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# Is there an international disaster risk reduction regime? Does it matter?

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ABSTRACT

Global cooperation on disaster risk reduction seems to have risen dramatically over the last twenty-five years. From the 1994 Yokohama Strategy and Plan of Action for a Safer World through the 2015 Sendai Framework for Disaster Risk Reduction, countries gradually made stronger pledges and policy changes aimed at substantially reducing disaster risk and losses. Alongside these global efforts, important regional frameworks have emerged aiming to increase national capacities through cooperation and coordination across geographic regions. What are we to make of these efforts at multinational and multi-actor governance? This article explores two key questions: Are we witnessing the inception of a global disaster risk reduction regime? To the extent that we can classify this as a regime, what are the implications for understanding global collective action around disaster risk reduction? The analysis here suggests that it may be too early to classify this as a regime, but aspects of cooperation are trending in that direction. The language of regimes provides a systematic and relatively comprehensive framework for thinking about inherent tensions around global disaster risk reduction.



## 1. Introduction

Global cooperation on disaster risk reduction (DRR) seems to have risen dramatically over the last decade. In 1994, the United Nations (UN) held the World Conference on Disaster Risk Reduction in Yokohama, Japan. The conference produced the Yokohama Strategy and Plan of Action for a Safer World. Since that time, countries have made stronger pledges and policy changes aimed at substantially reducing disaster risk and losses. In 2005, 168 countries endorsed the Hyogo Framework for Action (HFA) aimed at reducing the losses from disasters by 2015. In March 2015, the Sendai Framework for Disaster Risk Reduction was adopted by United Nations (UN) member states as a successor to the HFA. It aims to substantially reduce disaster risk and losses by the year 2030. In 2007, the UN General Assembly established the Global Platform for Disaster Risk Reduction, a biennial forum aimed at monitoring global progress on first the HFA and now the Sendai Framework. Over this same time period various regional organizations (the Association of Southeast Asian Nations (ASEAN), the African Union, etc.) have developed their own frameworks for encouraging DRR. And finally, international non-governmental organizations (NGOs) have increased their efforts at DRR in a variety of ways. All of this falls under the umbrella of "disaster governance" [27], a term that encompasses interaction between the public-sector, private-sector, and civil society in a way that relies on both formal institutions as well as informal norms. This governance includes a broad range of horizontal and vertical linkages spanning local, state, national, regional, and international jurisdictions.

Since at least the mid-1970s, international relations scholars have used the term *international regime* to describe patterns of cooperative governance within specific issue areas [25]. The scholarship on regimes has evolved over time, providing scholars a systematic framework for thinking about the ways in which norms, rules, and behaviors interact to produce patterns of or challenges to cooperative behavior. Given what we have witnessed over the last 25 years regarding disaster risk reduction, it is worth zooming out and thinking about whether the pieces of this multidimensional governance fit together in any patterned way. Are we witnessing the inception of a global disaster risk reduction *regime*?

This is an analytically useful question. The language of regimes gives us a systematic and relatively comprehensive framework for thinking about governance around global disaster risk reduction. This is important for two reasons. First, it allows us to see normative and behavioral trends as well as normative and behavioral variance. The variance is important. We have seen it play out in compliance with specific international agreements like the Hyogo Framework [3], and it can be puzzling to reconcile widespread agreement on the norm of disaster risk reduction with varied compliance. But within the framework of international regimes, variance on compliance becomes less puzzling. This is simply the result of the many challenges inherent in all types of global cooperation—information, public goods, challenges with credible commitments as a result of time inconsistencies and domestic politics, and security dilemmas among others. Second, while there is increasing cooperation on global disaster risk reduction, there is also widespread acceptance of the idea that the local level is best level for achieving disaster risk reduction, and these ideas have been incorporated into the major international frameworks [21]. The regime framework gives us at least one way to think through tensions between various

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levels of governance on these issues, especially where international norms and behaviors begin to conflict with local norms and behaviors.

This article explores two questions: (1) Are we witnessing the inception of a global disaster risk reduction regime? (2) To the extent that we can classify this as a regime, what are the implications for understanding and explaining efforts at disaster risk reduction? The analysis here suggests that it may be too early to classify this as a regime, but aspects of cooperation are trending in that direction. Either way, the process of analyzing international cooperation within the regime framework provides a useful way to think about some of the challenges that are inherent to collective action.

## 2. Defining regimes—what would we expect to see?

In their broadest conceptualization, regimes are similar to many other social institutions. They exist at the intersection of actors' convergent expectations and behavioral patterns ([29], 278). When states and other actors find themselves acting within "discernably patterned behavior" on a given issue area—adhering to particular sets of principles, norms and rules—and subjectively recognize themselves as doing so, we can characterize these interactions as occurring within a regime [22]. Steven Krasner's formal definition from the early 1980s captures all of these aspects: "principles, norms, rules, and decision-making procedures around which actor expectations converge in a given issue-area" [14].

### 2.1. "Discernably patterned behavior" on a given issue area

The phrase "discernably patterned behavior" gives rise to two questions: First, what types of behavior patterns qualify and among which actors? Is it enough, for example, for countries to meet regularly and discuss issues? Or do we need to see something more substantive, an agreement, treaty, or some other type of exchange? Second, how much of the behavior do we need to see? Is there a useful threshold we can use to delineate patterned international cooperation and regimes? Little, if any, consensus exists on these questions ([7], 8–22). Most of the analysis around the quality and quantity of behavior takes an unnamed "we'll know it when we see it" approach to labeling something a regime.

One indicator of the patterned behavior is the number of countries that participate in the regime, the regime's participatory scope ([22], 64). Of course, these numbers can be subjective. A more complete analysis of this dimension asks whether there is a discrepancy between the number of countries that consider themselves to be part of, for example, a disaster risk reduction regime and whether others perceive them as part of the regime ([4], 47). This brings in questions about regime outsiders. How many countries exist outside the regime? How problematic are they from the perspective of the health of the regime? Are any of these realities fundamentally damaging to the regime itself?

Additionally, we must consider the roles that non-state actors play in the regime architecture. Some of the regime literature has noted the separation between states as regime members and the non-state actors who are often subject to the regime's rules and procedures ([31], 273). However, more recent approaches to the study of the patterned behavior of regimes explore the roles of non-state actors in negotiation the terms of the regime itself [18,20]. Both roles are noteworthy and force any exploration of "patterned behavior" beyond the actions of states.

Even with this analysis, evidence of discernably patterned behavior may not be enough. Early on Young recognized the challenge, arguing "there is little point in attempting to establish an arbitrary threshold regarding the number of interconnected conventions required to qualify for the status of regime" ([29], 279). Rather than a threshold, he prefers thinking about effectiveness. If we observe actors altering their behavior due to agreed-upon norms and rules, we can start talking about the existence of a regime.

### 2.2. Adherence to principles and norms

Most regimes emerge based on a shared set of foundational principles or at least shared understandings about a given issue area [14]. How robust are the regime's norms? Do all countries in the regime agree on these principles or are there a variety of interpretations? Do these shared understandings continue to deepen over time or are there emerging debates over what this regime should be about? These are difficult questions to answer, especially as "any evaluation of robustness must measure it independently from the norm's effects" ([17], 39). In addition, specific assessments of normative robustness are likely to be subjective. Nonetheless, there are several frameworks that divide norms into different types and different features of robustness.

Maria Rublee's work employs a social psychological framework that classifies norms into three types based on the way in which they are transmitted. Descriptive norms are those norms transmitted through the behavior of others. As Rublee points out, "watching what others do does more than just give us information—it shapes our perception of social reality and our understanding of the proper response" ([24], 40). As more and more actors behave in particular ways, other actors come to view those behaviors as appropriate and correct. For example, if states make strides toward disaster risk reduction and are praised by others for "doing the correct thing" or alternatively if they ignore disaster risk reduction and are shamed (in some way) for it, these would each constitute evidence for the existence of a norm.

Injunctive norms are transmitted more explicitly. These norms come not from viewing the behavior of others but from specific statements prescribing proper and proscribing improper behavior ([24], 40). For these, the ways countries and international organizations frame issues is relevant. If countries make statements suggesting the appropriateness of disaster risk reduction—or again, the inappropriateness of not reducing disaster risk—then we have a basis for arguing that a norm exists or is emerging.

Finally, norms can emerge and deepen as actors interpret what others believe about a norm ([24], 42). For example, we might observe evidence that Turkey believes that disaster risk reduction is a good thing. That might indicate a given level of strength for a norm. However, if we observe Turkey interpreting the European Union as believing in disaster risk reduction, this might be an indicator of an even stronger norm.

While *descriptive*, *injunctive*, and *subjective* focus on the way norms are transmitted, Legro's [17] "features" help us think about the robustness of norms. A norm's "specificity" refers to the extent to which the norm is defined and understood. In the context of disaster risk reduction, do countries understand what risk reduction means and how to implement it or do they argue about it (1997, 34)? The "durability" of a norm is measured by the length of time the norm has been seen as legitimate. Has the norm been reinforced through punishment of violators? It is difficult to talk about a regime existing until actors begin to interpret actions as violations of their shared understandings [15]. Finally, a norm's "concordance" is a measure of the extent to which the norm is "widely accepted…in diplomatic discussions and treaties" ([17], 35). For each of the different types of transmitted norms, we can observe whether any existing norm is specific, durable, and/or concordant.

### 2.3. Creation of and adherence to rules

International regimes are often predicated on rules. Countries may agree to various institutions that govern transactions and reduce transaction costs associated with information deficiencies and asymmetries, externalities, and any enforcement- or property rights-related transaction costs [12,19]. These institutions can vary in the way that they are centralized, whether or not they have dispute settlement mechanisms, how they share information, and how the individual members are established and represented in any regime organizations [5]. Additionally, these rules may take on distinctive and formal organizational forms [22]. If we observe, for example, international bodies or secretariats specifically devoted to disaster

risk reduction, this could be a signal of the presence of an international regime.

One of the primary markers of international regimes is the extent to which countries are willing to subject themselves to these rules. At the extreme, these rules are internalized as countries are "willing to enact changes within their own domestic institutions and laws in order to comply with the regime" ([4], 47). When there is evidence that countries are willing to internalize international commitments, it can be a strong marker of the existence of a regime. The explicit introduction of domestic politics (i.e., attempts to change domestic laws) significantly complicates international bargaining [23]. It is difficult to imagine countries would be willing to take this step unless it was in the context of something larger [4]. As such, if we observe countries changing their domestic laws regarding disaster risk reduction in order to comply with international agreements, this would be a piece of evidence on the "this is a regime" side of the ledger.

### 2.4. Converged(-ing) expectations

How converged must the expectations be among participants? How many agreeing expectations count as "convergence"? The literature on regimes is largely silent on this. There is a general expectation of convergence across the most widely accepted definitions of regimes (e.g., [13,14,22]) but not many, if any, attempts operationalize the term. Even so, at least two ideas make sense. First, we would expect to see evidence of converged or converging expectation around the norms. For global disaster risk reduction to be recognized as a regime, we would expect (at the very least) to see countries agreeing on a shared understanding of what it means to reduce risk and the idea that this is "appropriate" behavior. These norms might be transmitted in any of the ways previously discussed, but the key here is that there is evidence of some level of convergence on the norms themselves.

Second, we should observe some amount of convergence around the expectations for behavior. This is admittedly difficult to disentangle from norms. However, one of the useful aspects of regimes is the way regimes not only improve the quality of information available but also help to coordinate expectations among the participants. These shared expectations based, in part, on improvements in information quality and quantity help to establish norms of reciprocation [9]—shared understandings based on regime-related information that "regime-supporting behavior will be reciprocated in the future" ([11], 343).

### 2.5. Which of these is necessary and/or sufficient?

A final question needs to be considered. Among norms, rules, and decision-making procedures, which is necessary and/or sufficient for the existence of a regime? If a group of actors agrees that disaster risk reduction is appropriate or that a lack of disaster risk reduction is inappropriate but there are no formal rules that encourage the former or punish the latter, is this a regime? If there are a series of non-binding rules in place but countries have not converged around a standard understanding of risk and risk reduction, is this a regime?

Existing work on regimes reflects ongoing differences in the broader theoretical debates over power and interests in international relations and thus has differing views on whether norms, behaviors, or rules are foundational to regime existence [6–8]. In one view, international regimes are built on underlying principles and norms, or networks of social conventions that contribute to the expectation of reciprocity as a fundamental aspect of regime formation [15]. Another view prioritizes repeated patterns of cooperation and exchange as the factor that best explains the existence of regimes [2,22,26,30]. A third view argues that the first two approaches require a "'thick' substantive definition" of regime and there are methodological issues inherent in this definition; thus, a more formal definition of regime is necessary. Such a definition focuses on the existence of explicit rules within a given issue area [13]. At the core, the question is whether norms are foundational to regimes or whether they are merely one of the aspects through which "regimes make it easier for actors to realize their interests collectively" [11]. This debate remains unresolved too. Table 1 summarizes each of the features and matching observable expectations with respect to global disaster risk reduction efforts.

## 3. Disaster risk reduction—what do we see?

Table 2 places observations about global disaster risk reduction into the framework of international regimes. Rather than address "converging expectations" as a separate category, they will be discussed throughout.

### 3.1. "Discernably patterned behavior" on a given issue area

There is strong evidence that the participatory scope of disaster risk reduction has increased over the last two decades and continues to increase. In December 1989, the United Nations adopted Resolution 44/236, "International Decade for Natural Disaster Reduction" (IDNDR). As the title indicates the resolution declared that the 1990s would be a decade devoted to the reduction of natural disasters. As a first step in this process, the General Assembly agreed (as part of 44/236) to implement a "Framework for Action," which set out several goals and policy measures to be taken by individual national governments. Among these, there was a noteworthy emphasis on taking "concerted international action." In addition, the Framework called for the establishment of a secretariat at the UN office in Geneva which would be "responsible for the day-to-day coordination of Decade activities" [28].

The 1994 countries met in Yokohama for the World Conference on Natural Disaster Reduction, a mid-term review of the IDNDR. The result of the conference was the "Yokohama Strategy and Plan of Action for a Safer World." This agreement "the first document providing guidelines at the international level for preparation for an prevention and mitigation of disaster impacts" ([21], 130). In particular, the document calls on countries to cooperate to establish or strengthen early warning mechanisms, mutual assistance agreements, and coordination mechanisms rooted in regional arrangements.

In 2005, 168 countries strengthened these coordinated efforts at disaster risk reduction, endorsing the Hyogo Framework for Action (HFA) aimed at reducing the losses from disasters by 2015. The HFA established five core areas in need of continued improvement along with a set of key indicators. The signatory countries agreed to submit biannual self-evaluations of their accomplishments within the indicators to the UN Secretariat of the International Strategy for Disaster Reduction (UNISDR). In March

**Table 1**
Observable expectations for an international DRR regime.

| Features | Observable expectations |
|---|---|
| Scope of participation | Widespread participation in disaster risk reduction efforts by a variety of state and non-state actors |
| Descriptive norms | Norms transmitted informally as countries recognize others actions as either appropriate and correct or inappropriate and incorrect |
| Injunctive norms | Norms transmitted more formally as statements that "prescribe proper behavior or proscribe improper behavior" ([24], 40); norms "specific" and/or "durable" and/or "concordant" [17] |
| Subjective norms | Countries able to correctly interpret other key actor's beliefs about norms regarding disaster risk reduction |
| Accepted constraints | Countries accept constraints in the form of international agreements, treaties, etc. |
| Internalization of constraints | Internalization of international agreements (change of domestic laws) regarding disaster risk reduction |
| Verification mechanism | For any accepted constraints regarding disaster risk reduction, there are institutions for compliance verification |
| Enforcement mechanism | For any accepted constraints regarding disaster risk reduction, there are enforcement mechanisms |
| Norms | Converged or converging expectations on the norms of disaster risk reduction |
| Behaviors | Expectation that cooperative behaviors around risk reduction will be reciprocated |

**Table 2**
Observations on International Disaster Risk Reduction.

| Features | Observable expectations | DRR-related observations |
|---|---|---|
| Scope of participation | Widespread is participation in disaster risk reduction efforts | • 1989 UN GA Resolution 44/236<br>• 1994 Yokohama Strategy and Plan of Action<br>• 168 countries endorse HFA in 2005<br>• Sendai Framework adopted by UN member states in 2015<br>• Major initiatives by regional organizations<br>• Proliferation of international, national, and sub-national NGOs related to DRR |
| Descriptive norms | Norms transmitted informally as countries recognize others actions as either appropriate and correct or inappropriate and incorrect | |
| Injunctive norms | Norms transmitted more formally as statements that "prescribe proper behavior or proscribe improper behavior" ([24], 40); norms "specific" and/or "durable" and/or "concordant" [17] | • 1994 Yokohama Strategy and Plan of Action for a Safer World – ten principles<br>• Sendai Framework's "Guiding Principles" serve as statement of norms; not very specific |
| Subjective norms | Countries able to correctly interpret other key actor's beliefs about norms regarding disaster risk reduction | • Many attempts to tie disaster risk reduction into discussions about global climate change, poverty, and overall vulnerability |
| Accepted constraints | Countries accept constraints in the form of international agreements, treaties, etc. | • Both HFA and Sendai incorporate voluntary commitments for domestic disaster risk reduction<br>• For Sendai, states formally express voluntary commitments |
| Internalization of constraints | Internalization of international agreements (change of domestic laws) regarding disaster risk reduction | • For Sendai, states formally express voluntary commitments |
| Verification mechanism | For any accepted constraints regarding disaster risk reduction, there are institutions for compliance verification | • Both HFA and Sendai have voluntary monitory system judged on sets of indicators |
| Enforcement mechanism | For any accepted constraints regarding disaster risk reduction, there are enforcement mechanisms | • Nothing formal |
| Norms | Converged or converging expectations on the norms of disaster risk reduction | • Converged idea that important component of disaster risk reduction is reduction of social vulnerability |
| Behaviors | Expectation that cooperative behaviors around risk reduction will be reciprocated | |

2015, the Sendai Framework for Disaster Risk Reduction was adopted by United Nations member states as a successor to the HFA. It extends the disaster risk reduction efforts of the HFA to 2030 establishing updated priorities for action and new metrics for state compliance. In spite of a mixed record on the individual components for both the HFA [3] and Sendai Framework, the evaluative components of these agreements is positive evidence of discernably patterned behavior in the context of disaster risk reduction.

Alongside these global efforts, several regional frameworks emerged. In 2009, the Association of South East Asian Nations (ASEAN) produced the ASEAN Agreement on Disaster Management and Emergency Response (AADMER), which aims to increase national capacities through cooperation and coordination across the region. Similarly, in 2010, the League of Arab States adopted the Arab Strategy for Disaster Risk Reduction in 2010 and the African Union developed the Africa Regional Strategy for Disaster Risk Reduction.

Nongovernmental organizations (NGOs) have played a significant and evolving role in mobilizing, innovating, and educating around the issues related to disaster risk reduction [16]. For example, at the international level, the Global Network of Civil Society Organisations for Disaster Reduction (GNDR) lists 1036 member organizations spread across 109 countries. Organizations such as GeoHazards International, for example, indirectly fulfill the spirit of concerted international action embedded in the original UN Framework as they provide opportunities to coordinate scientific knowledge across various issue areas related to different types of natural hazards. At the community level, NGOs have become an important component of the "collaborative governance" that underpins countries' emergency management frameworks [10].

### 3.2. Adherence to principles and norms

The 1994 Yokohama Strategy sets out ten principles, many of which serve as a statement of the norms at the core of the international disaster risk reduction movement. The document recognizes the norms of reducing vulnerability, sustainable development, and growing global interdependence. These injunctive norms were made explicit again in the Sendai Framework. These norms also seem to be transmitted descriptively through state behavior. The United Nations Office for Disaster Risk Reduction (UNIDSR) recognizes the success stories of disaster risk reduction, whether they are the efforts of individual countries or regional institutions. Expectations around these norms seem to be converging.

However, it is worth noting that several of these norms remain vague. The reduction of vulnerabilities for example, is often discussed in terms of "social vulnerabilities," and several markers are mentioned. However, there is no hard-and-fast understanding about how much social vulnerability needs to be reduced or which of the social vulnerability markers needs to be reduced first in order to have the biggest impact on disaster risk reduction.

### 3.3. Creation of and adherence to rules

Both the HFA and the Sendai framework create mechanisms to judge the voluntary compliance of states. The HFA, for example, identified five priority areas for action and within each of the priority areas, the HFA identified a series of core indicators. Signatory countries agreed to be evaluated by United Nations Secretariat of the International Strategy for Disaster Reduction (UNISDR) bi-annually starting in 2007. As part of this evaluation process, member countries submit self-assessments—scores from 1 to 5—indicating their progress along each core indicator.[1]

While the participatory scope associated with endorsing these treaties and agreements is strong, the patterned behavior of compliance has been more varied. For example, in 2011, the United Nations United Nations Secretariat of the International Strategy for Disaster Reduction (UNISDR) conducted a mid-term review of the HFA. The review concluded that "progress achieved in HFA implementation is uneven across the world" [32]. Countries' records of voluntary compliance were varied across the sub-issues and component indicators for measuring compliance with the framework. Many of the public goods qualities of these actions make them difficult to implement domestically [3]. While none of the public goods challenges disappear in the Sendai Framework, there is a solid pattern of behavior of the stakeholder countries formally expressing their intent to put the four "priority actions" into practice.[2]

The voluntary nature of both of these major agreements makes them difficult to enforce, and thus there are no formal enforcement mechanism.

[1] Enia [3] provides a table of the indicators and summary statistics on their measurements.
[2] For the current list, see https://www.preventionweb.net/drr-framework/commitments/#tab-1

This is not necessarily a criticism of these agreements. It is difficult to imagine that the level of participatory scope would be as high as it is if there were more formal enforcement mechanisms. Indeed, this highlights the tensions that exist within global cooperation as competing norms (interdependence, sovereignty) clash and incentives to defect (global public goods) all clash as countries attempt to create institutions.

## 4. Is there a disaster risk reduction regime?

In the end, it is too early to say whether this constitutes a global regime; however, it is safe to say that things are trending in that direction. We see convergence on several key norms, an increased participatory scope and willingness for states to agree to various rules, and widespread willingness to accept informal compliance mechanisms. However, the level of compliance has been highly varied. In addition, it is difficult to separate actions that states would have taken anyway because of recent experiences with disasters from actions that they took because of the causal influence of global efforts. In other words, would Turkey have undertaken significant disaster risk reduction efforts in the past couple decades without the major earthquakes that have occurred? If the earthquakes were indeed decisive then it makes it more difficult to think about whether any global disaster risk reduction regime is really all that important even if it does exist.

Despite these challenges, the framework of regimes is analytically useful. International efforts at disaster risk reduction are beset with an inherent tension between the various levels of governance. This tension manifests itself in the stated principles of the various agreements as they simultaneously recognize the importance of conducting risk reduction at the local level while coordinating efforts internationally. This sets up the possibility of tension as individuals attempt to reconcile international norms and expected behaviors with local norms and behaviors [1]. The regime framework provides a systematic way to classify these tensions, exploring and understanding the ways they inhibit or contribute to collective action.

Beyond this, international cooperation on disaster risk reduction gives international relations scholars another issue area on which to assess our understandings and definitions of regimes. As mentioned several times in the discussion of individual regime features above, there is still widespread debate about the definition of regimes. As such, the underlying dynamics of international regimes are not clearly understood—at the very least, they are debated. In these situations, more cases and more evidence can only be good things. Over the long run, more cases in different issue spaces can only serve to improve our understandings of international cooperation more broadly.

## CRediT author statement

**Jason Enia**: Conceptualization, Methodology, Investigation, Writing-Original draft preparation, Writing-Reviewing and Editing.

## Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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