics often portrayed in resilience thinking focusing on a system's (community, city, region, country and so on) capacity to 'bounce forward' after a devastating disaster event. The bouncing forward analogy implies an element of social engineering and transformative changes in physical, economic, political and/or psychological realities of social life. Some examples highlighted by previous studies include enhanced disaster risk management in Christchurch, New Zealand after the 2010 earthquake, depopulation of mangrove forest ecosystems in the Indian and Bangladeshi coastline after Aila super cyclone in 2009, direct cash transfers to citizens enabling their engagement in disaster and development policy in the Lower Sindh region of Pakistan after flooding in 2010 and 2011, and enhanced relief development in Niger in response to slow onset drought in Africa in the last decade (Gibson et al, 2016).

Transformational changes are generally depicted as outcomes of rational choices that are partly initiated and orchestrated in a 'bottom-up' fashion by affected communities and partly 'top-down' via the state through disaster risk governance structures and formal political institutions. Part of the argument is linked to the notion that societies need to undertake change in order to escape those conditions that caused the disaster in the first place, which is ultimately about efforts to reduce vulnerability (Manyena et al, 2011). Furthermore, this combination of top-down and bottom-up approaches to post-disaster policymaking has been recognised as a pathway to effective disaster risk reduction (UNISDR, 2015). Hence, the logic behind the bouncing forward scenario is that transformation is initiated both by communities affected by disaster and by public actors and organisations with

responsibility for disaster risk reduction and societal security as well as adaptation, mitigation and sustainable development.

The ability of policy actors to initiate transformative changes is partially captured by the notion of double-loop learning, originally developed by Argyris and Schon (1978) and elaborated by Birkland (2009) in relation to policy dynamics after disasters. Unlike single-loop learning, which focuses on error-correction, double-loop learning entails a more profound questioning of the policies, assumptions and values that guided action in preparation for and response to an event. Organisations or actors that exhibit such capacity to double-loop learning are more likely to adapt to signals from the external environment. Whether a disaster will generate transformative change thus depends on the ability of policy actors to identify, question and reconsider value systems, practices and structures.

According to some policy theories, however, such significant change is an unlikely scenario – even in the wake of major disruptive disaster events. The reason for this is that the fundamental values and preferences that guide policy action are deeply rooted in actors' belief systems. For instance, the advocacy coalition framework (ACF) recognises that the most fundamental elements of the belief systems, the policy core beliefs, of policy actors will remain stable over time (Nohrstedt, 2005). Thus, as long as the distribution of power within any given policy subsystem does not change (that is, paving the way for other actors with alternate beliefs), rigid policy beliefs will prevent learning and major policy change (Jenkins-Smith et al, 2014). This is due to biased assimilation – the tendency to interpret new information or evidence in ways that are consistent with pre-existing beliefs. In other instances, policy actors may alter their beliefs (for example, concerning the efficiency of an existing policy or programme in addressing a given problem) while maintaining their support for the existing policy (Moyson, 2017).

Interest decline

While the bouncing forward-scenario describes how a surge in public attention and agenda-setting sets the stage for major change, interest decline refers to a reduction in public interest and engagement. This depicts a scenario where, after an initial period of heightened attention and increased salience, the policy process gradually steers away from policy changes toward transformation. Consequently, whereas some events become vehicles for mobilisation aiming at transformation, other events lead to a gradual decline in support and interest.

Anthony Downs' issue attention-cycle describes how certain issues rise on the public agenda and bring an 'alarmed discovery' of particular problems along with an increase in collective confidence to develop short-term solutions (Downs, 1972). However, in Downs' view, public attention will often start to decline and eventually problems get stuck in 'a twilight realm of lesser attention or spasmodic recurrences of interest' (p 40). This is based on a widespread insight in society that the costs for addressing the problem are very high, which feeds discouragement and perceptions of threat. In turn, the likelihood increases that public attention is redirected at other more pressing problems, which give rise to new attention cycles.

One consequence of this scenario is that sometimes policymakers resort to less costly solutions targeted at reducing some undesirable consequences of any given problem, but that do not bring a major restructuring or redistribution of benefits. This is captured by well-known tendencies after disasters associated with symbolic policy actions to demonstrate determination and decisiveness in the face of arousal and critique. Another

risk is that disasters provoke salience-driven policymaking resulting in inefficient or maladaptive policy responses, for example, so that future risks are actually increased rather than decreased (Anderson et al, 2018). Policy subsystem dynamics and institutional crisis might be helpful to understand and analyse these different outcomes, as discussed further later in the article. That is, whether policy activity results in resilience-building and bouncing forward or becomes subject to interest decline likely depends on dynamics associated with institutional crisis, policy learning, and stakeholder mobilisation.

One version of the interest-decline scenario is that some disaster events do not generate agenda change or group mobilisation. Most disasters, given their magnitude, are followed by some level of increased attention but in many cases attention and interest never increase to the point where the event punctuates existing agendas. This led Birkland, for example, to depict disasters as 'potential' focusing events, since it is difficult a priori to anticipate which events will have focal power (Birkland, 2016). According to this view, most extreme events are likely to generate some level of attention by the media and policymakers, however, only some will motivate political debate and induce government actors to explore alternative policy actions. The literature offers some hypotheses regarding what explains variation in the 'focal power' of disasters, including suddenness (and in turn predictability), severity, framing and the nature of institutional arrangements (Giordono et al, 2021; DeLeo et al, 2021).

Tyranny of the urgent

Recent studies, mainly in the natural sciences, emphasise challenges associated with compounded, or consecutive, disaster events that overlap spatially and temporally (Zscheischler et al, 2018; Ruiter et al, 2020; Ridder et al, 2020; Hassan and Mahmoud, 2021). Previous work (Albala-Bertrand, 1993; Drury and Olson, 1998) has suggested that repeated disasters can have implications for transformation, yet empirical research on this relationship is scarce. It has been hypothesised that frequent exposure to major events may disrupt lesson-drawing and constrain long-term societal change.

It has been suggested that exposure to repeated disaster events, particularly in low-income settings, increases the risk that decision-makers are forced to prioritise immediate needs and relief at the expense of long-term structural measures to reduce vulnerability and build disaster resilience. Such priorities can be accompanied by influx of external aid set on quickly returning a community to a state of normalcy. As one consequence, long-term development programmes can be overturned and fundamental social issues (for instance, poverty reduction, gender issues and local population participation and equality) are given low priority (Delaney and Shrader, 2000; Pelling, 2003; Smith, 2019; Yadav et al, 2021). Hereby the need for reconstruction may override sustainable development efforts, which may even lower the capacity to respond to future events and leave communities worse off (Schipper et al, 2016).

The empirical basis of the tyranny of the urgent hypothesis essentially consists of case-study evidence. In contrast, recent work examining the potential relationship between disaster events and progress in implementing disaster risk reduction policy found no association between event frequency and policy change. That is, on average, the number of disaster events that a country is exposed to over time does not make it more or less prone to take policy action associated with enhanced disaster risk reduction (Nohrstedt et al, 2021). Thus, there appears to be no clear empirical evidence in support of the tyranny of the urgent-effect on a global scale, however, it is nevertheless evident in individual cases.

Lagged effects

Some policy changes associated with disaster events and transformation can be expected to take a long time to formulate, initiate and implement. Thus, although one or several disaster events might bring heightened attention and opportunities for significant policy changes, moving from agenda-setting and increased attention to concrete and visible societal changes is demanding. Ensuring that the experiences of disaster events are effectively exploited for long-term transformative change requires, for instance, policy entrepreneurship, persistence, political stability, shifts in institutions and relative stability of the line-up of reform supporters.

The lagged-effects scenario recognises that transformation does not materialise as an immediate response to a dramatic agenda-setting disaster but will rather emerge gradually through time as the result of accumulated experience from multiple events. This is partially given by the profound nature of some transformation as a societal outcome. For instance, if transformation includes changes to the functional structure of societal systems, for example, via 'reorientation of development pathway towards social justice and sustainable development' (Pelling et al, 2015), then it seems reasonable that a single disaster event will have limited impact in the short-term. In addition, urgent pressure on policymakers in the wake of disruptive events might provoke reactive and more short-sighted policies in efforts to 'do something', which then fail to address underlying issues of risk and vulnerability (Anderson et al, 2018).

It has also been noted that policy changes associated with risk and vulnerability evolve slowly, as the result of accumulated experience from multiple events (O'Donovan, 2017). Repeated disasters can reinforce policymakers' lessons regarding the causal factors that drive damage and disruption, which may increase the likelihood for policy change (Birkland, 2006). In Singapore, for example, repeated floods in 2010 and 2011 enabled infrastructure improvements, new approaches for modelling and monitoring, increased public participation in flood preparedness, and other comprehensive policy measures associated with long-term flood risk management (Tortajada et al, 2021). Thus, in some cases experience from repeated disasters can in fact provide opportunities for gradual transformation.

Literatures on policy diffusion, policy transfer and vicarious learning suggest that policy action in one locale may also be provoked by events occurring in other geographical areas. This is a variant of the lagged effects scenario where policy actors are incentivised by hazards and disasters that occur elsewhere, which may derive from either specific events or a general sense of urgency. Thus, one may think of policy actions as targeted efforts to draw lessons from one or several specific events occurring in other locations, or as reactions to perceptions of growing salience in general without reference to specific events. The latter turns the spotlight on 'horizon scanning' as a practice for identifying threats and opportunities as the basis for policy action (Sutherland and Woodroof, 2009).

Perspectives on policymaking after disaster

Public administration and public policy literature identifies crucial factors and dynamics that enhance the understanding of policy change in the aftermath of disasters. Thus, these fields provide useful lessons and insights for enhancing the understanding of policy activity in the wake of disasters. These can be summed up in several influential perspectives:

Institutional crisis. Scholars interested in policymaking in the wake of disasters and other extreme events have studied how the political aftermath of accountability and blame shapes policy change and reform. These episodes have been defined as institutional crises, which refer to situations where the institutional structure of a policy sector 'experiences a relatively strong decline and unusually low levels of legitimacy' (Alink et al, 2011: 290). One common emphasis in this literature is how accountability processes can impose constraints on evaluation, collective lesson-drawing and reform in the wake of disaster. This research departs from the insight that disruptive events can spark accountability and blame, focusing on, for example, what went wrong (including faulty risk reduction and preparedness) and who is to be held responsible, which ultimately might pose a threat to political and bureaucratic elites and challenge the legitimacy of institutional systems (Brändström and Kuipers, 2003). Hereby, disasters may spark debates about the effectiveness or appropriateness of existing policies and institutions to mitigate impacts and protect societies from harm. In return, many expect that elected representatives and office-holders will take steps to initiate policy change and reform. Meanwhile, blaming might provoke policy actors to take a more defensive or conservative approach regarding policy learning and reform. For instance, scholars have elaborated how 'crisis exploitation' can explain why some events lead to policy change while other events do not. The notion of crisis exploitation emphasises the importance of framing contests, including battles between competing definitions of the situation (what went wrong, what caused it, who is to blame and so on), and the degree to which existing policies and institutions are publicly critiqued and questioned. Accordingly, it has been hypothesised that policy change is more likely if a high-impact event is being linked to flaws (foreseeable and avoidable problems) in pre-existing policy ('t Hart and Tindall, 2009; Boin et al, 2009).

Policy subsystem interactions. Theoretical frameworks of public policymaking typically portray disasters as external events, which are outside the control of policy actors within a policy subsystem. These subsystems are defined as a set of actors engaging in a substantive policy issue within a specific geographical area (for example, a watershed area, a region, a city, or a country). Although different theoretical frameworks, such as the multiple streams (Kingdon, 1995), punctuated equilibrium (Baumgartner and Jones, 1991), and the advocacy coalition framework (Jenkins-Smith et al, 2014), emphasise different factors, they share an interest in how unexpected events may disrupt political relationships and interactions, including the distribution of power between constellations of policy actors, effects on public and policy agendas, the elevation or de-emphasis of policy narratives, and the potential role of scientific information shaping beliefs and preferences (Nohrstedt and Weible, 2010). Changes in distribution of power may be the result of actors seeking new venues, engagement of new stakeholders, or that actors gain new political resources in terms of, for example, allies, financial resources or legal authority to make decisions. Other studies illustrate how dramatic events can temporarily relax constraints and pave the way for change agents. For example, in a study of flood-affected communities in Colorado, Crow, Albright and Koebele identified several types of emergent coalitions, including different types of stakeholders coming together to coordinate their efforts to shape either projects or policies in the wake of disasters (Crow et al, 2021). Some of these coalitions emerged from pre-existing constellations of stakeholders, while others formed in the immediate wake of disaster. Other factors, including whether coalition actors are able to establish trust, demonstrate short-term effects, and whether they are

able to capitalise on pre-existing funding schemes, also determine if these initiatives will have a lasting impact in terms of major policy change (Koebele et al, 2020).

Agenda-setting and issue salience. Whether disasters will have an impact on policymaking partially depends on the activities of interest groups, political and bureaucratic leaders, the news media and other actors to elevate problems and solutions on to the agenda. The framing and communicating of convincing narratives are a part of these strategies, which entail efforts by pro-change groups to advance claims of policy failure, and attempts by status-quo oriented groups to prevent promotion of certain issues. These efforts may result in changes in general perceptions of issue salience and whether preexisting policies for addressing problems are depicted in a positive or negative light (Baumgartner and Jones, 1991; Birkland, 1998). Disasters, especially events with 'frame-breaking qualities', can cause temporary or lasting changes in policy agendas and salience, providing opportunities for policy action ('t Hart and Boin, 2001). These effects can be reinforced by repeated disasters, which may build pressure for policy renewal and reform (Albala-Bertrand, 1993; Drury and Olson, 1998). Others have pointed to a number of reasons why the prominence of issues may fade in the wake of disasters and that policy-learning may be encumbered and limited to technological improvements and bureaucratic routines (Solecki and Michaels, 1994).

Governance capacity. Political and institutional capacities and resources also influence policymaking after disasters. Here, governance capacity refers to the breadth of individual, organisational and community resources that shape the capability of policy actors and stakeholders to collect and process information concerning disaster events as a basis for policy learning and change. Generally, however, governance capacity is mainly discussed in relation to community responses and not narrowly focused on formal political institutions and policymaking. This spans community-level adaptation to extreme events, including localised initiatives to reduce vulnerability and enhance resilience to future events. Yet there are arguments linking governance capacity to public policymaking. One example is the notion of the adaptation deficit, which holds that due to limited institutional, financial and technological resources, low-income countries are, on average, more heavily affected by extreme natural hazard events (Burton, 2008; Fankhauser and McDermott, 2014). To some, this is evidence that lack of capacity contributes to slow responses and faulty preparedness to increased exposure to weather extremes (Bouwer, 2011).

Policy-oriented learning. Policy action after disasters also depends on the willingness and capacity of policy actors to critically review information associated with events, whether this leads to changes in their beliefs, and whether belief changes are translated into policy action. Such lessons include alterations in instrumental aspects as well as changes in policy core beliefs (Crow et al, 2018), with the former being more likely. The notion of learning also has some overlap with governance capacity – for instance, the ability of policy actors to engage in learning is depicted as an important aspect of adaptive capacity at the system level. A recurrent insight in the literature is that major disaster events rarely elevate new ideas – it is more likely that a disaster brings attention to pre-existing ideas and creates momentum for policy actors and stakeholders to press for their beliefs (Birkland, 2006).

Concentration of power. Scholars have emphasised that disruptive disasters might provide openings for centralised leadership and decision-making (Keeler, 1993). This can be enabled by the rally-round-the-flag effect: the potential for increased

popular support for political leaders in the wake of disaster events, which in turn might provide temporary political capital and support for non-incremental policy changes. This was originally observed as an effect of foreign policy threats but has been illustrated in relation to other areas as well, including the COVID-19 pandemic (Yam et al, 2020). However, major policy change likely depends on other aspects of power concentration, for instance whether authority to make consequential decisions is delegated to specific authorities or bodies, which reduces the number of potential veto-points in policy formulation and implementation ('t Hart and Boin, 2001).

Conclusion

Disruptive disasters are often depicted as unique opportunities for societies to undertake ambitious policy changes to reduce risk and vulnerability and strengthen community resilience and sustainable development. In some cases, such policy change can provide a pathway to transformation with profound impacts on beliefs and institutions. In other cases, major policy changes are interrupted by the occurrence of subsequent disasters or declining support for reform agendas. A fundamental question following these scenarios is what leads to transformative change versus non-transformative change or stability? The reminder of this article is that previous literature already has come a long way to elaborate concepts and theory to account for this variance in outcomes. Public policy and public administration scholarship in particular offer insights that can be helpful to simplify and theorise the relationship. This article has focused on institutional crisis, policy subsystems, agenda-setting and issue salience, governance capacity, policy-oriented learning and concentration of power as useful starting-points.

Transformation unfolds in increasingly complex policy processes. It is often argued that long-term policy actions targeting shifts in, for example, socio-economic, cultural, environmental and physical systems depend on contributions from multiple stakeholders, including community groups (Patterson et al, 2017; Kruczkiewicz et al, 2021). For example, the current international regime for disaster risk reduction (the Sendai Framework) urges societies to adopt an 'all-of-society' approach and 'all-of-states institutions' engagement to strengthen synergies and achieve coordination in policymaking and implementation to address risks and vulnerabilities. Understanding transformation as the accumulation of experience from multiple disasters therefore requires more elaborated explanatory frameworks that take into account overlapping and nested policy subsystems.

Another key question concerns how public policies can actually contribute to societal transformation. Transformation spans multiple systems and engages multiple stakeholders. What, then, can public policy decisions and actions realistically achieve to enable transformation? This turns the spotlight on certain qualities associated with the policy process, such as the need to formulate transition visions along with interim objectives, continuous evaluation and maintenance of public support (Rotmans et al, 2001), as well as broader questions concerning the governance of transformation in fragmented and multi-leveled political systems (Patterson et al, 2017).

From this follows that analyses of decision-making cannot focus narrowly on single policy subsystems. Processes of transformation aim to reduce risk and vulnerability by efforts to build more sustainable and resilient communities. While this means different things to different people, these long-term ambitions typically engage a broad variety

of actors. Meanwhile, there seems to be little consensus across literatures about how to model agency in this context. For instance, while some scholars (Olsson et al, 2014) stress the importance of brokers who engage in 'scale-spanning activities' unfolding in networks operating across phases and scales, others (O'Brien, 2012) emphasise small groups of committed individuals. Studies also note that many transformations triggered by disasters unfold at the local level, involving both households and changes in policies for, for example, land-use and economic development, where individuals and organised civil society have been important agents of change (Gibson et al, 2016). In this regard, there is a need to continue exploring diverse analytical approaches focusing on different actors and scales.

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