

1 Introduction

The eve of our first day of interviews in Maputo, Mozambique, the rain began. It poured down throughout the night and into the morning. At breakfast, others around us mentioned the potential threat of an incoming cyclone. Given that we were in town to talk with government and civil society actors about disaster preparedness, it seemed only appropriate that we press on with our plans for the day. Our hotel was a short ferry ride from downtown, but the road to the port was flooded. Thanks to the availability of a 4×4, we made it to the ferry station and then to the mainland. On arrival, we saw that the streets of Maputo, too, were awash in rainwater and debris, the sewer drains clogged by uncollected trash. On its face, the city was woefully unprepared for the ongoing storm.

But these issues masked what we later learned was happening in the background: active mobilization of government officials and nongovernmental actors to track the storm, prepare for any necessary evacuations, and activate additional precautions along the shoreline. Inland areas were pre-stocked with survival gear, such as boats, to be ready in the event of extreme flooding. While these preparedness programs were difficult for us as outsiders to observe, we nonetheless came to understand the significant ways in which the government in Mozambique had shifted the dynamics of cyclone threats to fundamentally improve the safety of at-risk populations. While these efforts might not ease immediate, less threatening, difficulties in the face of extreme weather (e.g. local, short-term flooding), they targeted high-risk issues that posed the greatest threats. To our good fortune, this tropical storm was not a particularly bad one, and the waters began to dissipate within a few days. Nonetheless, the experience offered a brief glimpse into the complex realities and practical difficulties associated with managing natural hazards.

This anecdote is also indicative of natural hazard experiences in many other parts of the world. As I came to understand during the research described in greater detail in this volume, significant preparedness efforts for natural hazards – such as floods, drought, and tropical storms¹ – have been taken on in countries around the world, including across the Global South. Governments, on their own and encouraged by global accords, have often implemented substantial programs that ensure both rapid response at the time of a hazard and work to minimize the risk that hazards evolve into natural disasters. In India, for example, a case I consider in detail throughout this text, government efforts to ramp up preparedness programs began to emerge in the early 2000s and a robust, multilevel system for threat identification, preparedness, and

¹ Tropical storm is a general term for cyclones, hurricanes, and typhoons, each of which is used depending on where the storm originates.

response now exists for multiple types of hazards. This is easiest to observe in cases where hazards in recent years have led to significantly fewer deaths than those resulting from previous similar events, as has been the case with recent cyclones in India.²

At the same time, the quality and comprehensiveness of these efforts can vary quite dramatically both across and within countries. In Mozambique's neighbor, Zimbabwe, we see relatively fewer efforts to prepare for frequent threats such as drought. Similarly, adjacent to India in Pakistan we observe relatively disorganized efforts to prepare for increasingly common flood risks. Even within India, at the state level, we note variations in the degree to which neighboring states such as Odisha and Andhra Pradesh are prepared for the threat of annual cyclones.

That disaster preparedness initiatives of any type appear in these regions is also a surprise from the perspective of existing research on political incentives and natural hazards.³ A predominant assumption in current work is that investments in preparedness are fundamentally unlikely. This is because preparedness actions are expected to be more difficult to observe, and thus reward at the ballot box, than investments in response (Healy and Malhotra 2009). Analysts argue that citizens reward effective political responses to natural disasters and punish failures to respond (Healy and Malhotra 2009; Bechtel and Hainmueller 2011; Cole et al. 2012). At the same time, voters can fail to reward disaster preparedness, and may even punish incumbents for investing in preparedness over other public benefits, because the benefits of these policies are perceived to be less obvious than those of response (Healy and Malhotra 2009). This is despite the generally greater efficiency of spending on preparedness versus response (Healy and Malhotra 2009). In addition, the potential for moral hazard related to natural hazards, given the propensity of higher level domestic or international actors to respond in times of disasters, is believed to further disincentivize governments to allocate scarce resources toward preparedness activities (Cohen and Werker 2008). In short, existing work posits that political elites should have few incentives to prepare for natural hazards. Thus, the existence of, and variation in, disaster preparedness initiatives, even in closely lying countries or states facing similar hazards, is an empirical puzzle.

The primary focus of this Element is to examine this puzzle and provide a novel argument to explain the character of disaster preparedness initiatives in countries of the Global South. Why do governments prepare for natural

² See, *inter alia*, The Hindu, 2022.

³ I focus here on literature pertaining to policy responses, but there exists substantial important and related work on factors affecting the quality of response (e.g. Aldrich 2010, 2012) and the downstream effects of natural hazards (e.g. Bhavnani and Lacina 2015).

hazards? And what characteristics of states are associated with the best preparedness outcomes?

I argue that disaster preparedness can, and does, occur in the context of both *motivated* ruling elites and a *capable* state. Ruling elites can be mobilized to lead preparedness efforts. The quality and character of these efforts subsequently depend on the government's capacity to coordinate the design and implementation of preparedness plans. In this way, elite motivation and state capacity are both necessary conditions that, when they occur together, are sufficient to produce comprehensive disaster preparedness. Thus, ruling elites must be *willing* and the state they oversee *able*.⁴ My argument elaborates the conditions under which this occurs.

I contend, in contrast with existing work that argues politicians do not have incentives to prepare for disasters,⁵ that there are plausible political situations in which ruling elites will perceive benefits to investing in preparedness. Specifically, elites are motivated when there is a risk that past exposure to hazards will lead to political instability in the face of a future hazard. Elite motivation thus rests on two sub-variables: past exposure to natural hazards and elite perceptions of opposition threat.⁶ Where elites anticipate a threat to their rule in the face of a future hazard, due to substantial past exposure and significant opposition strength, they will be motivated to engage in disaster preparedness.

The ability of elites to act on this motivation depends on a second primary variable: the state's own competence in coordinating the bureaucracy and/or civil society actors to realize preparedness goals. Where government actors have the capacity to oversee preparedness efforts and are given the power to do so, ruling elites will plausibly succeed in implementing the highest levels of effective disaster preparedness.

In the remainder of this Introduction, I lay out a conceptual framework for analyzing natural hazards and disaster preparedness in the context of low- to middle-income countries of the Global South. I consider the relevance of this problem in the context of past threats in the region and across the globe more generally. I then elaborate the details of my argument for when governments are most likely to make preparedness investments, contrasting this with existing arguments for why governments would not invest in preparedness for natural hazards and the limited hypothetical conditions under which they would do so.

⁴ This argument is consistent with the idea that state capacity matters most in the context of motivated political leadership (Centeno et al. 2017).

⁵ See, *inter alia*, Healy and Malhotra 2009; Gailmard and Patty 2019.

⁶ Hossain (2017) provides evidence of this dynamic in the aftermath of the 1974 Bangladesh famine.

I conclude with a discussion of case selection and the qualitative, medium-N case methodology used in this study, before providing background on the country and subnational cases considered here.

1.1 Natural Hazards, Disasters, and Preparedness

Natural hazards are rare or, at the very least, unpredictable events that can threaten lives and infrastructure. The most commonly occurring natural hazards are earthquakes, floods, droughts, tropical storms, and tsunamis. These hazards are typically divided into rapid onset (e.g. earthquake or tropical storm) and slow onset (e.g. drought). A natural hazard becomes a disaster when an area affected by the hazard is unable to respond in a sufficient manner, resulting in economic and, possibly, human and animal losses.

The threat of natural hazards seems clear from news reports of hurricanes, drought, and floods around the world. But how substantial are these threats in reality? As I discuss in greater detail, measuring the magnitude of a natural hazard is difficult due to a lack of valid measurement instruments that can indicate the strength of a hazard apart from its effects. For current purposes, I use share of the population “affected” by a hazard as an indicator of magnitude, which can be held constant across different types of hazards. Using data from EM-DAT – the international disaster database – I show in Table 1 the share of the population in each continent affected by natural hazards over the period 2005–2014.⁷ These data highlight that the threat of hazards exists across the globe, but is particularly significant in Africa, Asia, and the Americas.

Evidence also suggests that the threat of hazards has increased in recent years, particularly with changing meteorological dynamics due to climate

Table 1 Variation in populations affected by natural hazards, 2005–2014⁸

Continent	Annual Average Individuals Affected	Percent of Total Population Affected over Entire Period
Africa	16,355,161	15.7%
Asia	147,395,737	35.0%
Europe	722,566	1.0%
Oceania	182,856	5.0%
Americas	11,594,451	12.4%

⁷ Note that this measure may double count individuals affected by multiple hazards over this period, but is nonetheless the most consistent measure across hazards and all continents.
⁸ Natural hazard data from EM-DAT and 2010 population data from UN-DESA.

change. Predicting the character of such threats is becoming more difficult. A recent study, also drawing on EM-DAT data, found that the occurrence of natural disasters globally had increased ten times over the period from 1960 to 2019 (IEP 2020). These figures may also undercount the occurrence of natural hazards, as preparedness efforts over this same period have played at least some role in reducing the likelihood of a hazard converting to a natural disaster.

Given these threats, what can be done to protect communities and individuals from natural hazards? Government and private sector efforts to deal with natural hazards take many forms, but are typically categorized as response, preparedness, or risk reduction. Response efforts happen at the time or after a hazard occurs, to minimize the damages and attempt to prevent a hazard from becoming a disaster. Preparedness efforts are focused on ensuring that there are programs in place to minimize the risks in advance of an impending hazard (such as evacuations) and improve the ability to respond when the hazard occurs (such as building shelters and conducting mock drills). Risk reduction instead emphasizes changing ongoing practices to reduce the fundamental likelihood of disasters occurring, such as implementing drought resistant agricultural practices. I consider the range of possible government policies in greater detail in Section 2.

Public debates and discussions about the appropriate policy response to natural hazards have shifted over the last few decades from a focus on response to preparedness to risk reduction. In the period leading up to this study, while risk reduction was seen as the ultimate goal, policy recommendations focused largely on preparation, reflecting perceived limitations on preparedness in most countries, especially in the Global South. In this volume, I primarily consider efforts to promote preparedness for natural hazards.

1.2 A Political Institutional Theory of Preparedness

The key theoretical question of this study is: what conditions will make governments most likely to implement comprehensive disaster preparedness policies? I argue that the most thorough efforts to prepare for natural hazards occur in those places where ruling elites are politically motivated to reduce the risks of future hazards and they also have the capacity to design and implement reforms. This is because effective policy initiatives – ones that are both initiated and implemented – require both political support and a capable set of institutions to implement the policy. But when is this the case?

I posit that disaster preparedness depends on two primary variables: elite motivation and capacity. Elite motivation rests on two sub-variables: past exposure and opposition threat. Past exposure implies a record of natural

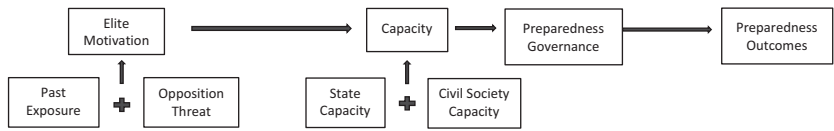


Figure 1 A political institutional theory of preparedness

hazards that have affected a substantial portion of the population in the past. Opposition threat can come in the form of electoral competition, in established democracies, or the presence of plausible opposition parties, in the context of autocracies. Where ruling elites associate the potential for future hazards with the possibility of threats to their continued control, they will be motivated to engage in preparedness to reduce this threat.

Capacity depends on the government, and most significantly the bureaucracy, having the ability to develop and coordinate plans for disaster preparedness. The implementation of disaster preparedness initiatives may involve government actors and/or civil society, but how these programs are governed depends on the relative strength of different actors. The most successful outcomes will be observed where the state effectively leads the coordination of these efforts. Figure 1 summarizes this logic and I now examine each of these variables in greater detail.

1.2.1 Elite Motivation

I begin from the expectation that countries which have faced greater hazards in the past will prepare more in the future. This idea is not new (Fox and Weelden 2015), but I offer a more nuanced and comprehensive explanation for why this is the case. Existing work highlights an empirical correlation between past hazards and preparation but does not sufficiently identify the causal mechanism linking exposure to greater preparedness (Keefer et al. 2011; Hsiang and Narita 2012). Do incumbent governments view natural hazards as a threat to their economic performance (World Bank 2009; Hsiang and Jina 2014)? Do they perceive natural hazards as a potential cause of conflict (Hsiang et al. 2013)?

I suggest instead that ruling elites anticipate a potential threat to their incumbency when citizens can observe the *preparedness counterfactual*. If an individual has not faced a hazard in the past, as in places that experience these events rarely, they will have little ability to separate the quality of preparedness efforts from the intensity of the hazard itself. In other words, because the effects of a hazard are endogenous to preparedness efforts, someone without past experience of a similar event will be unable to gauge the value of existing investments to their or the broader welfare. These individuals cannot conceive

of the preparedness counterfactual at the time of a natural shock: “what would have been the impact of a disaster in the absence of preparedness spending?” (Healy and Malhotra 2009: 389).

In contrast, those individuals who have previously been affected by a natural hazard are able to evaluate the quality of preparedness efforts at the time of a future hazard – the counterfactual to what would have happened without preparedness – and can use this information to evaluate the quality of incumbent politician performance. This expectation contrasts with the idea that individuals cannot observe and evaluate preparedness programs, relative to disaster response (Healy and Malhotra 2009; Gailmard and Patty 2019): where individuals have previously experienced a failure to prepare, I posit that they will be able to evaluate the quality of preparedness efforts at the time of a future hazard.

Even if we assume that individuals have no ability to observe the actual policy changes that have occurred, in the form of disaster preparedness, otherwise similar individuals may still differ in the interpretation of their current welfare based on a comparison between the effects of past and current natural hazards. An individual who has been exposed to a natural disaster in the past, particularly one in which the government was ill-prepared, will have different expectations for the likely outcomes of a subsequent hazard. If the results of that hazard are better than in the past, then they are likely to have a higher estimate of their current welfare than someone who had not been exposed to a disaster in the past and so has much different expectations about the effect that a hazard would have on their wellbeing.

This supposition is in line with qualitative evidence regarding the behavior of individuals who were and were not exposed to a significant previous hazard at the time of a new hazard. In India’s Odisha state, which has a history of tropical storms, a severe cyclone in 2013 affected areas that had and had not been exposed to a similarly intense cyclone in 1999. Officials involved in evacuation efforts at the time noted that those individuals living in areas that had previously been affected were easily evacuated multiple days in advance, while those who had not been hit by earlier cyclones were considerably more reluctant to evacuate and, in the end, some forced evacuations were necessary in these regions (Odisha State Government Official #2 2014). If behavior at the time of the cyclone is associated with differing past exposures to natural hazards, then we might believe that other kinds of behaviors, such as voting, may also exhibit these differences.

Politicians who are knowledgeable about past hazard exposure can then anticipate this future evaluation and incorporate it into their policymaking decision calculus (Bussell 2017). The opportunity to observe multiple shocks over time implies that once a natural hazard has occurred, politicians may

assume that at least some proportion of voters will be able to estimate the preparedness counterfactual based on their experience with this shock. In this sense, past experience of disasters changes the information available to a segment of voters, making them more competent at evaluating the performance of the incumbent than their non-disaster-exposed peers. As a result, the perceived electoral value of preparedness may increase, making preparedness activities more compelling as an electoral strategy than was previously the case. Investment in disaster preparedness, then, becomes a strategic electoral move on the part of incumbent elites, to increase the chances of retaining power in the face of a future hazard.

The relevance of this calculation to preparedness policies, however, depends on whether ruling elites perceive a general threat to their incumbency. This is a relatively straightforward expectation that politicians in electorally competitive democratic regimes or authoritarian regimes with a viable opposition will be willing to implement new policies that they expect to be received well by the public. Even if ruling elites anticipate that citizens can evaluate their preparedness efforts, these evaluations will only matter in contexts where those citizens can pose some sort of political threat, through voting, support for an opposition party, riots, or otherwise.

Combining these two sub-variables of elite motivation results in four general expectations for the character of incentives regarding disaster preparedness, summarized in Table 2. We should observe the strongest political incentives for preparedness where both past exposure and opposition threat are high. Where past exposure is high, but opposition threat is low, we should still expect to see medium to high incentives, given the risk of instability and negative public response in the face of a future hazard. Where there is a clear opposition threat but low past exposure, politicians will have only low to medium incentives to prepare, as the costs of preparation will compete with other policy areas that may have more obvious benefits to voters. Finally, where both past exposure and opposition threat are low, we should see the weakest political incentives for reform.

Table 2 Empirical expectations for elite motivation to engage in disaster preparedness efforts

		Opposition Threat	
		Low	High
Past Hazard Exposure	Minimal	Low Incentives	Low-Medium Incentives
	Substantial	Medium-High Incentives	High Incentives

The discussion to this point thus suggests that where ruling elites have an expectation that disaster preparedness efforts are likely to result in electoral support at the time of a future hazard, and where they face a competitive environment in which they would benefit from additional popular support, we should expect to see political interest in disaster preparedness initiatives. To be successful in these initiatives, however, also requires the capacity to coordinate relevant actors who are capable of designing and implementing such reforms. I now explore this aspect of the argument in greater detail.

1.2.2 Capacity

The second key variable in my argument is the capacity of the state to coordinate disaster preparedness efforts. Following existing research, I conceptualize “capacity,” applied to state or non-state actors, as the ability of an organization to achieve the goals they set for themselves (Centeno et al. 2017; O’Reilly and Murphy 2022: 1). For a government organization, this typically involves “the ability to raise revenue efficiently, the ability to enforce a monopoly on violence within its territory, and the provision of public goods in such a way that supports the functioning of markets, especially the legal capacity to attain the rule of law” (O’Reilly and Murphy 2022: 1). For non-state actors, this implies parallel abilities to raise and manage financial resources, run a functional organization, and deliver relevant goods to target clients. Such a conceptualization implicitly assumes consistent underlying institutional structures that support and enable this capacity. This is, then, an argument about institutional capacity to support preparedness initiatives.

Substantial work in the social sciences has highlighted the importance of bureaucratic capacity for the effective functioning of government institutions. In their agenda-setting work, Evans and Rauch evaluate the degree to which state institutions exhibit “Weberianness” as a measure of state capacity, considering the presence of competitive salaries, internal promotion and career stability, and meritocratic recruitment (Evans and Rauch 1999). This capacity, they argue, is then linked to the ability of states to achieve economic growth (Evans and Rauch 1999). More generally, the quality of institutions came to be seen as a key factor affecting outcomes of both economic and social welfare (Rothstein and Teorell 2008, see also Levitsky and Murillo 2009).

Related work focuses on the frequent gaps in, or limitations of, government capacity and looks outside the state to identify alternative providers of public goods. In the case of Kenya, Brass (2012, 2016) shows how nongovernmental organizations (NGOs) increasingly play both direct and indirect roles in government service provision, through their participation in

governance and in the direct delivery of services. More generally, Cammett and MacLean argue that “In many parts of Africa, Asia, the Middle East, and Latin America, states are unable to provide extensive social welfare services, but a diversity of non-state actors such as multinational corporations, ethnic and sectarian organizations, NGOs, community-based organizations, and families provide and facilitate access to much of the welfare that exists on the ground” (Cammett and MacLean 2011: 1–2). In addition, the role of non-state actors in service provision is seen only to be increasing (Cammett and MacLean 2011: 1–2). These arguments imply that we may observe cases of non-state actors filling in where the state is unable to implement programming directly.

At the same time, it is insufficient to assume that non-state actors have consistent capacity to provide these services across countries. Non-state actors differ dramatically in their size, resources, modes of work, and connections to international affiliates or sponsors.⁹ Relatedly, the relationship between non-state providers and state actors themselves is likely to have an important effect on outcomes (Cammett and MacLean 2011), particularly in those countries with significant restrictions on civic freedoms. Thus, variation in the capacity of non-state actors is also likely to affect their ability to play a role in disaster preparedness.

My first expectation related to capacity, summarized in Table 3, is that the governance of disaster preparedness efforts, and specifically the character of roles for the state and civil society actors, will depend on the relative capacities of these groups. Where both the state and civil society are of high capacity, the state should lead disaster preparedness efforts while effectively drawing on civil society actors to support its mission, which I characterize as “State-Led.” In contrast, where only the state has high levels of capacity, disaster preparedness efforts are likely to rely predominantly on the bureaucracy in a “State-Dominant” model. Here, when the government draws on non-state actors, it is

Table 3 Expected character of disaster preparedness governance given state and civil society capacity

		State Capacity	
		Lower	Higher
Civil Society Capacity	Lower	“Uncoordinated”	“State-Dominant”
	Higher	“Society-Reliant”	“State-Led”

⁹ See, *inter alia*, Stroup (2012), MacLean et al. (2015)