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### Natural Disasters, Nuclear Disasters, and Global Governance

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## Natural Disasters, Nuclear Disasters, and Global Governance

Eric A. Feldman and Chelsea Fish

### **I. Introduction**

In their provocative new book *Transnational Legal Orders*, Halliday and Shaffer (2014a; 2014b) argue that in areas as diverse as civil rights, public health, financial stability, and trade policy, governments increasingly “reach beyond domestic to transnational legal norms” when crafting law and policy. They are not alone in noting the growing importance of what has come to be called global governance; scholars across a range of disciplines argue that transnational legal regimes have become increasingly important.<sup>1</sup> This chapter uses the analytical framework of transnational legal ordering (TLO) developed by Halliday and Shaffer and applies it to the area of law and disasters. In contrast to the increasingly transnational legal nature of social ordering highlighted by Halliday and Shaffer, it argues that the emergence of transnational regulatory networks and cross-border principles or policies in the area of disaster management has been uneven and incomplete. Although there are many factors that help to explain why the law/disasters area has resisted the trend toward “transnationalization,” two stand out. One is the relative dearth of national laws and policies governing disaster management, which means that unlike other areas in which TLOs have emerged, there is an inadequate foundation of nation-

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<sup>1</sup> See, e.g., Wai, Robert. 2005. Transnational Private Law and Private Ordering in a Contested Global Society (2005). *Harvard International Law Journal*, Vol. 46, pp.471-488 (characterizing transnational private law as one of many possible regimes in a global order and discussing its “public” or “social” function); Twining, William, *Globalization & Legal Theory*. 2000. London, England: Butterworths (discussing globalization and the law and noting the challenge of constructing “a conceptual framework and a meta-language of legal theory that can transcend legal cultures”); Shaffer, Gregory. 2014. “How the WTO Shapes the Regulatory State,” in David Zaring and Francesca Bignami, eds., *NAME OF This VOLUME*. Oxford: Oxford University Press (setting forth a new analytic framework for discussing the “broader regulatory implications of the WTO within nation states”); (Zumbansen, Peer C. 2010. Transnational Legal Pluralism. *Transnational Legal Theory*, Vol. 10, No. 2, pp. 141-189, 2010; CLPE Research Paper No. 01/2010. (discussing the concept of “transnational legal pluralism” as being distinct from that of international law);

specific laws and norms on which to build a transnational edifice. The second, closely related reason is that governments tend to “go it alone” when it comes to disaster management. Disasters can be difficult to predict, can carry an extraordinarily high price tag, can be geographically specific, and can affect people who lack the political clout to demand an official response. Rather than treating disaster management as an area of reciprocal risk in which the needs and interests of various countries are interdependent, therefore, nations generally manage disasters on an ad hoc, individual basis.

As conceptualized by Halliday and Shaffer (2014a), a TLO is “a collection of formalized legal norms and associated organizations and actors that authoritatively order the understanding and practice of law across national jurisdictions.” More specifically, TLOs create an *order* in an area that relevant actors consider problematic; adopt a *legal* form—articulating norms by a transnational body that engages with national bodies—to address the problem; and are *transnational* because they cross over and penetrate state boundaries (Halliday and Shaffer, 2014a). TLO formation depends upon the existence of precipitating conditions and facilitating circumstances (Halliday and Shaffer, 2014a). Applied to the area of law and disasters, precipitating conditions might include the occurrence of disasters, the political challenges that exist as the result of disasters, and the economic circumstances that accompany disasters. The likelihood that a disaster in one nation will affect other nations constitutes what Halliday and Shaffer call a facilitating circumstance, as do technological advances and innovations allowing for greater ease in coordination (Halliday and Shaffer, 2014b). Despite the existence of various precipitating conditions and facilitating circumstances, disaster management has largely resisted the type of global governance Halliday and Shaffer find so pervasive in other areas.

In exploring the apparent mismatch between the growing importance of TLOs described by Halliday and Shaffer (2014a; 2014b) and the reality of how nations individually and collectively manage disasters, this chapter roams broadly through the landscape of law and disasters. More specifically, it examines the state of TLO development in different stages of disaster management, particularly disaster prevention and preparedness, post-disaster emergency response, and victim compensation. It argues that the emergence of TLOs is most visible when it comes to post disaster emergency response, but is far less visible in other areas, most notably and ubiquitously in victim compensation.

The chapter first turns to the creation of TLOs for natural and nuclear disasters, surveying the areas of disaster prevention and preparedness, immediate disaster response, and victim compensation. It finds that for both types of disasters a modest degree of coordinated transnational regulation has developed in the area of disaster preparedness/prevention, targeted at minimizing potential physical injury and property damage, and that the transnational network of international organizations addressing the immediate response to natural disasters is more robust than that for nuclear disasters. Victim compensation, targeted at paying for disaster-related resulting personal injury and property damage, generally lacks a global regulatory structure.

Next, the chapter uses the Japanese response to the nuclear accident in Fukushima to illustrate the inadequacies of national and global nuclear disaster preparedness and management, and to highlight the potential for a more robust scheme. An administrative structure for managing nuclear disasters was developed by the international community in the 1950s as a way of enabling governments and nuclear energy providers to assure the public that the potential risks of nuclear energy were internalized by the owners/operators of nuclear facilities. But the structure is both incomplete and inadequate. Japan's inadequate disaster preparedness and its

poor performance in handling post disaster compensation underscore both the failure of translational legal norms in the area of nuclear disaster policy—because they are absent or insufficient—and how such norms could help nations manage the inevitable occurrence of disasters.

Third, the chapter turns to both the French regulatory response to natural disasters and the US response to the terrorist attacks of 9/11, which despite their differences suggest the potential for a more coordinated transnational approach to disaster management. Implemented in 1982, France's disaster insurance system now covers more than 90% of French citizens. Among its more distinctive qualities is that it is relatively inexpensive for consumers, provides them with guaranteed payments for property damage in the event that they are victims of disasters, reduces the potential financial burden on the government in the aftermath of natural disasters, and reasserts the values of community and solidarity by creating a national pool of insured. Similarly, the September 11<sup>th</sup> Victim Compensation Fund, which compensates individuals physically injured or killed by the 2001 World Trade Center terrorist attacks, was also animated by the concept of solidarity. The success of these programs illustrates that there may be identifiable international norms, like solidarity, that could be successfully harnessed by domestic and global actors to build a transnational legal regime in the area of disaster management, a regime that is flexible enough to account for the varying economic structures and social values of disaster-affected countries.

Finally, the chapter suggests several reasons why the areas of disaster prediction/preparedness and post-disaster compensation appear to be more resistant to global regulatory regimes than that of post-disaster emergency response, and asks under what circumstances a coordinated and consistent transnational regulatory apparatus might develop in

the area of law and disasters. It underscores why some categories of disasters may be more likely to develop a transnational regulatory regime, and uses the French system of disaster insurance and the U.S. September 11<sup>th</sup> Victim Compensation Fund to illustrate the possibility that transnational legal norms could in the future serve as the basis for the development of TLOs in the law/disasters areas.

## II. Disaster Management: Global Governance, Global Rules?

The capacity of human beings to deny, ignore or minimize potentially unpleasant and undesirable experiences is vividly on display in how they approach the possibility of being affected by disasters.<sup>2</sup> Floods, heat waves, hurricanes, nuclear meltdowns, tsunamis, earthquakes, tornadoes, volcanoes, hail, drought—despite Biblical warnings and the regular occurrence of devastating events, we seem content to act as if disasters are always someone else’s problem (*King James Bible*, Matt. 24.7).<sup>3</sup> When offered the chance to individually insure against them, we generally refuse unless given no choice.<sup>4</sup> Collectively, we are either uninterested in constructing forward-looking administrative schemes to manage disasters, or create ill-considered and underfunded programs. In a global environment characterized by increasingly

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<sup>2</sup> According to the United Nation’s International Strategy for Disaster Reduction, “In the past two decades, on average more than 200 million people have been affected every year by natural hazards. These disasters have caused a massive loss of life and negative long-term social, economic and environmental consequences.” United Nations International Strategy for Disaster Reduction, *About the International Early Warning Programme*, <http://www.unisdr.org/2006/ppew/iewp/about-iewp.htm> (accessed September 28, 2014). See also Douglas, Lawrence, Austin Sarat, and Martha Merrill Umphrey. 2007. “A Jurisprudence of Catastrophe: An Introduction,” in Austin Sarat, Lawrence Douglas, and Martha Merrill Umphrey, eds., *Law and Catastrophe*. Stanford: Stanford University Press (listing a range of recent catastrophes and noting that the term “catastrophe” encompasses both natural and human occurrences and is not limited by a specific temporal dimension).

<sup>3</sup> “For nation shall rise against nation, and kingdom against kingdom: and there shall be famines, and pestilences, and earthquakes, in divers places...” Matt. 24.7, *The Holy Bible: King James Version*. 2001. Iowa Falls, IA: World Bible Publishers.

<sup>4</sup> See, e.g., Schwartz, Reimund and Gert G. Wagner, *The Political Economy of Natural Disaster Insurance: Lessons from the Failure of a Proposed Compulsory Scheme in Germany* 3-5 (German Inst. for Econ. Research, Discussion Paper No. 620, 2006) (arguing that a sufficient degree of insurance coverage can only be achieved by some form of state intervention in the market, particularly by making insurance mandatory).

interwoven regulatory frameworks for financial institutions, we treat the cost of disasters as an afterthought, something that can be managed in an ex post, ad hoc manner, even though it is clear that the consequences of disasters—the human toll they exact and the financial cost they impose—can challenge even the wealthiest nations.

This section describes and compares the existence (or lack thereof) of transnational legal regimes in key areas of disaster management— prediction/prevention, emergency response, and victim compensation—with reference to both natural and nuclear disasters. It argues that to the degree a structure of global governance has emerged it is inconsistent and incomplete, with the most well-developed TLOs in the area of disaster response and the least developed in the area of victim compensation. Although some categorization and distinction is necessary when analyzing disasters, it is important to acknowledge that the borders separating different types of disasters are often blurry (Faure, 2013).<sup>5</sup> The occurrence of a flood may be a “natural” disaster, for example, but the damage it causes is almost always to the built, “unnatural,” environment. In the same way, a meltdown at a nuclear plant may be a “nuclear” disaster, but it can be triggered by an earthquake or some other “natural” event. Even the “natural” category can be misleading in that it may include “man-made” disasters that damage the “natural” environment, such as oil spills. Similarly, the distinction between preparing for and responding to a disaster can be opaque, as can that between immediately responding to a disaster and compensating victims after a disaster has occurred. Because some categorization is necessary to enable an analysis of

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<sup>5</sup> See Faure, Michael. 2013. “Introduction: Towards Effective Compensation for Victims of Natural Catastrophes in Developing Countries,” in Michael Faure and Andri Wibisana, eds., *Regulating Disasters, Climate Change and Environmental Harm: Lessons from the Indonesian Experience*. Cheltenham: Edward Elgar Publishing Ltd (describing various categories of disaster and noting that it is sometimes difficult to distinguish between those that are “man-made” and those that are “natural”).

disaster management, however, this chapter will make use of these distinctions while remaining attentive to their shortcomings.

## A. NATURAL DISASTERS

### 1. Disaster Prediction/Prevention

Efforts at developing global governance mechanisms for the prediction and prevention of natural disasters have resulted in a patchwork of multilateral and bilateral agreements between sovereign states and between sovereign states and regional and international organizations (de Guttery, 2012). Including formal treaties, political commitments, and memoranda of understanding, these agreements often lack an enforcement mechanism and tend to focus on narrow issues relevant to regions or sub-regions (de Guttery, 2012). In part because vulnerability to specific types of natural disasters (floods, fires, earthquakes, etc.) varies with location, a shared sense of risk and responsibility tends to exist, if at all, between and among states that are geographically proximate. The Caribbean region, for example, concluded the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region in 1983, which requires contracting states to take all necessary measures to respond to either the threat of pollution or existing pollution in the Convention area (art. 11).<sup>6</sup> But a key part of that Convention involves a Protocol for responding to oil spills, and it fails both to specify the obligations of contracting parties in the event of a major spill and to create a mechanism to ensure that parties fulfill their obligations (art. 3).<sup>7</sup> Furthermore, it encourages, rather than requires, signatories to harmonize their national policies in order to achieve the goals of the Convention (art. 4).

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<sup>6</sup> This convention is a good example of the blurry boundaries between different types of disasters. Most observers would consider not consider an oil spill a “natural” disaster. But the results of a spill—harm to wildlife, water quality, and more—do seem to fit the definition of a natural disaster.

<sup>7</sup> For example, Article 3, Paragraph 2 of the Protocol states that “Contracting Parties shall, within their capabilities, establish and maintain, or ensure the establishment and maintenance of, the means of responding to oil spill incidents and shall endeavour to reduce the risk thereof. Such means shall include the enactment, as necessary, of

States within a particular region or sub-region, for example, are likely to share pre-existing institutional architecture, which facilitates the creation of governance mechanisms for the information sharing and risk assessment/reduction that are essential to the prevention and prediction of natural disasters. The states within the MERCOSUR sub-region, for example, signed the *Protocolo Adicional al Acuerdo Marco sobre Medio Ambiente de MERCOSUR en Materia de Cooperación y Asistencia Frente a Emergencias Ambientales* (“Additional Protocol to the Framework Agreement on the Environment of MERCOSUR on Cooperation and Assistance Facing Environmental Emergencies”), which includes provisions on disaster prevention and management (arts. 4–8). It has only been ratified by Argentina and Paraguay. Pre-existing institutional architecture may facilitate the creation of transnational regulatory mechanisms. It does not, however, guarantee effective implementation.

One international effort that is suggestive of what a well-developed TLO for disaster prediction and prevention might, and perhaps should, include, is the United Nation’s 2005 World Conference on Disaster Reduction, which ended with the adoption of the International Early Warning Programme.<sup>8</sup> The Programme has the laudable aim of developing a transnational system of early warnings when disasters are imminent, building on existing infrastructure and of integrating early warning “into policy, into legal frameworks, and into fully described chains of decision making (UNISDR, 2004).” In order to do so, specific proposals were developed for five

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relevant legislation, the preparation of contingency plans, the identification and development of the capability to respond to an oil spill incident and the designation of an authority responsible for the implementation of this Protocol.” The vagueness of this and other provisions render the agreement largely hortatory. *Protocol Concerning Cooperation in Combating Oil Spills in the Wider Caribbean Region, with Annex*, art. 3, Mar. 24, 1983, T.I.A.S. No. 11,085, 1506 U.N.T.S. 157 (entered into force Oct. 11, 1986).

<sup>8</sup> See “UN Launches Plans for Global Early Warning System on Natural Disasters,” *UN News Centre*, Jan. 19, 2005, <http://www.un.org/apps/news/story.asp?NewsID=13077&Cr=natural&Cr1=disaster#.UknokYlev0E> (describing the International Early Warning Programme and the 2004 tsunami that motivated the Programme’s creation).

focus areas, including “(1) better integration of early warning ... into development processes and public policies; (2) improved data availability for investigating, forecasting/predicting, and managing risks on different time scales; (3) improved capacities and strengthened early warning systems, particularly in developing countries; (4) development of people-centered warning systems; and (5) mechanisms for sustaining early warning dialogue and supporting the development and implementation of a programme (UNISDR, 2004).” Despite the ambitious agenda, the Programme does not specifically address the consequences of disasters once they strike. It further conceptualizes the implementation of an internationally coherent early warning program as a platform by which to secure the long term benefits of sustainable development.<sup>9</sup> Advancing sustainable development agendas would ostensibly be achieved by strengthening national and transnational infrastructure and ameliorating the effects of damage caused by disasters insofar as such damage hinders national economic capacity (UNISDR, 2004).

## 2. Post Disaster Emergency Response

A relatively robust and well-settled transnational regulatory regime exists for the provision of emergency relief in the post disaster context. Globally, a large number of organizations are dedicated to the provision of humanitarian relief immediately following a disaster, including the International Red Cross, Oxfam, the UN’s Office for the Coordination of Humanitarian Affairs (OCHA), the United Nations Development Programme (UNDP), UNICEF, and many more. These agencies are important in providing support for victims of major disasters, particularly those in the developing world that pose an imminent threat to life. They can also be effective in

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<sup>9</sup> For example, the Programme advocated for and developed plans to create an early warning system for tsunamis. The United Nations had previously adopted in December 1999 the International Strategy for Disaster Reduction for this same purpose. *See* United Nations Office for Disaster Risk Reduction, “What is the International Strategy?” UNISDR. <http://www.unisdr.org/who-we-are/international-strategy-for-disaster-reduction> (accessed Sept. 29, 2013) (specifying that the vision of the International Strategy for Disaster Reduction is “[t]o enable all communities to become resilient to the effects of natural, technological and environmental hazards”).

the short term by providing food, clean water, sanitation, and shelter to disaster victims. Their importance is underscored by the emergency response to the 2004 Indian Ocean Earthquake and Tsunami, in which 78 countries, 30 organizations, and an unprecedented number of direct private donors contributed more than \$1.6 billion in aid (Athukorala and Resosduarmo, 2005; Stoianova, 2012). In subsequent years, the role of private aid in humanitarian disaster relief has continued to grow. From 2006 to 2010, for example, private funding as a share of the total humanitarian response grew from 17% to 32%, respectively (Stoianova, 2012).

Unfortunately, these organizations are poorly integrated and are beset by coordination problems, as the international response to the 2010 earthquake in Haiti demonstrates. Coordination of the Haiti relief effort depended upon two organizations: the United Nations, which uses its “Cluster System” to attempt to avoid duplication of efforts and competition for resources, and the U.S. military, which controlled the airport and took on the role of a de facto coordinator. Unfortunately, those organizations struggled to coordinate distribution of humanitarian aid when confronted with the scale of the destruction (Beiser, 2010). John Holmes, the head of the UN agency overseeing the Cluster System, commented in an internal email, “I was disappointed to find that despite my calls for the Global Cluster Lead Agencies to strengthen their cluster coordination capacity on the ground, very little progress has been made in this critical area ... this is beginning to show and is leading others to doubt our ability to deliver” (Lynch, 2010). The response of the international community and that of Haitian civil society and government, especially at the local level, was also poorly coordinated; therefore, local capacity to facilitate the relief effort was not maximally utilized (Patrick, 2011).<sup>10</sup>

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<sup>10</sup> Patrick, John. 2011. “Haiti Earthquake Response: Emerging Evaluation Lessons,” *Evaluation Lessons* 5, <http://www.oecd.org/countries/haiti/50313700.pdf> (Holmes further states that “it’s clear that there remain major unmet humanitarian needs,” and that all 12 clusters continue to “struggle without the capacity required to coordinate efficiently the large number of partners involved in the operation. One month into the response, only a few clusters

The agreements for post-disaster emergency response that do exist, regionally and internationally, tend to be circumscribed and weak. The South Asian Association for Regional Cooperation (SAARC), for example, representing Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka, in November 2011 proposed the Agreement on Rapid Response to Natural Disasters (SAARC, 2012). As stated in Article II of the Agreement, its objective is “to provide effective regional mechanisms for rapid response to disasters to achieve substantial reduction of disaster losses in lives and in the social, economic, and environmental assets of the Parties, and to jointly respond to disaster emergencies through concerted national efforts and intensified regional cooperation...” But the Agreement is primarily hortatory; signatories are not required to earmark funds or even participate in cooperative disaster relief efforts. Even so, the agreement will not go into effect until it is signed by all members, and as of May 2013 it still lacked several signatures (SAARC Secretariat, 2013).

Another example of regional coordination is the Agreement on Cooperation on Marine Oil Pollution, Preparedness, and Response in the Arctic, a treaty negotiated between the eight member states of the Arctic Council in May 2013. The Agreement requires each state to establish measures for dealing with pollution incidents and to coordinate with each other in the event of a spill (arts. 1, 4). Although the agreement hints at a treaty approach to dealing with regional disasters, it does not introduce any new substantive obligations beyond those required by the 1990 Convention on Oil Pollution Preparedness, Response, and Co-operation, a treaty already ratified by all eight member states. Moreover, the measures themselves are likely to be insufficient given the challenges of mounting a large-scale response to a major oil spill in the

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have fully dedicated cluster coordinators, information management focal points and technical support capacity, all of which are basic requirements for the efficient management of a large scale emergency operation.”).

Arctic environment. These shortcomings have led to calls for a more effective Arctic-wide treaty focused on the prevention of oil spills by forcing off-shore drilling companies to internalize the risk created by their operations (Byers, 2012).

### 3. Victim Compensation

Unlike disaster prevention/preparedness and emergency response, transnational regulatory regimes for compensating victims of natural disasters are largely non-existent. The international instruments that do exist tend to relate to the allocation of inter-state liability rather than to mechanism for providing compensation for individual victims. Because incentives for transnational coordination are particularly weak, the bulk of compensation—when it is paid—is provided by individual nations to people within their borders. Sovereign disaster financing instruments can aid governments in disaster planning. Contingent credit mechanisms—for example, the World Bank's Catastrophe Deferred Drawdown Option (CAT-DDO) loans—allow governments to set aside funds that would be available immediately in the wake of a disaster to complement other national reserves and facilitate compensation payments. However, these payments are earmarked for and disbursed to individuals within a specific nation state (World Bank, 2014).

In most cases, however, individuals are not compensated for either personal injuries or property losses. Some may rely on insurance, when available. The Turkish Catastrophe Insurance Pool (TCIP), a public-private partnership between the Turkish government and the private insurance industry, has increased catastrophe related insurance coverage from less than 3% to over 23% nationwide (World Bank, 2013). However, many standard private insurance policies exclude certain types of catastrophic risk. Property damage, for example, is excluded from coverage under standard U.S. property insurance policies if it stems from disasters such as

floods and earthquakes, even though the private insurance market for narrowly-tailored natural disaster policies is extremely limited (Sugarman, 2006). Even when insurance is available, individuals tend to underinsure either because they underestimate the risk of low-probability-high-loss events like natural disasters or because they (whether realistically or not) expect financial assistance from government agencies and private charities (Raschky and Schwindt, 2009).

In some cases, ad hoc disaster relief from non-governmental organizations, international organizations, national governments, and (increasingly) private donors may also be channeled to disaster-affected countries, particularly in the developing world. These funds, parceled out through private charity or governmental relief programs, provide limited monetary relief to disaster victims (Becerra, Cavallo, and Noy, 2012).<sup>11</sup> For example, Tamil Nadu, one of the states most heavily affected by the 2004 Indian Ocean Tsunami, incurred personal injury and property losses totaling USD 104 billion (Naidu, 2005).<sup>12</sup> The Indian government launched an impressive relief effort to compensate for death, injury, and loss of livelihood and property, yet the aid was often insufficient to fully restore income from lost livelihoods (Naidu, 2005).<sup>13</sup> Fishermen

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<sup>11</sup> See Becerra, Oscar, Eduardo Cavallo, and Ilan Noy. 2012. *Foreign Aid in the Aftermath of Large Natural Disasters* 1–2 (Inter-American Development Bank, Department of the Chief Economist, IDB Working Paper Series No. IDB-WP-333), <http://www10.iadb.org/intal/intalcdi/PE/2012/10593.pdf> (noting that although official development assistance (ODA) flows tend to “surge” after large natural disasters, aid surges typically cover only 3% of the estimated economic damages).

<sup>12</sup> In India 12,405 people were killed by the tsunami and about 5,640 were reported missing. In Tamil Nadu, 5 districts suffered the most severe damage, including Chennai (250 deaths), Kancheepuram (250 deaths), Cuddalore (500 deaths), Kanyakumari (1,000 deaths), and Nagapattinam (6,000 deaths). Out of the 200,000 homes destroyed by the tsunami, 190,000 of these were in Tamil Nadu. Similarly, out of the 83,788 boats destroyed, 52,638 were in Tamil Nadu, which devastated coastal fishing communities. Inland agricultural areas were not spared, and several thousand acres were damaged by salt water, a large portion of which were located in Tamil Nadu. Naidu, V. Chandrasekara. 2005. “Country Report: India,” in Laurel Fletcher, Eric Stover and Harvey Weinstein, eds., *After the Tsunami: Human Rights of Vulnerable Populations*. Human Rights Center, University of California, Berkeley East West Center, [http://www.law.berkeley.edu/files/HRC/Publications\\_After-the-Tsunami\\_10-2005.pdf](http://www.law.berkeley.edu/files/HRC/Publications_After-the-Tsunami_10-2005.pdf).

<sup>13</sup> Details of relief effort include the following: the central government establishing a one-time relief package for all tsunami affected families that consisted of a cash grant of INR 4000 (USD 91.95), along with rice, fuel, and basic household supplies (cooking stoves, vessels for fetching water, etc.); issuing individual relief package of INR 1,000 (approx. USD 23) and material relief worth INR 526 (USD 12) / family for three months following the tsunami;

devastated by the loss were eligible to receive a new fiberglass boat valued at INR 150,000 for groups of four fishermen, although they did not receive nets, valued at INR 5000 to 10,000, without which they were not able to resume productive activity (Naidu, 2005). Compensation is also unevenly distributed, with many individuals and families, often the most vulnerable, left to fend for themselves. For example, studies of aid distribution in tsunami-affected districts of Tamil Nadu post tsunami revealed that between 1% to 8% of individuals entitled to government aid had been denied on the basis of caste, religion, or occupation (Naidu, 2005).<sup>14</sup>

*a. Compensation at the National Level*

The extremely modest international effort to develop a transnational regulatory structure to govern compensation for natural disaster victims is echoed at the national level. The Japanese experience is illustrative, highlighting the lack of consistency and coordination that is the norm in many nations when it comes to national regulatory responses to natural disasters. This reality is surely not because disasters are infrequent in Japan. To the contrary, throughout its history Japan has experienced a wide range of devastating natural calamities that have razed cities and caused terrible human suffering. Many have been caused by earthquakes, which is to be expected

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establishing a special relief fund from which the next of kin for each deceased family member received a one-time payment of INR 100,000 (USD 2,290) each to next of kin for a family member tsunami casualty; providing owners of machine boats compensated between INR 30,000 (USD 687) and 500,000 (USD 11,450) depending on extent of damage; providing owners of fiberglass boats and catamarans compensation between INR 25,000 (USD 572.50), 32,000 (USD 732.80), or 75,000 (USD 1717.50) depending on extent of damage; and the state government constructing new houses for tsunami survivors in general. Naidu, V. Chandrasekara. 2005. "Country Report: India," in Laurel Fletcher, Eric Stover and Harvey Weinstein, eds., *After the Tsunami: Human Rights of Vulnerable Populations*. Human Rights Center, University of California, Berkeley East West Center, [http://www.law.berkeley.edu/files/HRC/Publications\\_After-the-Tsunami\\_10-2005.pdf](http://www.law.berkeley.edu/files/HRC/Publications_After-the-Tsunami_10-2005.pdf).

<sup>14</sup> Naidu, V. Chandrasekara. 2005. "Country Report: India," in Laurel Fletcher, Eric Stover and Harvey Weinstein, eds., *After the Tsunami: Human Rights of Vulnerable Populations*. Human Rights Center, University of California, Berkeley East West Center, [http://www.law.berkeley.edu/files/HRC/Publications\\_After-the-Tsunami\\_10-2005.pdf](http://www.law.berkeley.edu/files/HRC/Publications_After-the-Tsunami_10-2005.pdf), at 18 (A poor fisherman commented, "The tsunami did not discriminate against people in its devastation or fury but the rich and powerful have discriminated against us in securing aid."). See also Asian Human Rights Commission & Asian Legal Resource Centre. 2005. "In the Wake of the Tsunami, Deception and Discrimination," 4 *Article 2*, n.1, Feb. 2005, at 1, 33 (documenting caste discrimination in the distribution of relief supplies after the tsunami).

for a country resting on a web of fault lines. But the frequency of tremors and the regularity of damaging quakes have not triggered an embrace of a coordinated plan when they strike. In 1993, for example, an earthquake and resulting tsunami off the coast of Japan's northernmost island, Hokkaido, killed close to two hundred people living on the island of Okushiri and destroyed most homes on the island (Nakao, 2013). The targeted nature of the losses—the personal and property harms on Okushiri were devastating, but compared to many disasters the overall scope of the losses was modest—made it a relatively easy case for a comprehensive governmental response. Without any legal or regulatory mechanism for providing relief to earthquake or tsunami victims, however, the only payments forthcoming were small private donations allocated by the local government.

A similar situation can be seen in the aftermath of Japan's deadliest postwar earthquake, the 1995 Hanshin (Kobe) quake. As a result of that earthquake, 6,000 people died, 40,000 were injured, and almost 400,000 lost their homes (Edgington, 2010). Election year politics may have factored in to the decision to spend more than usual on reconstructing Kobe's infrastructure.<sup>15</sup> Like those in Okushiri who suffered personal injury or property loss, however, there was little aid forthcoming. Victims received just \$2,500 per family from the Japanese Red Cross, along with a token condolence payment ("*mimaikin*") authorized by the Japan Legislature ("Diet") as part of the reconstruction budget.<sup>16</sup>

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<sup>15</sup> See Edgington, David W. 2010. *Reconstructing Kobe: The Geography of Crisis and Opportunity*. Vancouver: UBC Press at 85–86 ("For some commentators, the reasons [for Japan's expenditures on infrastructure] had to do with the fact that 1995 was an election year in Japan. The ruling Liberal Democratic Party (LDP), then in a coalition with the Japan Socialist Party, felt that it would gain politically by providing subsidies to the Kobe region...").

<sup>16</sup> Condolence payments (*mimaikin*) are clearly distinguished from compensation because they are given as an expression of sympathy rather than an effort to make the victim whole. For Kobe earthquake victims, the payments were five million yen to families that lost the head of household, and 2.5 million yen for those who lost a family member. The exchange rate of U.S. dollars to yen (as of Nov. 18, 2014) is 1:116.87. Currencies Center, Yahoo! Finance, <http://finance.yahoo.com/currency-converter> (accessed Nov. 18, 2014).

In the absence of specific laws or administrative structures for addressing the human toll exacted by earthquakes, one might imagine that individuals would turn to insurance companies to fill the gap. Earthquake insurance is available in Japan, but not everywhere or to everyone, and not always at an appealing price.<sup>17</sup> In the recently devastated area of Tohoku, for example, rocked by a magnitude 9.0 earthquake and huge tsunami in 2011, only 19.6% of homeowners had purchased earthquake insurance (Yoneyama, 2011). Neither prior to nor in the aftermath of that quake has there been a serious move to mandate such insurance.

Also absent is any evidence of political will to create a regulatory structure to provide some degree of post-earthquake compensation for personal injury or property loss. There has, of course, been a governmental response to the 3/11 disaster: roads and other infrastructure are being rebuilt (though far too slowly, many claim), and compensation funds for a subset of Fukushima victims have been secured through domestic and international private donations. What one does not find, however, is a thoughtful, coordinated, and predictable system that could help to minimize the likelihood of earthquake-related harms and manage those that occur. When (not if) the next major earthquake rocks Japan, neither individuals nor the state will be prepared.

The absence of legal rules, principles, and institutions to undergird a regulatory structure for disaster management in Japan—beyond a *laissez-faire* approach that places the burden of disaster-related harms on individuals—is not confined to earthquakes and tidal waves. The 1959 Isewan Typhoon was one of the worst natural disasters in Japan’s history, killing over 5,000 people,

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<sup>17</sup> See Mahul, Olivier and Emily White. *Knowledge Notes, Cluster 6: Earthquake Risk Insurance 6* (World Bank, Note 6-2, Sept. 24, 2012), (The premium rates for earthquake insurance provided by private nonlife insurance companies are risk based, depending on location of the dwelling (eight risk zones) and the type of construction (wooden or non-wooden). For example, the annual premiums for a non-wooden dwelling in Nagasaki Prefecture and a wooden dwelling in Tokyo are JPY 5,000 and JPY 31,000, respectively. The rates include a pure premium rate and a loading rate (though because the program is not-for-profit the rates do not include loading for profit). These rates are still considered high because of Japan’s high exposure to earthquakes.).

injuring 40,000, and destroying 120,000 homes (Japan Water Forum, 2005). In its aftermath, the government mounted a major reconstruction effort but did not offer any monetary compensation to victims for death, injury, or property damage. In fact, Japan's elite bureaucracy does not appear to find the entire spectrum of natural disasters a particularly worthwhile target for a regulatory response; unlike the attention lavished on the legal and regulatory structure of Japan's financial system over the past decade, managing disasters has been a low/no priority item.

In sum, despite the existence of a relatively well-developed transnational regime for emergency response to disasters, global governance mechanisms are relatively weak and underdeveloped for prediction/prevention and practically non-existent for victim compensation. When transnational agreements do exist, particularly in the realm of disaster prediction/prevention, they are narrow and circumscribed in scope, focusing on geographically proximate threats most often conceptualized regionally. What is more, despite relying on previously existing regional institutional architecture, many of these agreements—because they are not binding, fail to include all the relevant players, or do not include comprehensive provisions or mechanisms—cannot be implemented effectively.

In terms of victim compensation, one finds few examples of transnational efforts to develop coordinated approaches to compensation, and that lack of structure is echoed at the national level. In addition, insurance-based approaches to managing the costs of disaster-related harms have also been neglected. Even the area of emergency response, where existing transnational governance mechanisms enjoy widespread buy-in and acceptance, suffers from coordination problems stemming from the sheer number of players and the failure to agree on and implement

best practices. Finally, in those cases in which transnational norms do exist, they generally fail to filter down and gain acceptance at sub-national levels of social organization.<sup>18</sup>

## NUCLEAR DISASTERS

### 1. Nuclear Disaster Prediction/Prevention

The difficulty of predicting when and where a nuclear accident will occur has led to the creation of global governance mechanisms that seek to promote nuclear safety and ease public concerns through information sharing and voluntary adherence to safety standards articulated in multilateral treaties and by industry organizations.<sup>19</sup> While laudable in their goals, these relatively new transnational regulatory regimes may not lead to buy-in from nations interested in acquiring nuclear capabilities as the acceptance of nuclear energy rebounds in the aftermath of the Fukushima accident.

International cooperation on issues of nuclear safety is spearheaded by two treaties concluded under the auspices of the International Atomic Energy Agency (IAEA). The first, the Convention on Nuclear Safety, was adopted on June 17, 1994, and entered into force on October 24, 1996 (IAEA, 2014b).<sup>20</sup> The Convention requires the 76 ratifying nations to implement specific safety rules and standards at their nuclear energy facilities, including site selection, emergency preparedness, and operation and safety verification (art. 14–19).<sup>21</sup> The second, the

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<sup>18</sup> See Halliday & Shaffer (2014a) at 2 (discussing “normative settlement,” which they relate to the production of a legal order at different levels of social organization).

<sup>19</sup> For a survey of major international legal conventions on the regulation of nuclear energy, see Cook, Helen. 2014. “International Nuclear Law: Nuclear Safety, Emergency Response and Nuclear Liability,” in Simon Butt, Hitoshi Nasu, and Luke Nottage, eds., *Asia-Pacific Disaster Management: Comparative and Socio-legal Perspectives*. London: Springer.

<sup>20</sup> See International Atomic Energy Agency (IAEA). *International Conventions and Legal Agreements: Convention on Nuclear Safety*, <http://www.iaea.org/Publications/Documents/Conventions/nuclearsafety.html> (last updated Nov. 6, 2014) [Hereinafter *Convention on Nuclear Safety*] (providing background information on the treaty).

<sup>21</sup> *Id.* Cuba, Egypt, Israel, Sudan, and Syria are among several nations that have signed but not ratified it. IAEA. *Latest Status: Convention on Nuclear Safety*, [http://www.iaea.org/sites/default/files/nuclearsafety\\_status.pdf](http://www.iaea.org/sites/default/files/nuclearsafety_status.pdf) (last change of status Jan. 9, 2014) (accessed Oct. 16, 2014).

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radiological Waste Management, entered into force in June 2001, and requires contracting parties to attend review meetings and submit reports describing measures taken to implement the Joint Convention's obligations (arts. 29–34).<sup>22</sup>

While the two Conventions have been heralded as milestones in the development of nuclear energy law, both establish relatively general safety requirements and seek to ensure compliance not through the imposition of sanctions but by emphasizing that nations have a common interest in achieving higher levels of safety (Pelzer, 1994).<sup>23</sup> As so-called “incentive conventions,” that common interest is underscored by a system of peer review through which contracting nations hold regular meetings to discuss and review each other's reports concerning their obligations (Pelzer, 1994). This mechanism is “the main innovative and dynamic element” of the two Conventions, and was designed to de-emphasize coercive enforcement (IAEA, 2014a). The expectation of the drafters is that over time, inclusivity and cooperation will result in deeper and more ambitious commitments among contracting parties (Handl, 2004).

Other organizations emphasize safety-related cooperation between nuclear power operators, and exist at both the international and national level. The most significant institution internationally is the World Association of Nuclear Operators (WANO), a non-profit group of nuclear power plant operators, reactor vendors, and other organizations involved with nuclear safety that promotes information sharing as a means of enhancing safety standards in the

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<sup>22</sup> See IAEA. *International Conventions and Legal Agreements: Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management*, <http://www.iaea.org/publications/documents/conventions/joint-convention-safety-spent-fuel-management-and-safety-radioactive-waste> (last updated Nov. 6, 2014) [Hereinafter *Joint Convention*] (providing background information on the treaty).

<sup>23</sup> See, e.g., Pelzer, Norbert. 1994. “Nuclear Energy,” *5 Yearbook of International Environmental Law* 195, 197 (discussing the Convention on Nuclear Safety as an important accomplishment in nuclear energy law).

industry. Each organization submits event reports and information to a regional center, and any trends or concerns that emerge from those reports are flagged as recommendations to the general membership. In the wake of Fukushima, WANO (2014) stepped up its review process, moving towards peer reviews every four years, with a two-year follow up.

A number of other ad hoc, narrow initiatives are designed to promote the overarching goal of nuclear safety. They include, among others, a 2011 pledge by international operators to support a collaborative effort to standardize reactor design as a means of enhancing nuclear safety, as well as the creation of the Nuclear Power Plant Exporters' Principles of Conduct under the auspices of the Carnegie Endowment for International Peace, which was signed onto by 12 companies currently exporting nuclear reactors and sets forth best practices in safety, security, and environmental management (World Nuclear Association, 2014). Initiatives such as these, though relatively new, are indicative of the ways in which the private sector has become involved in catalyzing coordinated transnational regulation for nuclear safety.

## 2. Nuclear Disaster Response

Transnational regulatory coordination with respect to nuclear disasters is even less developed than the multi-faceted regulatory regime that governs emergency response to natural disasters, with only a few treaties addressing a coordinated transnational emergency response to nuclear accidents. In the wake of the Chernobyl accident in 1986, two relatively narrow treaties were adopted. One, the 1986 Convention on Early Notification of a Nuclear Accident, was ratified by 116 nations, which agreed to notify the IAEA and all potentially affected nations if a nuclear accident occurs within their territory and has the potential to affect other nations (arts. 4-

7).<sup>24</sup> The Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency, adopted the same year, requires that parties (it has so far been ratified by 111 countries) notify the IAEA if they can provide assistance to member nations that experience a nuclear accident (art. 2).<sup>25</sup> The IAEA is the focal organization for activating an inter-agency response to nuclear accidents, including facilitating the exchange of information between reporting and affected states and sharing information with other relevant international organizations and agencies. The Inter-Agency Committee on Radiological and Nuclear Emergencies (IACRNE) serves as the coordination mechanism for both preparedness and response of relevant international intergovernmental organizations (IAEA, 2013).

After both Chernobyl and Fukushima, the IAEA sought to strengthen and expand its ability to effectively respond to nuclear accidents (IAEA, 2011). But its efforts were hampered by the exigencies of global politics. In the immediate aftermath of Fukushima, for example, the Japanese government requested assistance directly from the US because it did not want some member nations of the IAEA to participate in the emergency response activities within Japan (Banyan Analytics, 2014).

As one might expect, individual nation states also lack coordinated international nuclear response plans that could facilitate an effective response to nuclear accidents beyond their borders (Banyan Analytics, 2014). For example, the U.S. response to domestic nuclear accidents is codified under the Nuclear / Radiological Incident Annex to the National Response

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<sup>24</sup> See International Atomic Energy Agency, *International Conventions and Legal Agreements: Convention on Early Notification of a Nuclear Accident*, <http://www.iaea.org/Publications/Documents/Conventions/cenna.html> (accessed Nov. 18, 2014) (providing background information on the treaty).

<sup>25</sup> See *International Conventions and Legal Agreements: Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency*, International Atomic Energy Agency, <http://www.iaea.org/Publications/Documents/Conventions/cacnare.html> (accessed Nov. 18, 2014) (providing background information on the treaty).

Framework (Department of Defense, 2008). The Annex (Department of Defense, 2008) “describes the policies, situations, concepts of operations, and responsibilities of the Federal departments and agencies governing the immediate response and short term recovery activities.” But there is no corresponding document organizing the U.S. response to international nuclear accidents (Banyan Analytics, 2014). Moreover, the Radiological Emergency Preparedness Program (REPP), which was updated in 2013 to include policies for more effective interagency (for example, between the Department of Homeland Security and the Federal Emergency Management Agency (FEMA)) and governmental (Federal, State, local, and tribal) coordination, does not address the U.S. response to international nuclear incidents (Department of Homeland Security, 2013).<sup>26</sup>

In sum, transnational mechanisms for providing emergency assistance for nuclear accidents remain limited in scope. They are also frequently distinct from well-established international humanitarian aid structures. Transnational nuclear response organizations would benefit from enhanced collaboration in responding to the immediate and devastating consequences of nuclear accidents (Calvi-Pariseti, 2013).

### 3. Nuclear Disaster Victim Compensation

It is in the area of nuclear disaster victim compensation that one finds the most visible evidence of a global regulatory regime, which rests on the existence of well-established national regulations. Yet even there, none of the extant international instruments bind all nations with nuclear capability. Moreover, although a compensation structure exists, it is woefully

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<sup>26</sup> It did, however, seek to “[i]ntegrate lessons learned and corrective actions from the Japan Fukushima disaster.” Department of Homeland Security. 2013. Federal Emergency Management Agency: Radiological Emergency Preparedness, Fiscal Year 2013 Congressional Justification, [https://www.fema.gov/pdf/about/budget/11c\\_fema\\_radiological\\_emergency\\_preparedness\\_program\\_dhs\\_fy13\\_cj.pdf](https://www.fema.gov/pdf/about/budget/11c_fema_radiological_emergency_preparedness_program_dhs_fy13_cj.pdf).

underfinanced, which either leaves many nuclear accident victims under-compensated or un-compensated and/or puts the government at risk of financing victim compensation. The difficulty of determining the “real” cost of nuclear accidents exacerbates the financing problem; because the health and environmental consequences of a nuclear accident might not become manifest for many years, anticipating the financial demands of victim compensation is extremely difficult (Faure and Fiore, 2008).

Despite the difficulties of assessing the potential consequences of a nuclear accident, along with the realization that the consequences could be incalculably high, countries interested in developing the capacity to produce nuclear power in the postwar period realized that they needed to assure their citizens that a system was in place to deal with the possibility of a domestic nuclear accident. Because national regulators understood that the consequences of a nuclear accident would not be confined to national borders, they needed some way of assuring their citizens that they would be protected in the event of an accident in a nearby country.

The first international treaty addressing nuclear accidents was the Paris Convention on Third Party Liability in the Field of Nuclear Energy (Paris Convention), which was adopted on July 29, 1960 and entered into force on April 1, 1968.<sup>27</sup> An OECD Convention that focuses on cross-border harms, the Paris Convention comes into play when a nuclear incident occurs in a nation that ratified the agreement and causes damage in another ratifying nation (Bernesconi, 1988; IAEA, 2004).<sup>28</sup> Soon after it was adopted, the Paris Convention was supplemented by the

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<sup>27</sup> See Nuclear Energy Agency, *Paris Convention on Nuclear Third Party Liability: Latest Status of Ratifications or Accessions*, Organization for Economic Cooperation and Development, <https://www.oecd-nea.org/law/paris-convention-ratification.html> (last modified June 10, 2009) (providing background information and status of ratifications and accessions) [Hereinafter *Paris Convention*].

<sup>28</sup> See Christophe Bernasconi, *Civil Liability Resulting from Transfrontier Environmental Damage: A Case for Hague Conference?*, at 5 (Dec. 20, 1988), [http://www.hcch.net/upload/wop/gen\\_pd8e.pdf](http://www.hcch.net/upload/wop/gen_pd8e.pdf) (providing an overview of the Paris and Vienna Conventions); IAEA, 2004. *The 1997 Vienna Convention on Civil Liability for Nuclear Damage and the 1997 Convention on Supplementary Compensation for Nuclear Damage: Explanatory Texts*,

Brussels (Supplementary) Convention of January 31, 1963, which established a system whereby all signatories of the Paris Convention would use public money to contribute to a compensation fund if the funds set aside under the Paris Convention were inadequate (Nuclear Energy Agency, 2012).<sup>29</sup> In 2004, both the Paris and Brussels Conventions were amended, largely in an effort to increase liability levels in the event of an accident. Under the amendments, which have not yet come into force, victims of nuclear accidents will be guaranteed a €1.5 billion compensation fund, with €700 million coming from the owner/operator of the facility, €500 million from the state where the accident occurred, and €300 million from the pool of funds contributed by members of the Convention (Nuclear Energy Agency, 2011).<sup>30</sup>

The relatively limited scope of the Paris Convention, which focused on the nations of Western Europe, led to the passage of a second international nuclear energy treaty, the Vienna Convention on Civil Liability for Nuclear Damage, adopted May 21, 1963 and entered into force on November 12, 1977 (Bernesconi, 1988; IAEA, 2004).<sup>31</sup> <sup>32</sup> Similar in substance to the Paris Convention, the Vienna Convention, which had 40 parties as of January 2014 (but which had been ratified by only a small number of nations) reaches far beyond Western Europe, and falls

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<http://www.iaea.org/About/Policy/GC/GC48/Documents/gc48inf-5expltext.pdf> (providing background to Paris and Vienna Conventions and the motivation driving their implementation).

<sup>29</sup> See Adisianya, Anthony. "Different Compensation Systems Under Nuclear Liability Conventions," *The Centre for Energy, Petroleum and Mineral Law and Policy* (May 16, 2011), <http://www.dundee.ac.uk/cepmlp/gateway/?news=31321> (comparing different nuclear liability regimes on issues of coverage, liability limitations, and the relevance of national law).

<sup>30</sup> See Nuclear Energy Agency. *2004 Protocol to Amend the Paris Convention*, <https://www.oecd-nea.org/law/paris-convention-protocol.html> (last updated Mar. 18, 2014) (providing background information on the Protocol).

<sup>31</sup> See IAEA. 2004. *The 1997 Vienna Convention on Civil Liability for Nuclear Damage and the 1997 Convention on Supplementary Compensation for Nuclear Damage*, at 4, <http://www.iaea.org/About/Policy/GC/GC48/Documents/gc48inf-5expltext.pdf> (listing "the special nature of nuclear hazards and the possibility that a nuclear incident might cause damage of an extreme magnitude and involve the nationals of more than one country" as the primary motivators behind the international effort for a global nuclear energy treaty).

<sup>32</sup> A 1997 Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage broadened the scope of the 1963 Vienna Convention and increased the amount of liability an operator of a nuclear facility faced. Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage arts. 2–13, Sept. 29, 1997, IAEA-INF/CIRC/566.

under the auspices of the IAEA (IAEA, 2014g).<sup>33</sup> As a result of amendments in 1997, the liability limit for operators of nuclear energy facilities was set at approximately \$400 million (IAEA, 2014g).

The Vienna and Paris Conventions operated independently until September 21, 1988, when a Joint Protocol was signed (Bernesconi, 1988). The Joint Protocol treated any nation that signed it as if it were a party to both the Paris Convention and the Vienna Convention (Bernesconi, 1988; IAEA, 2004).<sup>34</sup> The 1986 Chernobyl incident convinced regulators that they needed a broader, more global civil liability regime for nuclear incidents (Bernesconi, 1988; IAEA, 2004). In 2004, Amending Protocols were signed to better link the Paris and Vienna Conventions, increase compensation levels, and shift some of the financial burden of compensation from government to industry (IAEA, 2004).

The Paris and Vienna Conventions are grounded in a similar set of principles. Both provide compensation in the event of death, personal injury, or property loss caused by a nuclear accident occurring in a nuclear facility or during the transport of nuclear substances to or from a nuclear facility (Bernesconi, 1988). Under the Conventions, operators of nuclear facilities are strictly liable for the harms that result from nuclear accidents, meaning that accident victims do not have to demonstrate that the owners/operators were at fault (though as with strict liability

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<sup>33</sup> See IAEA. *Conventions and Agreements: Vienna Convention on Civil Liability for Nuclear Damage*, <http://www.iaea.org/publications/documents/conventions/vienna-convention-on-civil-liability-for-nuclear-damage> (last updated Oct. 20, 2014) (providing an overview of the Vienna Convention); IAEA, *Latest Status: Vienna Convention on Civil Liability for Nuclear Damage*, [http://www.iaea.org/sites/default/files/liability\\_status.pdf](http://www.iaea.org/sites/default/files/liability_status.pdf) (last change of status Jan. 27, 2014) (Forty countries had ratified the Convention as of January 27, 2014, and thirteen countries, including Israel, Spain, and the United Kingdom, had signed but not yet ratified the Convention).

<sup>34</sup> Bernasconi, Christophe. 1988. *Civil Liability Resulting from Transfrontier Environmental Damage: A Case for Hague Conference?*, [http://www.hcch.net/upload/wop/gen\\_pd8e.pdf](http://www.hcch.net/upload/wop/gen_pd8e.pdf).

Thus, if a nuclear incident occurred for which an operator is liable under both the Vienna Convention and the Joint Protocol, the operator is liable not only for damage suffered in the territory of parties to both the Vienna Convention and the Joint Protocol, but also for damage suffered in the territory of parties to both the Paris Convention and the Joint Protocol. The converse is also true.

generally, victims are not relieved of the need to prove causation) (IAEA, 2014). Both Conventions cap the liability of operators, so that their obligation to pay compensation regardless of fault has a clear financial limit. Claims are governed by a statute of limitations that expires after ten years, although that period can be lengthened or shortened to a minimum of two years (under the Paris Convention) or three years (under the Vienna Convention) from the date claimants knew or should have known of their losses (IAEA, 2014). To ensure that payments are made in accordance with the Conventions, operators must maintain insurance or other financial security to cover their mandated liability limits; governments are expected to make up the difference if operators experience a shortfall; and compensation is paid regardless of a victim's nationality, domicile or residence (IAEA, 2014).

What one finds in the area of global governance and nuclear accident compensation, therefore, is a patchwork of international instruments, none of which bind the full complement of nations that produce and use nuclear energy, and none of which provide for adequate compensation in the event of a mid-level to serious accident. One simple fact illustrates the shortcomings of these international instruments: certain key countries, including Japan, South Korea, China, Canada, and the US, are not party to any international nuclear agreement, even though they account for more than 50% of the world's nuclear reactors.

Part of the reason why there has been such modest buy-in is that certain nations with significant stakes in nuclear energy do not share a view of what constitutes a desirable global approach. Two major nuclear-dependent countries, the US and France, have long disagreed about the best way to manage liability for nuclear accidents, with France pressing for a reliance on the Paris Convention and the Joint Protocols, and the US relying on domestic legislation (the Price-Anderson Act) to handle accident compensation. One potential breakthrough occurred in

late 2013, when the possibility of a more robust global regulatory regime suddenly emerged. It rests on the IAEA's 1997 Convention on Supplementary Compensation for Nuclear Damage (CSC), which takes as its goal the establishment of "a worldwide liability regime" that would "supplement and enhance" the Paris and Vienna Conventions, as well as national nuclear accident compensation systems (preamble). The CSC is also meant to "encourage regional and global co-operation to promote a higher level of nuclear safety in accordance with the principles of international partnership and solidarity" (preamble).

Because it does not require that its parties are also parties to the Vienna Convention, Paris Convention, or other agreements, the CSC is appealing to countries like the US and Japan that rely on domestic legislation rather than global agreements to structure their liability systems for nuclear accidents. The CSC can only pass into force when ratified by countries that together account for approximately one third of the world's nuclear energy, and as of July 2014 has been ratified only by the United States, the United Arab Emirates, Argentina, Morocco, and Romania (IAEA, 2014). However, recent moves from key players in the nuclear arena suggest that the one-third threshold may soon be reached. In 2013, France, which had long opposed the CSC, signaled its support in a joint statement issued with the US, and both Canada and Japan also indicated that they would introduce legislation in an effort to ratify the CSC (Moinz and Martin, 2013; World Nuclear News, 2013). When considered in conjunction with the European Commission on Energy's announcement that it will soon introduce legislation seeking to harmonize EU nuclear accident insurance regimes—a development that seems poised to complement the approach of the CSC—the CSC offers the possibility of an increasingly global regulatory approach to liability for nuclear accidents. To the extent that the benefits of TLOs include the harmonization of national laws so as to eliminate repetitiveness and inconsistency,

and the creation of transnational dispute resolution mechanisms that rely on objective third party conflict resolvers, it appears that the management of nuclear accident liability and compensation may be moving, albeit slowly, in that direction.<sup>35 36 37</sup> Still, the lack of a global enforcement mechanism to sanction countries that violate the provisions of the international nuclear accident compensation agreements makes clear that there is a long way to go before one can say that a TLO has taken hold in that area.

### **III. Lessons from Fukushima: Barriers to the Creation of a TLO for Nuclear Disasters**

The 2011 earthquake and tsunami in Fukushima, Japan, followed by the nuclear accident at the Tokyo Electric Power Company's Daiichi and Daini nuclear power plants,<sup>38</sup> well illustrate the inadequacies of both national and global disaster management.<sup>39</sup> As described in Section II.A.2.a., the relative absence of TLOs in the area of disaster preparedness, combined with (and in part the result of) Japan's lack of a domestic legal order for managing disasters, resulted in the

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<sup>35</sup> See Anne Peters & Klaus Armingeon. 2008. "Introduction—Global Constitutionalism from an Interdisciplinary Perspective," 16 *Indiana J. Global Legal Stud.* 388, 389 (describing the goal of the global constitutionalism movement as improving "the effectiveness and fairness of the international legal order").

<sup>36</sup> See *Vienna Convention*, at 17 (noting that the IAEA came to the conclusion in the late 1980s that "the best solution would be the adoption of a new conventional instrument aimed at linking the two conventions").

<sup>37</sup> See Peters & Armingeon, *supra* note 33, at 393 ("The European Court of Human Rights' (ECtHR) new approach to systemic human rights deficiencies in certain member states can be seen as a shift away from redressing individual injuries, and to that extent as a more "public" law approach, by which the ECtHR assumes the role of a quasi-constitutional court."). Note that the two treaties that arose after the Chernobyl disaster, requiring all ratifying nations to work closely with the International Atomic Energy Agency, established a centralized agency that acts as an objective third-party for dispute resolution among member nations.

<sup>38</sup> See Nottage, Luke, Hitoshi Nasu, and Simon Butt. 2014. "Disaster Management: Socio-Legal and Asia Pacific Perspectives," in Simon Butt, Hitoshi Nasu, and Luke Nottage, eds., *Asia-Pacific Disaster Management: Comparative and Socio-legal Perspectives*. London: Springer ("Appendix A: Timeline of Japan's '3/11' Triple Disasters—Domestic and International Implications" provides a detailed timeline of the relevant events leading up to and following the triple-disaster).

<sup>39</sup> For an overview of the Japanese legal responses to the earthquake of 2011, see Umeda, Sayuri. Law Library of Congress, Global Legal Research Center. 2013. *Japan: Legal Responses to the Great East Japan Earthquake of 2011*. <http://www.loc.gov/law/help/japan-earthquake/Great-East-Japan-Earthquake.pdf>.

country being unprepared when disaster struck.<sup>40</sup> Domestic response to the earthquake and tsunami has been harshly criticized as slow and poorly organized, and although international disaster relief organizations offered their help, it was not always welcomed. Post-disaster compensation was unavailable, except for token payments from a fund offering condolence money and insurance payments for those few who happened to have earthquake policies. The result is that hundreds of thousands of people who lost their homes and their livelihoods may lack the financial resources to rebuild their lives, and a large number of people remain in temporary shelters.

The most complex and contentious issues have involved compensation for those affected by the nuclear accident. As noted above, like many other key countries, Japan is not a signatory to any international nuclear liability conventions. Instead, Japan relies on domestic legislation, the 1961 Nuclear Damage Compensation Act (NDCA), to structure its law on nuclear accident indemnification. Under the NDCA, which mimics the Paris Convention, nuclear power plant operators are strictly and exclusively liable for nuclear accidents. To meet their financial obligations, power providers are required to carry insurance that covers damages up to JPY 120 billion (§§ 3,7).<sup>41</sup>

Several main principles animate the NDCA. First, the NDCA subjects nuclear facility operators to strict, unlimited liability unless the damage is caused by a “grave natural disaster” (§

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<sup>40</sup> See Claremont, Yasuko. 2014. “Disaster in Japan: A Case Study,” in Simon Butt, Hitoshi Nasu, and Luke Nottage, eds., *Asia-Pacific Disaster Management: Comparative and Socio-legal Perspectives*. London: Springer (discussing Japan’s nuclear policy prior to the disaster); and Weitzdörfer, Julius. 2014. “Liability for Nuclear Damages Under Japanese Law: Key Legal Problems Arising from the Fukushima Daiichi Nuclear Accident,” in Simon Butt, Hitoshi Nasu, and Luke Nottage, eds., *Asia-Pacific Disaster Management: Comparative and Socio-legal Perspectives*. London: Springer (discussing the distinctive features of Japan’s nuclear liability regime).

<sup>41</sup> See Nuclear Energy Agency, Organization for Economic Co-operation and Development. 2012. *Japan’s Compensation System for Nuclear Damage: As Related to the TEPCO Fukushima Daiichi Nuclear Accident*. <http://www.oecd-nea.org/law/fukushima/7089-fukushima-compensation-system-pp.pdf> (describing the legal framework undergirding Japan’s compensation system for nuclear damage)..

3). Although the Tokyo Electric Power Company (TEPCO) attempted to avoid liability by claiming the 3/11 earthquake-tsunami-nuclear meltdown constituted a “grave natural disaster,” the Japanese government did not seriously consider the claim (Murayama, unpublished manuscript). Instead, as stated in the Final Report of the Diet’s Fukushima Nuclear Accident Independent Investigation Commission (2012), the government proceeded as though the accident was “manmade,” a result of the failure of regulators and TEPCO to insure that the nuclear power plant was capable of withstanding natural disasters by implementing “basic safety requirements.”

Second, the NDCA mandates that funds for compensation be secured through either mandatory insurance or through an indemnity contract between the government and the nuclear power operator. In the case of Fukushima, because the insurance policies state that insurers are released from liability in the case of nuclear accidents caused by earthquakes or other natural disasters, victims were compensated by TEPCO with funds raised by indemnity contract.<sup>42</sup>

Finally, if damage from a nuclear accident exceeds the JPY120 billion liability cap, the government has the prerogative of providing nuclear operators with financial assistance if the Government believes that doing so is consistent with and necessary to achieve the Act’s objectives (§16). Faced with compensation claims in the trillions of yen, the government has chosen to financially support TEPCO by issuing bonds, in return for which TEPCO is responsible both for repayment and for administering the compensation fund (Vásquez-Maignan, 2011).

Rather than creating a single, unified compensation system, Fukushima victims are eligible to seek compensation from any and all of three distinct routes. The first route—the direct route to compensation—is administered by TEPCO. It follows the guidelines of the Dispute

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<sup>42</sup> See Nuclear Damage Compensation Act, Act. No. 147 of 1961 (Japan), <http://www.oecd-nea/law/legislation/japan-docs/Japan-Nuclear-Damage-Compensation-Act.pdf>.

Reconciliation Committee for Nuclear Damage Compensation and is meant to respond to most losses caused by the nuclear accident. Rather than mandating a standard payment, TEPCO has been given a great deal of discretion to choose from a range of payment options.<sup>43</sup> The second route –alternative dispute resolution (ADR)– was set up under the auspices of the Ministry of Education, Culture, Sports, Science, and Technology. Run by attorney-mediators commissioned by the government, the ADR route focuses on compensating categories of people not included in the guidelines, including children, the disabled, and pregnant women. The third route to compensation is litigation, and is available to both individuals and corporations. Dozens of cases have been filed, both within and beyond Japan, some involving individuals, others groups of individuals, and still others single or multiple corporations (Feldman, 2013).

Japan’s effort to compensate the victims of the Fukushima nuclear accident illustrates two problems that a TLO addressing nuclear accident compensation must address. The first is Japan’s failure to create a well-coordinated set of compensation mechanisms, and to offer victims a roadmap that enables them to navigate the institutional landscape of compensation. Instead, victims can chose between three separate paths to compensation, with limited information about how best to position themselves with regard to those separate paths, or what to expect if they follow any given path. Facing a complex bureaucratic structure with multiple routes of entry, many victims have been unable to effectively pursue their claims.

The second problem is even more serious. TEPCO’s mandated JPY 120 billion of insurance was a drop in the bucket when compared to the actual costs of the nuclear accident. As of August 2014, TEPCO had already received over JPY 4.2496 trillion from the Nuclear Damage

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<sup>43</sup> See TEPCO. 2014. *Records of Applications and Payouts for Indemnification of Nuclear Damage (as of 10/3/2014)*, <http://www.tepco.co.jp/en/comp/images/jisseki-e.pdf>. (documenting that, as of August 2014, TEPCO has received applications from 1.95 million individuals and 279 thousand corporations/sole proprietorships, and has settled 1.863 million and 242 thousand claims, respectively).

Compensation and Decommissioning Facilitation Corporation to disburse as compensation payments, and many experts believe that the bill will ultimately reach the JPY 10-15 trillion range (TEPCO, 2014). The result of this monumental underinsurance is that the Japanese government, i.e., the Japanese population more generally, is underwriting the real cost of TEPCO's operations. And even so, many individuals and corporations beyond Japan that have been affected by the accident in Fukushima will remain uncompensated.

#### **IV. Responses Animated by Solidary: The French Regulatory Approach and the US Response to the September 11<sup>th</sup> Terrorist Attacks**

There are a variety of economic and political barriers to the creation of TLOs that govern disaster preparedness, response, and compensation, as the above sections of this chapter have discussed. The diversity of sociocultural and economic values undergirding individual nations also makes it difficult to create TLOs that govern disasters. As illustrated by the Fukushima disaster in Japan, the absence of both domestic and global regulatory mechanisms for national disaster preparation and response left a large number of people dead, injured, homeless and without hope. In the sphere of nuclear disasters, in which nations arguably have greater incentives to take actions to coordinate and create comprehensive cross border regulatory schemes, TLOs have also failed to take root, and the result is that many of those who suffered loss because of the Fukushima accident have yet to get their lives back on track.

This section presents two examples of how nations have effectively managed disasters, and identifies a common value underlying both of them. The cases of the French regulatory response to natural disasters and the US's September 11<sup>th</sup> Victim Compensation Fund, though distinctive in their approaches and national in scope, are both animated by the value of solidarity.

As such, they are suggestive of the potential form that a comprehensive and effective TLO might take in the area of disasters.

*a. The French CAT/NAT System*

In the French approach to compensating victims of natural disasters, one finds a regularized and inclusive system that socializes risk by spreading the cost of disaster related harms broadly throughout the populace (Bruggeman, 2010; Vandamme, 1998).<sup>44</sup> <sup>45</sup> It finds its justification in the Preamble to the Constitution of 1946, which “proclaims the solidarity and equality of all French people in bearing the burden resulting from national calamities” (§ 12). Solidarity as a value animating the French system of disaster management has found expression in the willingness of citizens to pay an extra tax in 1976 to fund an assistance program for farmers suffering from severe drought and to sacrifice a vacation day to assist elderly victims of an unusually severe heat wave (Cannarsa, Lafay, and Moréteau, 2006; Consorcio de Compensación de Seguros, 2008; Moss, 1999). These expressions of solidarity indicate an expectation that the government will provide supplemental assistance to disaster victims facing personal injury or

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<sup>44</sup> Solidarity as a value undergirding the French preference to statist remedies raises the question of the difference between Japan and France—both powerful centralized governments with paternalistic tendencies in the realm of social policy—in terms of creating a nationalized policy for disasters. The tendency to generalize between the two countries in this manner obfuscates the myriad of areas in which strong, paternalistic states like France and Japan are quite individualistic, perhaps even more so in the case of Japan than that of France. There is, therefore, no reason to anticipate a statist approach to disaster management in the case of Japan. For an example of the divergent outcomes on policy of France and Japan *see, e.g.*, Feldman, Eric A. 2000. “Blood Justice: Courts, Conflict, and Compensation in Japan, France, and the United States.” 34 *L. & Soc. R.* 651–701.

<sup>45</sup> *See* Consorcio de Compensación de Seguros. 2012. *Estadística Riesgos Extraordinarios: Serie 1971 – 2011*. Madrid: Consorcio de Compensación de Seguros (reporting statistics on catastrophes and risks in Spain); Consorcio de Compensación de Seguros. 2008. *Natural Catastrophe Insurance Cover: a Diversity of Systems*. Madrid: Consorcio de Compensación de Seguros (outlining the disaster insurance systems across a broad range of countries); Faure, Michael. 2006. “Comparative and Policy Conclusions,” in Michael Faure and Tom Hartlief, eds., *Financial Compensation for Victims of Catastrophes: a Comparative Legal Approach*. Vienna: SpringerWienNewYork (comparing the legal approaches for compensating disaster victims in different countries, including Austria, Belgium, France, Italy, the Netherlands, Sweden, the United Kingdom, and the United States); and Van den Bergh, Roger. 2006. “Compulsory Catastrophe Extension of First Party Property Insurance from a Competition Policy Perspective” in Michael Faure and Tom Hartlief, eds., *Financial Compensation for Victims of Catastrophes: a Comparative Legal Approach*. Vienna: SpringerWienNewYork (describing three different schemes for compensating catastrophe victims: ad hoc solutions, disaster funds, and catastrophe extensions of first party property insurance policies).

property loss, as well as a willingness to embrace present sacrifice with the expectation of future reciprocity.

French compensation for victims of natural disasters has several distinctive features.<sup>46</sup> First, the disaster management system as a whole reflects a general preference for insurance over tort liability as a means to provide redress for a wrong (Cannarsa, Lafay, and Moréteau, 2006; Moréteau, 2010).<sup>47</sup> The system does not impose specific limitations on an individual's ability to submit tort claims against the government or private actors. Instead, it is structured to disincentivize the submission of tort claims by providing an alternative—insurance—that is both less expensive and normatively superior because it is associated with social solidarity.

Second, because France has a robust social security system that covers the cost of treating physical harms—disaster related or otherwise—it has little need for a system that guarantees compensation for disaster-specific physical injuries. Instead, the social security system provides for health care, workplace injuries, old age pensions, lost wages, unemployment payments, and more, for close to 100% of residents (Bruggerman, 2010; Cannarsa, Lafay, and Moréteau, 2006; CMU.fr, 2014).<sup>48</sup> A competitive private insurance market sells policies that cover the 30% of the cost of care that remains after social security. Moreover, low-income individuals who are priced out of the private insurance market are not left without healthcare coverage. Instead, they are

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<sup>46</sup> For a comparison of attitudes and expectations for disaster relief in the United States and France, see Moss, David. 1999. "Courting Disaster? The Transformation of Federal Disaster Policy since 1803," in Kenneth A. Froot, ed., *The Financing of Catastrophe Risk*. Chicago: The University of Chicago Press (outlining the advantages and disadvantages should the United States adopt a disaster insurance scheme similar to that of France).

<sup>47</sup> For a discussion of the American preference to tort liability to insurance schemes for disaster compensation, see, e.g., Moréteau, Olivier. 2010. "Catastrophic Harm in United States Law." 58 *Am. J. Comp. L.* 69 (discussing the American preference to use tort liability to compensate disaster victims due to the "weakness of the American welfare system by comparison to other developed countries...").

<sup>48</sup> There are several different health insurance plans—for the employed, self-employed, agricultural workers, etc.—but all operate in almost the same way and provide similar benefits.

covered through the Couverture Maladie Universelle (CMU), a program started in 1999 to ensure that some form of healthcare coverage was available to all French residents.<sup>49</sup>

Third, it is with regard to property insurance that the French system is especially innovative. In response to the acute losses suffered by some citizens because of natural disaster-related property damage, legislation passed on July 13, 1982 dramatically altered the system of natural disaster indemnification in France by creating what is known as the CAT/NAT regime (Loi 82-600 du 13 juillet 1982).<sup>50</sup> Under this system, the voluntary purchase of basic homeowners insurance triggers the obligation to pay an additional premium for insurance against natural disaster-related property losses and business interruptions (Bruggeman, 2010).<sup>51</sup> Because over 95% of homeowners purchase first party insurance, and the liability limit of the CAT/NAT policy is the same as the limit of the underlying insurance policy, the coverage for natural disaster-related loss under the CAT/NAT is particularly broad. Moreover, priced at around 25 euros—12 % of the 200 euro annual cost of a typical homeowners insurance policy—the CAT/NAT regime has increased coverage for natural disasters without causing a decrease in the number of individuals purchasing first party homeowners insurance (Raspiller, 2010). When one

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<sup>49</sup> Since 2000, the French government has also enabled people to purchase modestly priced (starting at 15 euros/month/family) life and injury insurance through a policy it calls “guarantee for accidents of life” insurance (*garantie des accidents de la vie*). The insurance provides up to 1M euros of coverage for death, injury, economic loss, pain and suffering. So far, only 10% of population has purchased it. See Bruggeman, Véronique. 2010. *Compensating Catastrophe Victims: A Comparative Law and Economics Approach*. NY: Wolters Kluwer; Cannarsa, Michel, Fabien Lafay, and Olivier Moréteau. 2006. “France,” in Michael Faure and Ton Hartlief, eds., *Financial Compensation for Victims of Catastrophes: A Comparative Legal Approach*. Vienna: SpringerWienNewYork.

<sup>50</sup> See generally Cannarsa, Michel, Fabien Lafay, and Olivier Moréteau. 2006. “France,” in Michael Faure and Ton Hartlief, eds., *Financial Compensation for Victims of Catastrophes: A Comparative Legal Approach*. Vienna: SpringerWienNewYork.

<sup>51</sup> The CAT/NAT system is designed to cover “uninsurable” risks, including earthquakes, landslides, floods, tsunami, and more. But it does not cover risks for which insurance is available, like wind damage, hail, or collapse from snow. Bruggeman, Véronique. 2010. *Compensating Catastrophe Victims: A Comparative Law and Economics Approach*. NY: Wolters Kluwer. Both pecuniary and non-pecuniary damages are recoverable to the extent they were a direct and immediate consequence of the natural disaster, as are lost earnings. Curiously, the cost of temporary housing is not covered by CAT/NAT insurance.

counts the 6% mandatory upcharge on all automobile insurance policies to insure against natural disaster-related loss and the fact that the vast majority of French residents purchase automobile and/or homeowners insurance, the CAT/NAT regime has provided almost universal natural disaster coverage (of some kind) for French residents (Cannarsa, Lafay, and Moréteau, 2006).<sup>52</sup>

Although the CAT/NAT system is a creation of the central government, it depends upon the participation of private insurance companies, which at the onset were reluctant to expose themselves to potentially significant liabilities by entering an insurance market about which they had limited information. The government's success in securing the participation of private insurers resulted from its decision to set up a state-funded re-insurance company, the Caisse Centrale de Réassurance (CCR), which reinsures 50% of the risk of disaster insurance policies at an extremely competitive rate.<sup>53</sup> The system is extremely attractive for private insurers, who retain 50% of the risk and sell the remaining 50% to the CCR at a very competitive rate. The government provides CCR with a financial guarantee, stepping in to pay the excess liability when 90% of the CCR's reserves are depleted (von Ungern-Sternberg, 2014).<sup>54</sup> To increase the

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<sup>52</sup> A July 2003 law extended first-party insurance coverage to damage caused by industrial catastrophes for an additional 5 euro/year premium, and also established a compensation fund for uninsured victims of such catastrophes. See Cannarsa, Michel, Fabien Lafay, and Olivier Moréteau. 2006. "France," in Michael Faure and Ton Hartlief, eds., *Financial Compensation for Victims of Catastrophes: A Comparative Legal Approach*. Xx: Springer. The justification for extending natural disaster insurance to industrial disasters has been challenged, given the far greater likelihood of successfully pursuing tort remedies in the aftermath of an industrial accident.

<sup>53</sup> Because the CCA is a government agency and enjoys significant state backing, it has a virtual monopoly over reinsurance in the natural disasters market. That lack of competition led SCOR, a large French reinsurance company, to challenge the constitutionality of the 1982 law and the financial guarantee by the government provided to CCR. The CCR argued that the 1982 was aimed at indemnifying policyholders against uninsurable risks, and that the norm of solidarity required low premiums and state support. In its view, the importance of creating such a system outweighed the value of free compensation, which it notes is not a constitutional principle. In a September 27, 2013 decision, the Constitutional Court sided with the CCR and upheld the constitutionality of the provision. Conseil constitutionnel [CC] [Constitutional Court, decision No. 2013-344 QPC, Sept. 27, 2013, J.O. 16306 (Fr.), available at <http://www.conseil-constitutionnel.fr/conseil-constitutionnel/root/bank/download/cc2013344qpc.pdf>.

<sup>54</sup> Indeed, the state has had to support CCR on a number of occasions, as when it paid large claims in 1987, 1999 and 2003. While the CCR boasts a rating of "AA+" from Standard & Poor's (History, CCR Homepage, <http://www.ccr.fr/index.do?fid=1557851382829023455> (accessed Sept. 28, 2013)), the financial reserves of the CCR required an injection of nearly 460 million Euros in 1999 to remain afloat.

financial soundness of the system in response to the onslaught of claims from the 1982/3 floods, the government authorized a rate increase from the original property insurance upcharge of 5.5% to 9%. This initial increase, which later rose to 12%, provided a profit for private insurers while allowing CCR to slowly build its reserves in the disaster-light years of 1984-88 (Bidan, 2000). Other changes, like restricting the causal link between natural disasters and property losses and narrowly tailoring the definition of natural disasters, further shored up the system's sustainability (Bidan, 2000).<sup>55</sup>

Importantly, insurance premiums under the CAT/NAT regime are uniform, calculated as a fixed percentage of the cost of the underlying policy regardless of the risk factors of the insured (Picard, 2000). This aspect of CAT/NAT invites questions of moral hazard, in particular the possibility that the value of solidarity is undermined by individuals who take inappropriate risks (e.g., living on the banks of flood-prone rivers) knowing that they can spread their disaster-related losses among the general population. But French regulators are skeptical that anyone would consciously and willingly increase the possibility of being victimized by a natural disaster, and downplay the role of moral hazard in affecting individual behavior (Picard, 2000).

In addition to limiting coverage to natural disasters, defined as natural phenomenon of “abnormal” intensity, the CAT/NAT system also incentivizes the implementation of prevention policies in the form of risk prevention plans (Plan de Prévention des Risques Majeurs – PPR).<sup>56</sup> Created by municipalities, usually local mayors, PPRs provide detailed outlines of their efforts to

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<sup>55</sup> For an extended government discussion of CAT/NAT, see Note 2004-0304-01 due 5 octobre 2005 Rapport de Synthèse: Mission d'enquête sur le régime d'indemnisation des victimes de catastrophes naturelles [Note 2004-0304-01 of Oct. 5, 2005, Summary: Investigation into the Compensation Regime for Victims of Natural Disasters], <http://www.ladocumentationfrancaise.fr/var/storage/rapports-publics/064000106/0000.pdf>.

<sup>56</sup> See Poussin, Jennifer K., W.J. Wouter Bouzen, and Jeroen C.J.H. Aerts. 2013. “Stimulating Flood Damage Mitigation Through Insurance: an Assessment of the French CatNat System.” 12: 3-4 *Environmental Hazards* 258, 261–64 (describing PPRs created for mitigation of damage caused by floods).

minimize the potential harms caused by natural disasters. Two major incentives guide municipalities to create efficient and effective PPRs. First, failure to create a PPR exposes municipalities to the possibility of tort litigation by local residents. Second, it also enables the central government to increase the deductible on the CAT/NAT policy with subsequent declarations of natural disaster—twice as high the third time disaster strikes, three times as high the fourth, and so on. In turn, this provides local residents the incentive to place pressure on their municipalities to create a PPR or face the political consequences of being voted out of office if they fail to do so.

France’s approach to disaster compensation is therefore both effective and, apart from sharing some similarities with the Spanish and Belgian approaches, distinctive.<sup>57</sup> The value of solidarity animating its structure has both capitalized on and enhanced a culture of mutual sacrifice and reciprocity and catalyzed the growth of a profitable enterprise for private insurance companies and the state-run CCR.

*b. The U.S. Response to 9/11*

The terrorist attacks of September 11, 2001 killed over 2,977 people and injured many more (CNN Library, 2014). Beyond the death and physical injuries, it wrought both social and economic devastation—families and communities were fractured, and property damage was so vast that the site of the former World Trade Center was given the name “ground zero,” evoking the complete destruction of nuclear war.

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<sup>57</sup> There are several other countries with disaster compensation programs similar to that in France, in particular Spain and Belgium. For a comparison of the French and Spanish approaches, see von Ungern-Sternberg, Thomas. *Catastrophe Insurance: Spain vs. France*, University of Lausanne, Organization for Economic Co-operation and Development, <http://www.oecd.org/env/cc/37781875.pdf> (accessed Nov. 18, 2014) (comparing the shortcomings of France’s compulsory catastrophe insurance regime with the successes of that of Spain). See also Note 2004-0304-01 due 5 octobre 2005 Rapport de Synthèse: Mission d’enquête sur le régime d’indemnisation des victimes de catastrophes naturelles [Note 2004-0304-01 of Oct. 5, 2005, Summary: Investigation into the Compensation Regime for Victims of Natural Disasters], <http://www.ladocumentationfrancaise.fr/var/storage/rapports-publics/064000106/0000.pdf>.

In the past, the U.S. government's response to disasters generally reflected a discomfort with paternalism and a disinterest in principles of social solidarity.<sup>58</sup> 9/11, however, was different. In addition to the magnitude of the devastation and the deep wounds inflicted on the national psyche by an act of terrorism, the large number of potential liability claims posed a threat to the solvency of the American aviation industry (*In re September 11 Litigation*, 2009).<sup>59</sup> As a result, eleven days after the attacks, the government stepped in by enacting the Air Transportation Safety and System Stabilization Act (ATSSSA, 2001).

The ATSSSA delineated two remedies for claimants. Those who chose to file civil suits against the airlines were subject to the exclusive jurisdiction of the Southern District of New York, a strategy designed to streamline claims processing, insulate the airline industry from devastating liability, and ensure equity among claimants (*In re September 11 Litigation*, 2009, quoting 147 Cong. Rec. S9589–01, S9595, 2001).<sup>60</sup> The ATSSSA placed restrictions on claimants who chose to pursue civil litigation, including caps on defendants' liability and the elimination of punitive damages (494 F.Supp.2d 232 (S.D.N.Y.2007)).

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<sup>58</sup> See, e.g., 2 de Tocqueville, Alexis. *Democracy in America* 120 (Henry Reeve trans., 1862) ("[Americans] owe nothing to any man, they expect nothing from any man; they acquire the habit of always considering themselves as standing alone, and they are apt to imagine that their whole destiny is in their own hands."). This anti-paternalistic ethos is embodied in the wake of disasters such as Hurricane Katrina, the bombing of U.S.S Cole, and other disasters, whose victims were largely left to fend for themselves. See Feinberg, Kenneth R. "9/11 Fund: Once Was Enough," *Wash. Post*, Sept. 11, 2008, <http://www.washingtonpost.com/wp-dyn/content/article/2008/09/10/AR2008091002721.html> (noting, in reference to the 9/11 Victim Compensation Fund, that "[n]ever before in American history has there been an example of such taxpayer generosity" and comparing it to disasters occurring before and after September 2001).

<sup>59</sup> See also *Assessing Losses for the Airline Industry in the Aftermath of the Terrorist Attacks*, Joint Economic Committee Democratic Staff, Senator Jack Reed (Oct. 3, 2001), at <http://www.airlinebailout1.pdf> from [jec.senate.gov](http://jec.senate.gov) (the airline carriers' insurance coverage was reportedly \$1.6 billion per plane, an amount insufficient to cover the scope of the death, destruction, and injury on the ground).

<sup>60</sup> *In re September 11 Litigation*, 600 F.Supp.2d 551, (S.D.N.Y.2009), quoting 147 Cong. Rec. S9589–01, S9595 (Sept. 21, 2001) (Senator McCain: "In addition to removing the specter of devastating potential liability from the airlines, and guaranteeing that the victims and their families will receive compensation regardless of the outcomes of the tangle of lawsuits that will ensue, the bill attempts to provide some sense to the litigation by consolidating all civil litigation arising from the terrorist attacks of September 11 in one court.").

More significantly, the ATSSSA created a second route to compensation, the no-fault September 11<sup>th</sup> Victim Compensation Fund (the Fund), under which a Special Master evaluated wrongful death and personal injury claims (*In re September 11 Litigation*, 2009). Those who filed claims with the Fund were required to waive their right to sue the airlines, airline manufacturers, airport owners, individuals or entities with a property interest in the World Trade Center, and New York City (§§ 403(C)(B)(i), 405(c)(3)(C)(i)).<sup>61</sup> In addition, to be eligible for compensation from the Fund, claimants were required to have been “physically injured or killed as a result of the terrorist-related air crashes... (§ 403).” This included individuals who were (1) present at the World Trade Center or other related crash site at the time or in the immediate aftermath of the crash and (2) suffered physical harm or death resulting from the crash itself or debris removal, as well as (3) the representative of a decedent who would otherwise have been eligible (§§ 405(c)(2)(A)(i)–(ii); 405(c)(2)(B)).<sup>62</sup> Those who met the eligibility requirements did not have to prove that their harms resulted from the fault of another party, and were able to avoid the costs of a traditional civil suit (*In re September 11 Litigation*, 2009).

In creating the ATSSSA, therefore, Congress not only protected the airline industry from the possibility of devastating legal liability. It also quite explicitly offered “unprecedented expression of compassion on the part of the American people to the victims and their families devastated by the horror and tragedy on September 11<sup>th</sup> (Department of Justice, 2001).” Kenneth R. Feinberg (2004), tapped as Special Master of the Fund by Attorney General John Ashcroft after the ATSSSA’s enactment, called the Fund “a unique response to an unprecedented

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<sup>61</sup> Special Master Kenneth R. Feinberg allowed for the fact that some victims will receive nothing after setoffs, although noted that such a scenario was unlikely. *See*, Feinberg, Kenneth R., Special Master. 2001. Transcript, News Conference Announcing Regulations Concerning 9/11 Victim Compensation Fund 8 (Dec. 20, 2001), <http://www.usdoj.gov/ag/1220kenfeinbergnewsconference.htm>.

<sup>62</sup> Individuals deemed by the Attorney General to have acted as participants or conspirators in the terrorist attacks were also deemed ineligible to file a claim with the VCF. ATASSA § 405(c)(2)(C).

historical event” catalyzed by the “profound conditions” and the “sense of national grief and compassion” associated with the attacks of September 11<sup>th</sup>. Representative Harry J. Waxman (2001) summarized the national ethos embodied in the Fund when he stated, “In the aftermath of the September 11 attacks, our nation has learned to put a premium on the value of shared sacrifice.”<sup>63</sup> Like France’s approach to managing the property losses caused by disasters, the US response to 9/11 was deeply rooted in and explicitly justified by the value of solidarity.

To date, the Fund remains unique among American responses to disasters. Arguments in the aftermath of September 11<sup>th</sup> to enact a statute establishing such a fund upon certification by the Secretary of State in the event of a future terrorist attack failed to gain traction. Feinberg (2004) himself has argued against the prudence of such legislation. Instead, he has suggested that the conditions in the aftermath of a disaster ought to guide the decision to enact such a public compensation scheme in the future, although Congress should debate the merits of the Act and identify possible alternatives. Some of Feinberg’s suggestions have been borne out more recently, such as in as the Gulf Coast compensation fund he administered for BP and his latest role administering a fund created and paid for by General Motors to compensate victims of its ignition switch failures (Nocera, 2014). The Fund has, at least, catalyzed debates about whether it is practical and/or desirable to replicate it in the event of future disasters, and, if not, what forms future compensation schemes might take.

## **V. Conclusion**

Scholars of law and regulation persuasively argue that transnational legal institutions are playing an increasingly important role in how nations manage social problems. Halliday and

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<sup>63</sup> Waxman, Henry A. 147 CONG. REC. 130 (2001), at [http://capitolwords.org/date/2001/10/02/E1764\\_air-transportation-safety-and-system-stabilization/](http://capitolwords.org/date/2001/10/02/E1764_air-transportation-safety-and-system-stabilization/). Note that Representative Waxman said this a speech criticizing H.R. 2926, the ATSSSA legislation.

Shaffer (2014a) offer a valuable approach to that phenomenon, labeling the emergence of cross-national legal norms, organizations, and actors that “order the understanding and practice of law across national jurisdictions” as “transnational legal orders.” But the general trend toward “transnationalization” is not without exceptions, as this chapter on law and disasters has demonstrated. To the degree that TLOs have emerged in the law and disasters area, they are most visible when it comes to emergency response to natural disasters, only partially visible in the area of disaster prediction/prevention, and largely invisible in the area of victim compensation.

In an increasingly globalized environment, where transnational regulatory regimes play significant roles across a broad swath of fields, the relative lack of TLOs in the area of natural and nuclear disasters is notable. The frequency with which disasters strike, their relative ubiquity, and their border-crossing nature invite the creation of transnational global governance mechanisms. Yet for both natural and nuclear disasters, particularly in the areas of prediction/prevention and victim compensation, TLOs have largely failed to materialize.

What explains the gap between the literature on global governance, with its recognition of the increasingly importance of TLOs, and the relative resistance to TLOs in the law/disasters area? First, the many areas in which TLOs have emerged were subject to significant amounts of domestic legal control. From women’s rights to environmental toxins, banking to immigration, the fields most ripe for TLOs were already robust national legal orders, and thus primed for cross-border legalization. Not so for most areas of disaster management, which are generally underdeveloped domestic legal orders burdened by high degrees of uncertainty and a potentially high price tag. A second, related reason for minimal TLO development in the area of disasters is the lack of a shared sense of reciprocal risk. To the extent that one finds TLOs in the nuclear area, they rest on the notion that an accident in one nation will have negative consequences in

other (nearby) nations. There is no similar equation for natural disasters, which can easily be conceived of as resulting from external forces and causing geographically specific harms. The reality, of course, is that natural phenomenon become natural disasters because of human agency—where we locate our towns, how we build our homes—and their consequences are often felt in many nations. But there is a randomness to natural disasters, along with a difficulty of predicting their consequences and a lack of clarity between what constitutes a natural versus and human-made disaster which has worked against the construction of cross-national legal institutions.

The immense direct economic losses that can result from natural disasters also contribute to the lack of disaster-related TLO's. Those costs make it difficult to consolidate political support for the creation of policies and programs aimed at managing disasters, when doing so could mean that significant funds will be redirected to disaster management at unpredictable times. The problem is particularly acute in low to medium income countries, which have a large number of other pressing and immediate financial needs and may have difficulty setting aside funds for “unpredictable” natural disasters. Ad hoc, post hoc programs thus become the dominant institutional posture when disasters strike.

Of course, as discussed in the preceding sections, there is not a complete dearth of TLOs targeted at disasters. They are more common for nuclear than natural disasters, and in the area of natural disasters those that do exist tend to involve emergency response rather than disaster predication/preparation of post-disaster compensation. The nuclear/natural divide results in part from the political compromise that enabled the growth of the nuclear energy enterprise: governments and nuclear plant owners had to develop mechanisms to help lessen public fear of nuclear energy, which resulted in various international agreements. The stronger inclination to

cooperate in the immediate aftermath of a natural disaster can be at least partially explained by the human impulse to aid those in distress; the medical emergencies people experience enable them to receive emergency treatment in hospitals, for example, even when further treatment or accident compensation is not available. Moreover, emergency response is clearly bounded. It starts in the immediate aftermath of a disaster and ends relatively quickly, unlike the open-ended commitment of time and money required by serious efforts at disaster prediction and compensation.

The paucity of TLOs in the area of law and disasters is not simply a conceptual puzzle. It has profound human consequences. In 2011, the estimated cost of losses from natural disasters worldwide was a staggering \$380 billion (Ferris and Petz, 2011).<sup>64</sup> Japan's Fukushima disaster, with a price tag of over \$200 billion, has the unfortunate distinction of being the costliest in history, (Ferris and Petz, 2011) with direct economic losses representing 4% of Japan's GDP and only 16% of total losses being covered by insurance (Mahul and White, 2012). The cost of disasters is even more severe for middle-income countries. The 2010 earthquake/tsunami in Chile, for example, resulted in \$30 billion in economic losses representing 18% of GDP. Everywhere, the cost of disasters is widespread, far-reaching, and often difficult to calculate due to the long-term effects including constraining national budgets and hindering economic growth and development (Mahul and White, 2012).

Given the demonstrated costs of disasters, the development of a coordinated and consistent regulatory apparatus in the area of law and disasters is critical. Here, the French

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<sup>64</sup> The cost of natural disasters worldwide for 2009, 2010, and 2011 was USD 41.3, 123.9, and 380 billion, respectively. Ferris, Elizabeth, and Daniel Petz. 2011. *The Year that Shook the Rich: a Review of Natural Disasters in 2011*, Brookings Institution – London School of Economics Project on Internal Displacement, [http://www.brookings.edu/~media/research/files/reports/2012/3/natural%20disaster%20review%20ferris/03\\_natural\\_disaster\\_review\\_ferris.pdf](http://www.brookings.edu/~media/research/files/reports/2012/3/natural%20disaster%20review%20ferris/03_natural_disaster_review_ferris.pdf).

approach to disaster insurance and U.S. response to 9/11 may provide a foundation for the growth of a transnational regulatory apparatus in the area of law and disasters. Although the two regimes differ considerably, both programs were animated by a value—social solidarity—which was widely internalized and accepted by both policy makers and the public.<sup>65</sup> The ability of the social solidarity norm to effectively motivate disaster compensation regimes in two countries with such different social and political values is suggestive of its potential to undergird the creation of law and disaster TLOs across a broad spectrum of nations. When that occurs, we will know that the predictions of a truly globalized international legal order will have finally proven true.

## References

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<sup>65</sup> See Roberts, Patrick S. 2010. “Private Choices, Public Harms: The Evolution of Natural Disaster Organizations in the United States,” in Andrew Lakoff, ed., *Disaster and the Politics of Intervention*. New York: Columbia University Press (describing disaster management in the United States and stating that “...a democratic majority has reached a rough consensus that preparing for disaster is a shared universal responsibility).

1946 CONST. Preamble, Sec. 12 (Fr.), available at [http://www.conseil-constitutionnel.fr/conseil-constitutionnel/root/bank\\_mm/anglais/cst3.pdf](http://www.conseil-constitutionnel.fr/conseil-constitutionnel/root/bank_mm/anglais/cst3.pdf).

Additional Protocol to the Framework Agreement on the Environment of MERCOSUR on Cooperation and Assistance Facing Environmental Emergencies arts. 4–9, July 7, 2004, MERCOSUR/CMC/DEC 14/04, <http://www.sice.oas.org/trade/mrcsrs/decisions/dec1404s.asp>.

Agreement on Cooperation on Marine Oil Pollution, Preparedness, and Response in the Arctic art. 1, 4, May 15, 2013, PRN 2013/0567, *available at* <http://www.state.gov/r/pa/prs/ps/2013/05/209406.htm>.

Air Transportation Safety and System Stabilization Act of 2001 (ATASSA). 49 U.S.C. §§ 40101, 44302–44306. Pub.L 107–42, 115 Stat. 230, *available at* <http://www.gpo.gov/fdsys/pkg/PLAW-107publ42/pdf/PLAW-107publ42.pdf>.

Athukorala, Prema-chandra, and Budy P. Resosudarmo. “The Indian Ocean Tsunami: Economic Impact, Disaster Management and Lessons,” *Asian Economic Papers* 4–7.

Bidan, Patrick. 2000. “Indemnisation des catastrophes naturelles: de la naissance vers l’âge adulte,” 42 *Risque* 80.

Banyan Analytics. 2014. *The 2011 Earthquake, Tsunami, and Nuclear Accident in Japan: Coordinating the U.S. Government Response*, [http://www.anser.org/docs/banyan\\_analytics/Fukushima\\_Case\\_study.pdf](http://www.anser.org/docs/banyan_analytics/Fukushima_Case_study.pdf).

Becerra, Oscar, Eduardo Cavallo, and Ilan Noy. 2012. *Foreign Aid in the Aftermath of Large Natural Disasters* 1–2 (Inter-American Development Bank, Department of the Chief Economist, IDB Working Paper Series No. IDB-WP-333), <http://www10.iadb.org/intal/intalcdi/PE/2012/10593.pdf>.

Beiser, Vince. “Organizing Armageddon: What we Learned from the Haiti Earthquake,” *Wired Magazine*, April 19, 2010. <http://www.vincebeiser.com/pdfs/haiti.pdf>.

Bernasconi, Christophe. 1988. *Civil Liability Resulting from Transfrontier Environmental Damage: A Case for Hague Conference?*, [http://www.hcch.net/upload/wop/gen\\_pd8e.pdf](http://www.hcch.net/upload/wop/gen_pd8e.pdf).

Bruggeman, Véronique. 2010. *Compensating Catastrophe Victims: A Comparative Law and Economics Approach*. NY: Wolters Kluwer.

[Brussels Supplementary Convention] Convention Supplementary to the Paris Convention on Third Party Liability in the Field of Nuclear Energy of July 29, 1960 arts. 1–25, Jan. 31, 1963, 1041 U.N.T.S. 350.

Byers, Michael. 2012. *Circumpolar Challenges: an Ambitious Agenda for the Arctic Council*. Pre-conference report. Ottawa: Rideau Institute, <http://byers.typepad.com/files/michael-byers-report-on-arctic-council-26-sept-2012.pdf>.

Calvi-Parisetti, Piero. 2013. *Linking Humanitarian and Nuclear Response Systems: a Study by the UN Office for Coordination of Humanitarian Affairs*, <https://ochanet.unocha.org/p/Documents/Linking%20Humanitarian%20and%20Nuclear%20Response%20Systems.pdf>.

Cannarsa, Michel, Fabien Lafay, and Olivier Moréteau. 2006. “France,” in Michael Faure and Ton Hartlief, eds., *Financial Compensation for Victims of Catastrophes: A Comparative Legal Approach*. Vienna: SpringerWienNewYork.

Claremont, Yasuko. 2014. “Disaster in Japan: A Case Study,” in Luke Nottage, Hitoshi Nasu, and Simon Butt, eds., *Asia-Pacific Disaster Management: Comparative and Socio-Legal Perspectives*. London: Springer.

CNN Library, “September 11<sup>th</sup> Fast Facts,” *CNN U.S.*, Sept. 8, 2014, <http://www.cnn.com/2013/07/27/us/september-11-anniversary-fast-facts/>.

Consortio de Compensación de Seguros. 2012. *Estadística Riesgos Extraordinarios: Serie 1971 – 2011*. Madrid: Consortio de Compensación de Seguros.

Consortio de Compensación de Seguros. 2008. *Natural Catastrophe Insurance Cover: a Diversity of Systems*. Madrid: Consortio de Compensación de Seguros.

Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region, arts. 3 – 5, 11, Mar. 24, 1983, T.I.A.S. No. 11085 1506 U.N.T.S. 157 (entered into force Oct. 11, 1986).

Convention on Assistance in the Case of a Nuclear Accident or Radiological Emergency art. 2, Sept. 26, 1986, 25 I.L.M. 1378, 1457 U.N.T.S. 133.

Convention on Early Notification of a Nuclear Accident arts. 4–7, Sept. 26, 1986, Senate Treaty Documents 100-4, 1439 U.N.T.S. 275 (entered into force Oct. 27, 1986).

Convention on Nuclear Safety arts. 14–19, Sept. 20, 1994, 33 I.L.M. 1514, 1963 U.N.T.S. 293. (entered into force Oct. 24, 1996).

Convention on Supplementary Compensation for Nuclear Damage, preamble, Sept. 29, 1997, INFCIRC/567, available at <http://www.iaea.org/sites/default/files/publications/documents/infcircs/1998/infcirc0567.pdf>.

Cook, Helen. 2014. “International Nuclear Law: Nuclear Safety, Emergency Response and Nuclear Liability,” in Simon Butt, Hitoshi Nasu, and Luke Nottage, eds., *Asia-Pacific Disaster Management: Comparative and Socio-legal Perspectives*. London: Springer.  
Couverture Maladie Universelle. [www.cmu.fr](http://www.cmu.fr) (accessed Oct. 12, 2014).

de Guttry, Andrea. 2012. "Surveying the Law," in Andrea de Guttry, Marco Gestri, and Gabriella Venturini, eds., *International Disaster Response Law*. The Hague: T.M.C. Asser Press.

Department of Homeland Security. 2013. Federal Emergency Management Agency: Radiological Emergency Preparedness, Fiscal Year 2013 Congressional Justification, [https://www.fema.gov/pdf/about/budget/11c\\_fema\\_radiological\\_emergency\\_preparedness\\_program\\_dhs\\_fy13\\_cj.pdf](https://www.fema.gov/pdf/about/budget/11c_fema_radiological_emergency_preparedness_program_dhs_fy13_cj.pdf).

Douglas, Lawrence, Austin Sarat, and Martha Merrill Umphrey. 2007. "A Jurisprudence of Catastrophe: An Introduction," in Austin Sarat, Lawrence Douglas, and Martha Merrill Umphrey, eds., *Law and Catastrophe*. Stanford: Stanford University Press.

Edgington, David W. 2010. *Reconstructing Kobe: The Geography of Crisis and Opportunity*. Vancouver: UBC Press.

Faure, Michael. 2013. "Introduction: Towards Effective Compensation for Victims of Natural Catastrophes in Developing Countries," in Michael Faure and Andri Wibisana, eds., *Regulating Disasters, Climate Change and Environmental Harm: Lessons from the Indonesian Experience*. Cheltenham: Edward Elgar Publishing Ltd.

Faure, Michael. 2006. "Comparative and Policy Conclusions," in Michael Faure and Tom Hartlief, eds., *Financial Compensation for Victims of Catastrophes: a Comparative Legal Approach*. Vienna: SpringerWienNewYork.

Faure, Michael G. and Karine Fiore. 2008. "The Coverage of Nuclear Risk in Europe: Which Alternative?" 33 *The Geneva Papers on Risk and Insurance – Issues and Practice* 288-89.

Feinberg, Kenneth R. 2004. *Final Report of the Special Master for the September 11<sup>th</sup> Victim Compensation Fund*, Vol. 1, [http://www.justice.gov/final\\_report.pdf](http://www.justice.gov/final_report.pdf).

Feldman, Eric. 2013. "Fukushima: Catastrophe, Compensation, and Justice in Japan," 62 *DePaul Law Review* 335, 343.

Global Facility for Disaster Reduction and Recovery (GFDRR). 2012. *Disaster Risk Financing and Insurance Program*, The World Bank, [http://siteresources.worldbank.org/EXTDISASTER/Resources/8308420-1353538006746/4Pager\\_GFDRR-DRFI-program\\_final\\_Nov21\\_2012.pdf](http://siteresources.worldbank.org/EXTDISASTER/Resources/8308420-1353538006746/4Pager_GFDRR-DRFI-program_final_Nov21_2012.pdf).

Halliday, Terence C., and David Shaffer. 2014a. "Transnational Legal Orders," in Terence C. Halliday and David Shaffer, eds., *Transnational Legal Orders*. Cambridge: Cambridge University Press.

Halliday, Terence C., and David Shaffer. 2014b. "Researching Transnational Legal Orders," in Terence C. Halliday and David Shaffer, eds., *Transnational Legal Orders*. Cambridge: Cambridge University Press.

Handl, Günther. 2004. “The IAEA Nuclear Safety Conventions: An Example of Successful “Treaty Management?”” *72 Nuclear Law Bulletin* 1, 10, available at [http://www.oecd-nea.org/law/nlb/nlb-72/007\\_027.pdf](http://www.oecd-nea.org/law/nlb/nlb-72/007_027.pdf).

*In re September 11 Litigation*, 600 F.Supp.2d 551 (S.D.N.Y.2009).

International Atomic Energy Agency. 2014a. *Convention on Nuclear Safety*, <http://www.iaea.org/publications/documents/treaties/convention-nuclear-safety> (last updated Nov. 16, 2014).

International Atomic Energy Agency. 2014b. *Convention on Nuclear Safety, Sixth Review Meeting*, <http://www-ns.iaea.org/conventions/nuclear-safety.asp?l=41> (last updated Sept. 30, 2014).

International Atomic Energy Agency. 2014c. “Briefing by IAEA Director General Yukiya Amano: Fukushima Nuclear Accident,” *Fukushima Nuclear Accident Update Log* (Mar. 28, 2011, 14:30 UTC), <http://www.iaea.org/newscenter/news/2011/fukushima280311.html>.

International Atomic Energy Agency. 2014d. *International Conventions and Legal Agreements: Convention on Early Notification of a Nuclear Accident*, <http://www.iaea.org/Publications/Documents/Conventions/cenna.html> (last visited Oct. 12, 2014).

International Atomic Energy Agency. 2014e. *International Conventions and Legal Agreements: Convention on Supplementary Compensation for Nuclear Damage*, <http://www.iaea.org/Publications/Documents/Conventions/supcomp.html> (accessed Oct. 12, 2014).

International Atomic Energy Agency. 2014f. *International Conventions and Legal Agreements: Paris Convention on Third Party Liability in the Field of Nuclear Energy*, <http://www.iaea.org/Publications/Documents/Treaties/parisconv.html> (accessed Oct. 12, 2014).

International Atomic Energy Agency. 2014g. *International Conventions and Legal Agreements: Vienna Convention on Civil Liability for Nuclear Damage*, <http://www.iaea.org/Publications/Documents/Conventions/liability.html> (accessed Oct. 12, 2014).

International Atomic Energy Agency. 2014h. *Latest Status: Convention on Supplementary Compensation for Nuclear Damage*, [http://www.iaea.org/sites/default/files/supcomp\\_status.pdf](http://www.iaea.org/sites/default/files/supcomp_status.pdf) (latest change of status July 7, 2014).

International Atomic Energy Agency. 2013. *Nuclear Safety and Security: Inter-agency Committee on Radiological and Nuclear Emergencies*, <http://www-ns.iaea.org/tech-areas/emergency/iacrna/login.asp> (last modified Aug. 5, 2013).

International Atomic Energy Agency. 2004. *The 1997 Vienna Convention on Civil Liability for Nuclear Damage and the 1997 Convention on Supplementary Compensation for Nuclear Damage: Explanatory Texts*, <http://www.iaea.org/About/Policy/GC/GC48/Documents/gc48inf-5expltext.pdf>.

International Convention on Oil Pollution Preparedness, Response, and Co-operation, Nov. 30, 1990, 30 I.L.M. 733, 735.

Japan Looks to Ratify Liability Accord, *World Nuclear News*, Dec. 13, 2013, <http://www.world-nuclear-news.org/NP-Japan-looks-to-ratify-liability-accord-1312134.html>.

Japan Water Forum. 2005. Typhoon Isewan (Vera) and its Lessons, [http://www.waterforum.jp/jpn/katrina/Typhoon\\_Isewan.pdf](http://www.waterforum.jp/jpn/katrina/Typhoon_Isewan.pdf) (accessed Feb. 17, 2013).

Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radiological Waste Management arts. 29–34, Sept. 5, 1997, 2153 U.N.T.S. 303 (entered into force June 18, 2001).

Joint Protocol Relating to the Application of the Vienna Convention on Civil Liability for Nuclear Damage of May 21, 1963, and the Paris Convention on Third Party Liability in the Field of Nuclear Energy of July 29, 1960, Sept. 21, 1988, 1672 U.N.T.S. 293.

Kingston, Jeff. 2012. “The Politics of Disaster, Nuclear Crisis, and Recovery,” in Jeff Kingston, ed., *Natural Disaster and Nuclear Crisis in Japan: Response and Recovery after Japan’s 3/11*. New York: Routledge.

Loi 82-600 du 13 juillet 1982 relative à l'indemnisation des victimes de catastrophes naturelles [Law 82-600 of 13 July 1982 on Compensation for Victims of Disasters], JOURNAL OFFICIEL DE LA RÉPUBLIQUE FRANÇAISE [J.O.] [OFFICIAL GAZETTE OF FRANCE], July 14, 1982, p. 2242.

Lynch, Colum. 2010. “Top U.N. Aid Official Critiques Haiti Aid Efforts in Confidential Email,” in *Foreign Policy*. Feb.17, 2010, [http://blog.foreignpolicy.com/posts/2010/02/17/top\\_un\\_aid\\_official\\_critiques\\_haiti\\_aid\\_efforts\\_in\\_confidential\\_email](http://blog.foreignpolicy.com/posts/2010/02/17/top_un_aid_official_critiques_haiti_aid_efforts_in_confidential_email).

Mahul, Olivier and Emily White. *Knowledge Notes, Cluster 6: Earthquake Risk Insurance 6* (World Bank, Note 6-2, Sept. 24, 2012), [http://wbi.worldbank.org/wbi/Data/wbi/wbicms/files/drupal-acquia/wbi/drm\\_kn6-2.pdf](http://wbi.worldbank.org/wbi/Data/wbi/wbicms/files/drupal-acquia/wbi/drm_kn6-2.pdf).

Masayuki Murayama, “There Are Few Cases Around Here: Lawyers' Response to Nuclear Compensation and Structural Problems of the Japanese Legal Profession” (unpublished manuscript)(on file with author).

Moinz, Ernest and Phillipe Martin. *U.S.-France Joint Statement on Liability for Nuclear Damage*, U.S. Dept. of Energy, (Aug. 29, 2013),

<http://iipdigital.usembassy.gov/st/english/texttrans/2013/08/20130830281994.html#axzz2r9Wkqr2H>.

Moréteai, Olivier. 2010. "Catastrophic Harm in United States Law: Liability and Insurance." 58 *Am. J. Comp. L.* 69.

Moss, David. 1999. "Courting Disaster? The Transformation of Federal Disaster Policy since 1803," in Kenneth A. Froot, ed., *The Financing of Catastrophe Risk*. Chicago: The University of Chicago Press

Myerson, Michael I. "Losses of Equal Value" *The New York Times* (Mar. 24, 2002), <http://www.nytimes.com/2002/03/24/opinion/losses-of-equal-value.html>.

Naidu, V. Chandrasekara. 2005. "Country Report: India," in Laurel Fletcher, Eric Stover and Harvey Weinstein, eds., *After the Tsunami: Human Rights of Vulnerable Populations*. Human Rights Center, University of California, Berkeley East West Center, [http://www.law.berkeley.edu/files/HRC/Publications\\_After-the-Tsunami\\_10-2005.pdf](http://www.law.berkeley.edu/files/HRC/Publications_After-the-Tsunami_10-2005.pdf).

Nakao, Masayuki. *Okushiri Tsunami Generated by Southwest-off Hokkaido Earthquake*, Hatamura Institute for the Advancement of Technology, <http://www.sozogaku.com/fkd/en/cfen/CA1000618.html> (accessed Feb. 17, 2013).

National Diet of Japan Fukushima Nuclear Accident Independent Investigation Commission. 2012. *The Official Report of the Fukushima Nuclear Accident Independent Investigation Commission: Executive Summary*, <http://warp.da.ndl.go.jp/info:ndljp/pid/3856371/naaic.go.jp/en/>.

Nocera, Joe. "From 9/11 to BP to G.M.," The Opinion Pages, *New York Times* (Jun. 30, 2014).

Nottage, Luke, Hitoshi Nasu, and Simon Butt. 2014. "Disaster Management: Socio-Legal and Asia Pacific Perspectives," in Simon Butt, Hitoshi Nasu, and Luke Nottage, eds., *Asia-Pacific Disaster Management: Comparative and Socio-legal Perspectives*. London: Springer.

[Nuclear Damage Compensation Act], Act No. 147 of 1961 (Japan), <http://www.oecd-nea.org/law/legislation/japan-docs/Japan-Nuclear-Damage-Compensation-Act.pdf>.

Nuclear Energy Agency. *Nuclear Law: 2004 Protocol to Amend the Brussels Supplementary Convention on Nuclear Third Party Liability*, <https://www.oecd-nea.org/law/brussels-supplementary-convention-protocol.html> (last reviewed Sept. 6, 2011).

Nuclear Energy Agency. *Nuclear Law: Brussels Supplementary Convention*, <https://www.oecd-nea.org/law/brussels-supplementary-convention.html> (last updated Aug. 30, 2012).

Department of Defense, Nuclear/Radiological Incident Annex (NRIA) to the National Response Framework (NRF), June 2008, [http://www.fema.gov/pdf/emergency/nrf/nrf\\_nuclearradiologicalincidentannex.pdf](http://www.fema.gov/pdf/emergency/nrf/nrf_nuclearradiologicalincidentannex.pdf).

Paris Convention on Third Party Liability in the Field of Nuclear Energy arts. 1–24, July 29, 1960, 956 U.N.T.S. 251.

Patrick, John. 2011. “Haiti Earthquake Response: Emerging Evaluation Lessons,” *Evaluation Lessons* 5, available at <http://www.oecd.org/countries/haiti/50313700.pdf>.

Pelzer, Norbert. 1994. “Nuclear Energy,” *5 Yearbook of International Environmental Law* 195, 197.

Pierre Picard, Introduction to *Risques, Les cahiers de l'assurance* N42 Avril-Juin 2000.

Poussin, Jennifer K., W.J. Wouter Bouzen, and Jeroen C.J.H. Aerts. 2013. “Stimulating Flood Damage Mitigation Through Insurance: an Assessment of the French CatNat System.” *12: 3-4 Environmental Hazards* 258, 261–64.

Protocol Concerning Cooperation in Combating Oil Spills in the Wider Caribbean Region, with Annex, art. 3, Mar. 24, 1983, T.I.A.S. No. 11,085, 1506 U.N.T.S. 157 (entered into force Oct. 11, 1986).

Protocol to Amend the Vienna Convention on Civil Liability for Nuclear Damage arts. 2–13 , Sept. 29, 1997, IAEA-INFCIRC/566.

[2004 Protocol to Amend the Brussels Supplementary Convention] Protocol to Amend the Convention of 31 January 1963 Supplementary to the Paris Convention of 29 July 1960 on Third Party Liability in the Field of Nuclear Energy, as Amended by the Additional Protocol of 28 January 1964 and by the Protocol of 16 November 1982.

[2004 Protocol to Amend the Paris Convention] Protocol to Amend the Paris Convention on Third Party Liability in the Field of Nuclear Energy of 29 July 1960, as Amended by the Additional Protocol of 28 January 1964 and by the Protocol of 16 November 1982 arts. I–II., Feb. 12, 2004

Raschky, Paul A., and Manijeh Schwindt. 2009. Aid, Natural Disasters and the Samaritan’s Dilemma 3 (The World Bank, Sustainable Development Network Vice Presidency, Global Facility for Disaster Reduction and Recovery Unit, Policy Research Working Paper No. 4592), [http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/06/03/000158349\\_20090603154059/Rendered/PDF/WPS4952.pdf](http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2009/06/03/000158349_20090603154059/Rendered/PDF/WPS4952.pdf).

Raspiller, Sebastien. 2012. “The French Experience on Disaster Risk Management,” in *Improving the Assessment of Disaster Risks to Strengthen Financial Resilience, A Special Joint G20 Publication by the Government of Mexico and the World Bank*. Washington, DC: International Bank for Reconstruction and Development.

Roberts, Patrick S. 2010. "Private Choices, Public Harms: The Evolution of Natural Disaster Organizations in the United States," in Andrew Lakoff, ed., *Disaster and the Politics of Intervention*. New York: Columbia University Press.

SAARC Agreement on Rapid Response to Natural Disasters art. 2, May 25-26, 2011, available at <http://www.ifrc.org/docs/idrl/N840EN.pdf>.

South Asian Association for Regional Cooperation. 2012. *India Ratifies the Agreement on Natural Disasters*, <http://saarc-sec.org/2012/08/21/news/India-ratifies-the-Agreement-on-Natural-Disasters/98/>.

South Asian Association for Regional Cooperation (SAARC). 2013. Global Platform for Disaster Risk Reduction, Fourth Session, Geneva, 19-23 May, 2013, "Invest Today for a Safer Tomorrow: Resilient People – Resilient Planet," SAARC Secretariat Statement, Kathmandu, Nepal.

Stoianova, Velina, *Private Funding: An Emerging Trend in Humanitarian Donorship* 4-5 (Global Humanitarian Assistance, Briefing Paper Version 1, April 2012), <http://www.globalhumanitarianassistance.org/wp-content/uploads/2012/04/Private-funding-an-emerging-trend.pdf>.

Sugarman, Stephen D. 2006. "Roles of Governments in Compensating Disaster Victims," *Issues in Legal Scholarship* 1, 8 (The Berkeley Electronic Press, Manuscript 1093), [http://www.law.berkeley.edu/sugarman/Disaster\\_losses\\_ils\\_final.pdf](http://www.law.berkeley.edu/sugarman/Disaster_losses_ils_final.pdf).

TEPCO. 2014. *Records of Applications and Payouts for Indemnification of Nuclear Damage (as of 10/3/2014)*, <http://www.tepco.co.jp/en/comp/images/jisseki-e.pdf>.

*The Holy Bible: King James Version*. 2001. Iowa Falls, IA: World Bible Publishers.

Umeda, Sayuri. Law Library of Congress, Global Legal Research Center. 2013. *Japan: Legal Responses to the Great East Japan Earthquake of 2011*. <http://www.loc.gov/law/help/japan-earthquake/Great-East-Japan-Earthquake.pdf>.

U.N. Inter-Agency Secretariat of the International Strategy for Disaster Reduction and the German Committee for Disaster Reduction (UN/ISDR). 2004. *Early Warning as a Matter of Policy: the Conclusions of the Second International Conference on Early Warning, 16-18 October 2003, Bonn, Germany*. Reid Basher and Katrin Miketta, eds. Bonn: UN/ISDR, <http://www.unisdr.org/2006/ppew/info-resources/docs/EWCII-conclusions.pdf>.

U.S. Department of Justice. 2001. *Press Release: September 11 Compensation Fund Regulations Announced* (Dec. 20, 2001), at <http://www.usdoj.gov/victimcompensation/pressdec20.htm>.

Van den Bergh, Roger. 2006. "Compulsory Catastrophe Extension of First Party Property Insurance from a Competition Policy Perspective" in Michael Faure and Tom Hartlief, eds.,

*Financial Compensation for Victims of Catastrophes: a Comparative Legal Approach*. Vienna: SpringerWeinNewYork.

Vásquez-Maignan, X. 2011. “Fukushima: Liability and Compensation,” *NEA News*, <http://www.oecd-nea.org/nea-news/2011/29-2/nea-news-29-2-fukushima-e.pdf>.

von Ungern-Sternberg, Thomas. *Catastrophe Insurance: Spain vs. France*, University of Lausanne, Organization for Economic Co-operation and Development, <http://www.oecd.org/env/cc/37781875.pdf> (accessed Nov. 18, 2014).

Vandamme, “Enjeux et défis de la réassurance en France,” in *Risques, Le risque catastrophe* N34 Avril-Juin 1998.

Vienna Convention on Civil Liability for Nuclear Damage, May 21, 1963, 1672 U.N.T.S. 293 (entered into force Nov. 12, 1967).

Waxman, Henry A. 147 Cong. Rec. 130 (2001), available at [http://capitolwords.org/date/2001/10/02/E1764\\_air-transportation-safety-and-system-stabilization/](http://capitolwords.org/date/2001/10/02/E1764_air-transportation-safety-and-system-stabilization/).

Weitzdörfer, Julius. 2014. “Liability for Nuclear Damages Under Japanese Law: Key Legal Problems Arising from the Fukushima Daiichi Nuclear Accident,” in Simon Butt, Hitoshi Nasu, and Luke Nottage, eds., *Asia-Pacific Disaster Management: Comparative and Socio-legal Perspectives*. London: Springer.

World Association of Nuclear Operators (WANO). Peer Reviews: The Heart of WANO’s Many Programmes, *WANO Programmes*, <http://www.wano.info/en-gb/programmes/peerreviews> (accessed Nov. 18, 2014).

World Bank. 2014. *Financial Protection Against Natural Disasters: An Operational Framework for Disaster Risk Financing and Insurance*. Washington, D.C.: World Bank, <https://gfdrr.org/sites/gfdrr/files/publication/Financial%20Protection%20Against%20Natural%20Disasters.pdf>.

World Nuclear Association, *Cooperation in Nuclear Power*. 2014. <http://www.world-nuclear.org/info/Current-and-Future-Generation/Cooperation-in-Nuclear-Power/> (accessed Oct. 12, 2014).

Yoneyama, Hidetaka. “The Lessons of the Great Tohoku Earthquake and Its Effects on Japan’s Economy (Part 1): the Effects of the Great Earthquake on Japan’s Macro Economy.” *Fujitsu Research Institute*, <http://www.fujitsu.com/jp/group/fri/en/column/message/2011/2011-04-08.html> (accessed Nov. 18, 2014).