Navigating Accountability Demands: Ceremonial Adoption and Implementation

in National Disaster Risk Reduction Policy Reporting, 2005-2015

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**Abstract**

Prior research has shown how decoupling, as a response to institutional pressures, enables organizations to enhance their legitimacy, while eschewing the costs, conflicts, and complexity of implementing policies. Yet, as institutional pressures increasingly incorporate accountability demands, organizations need to report public progress on implementation, and it is unclear how organizations navigate these demands. How organizations respond to accountability demands matters, as it shapes how policies get their practices implemented and create their intended outcomes. By studying the country-level reporting of a United Nations disaster preparedness policy, we test why and how organizations’ socio-historical embeddedness influences policy adoption, as well as how and why organizations repurpose existing practices to implement policies. Our study makes two primary contributions around the socio-historical relations shaping policy adoption and the substitutive decoupling process resulting in ceremonial implementation, which bear policymaking implications for the understanding of how reporting is used in accountability-based policies.

Keywords:

*Decoupling, Accountability, Reporting, Repurposing, Public Policy Paradigm Shift, Disaster preparedness.*

# INTRODUCTION

Scholars have long studied how organizations respond to external pressures by decoupling the adoption of a policy from its implementation. Decoupling enhances organizations’ legitimacy while buffering core practices, which eschew the costs, conflicts, and complexity of implementing a new policy (Meyer and Rowan, 1977; Meyer, 1980; Orton and Weick, 1990; Thompson, 1967). More recently, scholars have emphasized increased accountability demands (Boxenbaum and Jonsson, 2017; Bromley and Powell, 2012; Brunsson and Jacobsson, 2000) that pressure organizations to go beyond symbolic adoption and publicly report substantive progress on implementation (Brandtner, 2021; Hensel and Guérard, 2020; Turco, 2012). A go-to response under conditions of low surveillance, the decoupling of policy adoption from practice implementation becomes less tenable in an era of transparency and accountability.

Existing research has shown how social pressures influence policy adoption and how organizational embeddedness in social relations shapes this outcome. For instance, early work has documented the role of peer networks and mimicry as a key process that underpins policy adoption (e.g., Strang and Meyer, 1993; Dacin, Goodstein, and Scott, 2002; Dobbin et al., 2007). Later work pointed to political embeddedness, showing that relations with a given political constituency, such as board members or political patrons, shape organizational responsiveness to pressures (Okhmatovskiy and David, 2012; Marquis et al., 2017; Westphal and Park, 2020). Here, implementation is enforced by coercive mechanisms, such as political monitoring or resource dependence (Haveman et al., 2017; Marquis and Qian, 2014; Okhmatovskiy, 2010). Yet, existing research has not much focused on how adoption and implementation processes unfold in an era of accountability, where compliance pressures are voluntary and decentralized rather than stemming from mandatory or centralized controls (Bartley, 2007; Timmermans and Epstein, 2010; Gustavsson 2020). Such contexts include global corporate norms, the UN CSR Global Compact initiative, UN sustainable development goals (SDGs), green building certifications (LEED), soft laws, or international financial reporting guidelines (Guerreiro et al., 2012; Kirton and Tebilcock, 2017; Lim, 2021; Williams et al., 2019; Witt et al., 2021; York et al., 2017). In voluntary and decentralized contexts, adoption is not coercive and decisions are delegated to organizations (e.g., Fayol, 2016; Schoffer and Meyer, 2005; Zabojnik, 2002). As a result, social pressures are likely to differ and give leeway to organizational idiosyncrasies, such as social relations organizations build through their history. Current research has paid little attention to additional non-coercive influences such as socio-historical embeddedness (Vaara and Lamberg, 2016; Coraiola et al., 2015) that may be salient when monitoring is high, but compliance is voluntary.

The high degree of monitoring, reporting, and auditing that characterizes accountability demands also affects how policy implementation unfolds. As organizations are pressed to be transparent, they face the challenge of how to reap the benefits of legitimacy while avoiding the costs of implementation. Existing research has shown an array of implementation strategies aiming at eschewing the pressure, such as accommodating, selecting, recombining, or translating, which are successful in buffering organizational practices yet impair the new policy (Crilly et al., 2012; Dick, 2015; Djelic and Quack, 2008; Heese et al., 2016; Marquis et al., 2017). But given accountability-based policies often aim at transparency (Haack et al., 2021; Wijen, 2014), organizations may aim to display compliance while minimizing disruption, which can lead to a ceremonial implementation. With the exception of Okhmatovskiy and David (2012), which showed how organizations substitute a costly policy with a cheaper alternative and then comply by reporting the implementation of the alternative, we know little about why and how some organizations decouple when facing accountability demands, while others comply and report implementation.

The processes of policy adoption and implementation are fundamental to understanding organizational effectiveness, as an unimplemented policy cannot achieve its intended goals. Moreover, there can be broad social consequences to a lack of implementation, as many policies aim to improve organizational performance around issues pertaining to social responsibility, sustainability, or universal human rights by increasing accountability demands (Cole and Ramirez, 2013; Haack et al., 2021; Wijen, 2014). We aim at advancing this line of work in two ways: first, by theorizing why and how organizations’ socio-historical embeddedness adds to our understanding of policy adoption in contexts with high monitoring; second, by theorizing how and why monitored organizations ceremonially implement policies by repurposing existing practices. We study policy adoption and implementation at the country level by analyzing national reports submitted to the world’s central organizing framework intended to build national resilience to large-scale disasters — the Hyogo Framework for Action (HFA). HFA is a voluntary and decentralized policy the United Nations (UN) promoted between 2005 and 2015 to reduce the human and material loss from disasters. As the disasters’ tolls skyrocketed, the UN championed HFA to shift the dominant policy paradigm from a relief approach once disasters occurred to a preparedness policy before disasters strike. To hold countries accountable for the new paradigm’s implementation, the UN set up four waves of reporting, completed with monitoring tools, conferences, and audits. As a result, countries adopted HFA by submitting reports and were cornered to navigate its implementation.

Our study makes two main contributions. First, by highlighting the influence of socio-historical embeddedness, we expand on the current repertoire of explanations for policy adoption. Responding to calls to strengthen the socio-historical dimensions of institutional theory (Marquis and Qian, 2014; Suddaby et al., 2013; Wadhwani et al., 2018), we show that linkage to the international community and historical legacies play a role in policy adoption and implementation. Second, we build on emerging work on ceremonial implementation (Bromley et al., 2012; de Bree and Stoopendaal, 2020; Dick, 2015). Instead of focusing on gaps between adoption and implementation, we show how decoupling also occurs at the implementation stage, in a process we call “substitutive decoupling”. Our study reveals how the repurposing of pre-existing activities to fit new demands operates as a key mechanism of ceremonial implementation. Even implementation should, at times, be thought of as subject to decoupling (Arndt and Bigelow, 2000; Okhmatovskiy and David, 2012). In what follows, we first present the context of our study, then develop hypotheses and our analytical approach, before concluding by discussing our findings and implications.

# ADOPTING AND IMPLEMENTING THE HYOGO FRAMEWORK FOR ACTION

## Policy paradigm shift: From emergency management to risk reduction

The number of large-scale disasters[[1]](#endnote-1), such as floods, tsunamis, earthquakes, or hurricanes, has risen sharply in the last fifty years, because of climate change and population growth (United Nations, 1994). In the 1960s and 1970s, the international disaster database EM-DAT (e.g., CRED, 2018) recorded between 10 and 45 large-scale disasters a year across the 191 countries belonging to our sample. EM-DAT only records large-scale disastrous events that killed ten or more people, that affected hundred or more people, or that led to a declaration of a state of emergency or a call for international assistance. By 1990, the total number of such events across the 191 countries exceeded 100 events a year, as the combination of population growth and increasing risk of disasters escalated the toll of people afflicted. Since the 2000s, this number constantly eclipses 150 disasters a year, peaking at over 200 yearly events. Since 1995 and the beginning of the UN conferences plan for action, over 1 in 3 people directly suffered the consequences of a large-scale disaster (over 2.7 billion people).

Facing this escalation in casualties and the growing financial consequences of disasters, the United Nations (UN) pioneered in the 1990s a global conversation on managing the risks triggered by natural disasters and extreme events (United Nations, 1994). Before the 1950s, public policies addressing disasters were chiefly local, the first national emergency organization being founded in Japan in 1948 (Nazarov, 2011). In the 1970s, global initiatives emerged yet were limited and focused on financial relief with the founding of the United Nations Disaster Relief Organization (UNDRO) in 1971. Then, in 1991, the UN expanded this relief approach efforts by providing emergency assistance with the creation of the United Nations Office for the Coordination of Humanitarian Affairs (OCHA).

As large-scale disasters became more frequent, more damaging, and increasingly understood as man-made, the UN further developed its efforts by shifting its policy paradigm from emergency management to risk reduction, following a wider cultural trend towards risk management (Ansari et al., 2013; Beck, 1992; Power, 2007; Hardy and Maguire, 2016). The first step of this policy change was the adoption of a resolution for an International Decade for Disaster Risk Reduction (IDNDR) in 1989 (International Framework of Action for the International Decade for Natural Disaster Reduction - resolution 44/236). Building on the emerging concept of Disaster Risk Reduction (DRR), or preparedness, IDNDR aimed at shifting the paradigm regarding global emergency policies from humanitarian responses, relief, and crisis management once disasters occurred, to a more systemic risk management focus, aiming at sustainably preparing, planning, and mitigating hazards before disasters happen (Britton, 2001).

## Responding to accountability demands and reporting

To promote the paradigm shift to DRR, the UN organized a world conference in Yokohama in 1994, gathering 147 countries[[2]](#endnote-2) to build awareness around DRR and develop guidelines and a plan for action (United Nations, 1994). Following this conference, the United Nations founded the Office for Disaster Risk Reduction (UNISDR then renamed UNDRR in 2019) in 1999 to promote an international strategy for reducing the human impact of disasters. The initial strategy encouraged states to assess their risks and develop their policies yet focused on regional, bilateral, or multilateral efforts by developing disaster reduction initiatives through existing relief structures such as humanitarian organizations and NGOs, who held most resources (Review of the Yokohama Strategy and Plan of Action for a Safer World, 2004).

A second world conference in 2005 in Kobe-Hyogo followed this call for action and led to a new strategy with the development of the first global DRR policy (United Nations, 2005), called the Hyogo Framework for Action (HFA) [[3]](#endnote-3). This policy was meant to provide a unifying, global, framework to build the resilience of nations and communities to disasters and to coordinate efforts at all levels (Annual report 2007: the secretariat of the International Strategy for Disaster Reduction UN/ISDR, 2007). Its concrete goal was to reduce substantively disaster losses by 2015 and HFA was planned to be implemented at the country-level over the next ten years, until the third conference in Sendai in 2015 (United Nations, 2015). To do so, HFA established a common set of global guidelines for DRR and detailed in the process up to 131 DRR practices to be implemented (see below).

Like the UN Global Compact or the OECD guidelines on corporate responsibility initiatives (e.g., Lim, 2021), HFA was based on voluntary reporting to implement its framework and was “legally non-binding” (Annual report 2007: the secretariat of the International Strategy for Disaster Reduction UN/ISDR, 2007, p. iii). HFA emphasized decentralization as a key success factor for shifting to the DRR paradigm and for accountability, as implementation at the national and local level was expected to provide greater input and buy-in from communities that might be affected by disasters (UNISDR, 2005; Hermansson, 2019). This decentralization approach called for collaboration from local to global levels, and among diverse actors such as NGOs, IGOs, UN agencies, regional associations, and local initiatives (e.g., Chakrabarti, 2013). As a decentralized framework to be implemented at local levels, the Hyogo Framework for Action proposed general patterns of priorities for actions but gave states freedom to manage implementation and the integration with local communities.

Unlike Yokohama and its initial strategy, the Hyogo Framework put in place an elaborate set of tools to promote, monitor, and audit adoption and implementation as well as to report progress. As in many accountability policies (Brunsson and Jacobsson, 2000), countries willing to adopt HFA were expected to submit detailed and publicly accessible reports through an online monitoring platform. Bi-annual meetings were organized to guide this transparent reporting process, leading to implementation progress reports, reviews, regional meetings, and audits by independent consultants.

## Navigating HFA implementation[[4]](#endnote-4)

The HFA policy aimed at reducing the loss of human life and the financial toll of disasters through five “priorities for action” (UNISDR, 2005): (1) institutional strengthening (with practices such as national platforms, laws, or budgets), (2) risk assessment and early warning systems (with practices related to risks maps, vulnerability indicators, or warnings systems), (3) education, information, and public awareness (with practices affecting DRR terminology, school curricula, or media communication), (4) reducing underlying risk factors (with practices dealing with the protection of public facilities, financial risk-sharing tools, or land use planning), and (5) preparedness for effective response (with practices related to communication systems, review and exercises of preparedness, or emergency funds). These priority areas are sub-divided into twenty-two core indicators of the practices countries should deploy to implement the DRR policy.

Countries, however, reported significant challenges in implementing HFA (Implementation of the Hyogo Framework for Action–Summary of Reports 2007-2013, 2013). First, implementation is costly as it requires sustaining funding and experts at the state and community levels. “The lack of financial resources for carrying out DRR was identified by governments as the main barrier to progress throughout the reports, and they brought up the issue when responding to each of the 22 HFA success indicators, noting the profound impact it has on their ability to invest in fulfilling all the action priorities” (Implementation of the Hyogo Framework for Action–Summary of Reports 2007-2013, 2013, p. 8). For instance, the 2011 Australian report[[5]](#endnote-5) laments “increasing vulnerability to disasters presents Australian governments with unprecedented calls on their resources and expertise”, especially for “communities in need” (p. 59).

Second, decentralization requires DRR principles be applied both at the country and at the local level, which triggers coordination issues, potential conflicts between institutions, and difficulties in incorporating DRR principles in existing policy frameworks. The 2013 German report, for instance, acknowledged that, “in order to achieve DRR, a multidisciplinary / multi-stakeholder strategy is necessary as a result of the cross-cutting nature of DRR. This means the integration of DRR aspects in both top-down and bottom-up approaches to disaster prevention [..] on all levels, globally to locally” (p. 79). The 2011 Brazilian report voiced the same concerns, pointing to the additional difficulties of integrating such new DRR principles in an institutionally complex federal country (p. 7). At a more micro-level, it is also difficult to implement the policy uniformly. For instance, the 2007 Philippines report stressing a general lack of harmony between DRR and the existing institutions, and their 2013 report signals “not all schools have been compliant–many in far-flung areas as well as private schools have not yet complied with this directive” (p. 24).

Third, despite the UN efforts to raise raising awareness about the need to shift from an emergency relief mindset to a DRR approach, countries report great challenges in doing so. The 2013 German report stressed the lack of awareness among both threatened populations and political decision-makers. In their 2011 report, Ethiopian officials echoed the same issue pointing to a low “awareness about DRR among various vulnerable communities and societies” (p. 35). Similarly, the Pakistani report (2007) summarized, “although a paradigm shift has been effected through adoption of prevention, mitigation and preparedness approach instead of emphasis on traditional emergency and response oriented approach, the implementing partners at the Government and Community level suffer from lack of awareness about such unprecedented change” (p. 26).

Changing the policy paradigm from disaster relief to a risk reduction approach presented multiple challenges to countries, be it costs, expertise, institutional integration, or public and decision-maker awareness. Though the reported implementation of HFA practices suggests a substantive effort, countries acknowledge that DRR principles were only partially incorporated. How did countries navigate these demands and difficulties? What explains varied success in adopting and implementing policies? Do the challenges of implementation combined with the pressure to show public progress shape the way this accountability mechanism (i.e. reporting) gets used?

# ADOPTION AND IMPLEMENTATION IN A DECENTRALIZED SETTING

Organizational theory can help us explain variation in the adoption and implementation of disaster planning and shed light on why we might observe a gap between endorsing a plan and being better prepared for a disaster. As organizations face functional, political, or social pressures, they are compelled to implement policy frameworks, yet their responses vary (Selznick, 1949; Tolbert and Zucker, 1983; D’Aunno et al., 1991; Oliver, 1991; 1992). For instance, organizations might comply symbolically with policies but decouple them from actual practices (e.g., Westphal and Zajac, 2001; Fiss and Zajac, 2006). Decoupling is a consequential outcome that affects the behaviors and legitimacy of organizations as well as the efficacy of public policies (Boxenbaum and Jonsson, 2008; 2017; Bromley and Powell, 2012; Cole and Ramirez, 2013; Hensel and Guérard, 2020; MacLean et al., 2015; Turco, 2012). Alternatively, they might partially implement a policy (e.g., Goodrick and Salancik, 1996), or replace the proposed framework with other practices (e.g., Djelic and Quack, 2008; Okhmatovskiy and David, 2012). Overall, the literature suggests that implementing practices is distinct from adopting the policy that prompted them; we consider these two processes in turn.

## Socio-historical pressures and policy adoption

The first leg of our argument focuses on policy adoption. A great deal of research has focused on the role of adoption among peers as a key social process that underpins policy transfer (Strang and Meyer, 1993; Dacin et al., 2002), as well as political embeddedness and resource dependence (Dobbin et al., 2007; Okhmatovskiy, 2010; Okhmatovskiy and David, 2012; Marquis and Qian, 2014; Haveman et al., 2017; Westphal and Park, 2020). We extend beyond this work by focusing on the role of organizational embeddedness in socio-historical relationships that support a DRR approach. In the HFA context of decentralized global governance, participation and compliance are voluntary, and there are no resource incentives for countries to submit a plan (but likely some costs). In such a setting, political embeddedness and resource dependencies offer only partial explanations, but socio-historical mechanisms are likely to be influential as the voluntary nature of HFA gives more leeway to country idiosyncrasies. We propose three different mechanisms through which socio-historical embeddedness promotes the submission of an HFA report, beyond political and economic factors and beyond the oft-observed social influences of peers.

First, the impulse to manage risk is, in part, a socially embedded and constructed practice. Societies vary in how much they perceive risk (Weber and Hsee, 1998) and thus likely vary in terms of how much they seek to manage it systematically. The idea that the future can and should be managed through formal organizational processes is linked to a highly rationalized vision of the human experience (Power, 2007) that has early roots in Western traditions and secular individualism (Drori et al.,2006a). In the wake of World War II, and again after the fall of the Soviet Union, Western modes of structuring society globalized rapidly, creating a world polity or world society, characterized by rationalized multilateralist approaches to progress (Meyer et al.,1997). World polity scholars have shown that country linkage to the international community shapes outcomes such as levels of government rationalization (Drori et al., 2006), treaty ratification (Frank, 1999; Cole, 2005), and the expansion of nongovernmental organizations (Schofer and Longhofer, 2011). Other rationalized governance practices, such as creating national development plans, are stronger in countries more embedded in the rationalized world polity (Frickel and Davidson, 2004; Hwang, 2006; Drori et al., 2006; Kentikelenis and Seabrooke, 2017).

World polity linkages occur via a country’s multilateral ties on social, political, and economic fronts, commonly observed through memberships in international nongovernmental organizations (INGOs), international governmental organizations (IGOs), and participation in international treaties, trade agreements, or conferences (Meyer et al., 1997; Boli and Thomas, 1999; Dobbin et al., 2007). We posit that countries most closely tied to, or embedded in, the rationalized world polity via multilateral linkages are more likely to adopt the HFA than those that are less embedded. HFA represents highly rationalized philosophies that are deeply built into global institutions and diffuse worldwide as an influential force (Drori, 2003).

Second, a country’s disaster legacy could shape its decision to submit a HFA report, perhaps as a result of recently experiencing a disaster. Rao and Greve (2018) underlined the importance of legacies of collective action in enhancing resilience after disasters. The capacity to respond to such crises is inherited from prior stressful events, which built trust and social capital within communities (Aldrich, 2011; Greve and Yue, 2017). Building on findings on the 1925 Santa Barbara and 2008 Sichuan earthquakes (Molotch et al., 2000; Zhang and Luo, 2013), Greve and Rao (2014, p. 35) argue that natural disasters have long-term organizational consequences. Findings by Tilcsik and Marquis (2013) support these arguments by demonstrating the effects of disasters on future organizing such as the civic capacity of communities. Past disastrous events are hence likely to mobilize stakeholders and the public and to lead to a response, such as organizing a plan to prepare against future catastrophes. Besides, findings in cognitive psychology and behavioral economics posit that recency effects guide decisions about whether to organize against risks (*e.g.,* Thaler et al., 1997). Related, Hogarth and Einhorn (1992) show that decision makers tend to over-rely on the information presented last–which might matter most when events are extremely salient. Organizations also encode experiences into routines that guide decisions and behavior (Levitt and March, 1988, p. 319), and, by some accounts, recent experiences are most easily retrievable to guide action (Levitt and March, 1988, p. 328). Their salience reinforces the importance of these recent events and embeds stakeholders in the issue at stake (e.g., Baron, 2004; Litrico and David, 2017). Thus, after a country experiences a disaster, states are more likely to prepare against future harm.

The importance of recent disasters to draw the attention of stakeholders and guide them to prepare for future events is well established in the DRR community. As stated in a Philippines report (2007, p. 29), “some stakeholders still find it “easier” to appreciate mitigation and preparedness when focusing on the most recent disaster”. By drawing attention, these recent disasters embed stakeholders and communities in the issue of preparedness and facilitate the adoption of planning measures. For instance, “recent experience with floods (from 2000 to 2008) demonstrated the need of improving settlement location planning, mainly in floods risky areas” (Mozambique, 2007, p. 20), as “the current urban improvement programs are not based on existing risk assessments, but mostly driven by recent disaster experience” (Mozambique, 2011, p. 18). As a result, “the Basic Disaster Management Plan was revised based on the lessons learned in the recent disasters” (Japan, 2009, p. 5). Disaster professionals even use catastrophes as political opportunities to advance the preparedness conversation: “the foremost driver [for progress] in Bhutan is seen as the government’s willingness to accept the importance of disaster risk reduction and management. The commitment is seen in the various parliamentary discussions on the issue, especially after the recent disaster events” (Bhutan, 2013, p. 55). Hence, what matters to turn attention into action is the mobilization of stakeholders, but also local communities. Also, organizing planning around acute events is an effective strategy. For instance, in a New Zealand report (2007, p. 5), the authors write “open government processes and competing priorities can create challenges in how to demonstrate to the public and stakeholders the return on investment from risk reduction. This situation is made worse by many communities having no recent experience of emergencies. One strategy is to take advantage of heightened awareness of local risks following […] events”. Therefore, we suggest the likelihood of adopting HFA and submitting a report increases with the seriousness of recent disasters countries experienced.

Third, past field embeddedness is likely to shape report submission. Countries develop legacies in policy domains over time, forging relations and commitments that create path dependencies and support engagement over time (Dobbin, 1994). Field-configuring events, which are “temporary social organizations such as trade shows, professional gatherings, technology contests, and business ceremonies that encapsulate and shape the development of professions, technologies, markets, and industries”, are important vehicles for solidifying and heightening the relations and commitments in a field (Lampel and Meyer, 2008, p. 1026). These events turn social relations into social pressures as they increase and repeat social interactions, shape collective expectations, and promote a consensus, which mounts the pressures to comply. For example, The Kyoto or COP climate change conferences, the UN World Conference on Human Rights, or the Stockholm Conference on Persistent Organic Pollutants are global conferences that pressure countries to endorse new policies (Ansari et al., 2013; Cole and Ramirez, 2013; Hardy and Maguire, 2010; Schussler et al., 2014). These events also create historical discontinuities that facilitate the transition to a new order (Oliver, 1992).

In the DRR domain, the 1994 Yokohama conference was the first gathering. Countries who took part could learn about this paradigm shift, develop relations, and grow a common understanding disaster needed a new response. This social pressure led countries to take several actions. Many national regulations were created between 1994 and 2005 and 78 countries founded a national disaster agency between Yokohama and Hyogo. This field-configuring event also led to regional organizations that duplicate and maintain these social pressures. For instance, regional disaster cooperation in Asia surged after Yokohama with the founding of the NGO Asian Disaster Reduction and Response Network in 1995 and the IGO Asian Disaster Preparedness Center in 1996. Between 1994 and 2005 ASEAN, the Association of Southeast Asian Nations, organized multiple meetings, forums, or conferences at all governmental levels (Chakrabarti, 2010). As a result, we argue that countries that took part in a prior field-configuring event are more likely to submit a HFA report.

Stated formally, our discussion suggests:

*Hypothesis 1a–World polity: Countries that are more embedded in the rationalized world polity are more likely to submit a HFA report.*

*Hypothesis 1b - Recency: Countries that have recently experienced a more serious disaster are more likely to submit a HFA report.*

*Hypothesis 1c–Field-configuring events: Countries that took part in a prior field-configuring event are more likely to submit a HFA report.*

## Ceremonial Implementation

The second leg of our argument predicts why and how countries vary in their degree of implementation, a critical stage in achieving a policy outcome. Prior studies show that political and economic pressures can support implementation through processes such as political monitoring or consensus building (Haveman et al., 2017; Marquis and Qian, 2014; Okhmatovskiy and David, 2012). For example, country wealth and political structures may shape the ability to implement policies, or the necessity of doing so in the face of global pressures. Similarly, the socio-historical mechanisms hypothesized above as linked to report submission may also promote implementation above and beyond political and economic factors. However, drawing inspiration from studies of transnational policy borrowing, we also seek to understand when implementation proceeds in unexpected or unintended ways by analyzing country reports.

*Substitutive Decoupling*

We build on Okhmatovskiy and David (2012) to suggest decoupling occurs in a novel way, as a substitution, in the HFA context, which presses countries with accountability and transparency demands. A key feature of the HFA is that it was intended to bring in a novel approach to a long-standing issue — the paradigm shift from disaster relief to risk reduction in managing large-scale disasters. There were many humanitarian organizations, agencies, and programs already involved in the disaster management sphere prior to HFA, such as the important work of many large United Nations Development Programme (UNDP) projects. We notably argued the socio-historical embeddedness of countries increased their likelihood of submitting a report. Given the reports’ accounts of implementation challenges outlined in our context section, combined with prior studies pointing to ways in which policies are altered to fit local contexts, we suspect that in many cases existing activities are simply reframed and repurposed to fit new pressures, rather than seeking new solutions. In our view, repurposing is finding a new problem for an existing solution (Padgett and Powell, 2012). As a mechanism, repurposing applies to organizations or technologies (Omezzine et al., 2021; Rauch and Ansari, 2021), but also to policies, such as with the 1972 Title IX federal law in the US, which addressed civil rights discriminations and yet was repurposed to also include sexual harassment (Reynolds, forthcoming). Repurposing is a mechanism of decoupling because it enables organizations facing accountability pressures to comply formally with these demands without substantively changing operations; this strategy helps minimize conflict and maximize efficiency across multiple demands. Repurposing one set of activities to fit another demand allows to implement ceremonially HFA by substituting it with prior activities, hence decoupling it. We label this process “substitutive decoupling.”

Several examples from the HFA reports help convey the process of substitutive decoupling. To start, country reports are full of initiatives that pre-existed HFA as part of earlier disaster relief work, but become used as evidence that the new framework is being implemented. As one case, US reports describe at length several disaster efforts they undertook in primary and secondary schools, as well as in colleges and universities, independent of HFA. Some of these efforts date back to the 1950s, decades before DRR and HFA were being discussed and even before the US national agency to address disasters, FEMA, was created (in 1979). Similarly, the 2007 Egyptian report signals a cooperation protocol dating back to 1976 as an example of an HFA practice, and the 2007 Indonesia report indicates several regional pre-HFA programs to protect against tsunamis developed with UNESCO, the Indian Ocean Group, or ASEAN. Likewise, the 2007 Nepal report presents a program created with the United Nations Development Program (UNDP) in 1971, the Swaziland illustrates the cooperation with NGOS citing a Task Force created in 1992, and the 2007 South Korean report indicates a program created with the Red Cross in 2004. The list goes on: Germany lists a 2004 law as the example stating the HFA practice has been met, New Zealand a 2002 law, Egypt a 1994 one, and Italy a 1992 one. Very few reports signal legal updates after 2005 and the promotion of HFA–two notable exceptions are a 2008 decree in Italy and a 2008 update of a 1953 act on civil protection in Norway.

Perhaps the most dramatic example comes from Japan’s 2011 report. An excerpt of their implementation replicates–word for word–text from a report produced in 2004 prior to the HFA agreement. Moreover, the 2004 text refers to a legal framework enacted in 1961 stating, “the cornerstone of legislation on disaster risk reduction is the Disaster Countermeasures Basic Act, enacted in 1961, which set out the basis for measures to reduce disaster risk in Japan”. This 1961 law, which pre-existed the conceptualization of DRR and was drafted as an emergency and relief plan after a typhoon killed over 5,000 people in the Bay of Ise in 1959, is nonetheless claimed as a DRR policy intended “to remedy inadequacies in the old disaster-reduction framework” (Japan’s report in preparation of the World Conference on Natural Disaster Reduction, Yokohama, 1994, p. 3). Japan has undoubtedly gained a recognized expertise in disaster management, yet the older legislative framework was repurposed to fit HFA demands, still infused with a relief logic, and hence decoupled from DRR.

A large disaster and development field existed prior to the HFA, and existing or prior work was repurposed to claim symbolically implementation of the new disaster risk reduction paradigm, while in fact existing to serve other purposes. As another example, the UNDP is a large player in providing funding for development, including in the wake of disasters, and 145 HFA country reports (39%) mention UNDP projects. Laos, for instance, describes a 2007 UNDP Regional Project, which was “initiated in order to mainstream disaster risk reduction into the education sector” (p. 9). Although UNDP publicly embraced the HFA principles, when we investigated the UNDP project database for the period, out of the 381 projects associated with disasters, none mentioned HFA and only one mentioned UNISDR (with a 75K USD budget). Only 85 refer to risk reduction for a total budget of circa 148 million USD, which accounts for 10% of the total amount funded for the 381 disaster-related projects (over 1.45 billion USD). What this suggests is that many UNDP projects were repurposed as conforming to the new HFA policies, although they existed independently and would have gone on regardless of HFA.

Our argument is that reported implementation of HFA is, in part, symbolic. As evidence to support this argument, we expect to find that countries with more disaster-related development work will report higher levels of implementation of HFA, above and beyond their disaster legacy and hazard of experiencing a large-scale tragedy. The idea is that countries with many disaster-related projects and activities can symbolically repurpose these as conforming to HFA, although the projects and activities exist to meet adjacent (non-HFA) goals. Formally, our arguments are:

*H2a: Repurposing ongoing projects: Countries with higher levels of development funding for disasters are likely to report higher implementation scores of HFA as they repurpose existing activities as part of the new framework.*

*H2b: Repurposing past projects: Countries that have submitted a higher number of disaster-related reports under the prior paradigm (i.e. prior to HFA) are likely to report higher implementation scores of HFA as they repurpose prior activities as part of the new framework.*

# DATA & METHODS

In this study, we focus on the country-level adoption and implementation of the Hyogo Framework for Action (HFA), developed by the United Nations (UN) between 2005 and 2015. We select this setting both for its practical importance and its ability to provide insights into our theoretical interest about adoption and implementation in a setting with accountability pressures. HFA is a voluntary and decentralized policy (UNISDR, 2005), where “decision-making processes should keep close to the communities at risk, have clear lines of accountability based on established responsibilities, and enable multiple stakeholders to contribute to disaster risk reduction” (Words Into Action: a Guide for Implementing the Hyogo Framework, 2007, p. 22). Throughout the process, accountability has been both reported as a key success factor and as a constant source of concern, guided by monitoring, bi-annual meetings, and independent audits (Implementation of the Hyogo Framework for Action–Summary of Reports 2007-2013, 2013; Synthesis Report: Consultations on a Post-2015 Framework on Disaster Risk Reduction HFA2, 2013). Additionally, the adoption and implementation of HFA is highly documented: the information related to UN conferences are public, and the HFA reports we gathered sum up to over 14,000 pages, not counting the other archives and data we collected. We reference the data sources and archives we consulted in the data sources section at the end of this manuscript. We also interviewed practitioners who took part in the HFA data collection and auditing process to better understand their efforts and practices. This gives us a detailed image of the phenomenon we study.

Our sample includes all 191 countries, whose governments[[6]](#endnote-6) participated in the INFORM[[7]](#endnote-7) initiative, the Index For Risk Management, a collaboration between the United Nations and the European commission “for developing shared, quantitative analysis relevant to humanitarian crises and disasters”. Following the HFA guidelines, countries could submit HFA reports over four reporting waves: 2007-2009, 2009-2011, 2011-2013, and 2013-2015.

## Dependent variables

To address empirically the two legs of our conceptual model, we run two sets of analyses with two dependent variables, submitting a HFA report (dichotomous) and implementing HFA practices (continuous).

*Submitting an HFA report:* Our first dependent variable is a dichotomous measure of whether a state submitted a report to the HFA initiative during a given reporting wave, true if a country submitted a HFA report. 153 countries in our sample sent at least one report, resulting in a total sample of 371 reports[[8]](#endnote-8). Reporting is a central accountability practice (Brunsson and Jacobsson, 2000), which makes submitting a report an appropriate measure of ceremonial adoption, as used in other studies such as Marquis and Qian (2014) and Okhmatovskiy and David (2012). Figure 1 shows the number of reports submitted in each wave.

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INSERT FIGURE 1 ABOUT HERE

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*Reported implementation score of the HFA*: Our second dependent variable is a continuous measure capturing the degree of implementation that a country reports in each period. The degree of implementation is coded from the content of the reports. In order to facilitate HFA implementation and monitoring, UNDRR developed an online tool to submit reports, which provide a unified reporting template. Though highly similar in their structure, the reports vary in length (from 9 to 165 pages) and in the details they provide regarding the practices implemented during the reporting wave. The practice implementation is detailed in the section describing the five priorities for actions (the longest section of the report). These five priorities are divided in 22 core indicators, themselves divided in several questions and means of verifications, which document the implementation of specific practices. For each report, we coded these questions and means of verification sections. Those “means of verification” sections also include detailed descriptions of examples of national legislation, local legislation, inclusion of DRR in the curriculum of secondary school, public information campaigns, allocating a national budget to DRR, and many other possible practices. We listed 415 practices in total (the same practice may appear in multiple reporting waves), 52 practices during the first wave, 101 during the second wave, and 131 during the third and fourth waves of reporting[[9]](#endnote-9).

Then, we computed an implementation score as the number of practices reported by a given country on the total number of possible practices reported by any country during that reporting wave. Implementation hence varies from 0% if a country submitted a report that does not mention any practice to 100% if a country reported all the possible practices. Figure 2 shows a world map of the level of implementation of the Hyogo Framework for Action according to the last submitted report. Most countries reported partial implementation of the HFA policy. Colors/shades vary per quartile, the lightest the lower the quartile. This map shows more than three quarters of countries report implementing more than half of the HFA practices.

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INSERT FIGURE 2 ABOUT HERE

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## Predictors of report submission

*World polity embeddedness*: Hypothesis 1a states that countries more linked to rationalized world polity are more likely to adopt the HFA. We assess linkages to world polity using a standard measure: the KOF Globalization index (Dreher, 2006; Gygli et al., 2019), a time-varying composite index measuring globalization and multilateralism for every country in the world along economic, social, and political dimensions. The composite index includes measures such as the number of embassies, the number of international NGOs, of international airports, the number of trade agreements, a measure of the freedom to visit, internet access, and many others (Gygli et al., 2019).

*Seriousness of a recent disaster*: Hypothesis 1b links the severity of a recent disaster to HFA adoption. We argue that the seriousness of a recent disaster is likely to draw the attention of stakeholders and the public and hence increase countries’ odds of adopting HFA. We assess the severity of an event using the log of a sum of deaths and affected people during the reporting wave, using the EM-DAT dataset (e.g., Ballesteros et al., 2017). EM-DAT “contains essential core data on the occurrence and effects of over 22,000 mass disasters in the world from 1900 to the present day” (CRED, 2018) [[10]](#endnote-10). Over the period of our study, at least one disaster was reported for 161 out of 191 countries in our sample. The deadliest disasters during our study period are the earthquake in Haiti in 2010 (222,570 deaths recorded) and a cyclone in Myanmar in 2008 (138,366 deaths recorded).

*Participation in field configuring events: the Yokohama conference*. Hypothesis 1c relates the country participation to field configuring event to the likelihood of adoption. We argue that past field-configuring events such as UN conferences are primary mechanisms embedding countries in disaster communities, which increase the likelihood of adopting HFA. We assess the participation in field configuring events with the participation of countries to the first World Conference on Natural Disaster Reduction, held in Yokohama, Japan 23-27 May 1994 (dichotomous measure). We focus on the Yokohama conference because it is the first and only World Conference on Natural Disaster Reduction that occurred before the conference enacting HFA in 2005. The list of participants to the conference is available on the conference reports from the United Nations.

## Predictors of implementation

*Development funding:* Hypothesis 2a relates the levels of development funding to the implementation scores of HFA. We measure the development funding with the budget of the United Nations Development Program (UNDP). Our UNDP budget measure captures a budget in US dollars dedicated to disaster-related projects. Our argument is that UNDP projects are repurposed to implement HFA ceremonially. The measure is the (log) sum of the budget a country received from the UNDP. The list of UNDP funded projects, as well as a description of the project, the country where the project is held, and the allocated budget, are available for download on the UNDP website. Among the 12,000 listed projects, we found 381 projects related to disasters for a total budget of USD 1,454,038,444. We define projects as related to disasters if the description contains any of the following keywords: UNISDR, flood, storm, typhoon, hurricane, tornado, cyclone, earthquake, landslide, tsunami, disaster, natural risk, risk reduction, DRR, or resilience (none of the project descriptions mentioned HFA). Some countries may have multiple projects over the same reporting wave; in this case, we summed all their budgets.

*Prior Disaster Risk Reduction Reporting:* Our last hypothesis is about the number of reports countries submitted to UN disaster initiatives prior to HFA. Our argument is that disaster reports not related to HFA are repurposed to implement HFA ceremonially. Disaster risk reduction (DRR) started as a global conversation in 1989 for the international decade of DRR, which led to reporting activities in 1998 to celebrate the end of this decade (43 reports from countries included in our sample out of 135 participants). Countries also submitted disaster-related reports to the UN organizations in 1994 before the Yokohama Conference (88 reports out of 147 participants) and in 2004 before the Hyogo Conference (111 reports out of 154 countries). As DRR practices and principles were not defined in a global policy before Hyogo, these reports are descriptive inventories of past and ongoing efforts to curb the toll of disasters, listing disasters that recently occurred, country risks, regional initiatives, national organizations of civil defense, existing disaster relief structures such as Ministries, existing regulations, partnerships with civil society, and so on. Our measure is the sum of previous reports a country published during any of those periods prior to the HFA initiatives and ranges from 0 to 3.

## Control variables

From a rational perspective, countries would be more likely to engage in disaster risk reduction policies if they are objectively at higher risk of experiencing natural hazard. We control for the *Natural Hazard* using the natural hazard index in the INFORM dataset. This is a composite index assessing the probability of exposure to the risks of “Earthquake, Flood, Tsunami, Tropical Cyclone, and Drought” in each country. There is great variation in country-level risk exposure; the index varies from values close to 0 (e.g., Singapore, that adopted the HFA in the first period) to values above 9 (e.g., Myanmar, that did not adopt the HFA), with a standard deviation of 2.07.

We also control for two indicators that might shape vulnerability to a hazard or a response. Larger countries may be more susceptible to hazards simply because of their geographic size, which is not accounted for in the natural hazard indicator. Thus, we measure *country size* using the number of square kilometers (logged to correct for skewness, INFORM, 2015). In addition, countries with larger populations may be more proactive in seeking to mitigate harm, as the raw number of people who could be affected is larger. Thus, we control for *country population* size (logged, World Bank, 2013).

As is standard in cross-national research at the country level, we control for *GDP per capita* (measured using Purchasing Power Parity in USD, logged): this controls for the possibility that wealthier countries are more likely to adopt disaster preparedness (International Monetary Fund 2007-2014). Due to issues of collinearity, we use a residualized measure of GDP in our modeling, built by regressing it on our measure of world polity embeddedness (Jorgenson, 2006; Jorgenson and Clark, 2009).

Because country policy adoption may be a response to internal and external pressures, we control for participation and freedom of expression in the countries in our sample, using the *level of voice and accountability* measure from the World Bank’s Worldwide Governance Indicators (WGI). For the same reason as for GDP, we used a residualized measure of the level of democracy in our models.

Because states’ internal structure is likely to influence their ability to adopt policies, we control for centralization using a dichotomous measure of *federal vs unitary states* (using the data available in the English Wikipedia article on Unitary States), which is true if the state is federal.

We also control for the level of *share of regional peer adoption* (countries being likely influenced by their neighbors). We measure adoption at the regional level with the proportion of countries in a region that adopted the framework in period *t* (excluding the focal country) on the total number of countries in that region. We grouped countries by region using the definition of the United Nations for geographical subregions, where the world is divided into 22 subregions based on geographical proximity (northern America, western Europe, etc.).

We know from prior research that how organizations organize themselves to address institutional pressures and adopt policies shapes the patterns of adoption (Lounsbury, 2001). In our context, this argument implies that the position of the report writer in the state administrative apparatus might influence policy adoption (Kentikelenis and Seabrooke, 2017). Skocpol (1979) distinguished government, such as ministry offices, which exercise power to adopt policies, from national agencies or NGOs working for a national agency, which holds topical expertise and advises rather than develops a political agenda. We control for the *report writer government position* by distinguishing if the writer is a member of the government, such as a ministry office, as opposed to a member of another state-related organization (member of a national agency or an NGO). We coded the writers’ position by collecting, for every report, the writers’ information (names, institution, function, and email address as usually stated on the first page of each report). Two authors coded separately this information, guided by theory, and compared their results to reach a consensus on this dichotomous measure.

Finally, we control for the time period in which a country adopts the HFA framework with three dichotomous indicators, leaving the earliest period as the omitted category. We assessed the robustness of our results using multiple additional or alternative measures, as described in the robustness checks section.

## Analytical Strategy

To address empirically the two legs of our conceptual model (adoption of policies and implementation of practices), we run two sets of analyses with two dependent variables. (1) In a first set of analyses, we assess the adoption of the HFA policy per country using our dichotomous dependent variable (adoption through the submission of policy reports). (2) In a second set of analyses, we assess the implementation of practices per country through our continuous dependent variable (score of reported implementation).

We assess the adoption of the Hyogo Framework for Action per country, with four time panels, resulting in a balanced panel dataset with 764 observations. Adoption is usually modeled with event history techniques assuming continuous time, yet, as we observe a discrete pattern over four time points, we opted for a different strategy. To that end, we use multilevel mixed effect logistic regression, per country (Hedeker and Gibbons, 2006). This model allows for assessing the adoption of the HFA by not only controlling for contextual variation between countries but also for unobserved differences within countries (with country fixed effects), which is a recurrent concern with event history models (Blossfeld et al., 2019).

For our second set of analyses, we model the level of implementation of practices using a multilevel mixed effect linear model. The model allows us to study the random effects of our independent variables on the level of implementation, while accounting for the non-independence of our observations, nested in countries over the four reporting waves (Gałecki and Burzykowski, 2013; Gelman and Hill, 2006).

# FINDINGS

Table I shows the descriptive statistics of our main variables and controls. The 191 countries in our sample could submit up to 4 reports (one per reporting wave). Table IIa (full sample) and IIb (countries that submitted a report) show the correlation matrix variables reported in our models. 153 countries out of 191 submitted at least one report during the four reporting waves, resulting in 371 reports and submission occurring in 49% of the cases (371/764). The average level of implementation is .59. This means that countries, on average, reported more than half of the possible HFA practices when they submitted a report.

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INSERT TABLES I, IIa & IIb ABOUT HERE

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Tables III and IV report the main findings of our regression analyses. In Table III, we present the models related to why countries adopt HFA and submit reports, with country fixed effects, and controlling for reporting wave. Model 1 includes only the controls. We see the influence of some country characteristics: more populated countries are more likely to submit HFA reports. Also, the controls related to the internal (the level of democracy, proxied with a measure of voice and accountability) and external pressures (the share of regional peer adoption) are both positively and significantly correlated with the likelihood of submitting a report. GDP per capita (residualized) is not significantly correlated with the likelihood of submitting a report.

Models 2 to 5 examine the embeddedness predictors of adoption, net of controls. Hypothesis 1a is about the role of world polity embeddedness. It states that countries that are more embedded in the rationalized world polity are more likely to submit a HFA report. We test this hypothesis in model 2 and 5. We notice some evidence of the role of world polity embeddedness in the adoption of HFA. However, the correlation is weak (.05 < p-value < .10 in model 2; .01 < p-value < .05 in the model 5; β = .0208). As such, we find partial support for H1a.

Hypothesis 1b states that the greater the number of citizens affected or killed by disasters in a reporting period, the more likely countries are to submit an HFA report in that period. Setting aside rational accounts, psychological and behavioral research suggests that a recent event may be linked to greater attention (Hogarth and Einhorn, 1992; Levitt and March, 1988; Thaler et al., 1997); thus, the efforts to prevent it might be higher. Also, research on legacies has shown how past events guide subsequent organizing. In models 3 and 5, this relationship is positive and significant (model 5: β = .075, p-value < .01). Additionally, we note that the control of natural hazard is not significant when the models include our seriousness of recent disasters measure. We interpret that the submission of a report, in that case, is not the result of a rational -long-term plan, but rather a response to an immediate hazard. An extract from a field report illustrates the point: “once recovery is judged complete, many countries do not necessarily continue to build back better, but rather revert to business as usual. This highlights just how difficult it is to take advantage of the window of opportunity that opens after a disaster and to ensure that new development prevents and avoids disaster risks rather than reconstructing them” (GAR, 2015, p. 19).

Hypothesis 1c posits countries that took part in prior field-configuring event are more likely to submit an HFA report. We test this hypothesis with model 4 and 5. Participating in the Yokohama conference in 1994, the field configuring event (first world conference on disaster risk reduction prior to the Hyogo Framework for Action), is positively and strongly correlated with the likelihood of submitting a report (model 5: β = 1.284, p-value < .001). In all the alternative models we ran, this relationship has always been strongly significant. Field-configuring events shape relationships among participants and embed them durably in a field. This also appears in the text of the reports. As examples, the 2004 pre-HFA reports for Morocco, Iran, or New Zealand describe how taking part in Yokohama led to initiatives and embedded them in several disaster-related organizations. From the 2004 New Zealand report: “In the period 23-27 May 1994 representatives of United Nations member states, other states, non-governmental organisations, international organisations, the scientific community, business, industry and the media met in the city of Yokohama, Japan, at a World Conference on Natural Disaster Reduction. The main outcome of the Yokohama Conference was the widely distributed “Yokohama Strategy and Plan of Action for a Safer World” (2004) which was designed to guide disaster reduction activities world-wide for the rest of the International Decade for Natural Disaster Reduction (IDNDR) and for later years”.

Overall, we find support across three measures for our hypothesis that socio-historical embeddedness increases HFA adoption, with particularly strong evidence regarding the role of past field embeddedness.

In the models 6 to 9 (Table IV), we study reported implementation. In model 6, we show controls for all the factors already present in models 1 to 5, plus a control for whether the report writer is from the government. None of the previous controls are systematically significantly correlated with the number of practices reported as implemented. The natural hazard and the seriousness of recent disasters are also not significantly correlated in these models. We understand countries may show willingness to act through ceremonial adoption as a response to recent and serious disasters, but this has no effect on implementing policies reported.

Hypothesis 2a posits a systematic association between higher levels of UNDP funding for disasters with reported HFA implementation. Our qualitative read of the reports showed that, in some cases, the practices that countries claim to have implemented reflect a process of substitutive decoupling; that is, the repurposing of existing practices to comply with a new demand. Providing support to our argument that repurposing is a systematic process, models 7 and 9 show a positive and significant correlation between the UNDP budget (log sum) related to disaster risk reduction and the reported HFA implementation (number of practices claimed, with means of verification) (model 9: β =.003, p-value < .05). Hypothesis 2b, similarly, states that countries that have submitted a higher number of disaster-related reports under the prior paradigm (i.e. prior to HFA) are reporting higher levels of HFA implementation, as they repurpose past activities as part of the new framework. Again, the relationship (models 8 and 9) is positive, and significant in the full model (model 9: β =.031, p-value < .05); it is marginally significant in the model 8. Although the levels of significance are moderate, the results we found here were consistent in the alternative models we tested, described in the robustness checks. As such, we find support for the two measures used in our second hypothesis.

**Robustness checks**

*Multicollinearity*. As is common in cross-national, longitudinal research, we face multiple collinearity issues amongst our variables. To help address these issues, we residualized the control variables that were highly correlated with our main independent variables (GDP per capita and the level of democracy) and used the residuals in the models (Jorgenson, 2006; Jorgenson and Clark, 2009). We further checked the results by running models excluding collinear items, and our central findings are robust.

## *Alternative measures.* An additional issue is that our measures are proxies for complex concepts, such as government effectiveness, embeddedness, or repurposing. There are multiple reasonable ways to employ quantitative indicators of these constructs, and so we made efforts to weigh the strength of our arguments by considering alternative reasonable indicators (Schweinsberg et al., 2021). Alternative measures were tested one by one, in their respective full model.

### Alternative dependent variables. As an alternative measure of submitting a report, besides the raw reports, the UNISDR provides a database summarizing the declared level of implementations for each country of the program in each reporting wave. When comparing this database with the 371 reports, we found three countries with a level of implementation but no pdf report. When considering those cases as true along with the 371 reports (they submitted something to HFA, although no report is available), our results were consistent.

We also tested our model with two other measures of implementation: we used (1) the self-assessed level of implementation reported by countries, and (2) the number of pages of the report. The self-assessed level of implementation is a score that countries report on a grid of 22 core indicators grouped within 5 priorities, each of them evaluated on a scale, starting with “minor progress with few signs of forward action in plans or policy” (level 1) to “comprehensive achievement with sustained commitment and capacities at all levels” (level 5). The correlation between the self-assessed score and the number of listed practices coded with the “means of verification” is ρ = .54. Compared to our own coding of the means of verification of the implemented practices, the self-assessed scores are more centered toward the mean (countries with high levels of implementation tend to underestimate their level of implementation, while countries with low levels of implementation tend to overestimate it). With this alternative measure, our main results were consistent.

The second alternative DV we tested to assess implementation is the number of pages of the HFA report. We use the number of pages of the report as a proxy for the degree of details provided in a country report. Consistent with the approach by Okhmatovskiy and David (2012), this measure captures the number of details present in each report, assuming the longer a report, the more details, and the more practices implemented. With this alternative measure, our main results were consistent.

### Alternative independent variables. We coded our measure of the seriousness of recent disaster as a binary measure (occurrence of disasters during the reporting period, not accounting for severity) and we get consistent results. We also tested for the seriousness and the recency of events prior to the reporting wave (the results reported in the model account for recent disaster that occurred during the reporting period). If accounting for events more than one year before the reporting period, the effect is not significant anymore (in the model assessing the submission to HFA): this further strengthen our argument related to the reaction to recent experience (as opposed to a rational reaction to long-term risk).

We also coded our UNDP budget (log, USD) as a binary measure (receiving budget for project related to disaster risk reduction, or not). We obtain consistent results. To strengthen our argument related to repurposing, we also tested for a measure of international aid that would not be related to disaster risk reduction: the Official Development Assistance (ODA). Prior research on mandatory and centralized contexts has shown that resource dependencies matter in shaping adoption and implementation (e.g., Okhmatovskiy and David, 2012). ODA captures generic country-level resource dependence on international funding, whereas UNDP funding is financing for specific development projects, such as the ones related to disasters. This ODA measure was not significantly related to the level of HFA implementation. We interpret this as additional evidence that we capture project-specific effects and not general resource dependence.

*Alternative measures of control variables.* As an alternative to GDP per capita, and because more effective governments are also more likely to adopt the HFA, we also control for government effectiveness using a measure from the World Bank in the INFORM dataset (2015). It is defined as an estimate capturing “perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government’s commitment to such policies.” (World Bank, 2013). There is a well-documented variation in the extent to which states have the necessary administrative structures (Drori et al., 2006b; Kim et al., 2002) and highly varied levels of government efficacy, which might shape a state’s ability to adopt the HFA. We do not include both GDP per capita and government effectiveness in the same models because they are very similar empirically (ρ = .78). Our results were consistent with both measures.

As an alternative to the *Voice and Accountability* variable, we used the level of democracy measure from the Polity 5 project (Marshal and Gurr, 2020), and obtained consistent results on our findings. Finally, as an alternative measure to the *share of regional peer adoption*, we used the average self-assessed score per region, and the average share of reported actions per region, and we found similar results.

*Other unreported controls.* We tested for a series of other possible controls unreported in the results. Most of them were not significant, including the Gini coefficient for income inequality, a gender inequality index, road density, or a general indicator of socio-economic vulnerability. We also tested whether the founding of a national disaster agency in a country prior to Hyogo (2005), prior to Yokohama (1994), or prior to the UN disaster International Decade (1989) increase the likelihood to adopt HFA, without finding a consistent and significant relationship. A few other indicators had significant correlations when entered without other controls, but contained many missing values, and/or because of other collinearity issues, did not bring extra information beyond the existing controls. These indicators included the number of children under the age of five, the number of underweight children under the age of five, and the Human Development Index.

*Alternative model specification.* As a robustness check, given adoption conditions implementation, we also modeled our two sets of analysis using a pooled correlated random effects model, known as “two-stage Heckman” (Semykina and Wooldridge, 2010; Wooldridge, 1995). Two-stage Heckman models are suitable for correcting sample selection bias with panel data and has multiple advantage, including that “the unobserved effects in both the regression and selection equations can be correlated with the observed variables, the error distribution in the regression equation can be unspecified, arbitrary serial dependence in the idiosyncratic errors of both equations is allowed, and all idiosyncratic errors can be heterogeneously distributed. Compared with maximum likelihood and other estimators derived under fully parametric assumptions, the new estimators are much more robust and have significant computational advantages” (Wooldridge, 1995, p. 115). Practically, we used the Rios-Avila’s (2020) Stata implementation of the estimator. The results were consistent. All these robustness checks are available from the authors upon request.

# DISCUSSION & CONCLUSION

In this paper, we draw on the insights of organizational theory to highlight an overlooked aspect of decoupling; namely, understanding the challenges created by accountability. Over the years, studies of decoupling have emphasized how political embeddedness, resource dependencies, and peers shape policy adoption. Our study draws attention to accountability demands in the policy environment, and this focus leads us to suggest a wider set of relations influence adoption and implementation and shape implementation in unexpected ways. We first theorize that, to navigate voluntary yet decentralized demands, organizations attend to socio-historical relations they have forged over the years. Second, we argue that voluntary accountability contexts press actors to display compliance when they implement policies, triggering a process we call substitutive decoupling. In substitutive decoupling, actors repurpose a pre-existing activity to demonstrate ceremonial implementation. We discuss below the implications of these ideas and their empirical test.

A leading assumption in organization theory prompts scholars to think of organizations as open systems, in which they are responsive to external pressures from their environment, such as imposing new policies (Selznick, 1949; Tolbert and Zucker, 1983; Pfeffer and Salancik, 1978). How and why some organizations are responsive and adopt a given policy, whereas others do not, is a central question in this line of work. Broadly speaking, organizational scholars have long modeled organizational responsiveness to environmental pressures by building on embeddedness, a set of relations tying an organization with its environment, as a core lens and operationalization tool (Granovetter, 1985). The implicit argument is that the more embedded an organization is in a given constituency, the more likely it is to adopt a policy. In the decoupling literature, institutional scholars have advanced this perspective by emphasizing the political embeddedness of organizations, whose ties with peers, stakeholders, or political patrons, channel resources, information, or visibility and hence influence policy adoption (Dobbin et al., 2007; Haveman et al., 2017; Okhmatovskiy, 2010; Okhmatovskiy and David, 2012; Marquis and Qian, 2014; Marquis et al., 2017; Weber et al., 2009; Witt et al., 2021). This perspective highlights the primary role governance actors play in organizations for adopting policies to gain legitimacy.

Against this backdrop, we consider how the increasingly common context of voluntary, decentralized accountability demands shapes our understanding of embeddedness. In decentralized governance systems, organizations are expected to respond to different kinds of actors, beyond the immediate relations with their immediate peers or a political constituency. And if compliance is voluntary, coercive economic or political relations become less salient. Taken together, these insights suggest that a wide array of socio-historical relations organizations are likely to be an understudied yet important form of embeddedness influencing policy adoption. We focus on the importance of temporal processes in creating relational legacies that shape adoption and implementation responds to calls to strengthen the socio-historical dimensions of institutional theory (Marquis and Qian, 2014; Suddaby et al., 2013; Wadhwani et al., 2018). And our findings provide empirical evidence to support our argument that socio-historical embeddedness shapes policy adoption.

Viewed through an optimistic lens, our results could be interpreted as suggesting that decentralized accountability systems effectively provide voice to a larger range of stakeholders to press for diverse policy preferences beyond immediate or narrow political and economic constituencies. But we do not mean to imply that transparency and decentralized accountability is always beneficial (Haack et al., 2021); highly participatory processes can be deeply conflictual, disruptive, or inefficient (Schlüsser et al., 2014). Furthermore, our study of reported implementation shows that even if the gap between adoption of formal structures and reported implementation is narrowed, the gap between means and ends can persist (Bromley and Powell, 2012). We observe significant ceremonial implementation of the HFA by countries repurposing pre-existing activities to fit the new demands, a process we referred to as substitutive decoupling.

Research on embeddedness and responsiveness to external pressures has also shown that social relationships influence organizational behaviors by conveying resources between actors, while also involving shared activities (Dacin et al., 1999; Granovetter, 1985; Zukin and DiMaggio, 1990). The literature on political embeddedness has largely studied policy implementation in centralized settings, where coercive mechanisms such as resource dependences guide policy deployment (Haveman et al., 2017; Marquis and Qian, 2014; Okhmatovskiy, 2010; Okhmatovskiy and David, 2012). At the country level, financial dependencies matter to influence such processes (Dobbin et al., 2007), especially in our context as HFA is new, complex, costly, and monitored. Yet, we did not find evidence showing these resource dependences shaped significantly and systematically HFA implementation. Our findings instead suggest that embeddedness operates differently in decentralized settings, where decisions are delegated. The extent of repurposing we observe, qualitatively and quantitatively, points to the importance of activities, be it current or past projects, to guide implementation. The HFA reports are filled with disaster-related initiatives that predate HFA or are unrelated. Monitoring and reporting pressured countries to identify the national and local activities done with local and international actors, be it UN agencies, NGOs, or civil defense organizations. As countries are being held publicly accountable for their progress, they largely repurposed these activities as testimonies, if not tokens, of their efforts to curb the toll of disasters. When organizations are held accountable, activities that can be shown and reported become the currency that matters to facilitate countries’ ceremonial implementation of policies and the buffering of their existing operation.

From a policymaking perspective, our results suggest reporting cannot be the only accountability practice to implement policies effectively, even if monitored and audited in a systematic fashion. Theoretical research on decoupling and accountability has debated the respective merits of opacity and transparency to shape policies (Haack et al., 2021; Haack and Schoenborn, 2015; Wijen, 2014; Wijen, 2015). Empirical research on decoupling and reporting as has shown how policies were are at risk of impression management and substitution (Arndt and Biggelow, 2000; Okhmatovskiy and David, 2012), while the political embeddedness literature has shown how resource dependences and political monitoring were key mechanisms to press organizations for a higher degree of implementation (Haveman et al., 2017; Marquis and Quian, 2014; Okhmatovskiy, 2010). In a decentralized and voluntary setting, such mechanisms are less salient. Our findings hence add to this conversation by encouraging policymakers to not only focus on accountability rules, resources, and processes but also to consider the merits of long-term field-building practices to promote accountability (such as the field-configuring event of the Yokohama Conference).

Future studies of ceremonial implementation and means-ends decoupling will help advance our conceptual understanding of policy effectiveness. It would be valuable to conduct detailed qualitative studies to consider other contexts where substitutive decoupling may occur. In addition, there may be various forms of substitutive decoupling beyond the repurposing activities we observe here. Existing research suggests substitutive decoupling could involve the full substitution of a policy by a more convenient one or the transposition of a policy from one context to the other (Djelic and Quack, 2008; Itçaina et al., 2016; Marquis et al., 2017; Okhmatovskiy and David, 2012). In his famous work on the gypsum mine, Gouldner (1954) showed how some rules and policies were simply ignored and mocked within organizations, while studies on civil rights policies has shown how policies where shaped by the individuals and professionals implementing them (Buchter, 2021; Dobbin and Kalev, 2021; Reynolds, forthcoming). The extent to which these various deviations from what was supposed to be deployed are ceremonial to buffer existing practices calls for future research on substitutive decoupling. Additionally, we study reported implementation rather than an objectively observed outcome, a common occurrence in studies of implementation. We aim to mitigate this by calculating our own measure of the number of practices a country verifies rather than its own self-report score. But in a context of transparency and accountability, there is much interesting work to be done in examining discrepancies between self-reports and more objective measures of implementation.

A pressing, practical implication of our work is that many of the countries most in need of disaster preparedness may be the least prepared. Over the last 30 years, professionals of disaster preparedness have successfully shifted the global conversation from responding to “random” disaster events to preventing vulnerability (National Research Council, 2006; Revet, 2019). Our study reveals that some countries might have built a legacy of advantage in this domain that fits with this globalized conversation, but many do not. In the context of a decentralized and voluntary policy, national histories both enable and constrain global adoption. As recent trends toward populism, nationalism, and authoritarianism illustrate, countries can opt out of a decentralized global governance system.

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# LIST OF DATA SOURCES

We combined multiple sources to gather the qualitative and quantitative evidence supporting our empirical analyses. We list here the data sources we refer to in this manuscript.

All these sources are stored online, hence we added the hyperlink whenever needed. Many documents come from the PreventionWeb website, “the global knowledge sharing platform for disaster risk reduction and resilience”, maintained by UNISDR/UNDRR, which are accessible at the following address: <https://www.preventionweb.net/>.

**The 2005 Hyogo Conference and the Hyogo Framework for Action (HFA)**

* 371 country reports sent between 2007 and 2015. National Progress Reports on the Implementation of the Hyogo Framework for Action (2009-2011, 2011-2013, 2013-2015).
* 111 National Reports in Preparation for the Hyogo World Conference on Disaster Reduction, 2004.
* United Nations (2005). *World Conference on Disaster Reduction*. Kobe, Japan.
* United Nations (2015). *Global assessment report on disaster risk reduction 2015 – Making development*
* Words Into Action: a Guide for Implementing the Hyogo Framework, 2007.<https://www.unisdr.org/files/594_10382.pdf>
* UNISDR (2005). Hyogo Framework for Action 2005-2015. Building the Resilience of Nations and Communities to Disasters. *Extract from the final report of the World Conference on Disaster Reduction* (A/CONF.206/6).

<https://www.unisdr.org/2005/wcdr/intergover/official-doc/L-docs/Hyogo-framework-for-action-english.pdf>

* Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, Mid-term Review, 2011.
* Implementation of the Hyogo Framework for Action – Summary of Reports 2007-2013, 2013.
* Synthesis Report: Consultations on a Post-2015 Framework on Disaster Risk Reduction (HFA2), 2013.

**The 1994 Yokohama Conference**

* United Nations (1994). *World Conference on Natural Disaster Reduction*. Yokohama, Japan.
* 88 Country Reports in preparation of the World Conference on Natural Disaster Reduction, Yokohama, 1994. .

Review of the Yokohama Strategy and Plan of Action for a Safer World, 2004. <https://digitallibrary.un.org/record/546804>

* Mid-term Review and the 1994 World Conference on Natural Disaster Reduction, Yokohama, 1994.

**The 1989-1998 International Decade for Disaster Reduction (IDNDR)**

* International Framework of Action for the International Decade for Natural Disaster Reduction.   
  In: Resolutions and decisions adopted by the General Assembly during its 44th session, Volume 1, 19 September-29 December 1989. - A/44/49. - 1990. - p. 161-162. <https://digitallibrary.un.org/record/82536?ln=en>
* 43 National Reports Prepared for the end of the IDNDR.

**The international strategy for disaster reduction (ISDR)**

* Annual report 2007: the secretariat of the International Strategy for Disaster Reduction (UN/ISDR), 2007.
* Chakrabarti, D. (2010). Chapter 6: Cooperating across the region. In Protecting Development Gains. Reducing Disaster Vulnerability and Building Resilience in Asia and the Pacific. The Asia-Pacific Disaster Report. ESCAP – UNISDR.

**Other sources**

* 381 reports for UNDP projects related to disasters. https://open.undp.org/GAR - Global Assessment Report on Disaster Risk Reduction (2015) – *Making development sustainable: The future of disaster risk management. United Nations.*
* Chakrabarti, D. (2013). Developing Indicators for Measuring Progress of Disaster Risk Reduction. *Input paper for the GAR*.
* National Research Council. (2006). *Facing hazards and disasters: Understanding human dimensions.* National Academies Press

**Datasets used**

* CRED (2018). *EM-DAT - The International Disaster Database. Explanatory notes*. <https://www.emdat.be/explanatory-notes>
* Gygli, Savina, Florian Haelg, Niklas Potrafke and Jan-Egbert Sturm (2019): The KOF Globalisation Index – Revisited, *Review of International Organizations*, 14(3), 543-574
* International Monetary Fund (2007-2014). *GDP, current prices (purchasing power parity).* <https://www.imf.org/external/datamapper/PPPGDP@WEO/OEMDC/ADVEC/WEOWORLD>
* World Bank (2013). *Worldwide Governance Indicator.* <https://info.worldbank.org/governance/wgi/pdf/ge.pdf>
* World Bank (2021). Official Development Assistance (ODA). Retrieved from the World development indictors database. https://databank.worldbank.org/source/world-development-indicators
* Wikipedia article on Unitary States: <https://en.wikipedia.org/wiki/Unitary_state>
* INFORM (2015). *Index for Risk Management*. <http://www.inform-index.org/>
* United Nations Development Program website: <https://www.undp.org/>

**Table I. Descriptive statistics.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Label** | **N** | **Mean** | **SD** | **min** | **max** |
| **Dependent variables:** |  |  |  |  |  |
| DV 1: *HFA report submission* | 764 | 49 % | dummy |  |  |
| DV 2: *HFA implementation* | 371 | 0.590 | 0.201 | 0 | 0.954 |
| **Independent variables:** |  |  |  |  |  |
| Explaining report submission: |  |  |  |  |  |
| H1a. *Globalization index* | 764 | 59.637 | 15.040 | 25.402 | 89.969 |
| H1b. *Seriousness of recent disasters* | 764 | 6.647 | 5.347 | 0 | 18.759 |
| H1c. *Participation in the Yokohama conference* | 764 | 77 % | dummy |  |  |
| Explaining implementation: |  |  |  |  |  |
| H2a. *UNDP budget (log, USD)* | 764 | 4.25 | 6.486 | 0 | 19.355 |
| H2b. *Prior disaster reports* | 764 | 0.874 | 0.854 | 0 | 3 |
| **Control variables:** |  |  |  |  |  |
| *Natural Hazard* | 764 | 3.527 | 2.070 | 0 | 9.250 |
| *Country size (log, square km)* | 764 | 11.354 | 2.613 | 3.091 | 16.611 |
| *Country population (log)* | 764 | 15.586 | 2.132 | 9.208 | 21.031 |
| *GDP per capita (log, USD, ppp.)* | 764 | 9.095 | 1.205 | 6.246 | 11.843 |
| *Level of democracy: voice & accountability* | 764 | -0.083 | 1.007 | -2.270 | 1.738 |
| *Level of centralization: unitary / federal state* | 764 | 85 % | dummy |  |  |
| *Share of regional peer adoption* | 764 | 48 % | 24 % | 0 % | 100 % |
| *Report writer is from the government* | 371 | 62 % | dummy |  |  |

Note: 764 observations correspond to 191 countries during 4 waves of reporting; 371 observations correspond to 371 reports submitted during the four periods. DV 2: The minimum score is 0 because some countries submitted a report, but the report is empty or do not contain any information related to something implemented.

**Table IIa. Correlation matrix, HFA submission (N = 764)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** |
| 1. HFA submission | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |
| 2. Globalization index | **0.15** | 1.00 |  |  |  |  |  |  |  |  |  |  |  |
| 3. Seriousness of recent disasters | **0.26** | **-0.16** | 1.00 |  |  |  |  |  |  |  |  |  |  |
| 4. Particip. in Yokohama | **0.28** | **0.14** | **0.24** | 1.00 |  |  |  |  |  |  |  |  |  |
| 5. UNDP budget | **0.13** | **-0.27** | **0.28** | **0.10** | 1.00 |  |  |  |  |  |  |  |  |
| 6. Prior disaster report | **0.24** | **0.20** | **0.33** | **0.34** | 0.06 | 1.00 |  |  |  |  |  |  |  |
| 7. Natural hazard | **0.25** | -0.06 | **0.53** | **0.23** | **0.27** | **0.36** | 1.00 |  |  |  |  |  |  |
| 8. Country size | **0.16** | **0.10** | **0.52** | **0.22** | **0.10** | **0.38** | **0.39** | 1.00 |  |  |  |  |  |
| 9. Country population | **0.26** | **0.21** | **0.57** | **0.27** | **0.12** | **0.46** | **0.48** | **0.85** | 1.00 |  |  |  |  |
| 10. GDP per capita | -0.01 | **0.77** | **-0.35** | -0.05 | **-0.32** | 0.03 | **-0.13** | **-0.11** | -0.08 | 1.00 |  |  |  |
| 11. Voice & accountability | **0.09** | **0.60** | **-0.21** | **0.10** | **-0.21** | 0.01 | **-0.18** | **-0.32** | **-0.30** | **0.48** | 1.00 |  |  |
| 12. Level of centralization | -0.00 | -0.02 | **-0.13** | 0.01 | 0.06 | -0.03 | **-0.10** | **-0.18** | **-0.22** | -0.05 | -0.04 | 1.00 |  |
| 13. Regional peer adoption | **0.23** | 0.03 | **0.16** | 0.05 | **0.09** | 0.05 | **0.22** | **0.14** | **0.16** | -0.02 | -0.01 | **-0.11** | 1.00 |

Note: 764 observations (191 countries over 4 periods). Values in bold are sig. at 0.01. In our models, we residualized GDP and level of democracy to avoid multicollinearity issues with one of our IVs (world polity embeddedness).

**Table IIb. Correlation matrix, HFA implementation (N = 371)**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** | **12** | **13** | **14** |
| 1. HFA implementation | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2. Globalization index | **0.27** | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |
| 3. Seriousness of recent disasters | 0.08 | **-0.19** | 1.00 |  |  |  |  |  |  |  |  |  |  |  |
| 4. Particip. in Yokohama | **0.24** | **0.19** | 0.13 | 1.00 |  |  |  |  |  |  |  |  |  |  |
| 5. UNDP budget | 0.12 | **-0.34** | **0.26** | -0.04 | 1.00 |  |  |  |  |  |  |  |  |  |
| 6. Prior disaster report | **0.24** | **0.20** | **0.26** | **0.21** | -0.05 | 1.00 |  |  |  |  |  |  |  |  |
| 7. Natural hazard | **0.15** | -0.08 | **0.51** | 0.13 | **0.22** | **0.27** | 1.00 |  |  |  |  |  |  |  |
| 8. Country size | **0.16** | **0.18** | **0.49** | **0.21** | 0.06 | **0.33** | **0.32** | 1.00 |  |  |  |  |  |  |
| 9. Country population | **0.22** | **0.22** | **0.53** | **0.18** | 0.08 | **0.38** | **0.43** | **0.84** | 1.00 |  |  |  |  |  |
| 10. GDP per capita | **0.19** | **0.83** | **-0.31** | 0.03 | **-0.35** | 0.08 | -0.09 | -0.02 | -0.03 | 1.00 |  |  |  |  |
| 11. Voice & accountability | **0.16** | **0.64** | **-0.17** | **0.19** | **-0.27** | 0.08 | **-0.15** | **-0.14** | **-0.17** | **0.57** | 1.00 |  |  |  |
| 12. Level of centralization | -0.00 | -0.08 | -0.10 | -0.03 | 0.04 | -0.05 | -0.12 | **-0.21** | **-0.25** | **-0.16** | **-0.14** | 1.00 |  |  |
| 13. Regional peer adoption | -0.01 | -0.09 | **0.24** | 0.08 | 0.08 | 0.03 | **0.22** | 0.11 | 0.09 | -0.06 | -0.02 | **-0.16** | 1.00 |  |
| 14. Report writer is from governm. | 0.02 | 0.02 | 0.13 | 0.03 | 0.09 | **0.15** | 0.11 | **0.19** | **0.14** | 0.02 | -0.09 | -0.01 | 0.13 | 1.00 |

Note: 371 observations (country-period with an HFA report submission). Values in bold are sig. at 0.01. In our models, we residualized GDP and level of democracy to avoid multicollinearity issues with one of our IVs (world polity embeddedness).

**Table III. Multilevel Mixed Effect Logistic Regression of submitting to HFA.**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Model 1** | | **Model 2** | | **Model 3** | | **Model 4** | | **Model 5** | |
| Wave 2 | 0.594 | \* | 0.582 | \* | 0.601 | \* | 0.589 | \* | 0.581 | \* |
|  | (0.271) |  | (0.271) |  | (0.272) |  | (0.271) |  | (0.273) |  |
| Wave 3 | 0.478 | + | 0.448 | + | 0.528 | \* | 0.472 | + | 0.493 | + |
|  | (0.265) |  | (0.266) |  | (0.268) |  | (0.265) |  | (0.268) |  |
| Wave 4 | 0.409 |  | 0.366 |  | 0.454 | + | 0.404 |  | 0.404 |  |
|  | (0.265) |  | (0.266) |  | (0.268) |  | (0.264) |  | (0.268) |  |
| Natural hazard | 0.179 | \* | 0.211 | \*\* | 0.126 |  | 0.146 | \* | 0.121 |  |
|  | (0.074) |  | (0.076) |  | (0.079) |  | (0.072) |  | (0.077) |  |
| Land size (log sqkm.) | -0.277 | \*\* | -0.243 | \* | -0.307 | \*\* | -0.280 | \*\* | -0.276 | \*\* |
|  | (0.099) |  | (0.100) |  | (0.102) |  | (0.098) |  | (0.101) |  |
| Population (log) | 0.688 | \*\*\* | 0.585 | \*\*\* | 0.653 | \*\*\* | 0.620 | \*\*\* | 0.455 | \*\* |
|  | (0.147) |  | (0.154) |  | (0.150) |  | (0.144) |  | (0.156) |  |
| GDP per capita (res.) | -0.226 |  | -0.284 |  | -0.161 |  | -0.140 |  | -0.136 |  |
|  | (0.199) |  | (0.201) |  | (0.204) |  | (0.197) |  | (0.203) |  |
| Voice & accountability (res.) | 0.730 | \*\*\* | 0.657 | \*\* | 0.678 | \*\* | 0.602 | \*\* | 0.454 | \* |
|  | (0.205) |  | (0.207) |  | (0.210) |  | (0.201) |  | (0.208) |  |
| Unitary government | 0.657 | + | 0.593 |  | 0.681 | + | 0.546 |  | 0.506 |  |
|  | (0.394) |  | (0.393) |  | (0.402) |  | (0.387) |  | (0.393) |  |
| Regional peer adoption | 2.502 | \*\*\* | 2.504 | \*\*\* | 2.511 | \*\*\* | 2.461 | \*\*\* | 2.468 | \*\*\* |
|  | (0.496) |  | (0.497) |  | (0.499) |  | (0.491) |  | (0.496) |  |
| **H1a. Globalization index** |  |  | **0.0178** | **+** |  |  |  |  | **0.0217** | **\*** |
|  |  |  | (0.009) |  |  |  |  |  | (0.010) |  |
| **H1b. Seriousness of recent disast.** |  |  |  |  | **0.0656** | **\*** |  |  | **0.0807** | **\*\*** |
|  |  |  |  |  | (0.027) |  |  |  | (0.028) |  |
| **H1c. Particip. in Yokohama 94** |  |  |  |  |  |  | **1.272** | **\*\*\*** | **1.200** | **\*\*\*** |
|  |  |  |  |  |  |  | (0.345) |  | (0.350) |  |
| Constant | -10.43 | \*\*\* | -10.33 | \*\*\* | -9.853 | \*\*\* | -10.12 | \*\*\* | -9.259 | \*\*\* |
|  | (1.744) |  | (1.735) |  | (1.782) |  | (1.707) |  | (1.739) |  |
| Est. var. component | 0.223 |  | 0.208 |  | 0.254 | + | 0.165 |  | 0.180 |  |
|  | (0.137) |  | (0.139) |  | (0.136) |  | (0.144) |  | (0.144) |  |
| Fixed effect | Country |  | Country |  | Country |  | Country |  | Country |  |
| AIC | 891.3 |  | 889.7 |  | 887.4 |  | 878.9 |  | 872.1 |  |
| BIC | 947.0 |  | 950.0 |  | 947.7 |  | 939.2 |  | 941.7 |  |
| Log-likelihood | -433.7 |  | -431.8 |  | -430.7 |  | -426.5 |  | -421.0 |  |

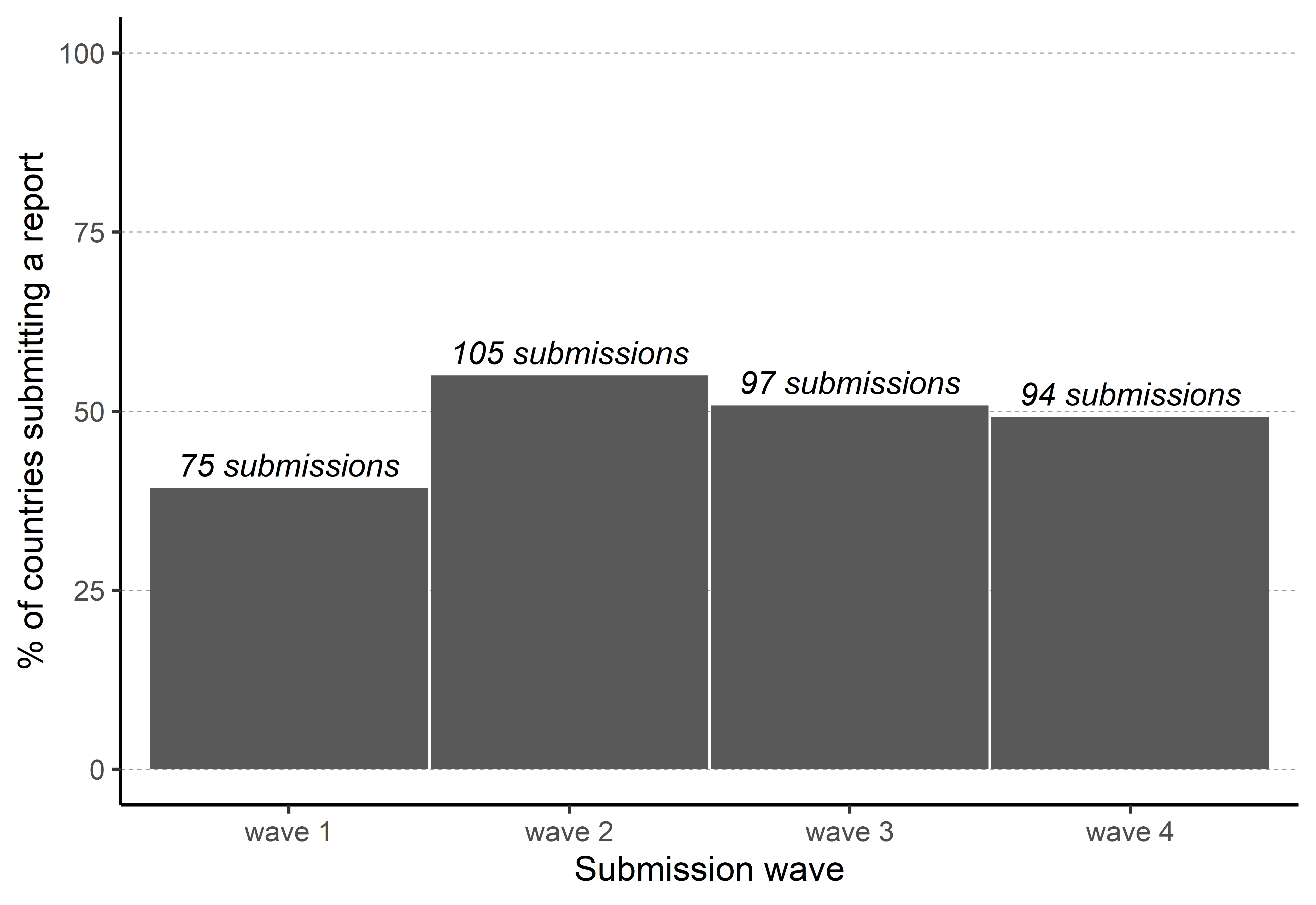
N = 764 (191 states during 4 periods); p-values: +: < 0.10, \*: <0.05, \*\*: <0.01, \*\*\*: <0.001; Dependent variable: submitting an HFA report during the period.

**Table IV. Multilevel mixed effect linear model of implementing HFA.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Model 6** | | **Model 7** | | **Model 8** | | **Model 9** | |
| Wave 2 | -0.0237 |  | -0.0277 |  | -0.0235 |  | -0.0279 |  |
|  | (0.023) |  | (0.023) |  | (0.023) |  | (0.023) |  |
| Wave 3 | 0.0669 | \*\* | 0.0561 | \* | 0.0661 | \*\* | 0.0542 | \* |
|  | (0.024) |  | (0.024) |  | (0.024) |  | (0.024) |  |
| Wave 4 | 0.123 | \*\*\* | 0.108 | \*\*\* | 0.125 | \*\*\* | 0.108 | \*\*\* |
|  | (0.024) |  | (0.025) |  | (0.024) |  | (0.025) |  |
| Natural hazard | 0.010 |  | 0.009 |  | 0.009 |  | 0.007 |  |
|  | (0.006) |  | (0.006) |  | (0.006) |  | (0.006) |  |
| Land size (log sqkm.) | -0.0118 |  | -0.0116 |  | -0.0119 |  | -0.0116 |  |
|  | (0.009) |  | (0.009) |  | (0.009) |  | (0.009) |  |
| Population (log) | 0.0284 | \* | 0.0287 | \* | 0.0245 | + | 0.0245 | + |
|  | (0.013) |  | (0.013) |  | (0.013) |  | (0.013) |  |
| GDP per capita (res.) | 0.0188 |  | 0.0233 |  | 0.0183 |  | 0.0231 |  |
|  | (0.02) |  | (0.02) |  | (0.02) |  | (0.02) |  |
| Voice & accountability (res.) | 0.0107 |  | 0.0110 |  | 0.00801 |  | 0.00818 |  |
|  | (0.019) |  | (0.018) |  | (0.018) |  | (0.018) |  |
| Unitary government | 0.051 |  | 0.0499 |  | 0.0471 |  | 0.0456 |  |
|  | (0.035) |  | (0.035) |  | (0.035) |  | (0.034) |  |
| Regional peer adoption | -0.0417 |  | -0.0348 |  | -0.0394 |  | -0.0317 |  |
|  | (0.043) |  | (0.043) |  | (0.043) |  | (0.042) |  |
| Globalization index | 0.002 | \*\* | 0.003 | \*\* | 0.002 | \* | 0.003 | \*\* |
|  | (0.001) |  | (0.001) |  | (0.001) |  | (0.001) |  |
| Seriousness of recent disast. | 0.0006 |  | 0.0001 |  | 0.0003 |  | -0.0002 |  |
|  | (0.002) |  | (0.002) |  | (0.002) |  | (0.002) |  |
| Particip. in Yokohama 94 | 0.108 | \*\* | 0.112 | \*\* | 0.099 | \*\* | 0.102 | \*\* |
|  | (0.037) |  | (0.037) |  | (0.037) |  | (0.036) |  |
| Writer from the government | -0.0108 |  | -0.0146 |  | -0.0148 |  | -0.0192 |  |
|  | (0.021) |  | (0.021) |  | (0.021) |  | (0.021) |  |
| **H2a. UNDP (budget)** |  |  | **0.0030** | **\*** |  |  | **0.0032** | **\*** |
|  |  |  | (0.001) |  |  |  | (0.001) |  |
| **H2b. N pre-reports** |  |  |  |  | **0.0289** | **+** | **0.0314** | **\*** |
|  |  |  |  |  | (0.015) |  | (0.015) |  |
| Constant | -0.0724 |  | -0.108 |  | -0.0070 |  | -0.0393 |  |
|  | (0.149) |  | (0.149) |  | (0.151) |  | (0.15) |  |
| Constant | -2.292 | \*\*\* | -2.3 | \*\*\* | -2.318 | \*\*\* | -2.333 | \*\*\* |
|  | (0.118) |  | (0.119) |  | (0.122) |  | (0.124) |  |
| Constant | -1.969 | \*\*\* | -1.974 | \*\*\* | -1.968 | \*\*\* | -1.973 | \*\*\* |
|  | (0.048) |  | (0.048) |  | (0.048) |  | (0.048) |  |
| Fixed effect | Country | | Country | | Country | | Country | |
| AIC | -254 | | -256.3 | | -255.7 | | -258.8 | |
| BIC | -187.3 | | -185.9 | | -185.2 | | -184.4 | |
| Log-likelihood | 144 | | 146.2 | | 145.8 | | 148.4 | |

N = 371 reports; p-values: +: < 0.10, \*: <0.05, \*\*: <0.01, \*\*\*: <0.001; Mixed effect models are run only for countries and in the period where the country made a submission;  
Dependent variable: level of implementation of the HFA.

**Figure 1. Number of report submissions per wave.**

****

**Figure 2. Level of implementation of the HFA.**

**Map

Description automatically generated**

# ENDNOTES

1. Drawing from Barton (1969), we define disasters as sudden, large-scale, and extreme natural hazards that disrupt the normal development of countries, which suffer from important deprivations along human, material, financial, and institutional dimensions. To reflect this definition, the numbers cited from EM-DAT only include four types of disastrous events: cyclones, tsunamis, earthquakes, and floods, and hence provide a conservative estimate of the global consequences of disasters. [↑](#endnote-ref-1)
2. The Yokohama Conference included 147 countries, 146 as participants and 1 as an observer, the Republic of Palau. [↑](#endnote-ref-2)
3. DRR specialists and UN reports describe HFA as a policy, a set of policy guidelines, policy guidance or framework for action (e.g., Chakrabarti, 2013; UNISDR, , 2005; Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, Mid-term Review, 2011; Implementation of the Hyogo Framework for Action – Summary of Reports 2007-2013, 2013). To refer to HFA, we use (public) policy or framework throughout the text. [↑](#endnote-ref-3)
4. We thank an anonymous reviewer for encouraging us to further investigate how implementation and reporting were done and for suggesting us to examine the substitution literature. [↑](#endnote-ref-4)
5. The HFA reporting unfolded over four periods: 2007-2009, 2009-2011, 2011-2013, and 2013-2015. To facilitate the reading, we cite 2007 as the year of reporting for the report published in 2007-2009, 2009 for the second wave in 2009-2011, 2011 for the third wave (2011-2013), and 2013 for the fourth wave (2013-2015). When we cite these reports, we indicate the country, reporting wave, and page to facilitate the location of the quote but, for the sake of space, we do not list the cited individual reports in the list of sources at the end of the manuscript. [↑](#endnote-ref-5)
6. Following Skocpol (1979, p. 29), we define states as "a set of administrative, policing, and military organizations headed, and more or less well coordinated, by an executive authority". States are essentially the organizations running countries. We use interchangeably states, nation-states, governments, and countries throughout the manuscript, an assumption that is regularly made in institutional analysis at the world level (Dobbin et al., 2007; Meyer et al., 1997). [↑](#endnote-ref-6)
7. The dataset is available here: <https://drmkc.jrc.ec.europa.eu/inform-index> [↑](#endnote-ref-7)
8. UNDRR lists a total of 386 reports submitted between 2005 and 2015. We excluded one duplicate (Norway) and 14 reports sent by states, which were not part of the UN-EU Inform initiative (Anguila, 2 reports; Cook Islands, 2 reports; Cayman Island, 2 reports; Monaco, 2 reports; Niue, 1 report; Turks and Caicos Island, 2 reports; and the Virgin British Islands, 3 reports). As a result, our analysis includes 371 reports. [↑](#endnote-ref-8)
9. For waves 2, 3, and 4, the reported practices are strictly uniform across reports as they follow a unique common reporting template, ensuring a fair comparison across countries. However, for wave 1, the reports used a common template yet not precise at the practice level. To ensure a fair comparison across countries for wave 1, we proceeded in three steps. First, we open coded all the practices in the priorities for action sections and we found a total of 91 different practices. Second, we reduced these 91 practices to 52 practices we identified as systematically documented across reports. Third, we checked the reliability of our coding. An assistant researcher external to the project coded a random sample of 20% of the Wave 1 reports and we obtained an intercoder reliability coefficient (IRC) of 0.8615 using Cohen’s kappa and 0.8616 using Krippendorff’s alpha with our coding. These two IRC measures control for chance and are insensitive to the number of categories (Krippendorff, 2004). Both validate a coding as reliable when equal to or larger than 0.80. [↑](#endnote-ref-9)
10. According to the EMDAT definition: “for a disaster to be entered into the database at least one of the following criteria must be fulfilled: (1) ten or more people reported killed, (2) hundred or more people reported affected, (3) declaration of a state of emergency, or (4) call for international assistance.” Affected people are “people requiring immediate assistance during a period of emergency, i.e. requiring basic survival needs such as food, water, shelter, sanitation and immediate medical assistance,” or “people suffering from physical injuries, trauma or an illness requiring immediate medical assistance as a direct result of a disaster,” or “people whose house is destroyed or heavily damaged and therefore need shelter after an event” (CRED, 2018). In our analyses, we restricted the focus of our analysis to four comparable types of extreme hazards that are sudden and natural: earthquakes, tsunamis, cyclones, and floods. The aggregate consequences of these events are estimated to amount to an average annual loss of US$314 billion in built environments alone (GAR, 2015). Despite their severity, we exclude droughts and famines because they are diffuse and require distinctive organizing issues that go beyond HFA. [↑](#endnote-ref-10)