DISASTER PREVENTION PRESENTATION,
FROM SCJIL SYMPOSIUM 2003

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The number of natural disasters has more than tripled since the 1970s. These phenomena range from slowly evolving events such as drought to sudden occurrences such as earthquakes and volcanic eruptions. They result in substantial loss of life (over five hundred thousand people in the 1990s\(^1\)) as well as massive economic losses (US$591 billion).\(^2\) Although these events occur throughout the world in large highly industrialized countries as well as small rural ones, the greatest losses occur in the developing world because of its increased vulnerability to such events.

The development of international legal mechanisms designed to respond to these events by providing humanitarian assistance began early in the last century. The short lived League of Nations laid the ground work for rules to facilitate the provision of relief to alleviate disasters, and since its formation in 1919, the League of Red Cross Societies has worked to formulate principles and rules which codify the role of the Red Cross Societies in responding to such events. In more recent years the United Nations has played an increasingly important role in the provision of humanitarian relief and the crystallization of the international law

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\(^1\) World Disaster Report 2000, p 12.

\(^2\) A recent UNEP report, funded by some of the world’s largest banks and insurers, the UNEP Finance Initiatives Climate Change Working Group, *Climate Change and the Financial Services Industry*, concludes that losses from natural disasters appear to be doubling each decade, creating significant risks for financial institutions, *at* www.unepfi.net (last visited July 6, 2003).
institutionalizing humanitarian relief.\textsuperscript{3} The UN has become increasingly active in this area and created the Office of the Coordinator of Humanitarian Assistance (“OCHA”) to coordinate disaster responses. This office has been joined with the UN Environmental Program (“UNEP”), which has expertise in environmental disaster response, to create the Joint UNEP/OCHA. In recent years the focus has broadened to include not just disaster relief, but also efforts to prevent, prepare for and mitigate disasters. The UN also declared 1990 to 2000 the Decade on Natural Disaster Reduction\textsuperscript{4} to reflect this change in focus. These acts reflect the increasing recognition that many disasters are inextricably linked to abuse of the environment.

Natural disasters are traditionally categorized into two distinct types: those for which there is no human causation, such as volcanoes and earthquakes, and those which are at least partially attributable to human activity.\textsuperscript{5} However, human actions are not irrelevant to the former because even if human activity does not cause the event, it can vastly increase the damage. For example, the construction of a school house which is not earthquake resistant can have tragic consequences by increasing the death toll among children, much as constructing housing in a flood plain can exponentially increase the numbers injured in flooding.

The second category, a disaster brought on or exacerbated by human activities, is the primary focus of this paper. While causation of


\textsuperscript{4} For a good general explanation of the various UN institutions and their role in disaster response, see Megan M. Grew, \textit{The Joint UNEP/OCHA Environmental Unit: A Global Environmental Response Team}, 25 \textit{SUFFOLK TRANSNAT'L L. REV.} 687 (2002); Zama Coursen-Neff, \textit{Preventative Measures Pertaining to Unconventional Threats to the Peace Such as Natural and Human Disasters}, 30 \textit{N.Y.U. J.INT'L. L. & POL.} 645 (1998).
such events can sometimes be attributed to the interaction of a variety of factors, in many instances there is a direct causal link between the disaster and previous environmental degradation. The existence of this causal link, together with the widely recognized duty of states not to injure their neighbors, is the source of an increasingly well developed duty on the part of states to identify hazards generated by their actions and, at a minimum, to use that information to mitigate the risk and to warn those persons and states most likely to be affected.

The causes of man-made disasters which are linked to human activities ranging from poor forestry practices to massive emissions of air pollution have been addressed by the growing body of international environmental law which has developed over the last thirty years. These principles derived from treaties and from coalescing customary law focus on the whole range of negative impacts which can arise from poor environmental practices many of which, though serious, do not rise to the level of a “disaster.” As a result, until quite recently international humanitarian relief law and environmental law have developed separately, with very little overlap. By bringing together these two parallel areas of concern, we may be able to create better frameworks for preventing disasters, as well as for mitigating their effects through preparedness when they cannot be prevented, and providing incentives for better, more sustainable environmental initiatives. The usefulness of this synthesis between the international law of disaster response and international environmental law is highlighted by two recent examples of disastrous

consequences brought on by damage to the environment: global warming and flooding of the upper Yangtze River caused by deforestation.

Global warming or climate change (because it is unique and hence less illustrative), will receive only brief discussion, and the remainder of this analysis will focus on flooding. Climate change is the gradual warming of the earth's atmosphere resulting from greenhouse gases generated by our increasingly industrial society. As this warming occurs, it is believed to cause significant changes in the patterns of the world's weather, which in turn leads to more violent weather patterns such as typhoons and hurricanes and their consequential flooding. While the relationship between the release of greenhouse gases, global warming and changing weather patterns is generally accepted by the scientific community, causation is difficult to prove with respect to a specific event. This is particularly true because the causative agents, greenhouse gases, come from multiple sources.

Despite this difficulty, efforts are beginning to be made to attach responsibility to states that are particularly large producers of greenhouse gases. The Pacific Island nation of Tuvalu, which is being inundated as sea levels and major storms increase, has announced that it intends to sue the United States and Australia for failure to participate in the Kyoto Protocol. (This protocol is the most recent and comprehensive effort of the international community to control global warming). Such a suit would face enormous practical and legal obstacles to its success, but would serve

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7 The literature, both legal and general, on this topic is vast. Perhaps the best source is the Intergovernmental Panel on Climate Change which suggests that world temperatures will rise between 2.5 and 10.4 degrees Fahrenheit by the end of the Twenty-First century. This in turn is expected to raise sea levels as much as 2.8 percent.

to highlight the very difficult problems raised by the climate change question. For all these reasons, global warming, while a compelling example of environmental degradation, is not a good vehicle for a general discussion of international moral and legal obligations arising from environmental degradation. It is, however, a useful background for our discussion because the principles we are examining are likely to arise with respect to the issue of global warming in the future.

The second example, flooding, is less diffuse in source than global climate change and generally presents less difficulty in attributing causation. Flooding, which is often caused at least partially by land use practices, serves as a paradigm for environmental degradation which predictably results in disastrous consequences. It thus affords a good opportunity to explore ways of structuring an international legal response.

The relationship between serious flooding and environmental degradation resulting from poor land use practices is poignantly illustrated by catastrophic floods which were experienced in China in 1998. While floods have been a menacing factor along the Yangtze for the last two millennia, they have become increasingly frequent during the last

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9 Technological disasters, resulting from poor disposal of hazardous materials or from the establishment of industrial facilities which produce toxic materials as a primary product or a by-product of operations by their very nature do not fall into the category of “natural disaster.” Although a prime example of risk created by human actions these type of facilities create particularized problems which, while sharing characteristics with more traditional disasters, are conceptually and factually different from them. As a result they are generally subject to highly specific regulatory regimes, both nationally and internationally, a fact which makes them ill-suited to this discussion.

10 This flooding which encompassed the Songhua and Nen river basins and was record breaking in its volume and duration resulted in not only loss of life and property but a significant impact on the country’s food supply. Zhang Shougong, *Catastrophic Flood Disaster in 1998 and the post factum Ecological and Environmental Reconstruction in China*, in Harvard University Asia Center: Natural Disaster and Policy response in Asia: Implication for Food Security, *at* www.fas.harvard.edu/~asiactr/archive/fs_zhang2.htm. See also Heather A. Wolf, *Deforestation in Cambodia and Malaysia: The Case for an International Legal Solution*, 5 PAC. RIM L. & POL’Y J. 429, 431 - 432 (1996) for the impacts of logging and deforestation on these countries.
Causation is attributed to a variety of factors including abnormally high rainfall (arguably attributable to climate change as a result of global warming), soil erosion along the steep slopes which border the upper reaches of the river, and the ineffectiveness of flood control installations because of the silting up of flood detention areas and reservoirs. The latter two factors are a direct consequence of massive deforestation of the area, a factor which is at least partially attributable to a doubling of the population of the Yangtze basin during the last half of the twentieth century.

The Yangtze flooding is an excellent example of how poor land use practices can lead to environmental degradation which sets the stage for human-caused disasters. In this instance, the resulting damage and environmental injury both occurred within the same country, beyond the reach of traditional international law. Where a single river flows through several smaller countries, flooding in one country is often caused by logging and other land use practices upstream of the flooded country. This latter situation may be dealt with after the fact by already existing international environmental legal principles which define the obligations and liabilities of nations where actions within their borders harm persons or property in another country.

This type of flooding has many characteristics of a situation which international law has dealt with repeatedly in the trans-boundary pollution context. The legal issue is easily framed as “what obligations do upstream owners have to protect downstream owners from flooding caused by poor land use practices?” There is a well developed body of law which points the way to an answer.

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11 The Yangtze has experienced nine serious floods since 185 BC, five of which occurred during the last century. These floods were in 1153, 1788, 1860, 1870, 1931, 1935, 1954, 1996 and 1998. *Id.*
The Trail Smelter Arbitration,\(^\text{12}\) decided in 1941, is generally the starting point for discussing trans-boundary environmental injury. The Canadian government was found liable for damage to American farms by the Canadian smelter's fumes. (The generally difficult element of causation was rendered simple because the Canadian government stipulated to the fact that the smelter, located on Canadian soil, was damaging property within the United States.) Since that decision, the principle that a country has a right to use its own resources only so long as it does not harm another country\(^\text{13}\) has been reinforced by a variety of agreements and treaties such that it is generally agreed to have become a recognized element of customary international law. While this principle is clearly applicable in the flooding caused by the upriver land use situation, it is important to note that Trail Smelter and its progeny envision pollution as such rather than the passage of large quantities of water through a pre-existing river system. This is particularly true because it may be difficult to establish that a specific flood was caused by particular land use practices.

The direct applicability of this body of law to questions of disaster prevention is limited by the fact that it focuses on providing a remedy after the damage has occurred.\(^\text{14}\) In the area of disaster management, like the area of environmental protection, the primary concern is for prevention, or at least mitigation, of disasters rather than the payment of post-injury

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\(^\text{12}\) Trail Smelter Arbitration (United States v. Canada), 3 R.I.A.A. 1911 (1941).

\(^\text{13}\) This principle is often referred to as the *sic utere* principle drawn from its Latin formulation of *sic utere tuo ut alienum non laedas*.

\(^\text{14}\) But see Brian Popiel, *From Customary Law to Environmental Impact Assessment: A New Approach to Avoiding Transboundary Environmental Damage Between Canada and the United States*, 22 B.C. ENVTL. AFF. L. REV. 447, 475 - 76 (1995) for an argument that *sic utere* should be expanded to include a duty to prevent harm identified by an EIA before it occurs.
damages. This suggests that another duty which has been increasingly recognized by customary law may be helpful – the duty to warn.

As articulated by the International Court of Justice in the Corfu Channel Case,15 a state has a duty to warn another state of any potential or impending disaster. This was further articulated in the Rio Declaration in Principles 1816 and 19,17 and in the post Chernobyl development of the IAEA Convention on Early Notification of a Nuclear Accident.18

In each of these instances, the duty to warn focuses on a particular and immediate danger: land mines in a shipping Channel (Corfu Channel) and the presence of a radioactive cloud (Chernobyl). Land use practices which lead to flooding can be equally damaging but have less focused or dramatic, although no less real, impacts. It is here that the tools which have been developed to mitigate environmental degradation resulting from poor decision making become particularly useful. These tools generally fall under the term “environmental impact assessment.”

This idea, which really began with the passage of NEPA in 1968 in the United States, has seen widespread use in a number of contexts. European nations, encouraged by the passage of EU Directive 85/337, had almost universally adopted some form of EIA by the end of the 1980's and currently more than one hundred and twenty countries have adopted EIA policies, laws or regulations.19 EIA has also been adopted by the World Bank as a tool to be applied to any bank-financed or -implemented project

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16 States are required to “immediately notify other States of any natural disasters or other emergencies which are likely to produce sudden harmful effects on the environment of those States.”
17 States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.”
which could result in an adverse environmental impact. 20 This usage is so widespread that there is a good argument that is has moved from simply good practice to a customary norm for decisions which have potentially widespread impact on the environment. 21

This argument was further bolstered by a recent decision by the International Court of Justice resolving a controversy between Hungary and Slovakia over the construction of a dam over the Danube River (the Gabcikovo-Nagymaros Project), which forms a border between the two countries. Although the case was ultimately resolved by interpretation of a 1977 treaty between the parties, a concurring opinion by Justice Weeramantry thoughtfully examined the role of EIA in such projects, stating that environmental law... would read into treaties which may reasonably be considered to have significant impact upon the environment, a duty of environmental impact assessment and this means also, whether the treaty expressly so provides or not, a duty of monitoring the environmental impact of any substantial project during the operation of the scheme.22

This articulates and supports the proposition that EIA has become a matter of customary law distinct from specific treaty or other obligations.

20 OP 4.01/ BP4.01/ GP 4.01. This is often performed in coordination with similar assessments of economic and social impacts. Id. 
These two aspects of customary law – the duty to prepare an environmental impact assessment before undertaking (or allowing) actions which can have a substantial impact on the environment and the duty to warn – have come together in a series of treaties recognizing a duty to prepare an EIA for any land use action that may cause environmental degradation which can reasonably be expected to result in disaster in another country. These treaties also recognize a duty to provide this EIA to the country at risk.

The most important of these is the ESPOO Convention,\textsuperscript{23} which was signed in 1991 and entered into force in 1997. The convention requires that parties assess the trans-boundary effects of actions listed in an appendix to the Convention, then notify potentially affected states of these effects as well as consulting with them on the matter. In addition, citizens of the affected states must be allowed to participate in the initial decision-making process.

The importance of access to environmental information was further refined in the European context by the Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters,\textsuperscript{24} signed by thirty-nine states and the European Community in Aarhus, Denmark in 1998. The Aarhus Convention, generated under the auspices of the United Nations Economic Commission for Europe, follows substantially the structure of the European Community in it requirements and provisions.\textsuperscript{25} In particular, it


\textsuperscript{25} See generally Maria Gavouneli, Access to Environmental Information: Delimitation of a Right, 13 TUL. ENVT'L. L.J. 303 (2000), for a discussion of the status of these principles in a European context.
provides that in the face of any imminent threat to human health or to the environment, whether arising from human activity or natural causes, all information held by public authorities which could enable the public to prevent or mitigate the harm should be disseminated immediately. 26 This general pattern is being followed in several other international instruments which are currently in development.

The international movement for EIA has been facilitated by the development of a body of professionals trained in assessing risks posed by various types of governmental actions. This capacity-building has occurred in the developing world as well as in the more industrialized countries. The process has been greatly enhanced by the technology of the Internet, 27 which allows impact assessors to tap into the knowledge which has been developed in other parts of the world.

While the development of EIA is often viewed as a positive goal in and of itself, it in fact has significant flaws as a mechanism to prevent environmental harm that causes disasters. First, in many instances there is a profound disconnect between the type of assessment which is contemplated by the policies and laws and its actual implementation on the ground. This is particularly true in developing countries, which often lack the resources for comprehensive analysis, but it can be a problem in the industrialized world as well. 28


27 For example the home page of the International Association of impact assessors (IAIA) contains an extensive index of internet sites with information on topics ranging from training courses to predictive models and case studies.

Second, the treaties establishing trans-boundary impact assessment, like their municipal predecessors, create only procedural duties. Once the originating state has analyzed the potential effects, notified the potentially injured state and consulted with them, it has no substantive duty to forgo the project or even to modify it to prevent injury, including disasters. (Clearly the EIA may provide information to support a suit for damages like that in the Trail Smelter Arbitration, such that it creates a financial disincentive to action).

Third, often, as in the case of deforestation caused by population pressures in the upper reaches of the Yangtze, the environmental degradation which causes the flooding is the result not of a particular project but of failing to plan or regulate to prevent the problem. This is the sort of problem that EIA as traditionally practiced is not well adapted to deal with. Efforts are currently being made by the EIA community to deal with this weakness of the mechanism. These efforts, often called programmatic EIAs in the US context, are designed to shift the focus away from the individual discrete project to the larger picture. At the international level, this effort has received attention under the label Strategic Environmental Assessment (SEA). This concept applies the principles of EIA not only to decisions on specific projects, but to decisions at the program and policy level. This idea, which was developed over a number of years by EIA professionals, received official approval with the development of the Protocol on Strategic Environmental Assessment, which was available for adoption in May 2003. Under

30 The Draft Protocol, prepared by the Ad Hoc Working Group on the Protocol on Strategic Environmental Assessment was available for signature at the extraordinary meeting of the Parties to the EIA Convention during the Ministerial “Environment for Europe Conference held in May 2003 in Kiev, Ukraine. Thirty Five countries signed the
Article 4 of this Protocol, the parties agree to prepare an SEA for plans and programs for everything from agriculture to mining to land use planning, and under Article 10, before adopting the plan, to notify any other country likely to be affected. If fully implemented, this would be a very valuable tool in preventing and mitigating trans-boundary disasters caused by environmental degradation.

Taken together, the international duties to perform environmental impact assessments, to include other potentially affected states in the process, and ultimately to warn other nations of potential disasters has laid the groundwork for the development of effective mechanisms for states to fulfill their duties to the citizens of neighboring countries. The more difficult question arises when the causative environmental degradation occurs not in a neighboring country, but within the same country. International law generally has very little reach within a sovereign nation. The only exception has been the development of treaty based and customary law in the area of human rights.

In recent years there have been a general movement by the international community in the direction of recognizing and delineating the legal obligation of states in connection with natural disasters. Over twenty years ago J. W. Samuels wrote:

It is suggested that general responsibility concerning natural disasters falls within the realm of the international law of human rights. In particular, states bear obligations to prevent and mitigate natural disasters as part of the responsibility issuing from Article 11 of the International Covenant on Economic, Social and Cultural Rights. The agreed right of all persons to an adequate standard of living, including adequate food, clothing and housing, ...and the consequent obligation of states to take protocol which is open to all member countries of the United Nations, at
appropriate steps to ensure the realization of this right, ought to translate into a three-fold responsibility: ....A state's legal obligation to prepare for disaster relief within its own territory and to take preventive measures in order to minimize the suffering resulting from natural disasters. (Emphasis added)\(^\text{31}\)

In this passage, Samuels is drawing from a body of law which has developed steadily in the post World War II period. It is embodied in The Charter of the United Nations,\(^\text{32}\) which binds all members of that body and requires “respect for, and observation of, human rights and fundamental freedoms.”\(^\text{33}\) Soon after the adoption of the Charter, the UN sought to further articulate its scope in the Universal Declaration of Human Rights.\(^\text{34}\) During the last decade, particularly in the wake of the Rio Conference of 1992, there has been significant movement toward recognition of a human right to a healthy environment both as a component of the right to life and as an independent principle of customary law.\(^\text{35}\) While the scope and applications of this right remain controversial, like much of the law of human rights, it seems clear that it is coalescing into a norm of customary international law. This, in turn, reinforces the similar developments in disaster response law, to require at least minimal prevention by limiting environmental degradation which has


\(^{33}\) Id. art. 55(c).


potentially disastrous effects. Thus, the right not to be subjected to the devastating events like major flooding with its potential immediate loss of life and long term health effects, not to mention loss of property and means of livelihood, is arguably a core human right worthy of protection.\textsuperscript{36}

As always, recognizing a right is relatively easy; it is enforcing and preserving the right which proves more problematic. Nevertheless, some of the same principles which apply in the trans-boundary context are also relevant here. At minimum, customary law should be held to include a duty to prepare an environmental assessment before engaging in or allowing any action or practice that can lead to a disaster. While this is essentially a procedural right, as it is in the United States, it can have the effect of discouraging poor decisions as well as potentially providing the basis for a case before international human rights tribunals. In addition, if the primary actor is another country, as is increasingly likely in this age of globalization, it may provide the basis for human right suits in municipal courts such as those in the United States.\textsuperscript{37}

The World Disaster Report 2000 concludes that there is substantial need to develop a body of international disaster relief law which deals not only with response, but with mitigation and prevention “ranging from construction codes and environmental planning to early warning

\textsuperscript{36} World Disasters Report 2000 at 151 after citing Article 3 of the Universal Declaration of Human Rights and Article 6 of the International Covenant on Civil and Political Rights, suggests that “Official indifference corruption or calculated neglect in the wake of natural or technological disaster may well constitute a de facto death sentence...”, in violation of human rights. The same reasoning applies in equal force to taking reasonable steps to identify and avoid environmental degradation which causes the disaster in the first instance.

\textsuperscript{37} The Alien Tort Claims Act, 28 U.S.C. 1350 (1994), provides that federal courts can hear civil suits by aliens for torts which violate customary international law, even where the tort in question was committed in another country by a non-citizen of the US.
This law should be applicable in both domestic and trans-boundary contexts. Any proposal arising out of this conference should include the suggestion of a duty to prepare and EIA setting forth the disasters which can flow from environmental degradation and recognizing a duty to notify affected countries by providing them with that EIA. It should also support the proposition that basic human rights include the right to be free from flooding and other disasters which result from environmental degradation.