WARTIME ENVIRONMENTAL DAMAGES: FINANCING THE CLEANUP

MEREDITH DUBARRY HUSTON*

"If trees could speak they would cry out, that since they are not the cause of war, it is wrong for them to bear its penalties."
—Hugo Grotius, De Jure Belle Ac Pacis, 1625

1. INTRODUCTION

Despite laws designed to prohibit or deter the environmental damages that result from belligerent conduct, in reality, they are an inevitable consequence of war. Such damages have occasionally been the result of deliberate military strategy. But more often, the environmental damages wrought by war are unintentional. Where prevention has failed, ex post remedies have been developed to deal with economic compensation for and remediation of the environmental effects of combat. The United Nations Compensation Commission’s (“UNCC”) response to the environmental damages caused by the Iraqi invasion of Kuwait represents a significant advance towards ensuring compensation for environmental damages by responsible parties, yet it falls short of a perfect solution, particularly in light of some of the most recent environmental consequences of belligerent conduct: the attack on the World Trade Center and the subsequent dispersal of anthrax through the mail. An alternative fund dedicated specifically to environmental damages may better address their unique attributes, although its suc-

* J.D. Candidate, 2003, University of Pennsylvania Law School; B.A., Middlebury College (Environmental Studies), 1997. I would like to thank my parents, for their infinite support, and Scott, for his unending patience. This Comment is dedicated to the memory of Elizabeth Gardner DuBarry, who helped to make it possible.

cess also faces some challenges, including establishing a source of financing.

To understand the need for ex post remedies, it is first necessary to understand how well existing law forestalls the need to exercise them. Section 2 of this Comment discusses four important provisions prohibiting environmentally destructive belligerent conduct. Section 3 examines one option available when preventive measures fail, specifically examining the environmental consequences of the Persian Gulf War and the ensuing United Nations effort to procure and distribute compensation for the devastation caused by Iraq's deliberate spillage of oil and burning of oil wells. This Section analyzes the structure and function of the UNCC, its specific efforts to deal with environmental claims, and its endeavor to gather funds from Iraq, and asks whether the UNCC can serve as a model for compensation for environmental damages in other combat contexts. Section 4 considers the environmental consequences of and potential economic liability for the cleanup from the September 11 attack on the World Trade Center and the dissemination of anthrax through the U.S. Postal Service. Section 5 examines the viability of a separate international fund for environmental damages as an answer to the issues of liquidity and prioritization that plague current remedies for environmentally harmful belligerent conduct. Such a fund might be financed through voluntary contributions, a system of taxes, or permit fees.

This Comment concludes, in Section 6, that as long as parties engage in conflict, the environmental consequences of belligerent conduct cannot be ignored. In light of the changed nature of warfare after September 11, where state governments may not be the only parties responsible for launching significant attacks, it is more important than ever that alternative financing schemes for ex post remedies be explored.

2. Rules of Law: Restrictions on the Conduct of Belligerents

Before looking at how combat-related environmental damages are compensated, it is important to see what types of conduct are prohibited under current rules of law. As outlined below, the existing limitations on belligerent conduct do not enjoin all actions that may negatively impact the environment. For many environmental injuries, there will be no remedies available at all.
2.1. Early Efforts: The Hague Conventions and Geneva Law

Early efforts to codify the laws of war were made at the Hague Peace Conferences in 1899 and 1907. Because the Hague Conventions are considered to be customary law today, they are binding on states that were not originally formal parties to the agreements. The 1899 Hague Convention Number II and its annexed regulations, addressing the customs and laws of war on land, were "the first successful effort to codify existing customary laws of war." Convened in 1907, the Second Hague Peace Conference slightly amended and replaced the 1899 Hague Convention Number II with Convention IV. The regulations of the Hague Conventions, reflecting a balance between the principles of proportionality and military necessity, provide limited environmental protection from warfare by protecting property.

Article 22 of the 1907 Hague Regulations sets forth the principle underlying all laws of war: "[T]he right of belligerents to adopt means of injuring the enemy is not unlimited." This concept of

2 In 1946, the Nuremberg International Military Tribunal noted that "by 1939 these rules . . . were recognized by all civilized nations and were regarded as being declaratory of the laws and customs of war." THE LAWS OF ARMED CONFLICTS 57 (Dietrich Schindler & Jiří Toman eds., 2d ed. 1981) (citation omitted) [hereinafter ARMED CONFLICTS].


5 Proportionality "is perhaps best characterized as the principle of customary international law that prohibits injury or damage disproportionate to the military advantage sought by an action." Michael N. Schmitt, Green War: An Assessment of the Environmental Law of International Armed Conflict, 22 YALE J. INT'L L. 1, 55 (1997) [hereinafter Green War].

6 "Military necessity prohibits destructive or harmful acts that are unnecessary to secure a military advantage . . . . [T]he act must be neither wanton nor of marginal military value, and military motivations must underlie it." Id. at 52.

7 See Regulations Respecting the Laws and Customs of War on Land, annex to Hague Convention No. IV Respecting the Laws and Customs of War on Land, Oct. 18, 1907, 36 Stat. 2277, 75 U.N.T.S. 287 [hereinafter 1907 Hague Regulations] (stating that "private property cannot be confiscated" and "the property of municipalities . . . shall be treated as private property. All seizure of, destruction, or wilful damage done to institutions of this character . . . is forbidden, and should be made the subject of legal proceedings.").

8 Id. art. 22.
"limits" provides protection for the environment. Article 55 of the regulations provides that "[t]he occupying state shall be regarded only as administrator and usufructuary\textsuperscript{9} of public buildings, real estate, forests, and agricultural estates belonging to the hostile State, and situated in the occupied country. It must safeguard the capital of these properties in accordance with the rules of usufruct."\textsuperscript{10} Under this principle, the occupying power may not permanently alter or destroy enemy territory and "may not act irresponsibly or maliciously in" using the natural resources found therein.\textsuperscript{11} Article 23(g) provides another source of limits on environmentally harmful behavior, although it is directed specifically at property rather than at natural resources: "it is especially forbidden . . . [t]o destroy or seize the enemy's property, unless such destruction or seizure be imperatively demanded by the necessities of war."\textsuperscript{12} But the exercise of limits on environmental destruction is not absolute. Destruction may be permissible if armed conflict occurs within occupied territory and military necessity so requires.\textsuperscript{13} The use of military necessity as a test to establish permissible methods of warfare raises questions about the effectiveness of the regulations' environmental protection, as military necessity itself is a possible exculpatory defense for environmental destruction during war.\textsuperscript{14}

A penalty for parties violating the regulations, absent from the 1899 Convention, was added to the 1907 Hague Convention Number IV in Article 3: "A belligerent party which violates the provi-
sions of the said Regulations shall, if the case demands, be liable to pay compensation. It shall be responsible for all acts committed by persons forming part of its armed forces.”

However, as the convention does not provide a mechanism for enforcing these civil penalties and it does not provide for criminal sanctions, the civil liability measure is of limited effectiveness.

Rules concerning the protection of war victims developed as a part of the Geneva Law beginning with the Geneva Convention I of 1864. The Fourth Geneva Convention of 1949 includes several provisions that provide protection for the environment through protection of property. Article 33’s prohibition of pillage and “[r]eprisals against protected persons and their property” provides one example. Article 53 outlaws “[a]ny destruction by the Occupying Power of... property belonging... to the State or to other public authorities... except where such destruction is rendered absolutely necessary by military operations.” Article 147 defines the “extensive destruction and appropriation of property, not justified by military necessity and carried out unlawfully and wantonly” as one of several “grave breaches” of the Convention. Articles 146 and 148 establish criminal and civil liability for grave breaches of the Convention. Again, military necessity provides a defense for destructive conduct. Situations are rare, if ever, where necessity does not excuse this conduct.

---


16 See Sharp, supra note 3, at 12 (“[T]his convention does not address individual criminal liability for a violation of its regulations...”).


18 Geneva Convention Relative to the Protection of Civilian Persons in Time of War, Aug. 12, 1949, 6 U.S.T. 3516, 75 U.N.T.S. 287 [hereinafter Geneva Convention IV]. This Convention was commonly known as the “Civilians’ Convention.” Id.

19 Id. art. 33.

20 Id. art. 53.

21 Id. art. 147.

22 Id. arts. 146, 148. See also Sharp, supra note 3, at 17 (“[A]rticle 148 acknowledges civil liability of the state for grave breaches of the Convention.”).
A key question about the protection from wartime environmental damages provided by the 1907 Hague Convention IV and Geneva Convention IV pertains to "the extent to which the term 'property' can be interpreted to encompass public goods (not necessarily under specific ownership) such as common land, forests, the atmosphere, water resources, and the open seas." If property is construed broadly, the conventions may constitute powerful protection for the environment from wartime environmental damages. A narrower definition of property, however, may limit their utility as environmental protection measures.

2.2. Modern Efforts: Protocol I and ENMOD

Most military treaties, like the 1907 Hague Convention IV and Geneva Convention IV, provide indirect environmental protection through measures safeguarding property and human welfare. By contrast, Protocol I of the 1977 Protocols Additional to the Geneva Conventions of 1949 ("Protocol I") 24 and the Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques ("ENMOD") 25 directly address protection of the environment. 26 Spurred by international objection to the environmental impact of the U.S. military's techniques during the Vietnam War, including the use of defoliating herbicides, incendiary weapons and rainmaking techniques, Protocol I and ENMOD reflect a growing international consciousness of environmental values. 27

Articles 35(3) and 55 of Protocol I "prohibit wartime damage even when the environment is a military objective or when the military objective outweighs the damage to the environment." 28

23 Adam Roberts, The Law of War and Environmental Damage, in The ENVIRONMENTAL CONSEQUENCES OF WAR, supra note 11, at 47, 57.


27 See id. at 149-52 (describing the impetus behind Protocol I).

28 Simonds, supra note 4, at 173.
Article 35(3) states: "It is prohibited to employ methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment." The International Committee of the Red Cross Commentary on Protocol I establishes a clearer definition for the term "environment" than exists for "property" under the 1907 Hague Convention IV or Geneva Convention IV, explaining that "[t]he concept of the natural environment should be understood in the widest sense to cover the biological environment in which a population is living." Article 55 parallels Article 35(3)'s protection from widespread, long-term, and severe damage, and adds, "This protection includes a prohibition of the use of methods or means of warfare which are intended or may be expected to cause such damage to the natural environment and thereby to prejudice the health or survival of the population." Unlike Article 35(3), this article requires environmental protection, not for its own sake, but because it serves to protect the population. Military necessity does not provide a defense for environmental destruction under either article.

If parties are found to have violated the terms of Protocol I, Article 91 provides for civil liability: "A party to the conflict which violates the provisions of the Conventions or of this Protocol shall, if the case demands, be liable to pay compensation." It is unlikely, however, that parties will ever have to pay under this provision. Although Protocol I directly requires consideration of the environmental consequences of combat, its effectiveness is unclear for several reasons. First, while the omission of military necessity exemptions for Articles 35(3) and 55 of Protocol I strengthens the environmental protection provided, the refusal of several major powers to ratify the treaty in the absence of such an exception has left Protocol I with little meaningful legal force.

---

29 Protocol I, supra note 24, art. 35(3).
31 Protocol I, supra note 24, art. 55.
32 Id. art. 91.
33 The United States, United Kingdom and former Soviet Union, among others, are signatories to Protocol I but have not ratified it. Seeming to disregard the
although the term "environment" is clearly defined, the terms "severe," "long-term," and "widespread" leave room for a range of interpretations. For example, for the ENMOD Convention, discussed below, "the term 'long-lasting' was defined as lasting for a period of months or approximately a season, while for the Protocol 'long-term' was interpreted as a matter of decades." Because of this vagueness, combatants may be able to interpret the provisions in a manner most favorable to their actions. Finally, a group of critics has argued that the articles "will not impose any significant limitation on combatants waging conventional warfare. It . . . would [only] affect such unconventional means of warfare as the massive use of herbicides or chemical agents which could produce widespread, long-term and severe damage to the natural environment." While protection from unconventional warfare is an important step in preventing environmental injury from combat, further measures may be needed to solve the problems caused by conventional combat if the critics are correct.

ENMOD, the first treaty to address the environmental impacts of combat as a distinct concern, represented a significant advance in the environmental law of war. Article I of ENMOD requires parties "not to engage in military or any other hostile use of environmental modification techniques having widespread, long-lasting or severe effects as the means of destruction, damage or in-

potential environmental impact of nuclear weapons, the United States declared on signature "the rules established by this protocol were not intended to have any effect on and do not regulate or prohibit the use of nuclear weapons." ARMED CONFLICTS, supra note 2, at 631-32.

34 See Christopher D. Stone, The Environment in Wartime: An Overview, in THE ENVIRONMENTAL CONSEQUENCES OF WAR, supra note 11, at 16, 21 ("[G]iven the vagueness of the terms—how 'severe'? how 'widespread'?—the import of this article is unclear."). See also Simonds, supra note 4, at 173-74 (discussing the negotiation history of the ambiguous terms in Articles 35(3) and 55).

35 COMMENTARY, supra note 30, para. 1452.


37 See Richard Falk, The Environmental Law of War, in ENVIRONMENTAL PROTECTION AND THE LAW OF WAR 78, 90-91 (Glen Plant ed., 1992) [hereinafter ENVIRONMENTAL PROTECTION] ("ENMOD is an important step forward. It addresses the problem of environmental harm in war as a distinct concern for the first time. It prohibits a wide range of potential techniques and may indirectly discourage research and development of the technologies and skills supportive of environmental modification capabilities.").
jury to any other State Party." Environmental modification techniques are defined as "any technique for changing—through the deliberate manipulation of natural processes—the dynamics, composition or structure of the earth, including its biota, lithosphere, hydrosphere and atmosphere, or of outer space." The term "environment" is viewed even more broadly under ENMOD than under Protocol I.

However, ENMOD is not without drawbacks. The treaty also fails to cover damages caused by conventional combat techniques. Environmental protection conferred by ENMOD is "limited to the manipulation of such forces as earthquakes, tidal waves, ocean currents, the ozone layer and climate." Most environmental consequences of war will not result from such deliberate manipulation of natural processes. Also, as with Protocol I, the definitions of "widespread," "long-lasting," and "severe" remain open to interpretation and allow implicated parties to interpret the treaty in the light most favorable to them. While Understanding I of the Conference of the Committee on Disarmament outlined more specific definitions for these terms, many ENMOD signatories opposed the proposal, eliminating the possibility of clarity. ENMOD is likewise restrained by its enforcement regime as its "scope is limited to damage caused by parties" and it provides no specific remedy.

---

38 ENMOD, supra note 25, art. 1.
39 Id. art. 2.
40 Glen Plant, Introduction, in ENVIRONMENTAL PROTECTION, supra note 37, at 3, 23.
41 It should be noted that the UN Conference of the Committee on Disarmament (CCD), the drafters of ENMOD, considered the criteria of widespread, long-lasting, and severe to be alternative rather than cumulative criteria (using the word "or" rather than "and" in the document). The analogue terms in Protocol I are generally interpreted as cumulative, thus creating a higher threshold of acceptable environmental harm. Glen Plant, Environmental Damage and the Laws of War: Points Addressed to Military Lawyers, in EFFECTING COMPLIANCE 159, 168 (Hazel Fox & Michael A. Meyer eds., 1993).
42 See Aaron Schwabach, Environmental Damage Resulting from the NATO Military Action Against Yugoslavia, 25 COLUM. J. ENVTL. L. 117, 129 (2000) ("Thus, Understanding I does not represent a consensus even among the signatories as to the meaning of those terms." (citing Florencio J. Yuzon, Deliberate Environmental Modification Through the Use of Chemical and Biological Weapons: "Greening" the International Laws of Armed Conflict to Establish an Environmentally Protective Regime, 11 AM. U. J. INT'L L. & POL'y 793, 807 (1996))).
other than referral to the United Nations Security Council for "enforcement action."\textsuperscript{43}

2.3. Summary

This examination of the existing rules of law and their effect on wartime environmental protection reveals several deficiencies. Without a complete ban on environmentally harmful activities, enforcement is hampered by the difficulty of establishing that the environmental injuries resulted from "hostile intent."\textsuperscript{44} The subjectivity of such determinations, directed by vague guidelines like "widespread . . . effects" also impedes preservation of the wartime environment.\textsuperscript{45} Only Protocol I and ENMOD impose an absolute ban on environmentally destructive action, regardless of military necessity. However, even these provisions are subject to exceptions (e.g., if damage is not considered long-term, it will be excused). A lack of synergy and coherence between existing provisions has created a series of prohibitions riddled with loopholes. The absence of effective punishments for environmentally destructive conduct reinforces the ineffectiveness of the current system as a deterrent for environmental harm through combat.\textsuperscript{46}

3. WHEN PREVENTION FAILS: EX POST REMEDIES

Restrictions on the use of specific weapons and tactics that negatively impact the environment only provide part of the strategy for dealing with the environmental consequences of war. While it is preferable to prevent all damage to the environment during combat, it may not always be possible to direct the attention of military commanders toward environmental protection and

\textsuperscript{43} \textit{Green War}, supra note 5, at 85. As Schmitt notes, "[T]he Security Council already is empowered under the Charter to take appropriate actions in response to most potential breaches of ENMOD; the Convention's enforcement provisions add little new power." \textit{Id.}

\textsuperscript{44} A.P.V. ROGERS, LAW ON THE BATTLEFIELD 111 (1996) (citing J. Goldblat, The ENMOD Convention: A Critical Review, 2 HUMANITÄRES VÖLKERRECHT INFORMATIONSSCHRIFTEN 83 (1993)).

\textsuperscript{45} Falk, supra note 37, at 92-94. "As matters now stand, the existing legal framework relevant to wartime environmental harm is gravely compromised by the extent of its subjectivity." \textit{Id.} at 93.

\textsuperscript{46} See \textit{id.} at 92-94 (examining "the main deficiencies of the international law of war when it comes to environmental protection in war and in relation to military activities"). \textit{See also Green War}, supra note 5, at 95-96 (discussing the shortfalls of the present environmental law of international armed conflict).
away from military objectives during the course of hostilities. Ex post remedies are necessary to deal with situations where military necessity appears to override environmental protection. When weighing the military necessity of action that will affect the environment, an effective system of prospective future damages or punishment may tip the balance in favor of environmental protection. If, considering future damages, the balance still tips in favor of military action and environmental destruction is not averted, ex post remedies can facilitate the post-conflict recovery of the affected area by providing funds for cleanup or other assistance.47 The undertakings of the UNCC following the Persian Gulf War provide a good example of how ex post remedies can be used to deal with the environmental impact of war.

3.1. Oil Spill and Oil Fires: Environmental Consequences of the Kuwaiti Oil Catastrophe

Two days after the beginning of the 1990 Persian Gulf War bombing campaign on Iraq, the Iraqis opened the flow of oil into the Persian Gulf.48 By the end of the war, 600 miles of sea surface were covered by an oil slick containing somewhere between four and six million barrels of oil and 300 miles of coastline were contaminated by the deliberate spill.49 Iraq then set fire to or otherwise damaged between 500 and 80050 producing Kuwaiti oil wells. During May and June of 1990, “4.5 million barrels of oil per day were lost to the fires.”51

Despite the allied forces’ rapid response to Iraq’s actions,52 Kuwait’s flora and fauna, air, soil, and water suffered devastating effects:

48 Green War, supra note 5, at 17-18 (citing Peter Ford, Vital Saudi Water Plant Prepares for Oil Slick, CHRISTIAN SCI. MONITOR, Feb. 1, 1991, at 1). Schmitt notes that some of the oil spilled into the Gulf during the conflict came from Coalition bombing, but that these releases were “dwarfed by those of the Iraqis.” Id. at 17-18.
49 Sharp, supra note 3, at 41.
50 Different sources cite varying numbers of total wells destroyed. See, e.g., Green War, supra note 5, at 18 (“By the end of the hostilities, the Iraqis had damaged or destroyed 590 oil well heads.”); Sharp, supra note 3, at 45 (“A total of 732 producing oil wells in Kuwait were set on fire or damaged.”).
51 Green War, supra note 5, at 19.
52 Following Iraq’s initial release of oil, the “U.S. Department of Defense immediately established an oil spill task force.” U.S. air strikes halted the supply of
Air quality was severely impaired over the short term by the plumes of smoke, which stretched at one point for over 100 kilometers. The soils in and around the oil lakes were contaminated to varying extents, and soil farther away was covered by combusted and partially combusted oil particulates spread by the smoke plumes. Leachates from these oil-contaminated soils have entered the groundwater. Numerous birds and animals were either killed in the fires, or drowned in the oil lakes. In addition to the fires, Kuwait’s fragile desert ecosystems and vital urban infrastructure were adversely impacted by the movement of vehicles, digging of trenches, aerial bombardment, and placement of thousands of landmines.

The marine environment of the Persian Gulf and Arabian Sea were similarly devastated by the enormous oil spill and by fallout from the oil fires.

3.2. Resolution 687: The United Nations Compensation Commission

As neither the release of oil into the Gulf nor the torching of the oil wells afforded Iraq a significant military advantage, Iraq’s conduct could not be excused under the customary principle of military necessity. After the conflict, Iraq argued that “the oil wells had been damaged as a result of allied bombing by coalition forces or, alternatively, by explosives planted on the oil wells by Iraq’s enemies ‘in order to incriminate Iraq.’” Despite these assertions,

---

54 See Mahmood Y. Abdulraheem, War-Related Damage to the Marine Environment in the ROPME Sea Area, in THE ENVIRONMENTAL CONSEQUENCES OF WAR, supra note 11, at 338, 345 (discussing the environmental damage to the Persian Gulf from the 1990-91 Gulf War, including the distribution of oil and oil-burn products in the marine environment).
55 “Iraq’s actions were militarily disproportionate, wantonly destructive of civilian assets, and had unnecessarily destroyed property.” Sharp, supra note 3, at 44-46 (quoting SENATE COMM. ON ENVIRONMENT AND PUBLIC WORKS—GULF POLLUTION TASK FORCE, EXECUTIVE SUMMARY AND RECOMMENDATIONS, THE ENVIRONMENTAL AFTERMATH OF THE GULF WAR 5 (1992)).
Security Council Resolution 687 established Iraq’s liability “under international law for any direct loss, damage, including environmental damage and the depletion of natural resources, or injury to foreign Governments, nationals, and corporations, as a result of Iraq’s unlawful invasion and occupation of Kuwait.” Resolution 687 also established a fund to compensate parties injured by Iraq during the Gulf War. Resolution 692 established the UNCC to administer payments from the fund for claims arising under Resolution 687.

As a subsidiary of the U.N. Security Council, the UNCC can perform any function the Security Council has authority to perform itself. Some, including Iraq, argue that the quasi-judicial functions of the UNCC go beyond its legitimate powers. Iraq complained, “[T]he Council has exceeded its mandate.... It is not a judicial body consisting of independent, impartial judges competent to rule on compensation for those entitled to it in any conflict.” Cuba argued that the claims should be heard by the International Court of Justice, as the U.N. Charter only refers to compensation or restitution in the context of that body. However, the U.N. Charter does not limit the decision of legal questions to the International Court of Justice and these objections ultimately failed. The UNCC is seen as “an essentially administrative mass claims system” rather than as a judicial body.


58 See id. para. 18 (establishing the fund and a Commission to administer it).


60 “U.N. Charter article 29 provides that the Security Council may create ‘such subsidiary organs as it deems necessary for the performance of its functions.’” Luan Low & David Hodgkinson, Compensation for Wartime Environmental Damage: Challenges to International Law After the Gulf War, 35 VA. J. INT’L L. 405, 468 n.430 (1995).


62 Low, supra note 60, at 470 n.439 (citing Hearings, supra note 61, at 58) (speech of Mr. Alarcon de Quesada of Cuba).

63 See Low, supra note 60, at 471-72 (noting that “the adjudication of claims is not outside the power of the Security Council simply because it is a judicial function”).

64 Christopher Greenwood, State Responsibility and Civil Liability for Environmental Damage Caused by Military Operations, in 69 INTERNATIONAL LAW STUDIES:
3.3. F4 Claims

There are six categories of UNCC claims: four categories that cover individual claims (A-D), one covering corporate claims (E), and one for claims by governments and international organizations (F). Many of the individual and corporate claims implicate the environmental impact of Iraq's actions. For example, "monies were awarded for a claim by a corporation for the costs of repainting a small facility in Saudi Arabia, near the Kuwaiti border, that had been covered with oily smoke from the Gulf War Oil Fires." However, specific environmental claims fall into the F category, the lowest priority category of claims.

By the February 1, 1997 filing deadline for F claims, the UNCC received approximately 300 category F claims, forty-seven of which were F4 claims for damage to the environment. F4 Claims cover expenses or losses arising from:

(a) Abatement and prevention of environmental damage, including expenses directly relating to fighting oil fires and stemming the flow of oil in coastal and international waters; (b) Reasonable measures already taken to clean and restore the environment or future measures which can be documented as reasonably necessary to clean and restore the environment; (c) Reasonable monitoring and assessment of the environmental damage for the purposes of

PROTECTION OF THE ENVIRONMENT DURING ARMED CONFLICT 397, 405 (Richard J. Grunawalt et al., eds.) (1996) (citation omitted).


See United Nations Compensation Commission, Category "F" Claims [hereinafter "F" Claims] ("F4' claims are claims for damage to the environment."), at http://www.unog.ch/uncc/claims/f_claims.htm (last visited Nov. 11, 2002).

Id. Although the deadline for filing F claims was in 1997, and the UNCC expects to process all claims by 2003, parties may suffer from impacts, particularly environmental health impacts, that may not manifest themselves for years. Because of the time frame established for the commission, Iraq receives a windfall of sorts as it escapes compensating these parties for their injuries.
evaluating and abating the harm and restoring the environment; (d) Reasonable monitoring of public health and performing medical screenings for the purposes of investigation and combating increased health risks as a result of environmental damage; and (e) Depletion of or damage to natural resources.69

F4 claims generally fall into two groups. The first group of thirty claims, seeking $40 billion in compensation, is for environmental damage and depletion of natural resources in the Persian Gulf area.70 The second group of seventeen F4 claims seeks $23 million for costs incurred by governments in providing assistance to countries that suffered the direct consequences of Iraq’s actions.71

The first panel of commissioners to review F4 claims was appointed in December 1988, and their report and recommendation on F4 claims was issued on June 22, 2001.72 It is significant that a full ten years passed between the issuance of Resolution 687 and the first award of environmental damages. The low priority of F4 claims has frustrated the deterrent effect of the UNCC liability provisions for environmentally damaging behavior, particularly as it may inhibit successful collection of damages where there is a limited cash flow.73

F4 claims are notably challenging to administer because of the difficulty of establishing that the alleged depletion of natural resources and environmental damage resulted from Iraqi actions and

---


70 “F” CLAIMS, supra note 67.

71 Id.


73 See Tiffani Y. Lee, Note, Environmental Liability Provisions Under the U.N. Compensation Commission: Remarkable Achievement with Room for Improved Deterrence, 11 GEO. INT’L ENVTL. L. REV. 209, 216 (1998) (“It is arguable that this delay [of seven to eight years before the F claims were first addressed] has diminished somewhat the full deterrent effect of the environmental liability provisions under the UNCC.”). See also discussion regarding compensation and cash flow infra Section 3.4.
not other forces. Valuation of environmental damages creates another challenge for the panel. Most F4 claims are for compensation for the actual and expected costs associated with remediation, assessment, and monitoring, claims to which market values are readily assigned. However, as the panel moves forward to evaluate substantive F4 claims, assigning values to alleged "depletion of or damage to natural resources" might prove more complicated. As there may be no readily assigned market values for impaired desert ecosystems or other environmental damages, the Panel will confront a range of valuation techniques that may provide a range of answers. The "monetary valuation of natural resources (or environmental commodities) remains in a state of flux" and the UNCC is unlikely to find easy answers to any valuation questions that may arise.

The F4 panel's first round of review focused on claims for "monitoring and assessment of environmental damage, depletion of natural resources, monitoring of public health, and performing medical screenings for the purposes of investigation and combating increased health risks." Saudi Arabia, Iran, Jordan, Kuwait,

74 First Instalment, supra note 72, para. 33.

Environmental goods are not like fungible manufactured goods, such as automobiles and buildings, which are regularly traded and for which there usually exist market price data and widely accepted methods of valuation. Natural resources, in contrast, tend to be nonmarketed commodities that generally are not subject to more traditional methods of appraisal and valuation . . . . In such cases, attempts to value the damage or loss to the public can rise to metaphysical dimensions.

77 Criteria, supra note 69, para. 35.

79 Id. at 6.
80 First Instalment, supra note 72, para. 3.
and Syria requested that awards for these claims be made first because an award of monitoring and assessment funds could pay for research to bolster their later substantive claims. Although concern was expressed that these claims might not reflect damages caused by the Iraqi invasion of Kuwait, the panel noted that conclusive proof of causation was not "a prerequisite for a monitoring and assessment activity to be compensable." The panel only required that there should be a "sufficient nexus" between Iraq's activities and the environmental damage. Despite the apparent flexibility of these guidelines, the panel recommended an award of only 4.1% of the total amount claimed by the parties. The panel decreased some of the claims where "savings [could] be achieved by coordinating activities of a claimant relating to the same subject matter." However, the parties cannot be overly optimistic about the prospects for their substantive claims based on these findings. Indeed, such a low success rate further undermines the deterrent capability of such measures and threatens the value of the UNCC as a source of funds for environmental restoration.

3.4. Compensation and Cash Flow

The F4 Panel's decision to recommend such small awards may be a product of the UNCC's limited cash flow. Based on a recommendation from the President of the Security Council, compensation to be paid into the fund by Iraq was established at a maximum rate of "30 per cent [sic] of the annual value of the exports of petroleum and petroleum products from Iraq." It was anticipated that this would generate approximately $6 billion for the fund. This initial projection failed, as Iraq did not export any oil until Decem-

---

81 Id. paras. 15-16. See discussion regarding compensation and cash flow infra Section 3.4.
82 First Instalment, supra note 72, para. 30.
83 Id. para. 31. "Sufficient nexus" was not defined.
84 The total amount claimed by the six countries was $1,007,412,574; the amount recommended by the panel was $243,234,967. Id. para. 779, tbl.14.
85 Id. para. 37.
Resolution 706 lifted the U.N. imposed oil embargo on Iraq for a six-month sale period in 1991. Iraq was allowed to receive up to $1.6 billion in oil profits with thirty percent to go to the UNCC and the rest to fund humanitarian purchases. Iraq refused to submit to this plan, and no funds were generated for the UNCC. Instead, loans from the U.N. Working Capital fund and, under Resolution 778, frozen oil revenues held by other countries, went into an escrow account from which the commission could collect thirty percent. Using this funding source, the UNCC was able to compensate all claimants who had suffered serious personal injuries by December 1996. While compensation was thus achieved, the deterrent aspects of the program were temporarily foiled, as Iraq contributed no revenue to the fund.

In 1995, Resolution 986 created the “oil-for-food program” under which Iraq could sell oil in exchange for humanitarian goods. Iraq relented from its initial rejection of the program and in 1996, exported oil for the first time since the beginning of the Gulf conflict. The initial ceiling for Iraqi oil revenues was set at $4 billion per year. In 1999, Resolution 1284 abolished the ceiling on authorized Iraqi oil revenues. In 2000, humanitarian concerns about the situation in Iraq prompted a change in the percentage of oil revenues directed to the compensation fund to twenty-five percent. Since the inception of the oil-for-food program, the commission has been able to make periodic compensation payments to successful claimants.
The past success of claim administration through the UNCC does not guarantee its continued viability. The Security Council generally renews the oil-for-food program for periods of 150 to 180 days.\textsuperscript{97} If Iraq’s dependence on the program for food and humanitarian supplies ceases or if the Security Council decides not to renew the program for another reason,\textsuperscript{98} there may be no funds for future panels to award parties with pending claims such as the substantive F4 claims.\textsuperscript{99}

3.5. Lessons Learned: Can the UNCC Model Work Elsewhere?

Overall, the UNCC has been a success. By November 15th, 2001, the Commission had awarded nearly $14 trillion in compensation to 1,506,458 claimants.\textsuperscript{100} It is likely that the U.N. will try to follow this model in the future. An indication of this is the Security Council’s rejection of “a proposed amendment to the Gulf War cease-fire agreement that would have held the Gulf War unique and the remedies lacking precedential value.”\textsuperscript{101} But can the UNCC model really work to impose civil liability for wartime damages in other contexts? The chief limitation of the model is its economic feasibility. Rosemary Libera argues that “[i]n order to be the compensating party, a country must have some form of wealth that has a high degree of liquidity, that was not destroyed during


\textsuperscript{98} The future of the oil-for-food program may turn on the outcome of a United Nations move to readmit representatives of its Monitoring, Verification, and Inspection Commission (UNMOVIC) into Iraq. See UN-Iraq Talks Open in Vienna on Practical Arrangements for Return of Inspectors, UN NEWS SERV., Sept. 30, 2002 (discussing negotiations between the UN and Iraq on the conditions for re-admission of weapons instructors), available at http://www.un.org/apps/news/printnews.asp?nid=4875. If Saddam Hussein does not comply with a new round of weapons inspections, the Security Council may very well reconsider the status of the program. Even if Iraq’s refusal to comply did not terminate the oil-for-food program, a threatened U.S. war against Iraq could adversely affect the availability of funds for the UNCC. See David E. Sanger, A New Look at U.S. Goal, N.Y. TIMES, Sept. 30, 2002, at A1 (discussing President Bush’s efforts to build a coalition against Iraq).

\textsuperscript{99} Lee, supra note 73, at 217-18.


\textsuperscript{101} Libera, supra note 87, at 301.
the conflict, that is easily accessible to the U.N., and that is not privately owned.”

Countries with this type of wealth may be deterred from undertaking illegal aggression by the threat of an effective system of civil liability. If they are not, compensation may proceed successfully. However, many countries do not meet this economic profile. These countries will remain undeterred and any compensation scheme involving them is likely to fail as a deterrent to environmentally harmful belligerent conduct.

The success of the UNCC as a remedy for wartime environmental damages is also unclear. As the final awards for environmental damages have not yet been recommended, the verdict is out on whether the awards will be sufficient to affect the environmental remediation required in the countries affected by the oil fires and oil spills. The Commission’s relatively short time frame for filing claims did not adequately address potential long-term injuries. The low priority given to recompensing parties with environmental injuries hazards a complete failure of compensation for these parties where funds are available but are more limited than in Iraq’s case. It is not clear why (other than their complexity) environmental claims should be dealt with last, or if this prioritization will severely impact their success.


While the past focus on wartime environmental devastation has looked at the effect of combat on the natural environment (Vietnam’s jungles, the Persian Gulf, and Kuwait’s deserts), recent events demonstrate that the urban environment may also suffer the consequences of belligerent conduct.

4.1. The World Trade Center Attack

On September 11, 2001, the environmental consequences of a belligerent attack materialized in the United States. When two hi-

102 Id.
103 See, e.g., id. at 311 (citing Serbia as an example of a country that would be undeterred by the UNCC model).
104 Another option for dealing with damages manifested after initial claims are filed would be to allow for “a reopener clause for changed conditions” as exists in many Superfund settlements. Greening of Warfare, supra note 76, at 36. See also discussion of delayed manifestation of environmental consequences, including health issues, supra note 68.
jacked jetliners were deliberately flown into New York City’s twin World Trade Center towers, an abundance of pollutants may have been released into the air and soil.\(^{105}\) Any attempt to recover damages for the environmental costs of the attack will be impeded by the difficulty of allocating cleanup costs between environmental costs and other costs such as the clearing of debris. This difficulty is compounded by the fact that the true environmental effects will be difficult to quantify. Air pollution and soil contamination almost certainly existed in the area of the Trade Towers prior to September 11.

The most difficult question to answer is who should pay for the environmental cleanup.\(^{106}\) It does not seem that the UNCC model can apply directly here, where the perpetrator is not a state government, but rather a terrorist organization. While the now customary law of the Hague and Geneva Conventions might apply to Al Qaeda’s actions, ENMOD and Protocol I may not, as Al Qaeda is not a signatory to the treaties. As in the case of Iraq, a resolution might be adopted to establish Al Qaeda or Osama Bin Laden’s liability for the environmental cleanup, but the issue of liquidity remains. Bin Laden and his network are alleged to have ties to substantial wealth,\(^{107}\) but it may be impossible to identify and gain access to all of their funding sources.\(^{108}\)

---

\(^{105}\) Early testing found elevated levels of asbestos, dioxin, PCBs, and volatile organic compounds. For a summary of possible health risks and environmental monitoring at the site in the initial weeks following the attack, see Press Release, U.S. Environmental Protection Agency, EPA and OSHA Web Sites Provide Environmental Monitoring Data From World Trade Center and Surrounding Areas (Oct. 3, 2001), available at http://www.epa.gov/wtc/summaries/epa-osh01.htm (last visited Oct. 15, 2002). See also David W. Dunlap, A Big Victim Is Still Empty After a Year, N.Y. TIMES, Sept. 11, 2002, at C4 (describing the extent of lead, mercury, and asbestos contamination in the former Federal Office building located at 90 Church Street, yards away from ground zero, where the cleanup cost was projected to “run into the tens of millions of dollars”); U.S. ENVIRONMENTAL PROTECTION AGENCY, HEALTH EFFECTS OF THE WORLD TRADE CENTER COLLAPSE (discussing the short and long term health effects of the dust released by the World Trade Center collapse), at http://www.epa.gov/wtc/factsheets/wtchealth.html (last visited Sept. 30, 2002).

\(^{106}\) So far, U.S. taxpayers have footed the bill for many of the costs associated with September 11 through allocations to the Federal Emergency Management Agency (“FEMA”). Following the attack, President Bush pledged over $20 billion in federal aid to New York. Of that, at least $2.7 billion was allocated for “disaster relief for cleanup at the site paid through [FEMA].” Raymond Hernandez, Bush Offers Details of Aid to New York Topping $20 Billion, N.Y. TIMES, Mar. 8, 2002, at A1.

\(^{107}\) Al Qaeda is alleged to have raised money through charities, for-profit entities, financial institutions, and the Internet. See PATRIOT Act Oversight: Investigating Patterns of Terrorist Fundraising, Before the House Committee on Financial Ser-
Al Qaeda funds that have already been seized\(^\text{109}\) might be used to fund the cleanup. But several lawsuits filed against Bin Laden since September 11\(^\text{110}\) pose a problem similar to that created by the UNCC prioritization scheme. If the lawsuits are successful, the limited available assets would likely first fund damage awards to cover the immediate medical needs of attack victims and to compensate families who lost loved ones. Again, it appears that the currently available solutions may not succeed in financing the cleanup.

\(^{108}\) See Krysten Crawford, **Drawing a Bead on Terrorism Funds Financial Fight May Be Mission Impossible**, LEGAL TIMES, Jan. 28, 2002, National Section, at 1 (reporting the goals of the U.S. PATRIOT Act and the obstacles faced in successfully terminating the flow of money to terrorist organizations). See also Colum Lynch, **War on Al Qaeda Funds Stalled**, WASH. POST., Aug. 29, 2002, at A1 ("A global campaign to block al Qaeda’s access to money has stalled, enabling the terrorist network to obtain a fresh infusion of tens of millions of dollars and putting it in a position to finance future attacks, according to a draft U.N. report.").

\(^{109}\) "Bush administration officials have persuaded American and international banks and governments to seize about $80 billion linked to nearly 170 businesses and individuals.” Joseph Kahn, **Afghanistan Gets Access to Frozen Funds**, N.Y. TIMES, Jan. 25, 2002, at A10. However, this estimate of frozen funds may have been too high. More recently it was reported that “[i]n the months immediately following the Sept. 11 attack, the United States and other U.N. members moved to shut down al Qaeda’s financial network, freezing more than $112 million in assets belonging to suspected members and supporters of the organization.” Lynch, supra note 108, at A1 (emphasis added). Since January, 2002, “only $10 million in additional funds has been blocked.” Id.

\(^{110}\) See Robert Gearty, **Judge: Use TV to Tell Osama You’re Suing**, DAILY NEWS (N.Y.), Jan. 11, 2002, at 4 (detailing a judge’s ruling that Afghan and Pakistani newspapers and broadcast outlets could be used to notify Osama Bin Laden that two families of World Trade Center victims are suing him); Jennifer Lin, **Families of Sept. 11 Victims Sue Bin Laden and Supporters**, PHILA. INQUIRER (online edition), Feb. 19, 2002 (discussing the first class action lawsuit against Bin Laden and his network), at http://www.philly.com/mld/inquirer/2705226.htm?template=contentModules/printstory.jsp; $116 Trillion Lawsuit Filed by 9/11 Families, CNN.COM, Aug. 16, 2002 (describing the fifteen-count, $116 trillion lawsuit filed by over 600 families of September 11 victims against “seven international banks; eight Islamic foundations, charities and their subsidiaries; individual terrorist financiers; the Saudi bin Laden Group; three Saudi Princes; and the government of Sudan for allegedly bankrolling the terrorist al Qaeda network, Osama bin Laden and the Taliban”), at http://www.cnn.com/2002/LAW/08/15/attacks.suit.
4.2. The Anthrax Letters

The series of anthrax-laced letters mailed to certain members of the American media and government and to several government facilities following the September 11 tragedies illustrates another possible environmental consequence of belligerent conduct, this time impacting the indoor environment. While the letters caused only twenty-two infections and five deaths,\textsuperscript{111} they strained the resources of the American government and public health system. "Activities of all branches of the federal government were disrupted, approximately 300 postal and other facilities were tested for the presence of anthrax spores, and approximately 32,000 persons initiated antimicrobial prophylaxis following potential exposure to \textit{B. anthracis} at workplaces in Florida, New Jersey, New York, and Washington, D.C."\textsuperscript{112}

While in most facilities the environmental consequences of the anthrax itself were remedied within a relatively short period of time, some of the remediation measures may have as yet unknown detrimental effects. Chlorine dioxide, "an antimicrobial pesticide," was used to fumigate the contaminated Hart Senate Office Building\textsuperscript{113} and, since the contaminated letters were discovered, mail sent to offices on Capitol Hill has been irradiated as a prophylactic measure.\textsuperscript{114} Capitol Hill workers have since complained of feeling


\textsuperscript{112} Fighting Bioterrorism: Using America's Scientists And Entrepreneurs to Find Solutions: Hearing on Fighting Terrorism Before the United States Senate Committee on Commerce, Science and Transportation, Subcommittee on Science, Technology and Space, 107th Cong. 2 (2002) (prepared testimony of Richard J. Hatchett, MD Coordinator, Civilian Medical Reserve Working Group, Clinical Assistant Attending, Memorial Hospital Memorial Sloan-Kettering Cancer Center), available at http://commerce .senate.gov/hearings/0205hatchett.pdf.


\textsuperscript{114} Ellen Gamerman, \textit{Hill Workers Feel Irritated by Irradiated Envelopes; Congressional Aides Say Mail Sickens Them}, \textit{Balt. Sun}, Feb. 20, 2002, at 1A.
ill while at work and some suspect the irradiated mail is to blame.\textsuperscript{115}

While the final tally of the cleanup costs has not yet been made, the anthrax attacks will likely have been very expensive for the United States.\textsuperscript{116} If the perpetrator of the attacks is found, should he or she be liable for the remediation efforts and any long-term environmental health consequences of the anthrax or cleanup methods? In 1925, the Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous, or Other Gases, and of Bacteriological Methods of Warfare\textsuperscript{117} was the first international provision to condemn the use of biological weapons in warfare. The ban was not absolute; many parties to the convention made reservations, including “that the ban would not be effective if a state party violated the 1925 Geneva Protocol by using biological weapons first.”\textsuperscript{118} That said, the anthrax letters present a clear case of “first use” of biological weapons, and the perpetrator is likely to be found liable for a violation of international law.

Assuming liability can be established, the problem of liquidity presents itself again. If the perpetrator is an individual, it is improbable that he or she will have the resources available to afford the cleanup of the offices and postal facilities affected. Given the likely inability of perpetrators to cover the cleanup costs, who should pay for the environmental consequences of belligerent actions?\textsuperscript{119}

\textsuperscript{115} Id.
\textsuperscript{116} As of March 6, 2002, the Environmental Protection Agency had spent $23 million to test for and clean up anthrax contamination at buildings on Capitol Hill. Meredith Preston, Superfund: Cost for Anthrax Cleanup in Congress Reaches $23 Million, EPA Tells Grassley, 45 Daily Envtl. Rep. (BNA), at A-5 (Mar. 7, 2002).
\textsuperscript{118} David P. Fidler, International Law and Public Health Consequences of Armed Conflict, in THE ENVIRONMENTAL CONSEQUENCES OF WAR, supra note 11, at 444, 450.
\textsuperscript{119} The U.S. Environmental Protection Agency (“EPA”) “has been paying for the emergency response activities from its Superfund Trust Fund, which is also used to pay for cleanups at superfund sites for which no responsible party can be found.” Preston, supra note 116, at A-5. The EPA “does not know how much it will be able to reimburse the Superfund Trust Fund.” Id. If the cleanup of biological terrorism exhausts the trust fund, as it might given the likelihood of future attacks, toxic waste sites across the United States and their associated public health consequences will go unremediated. Additionally, countries other than the
5. LOOKING AHEAD: FINANCING A GLOBAL FUND FOR WARTIME ENVIRONMENTAL DAMAGES

As already noted, the problems of prioritization of environmental claims and liquidity of responsible parties will almost always be present in the context of belligerent conduct. While the UNCC was a positive step towards providing resources to remedy the environmental damages of war, it is a solution that may not prove effective in every context. A separate fund dedicated to environmental damages could eliminate the problems of liquidity and prioritization. This fund could also be structured to deal with the uncertain long-term environmental consequences of combat. One of the fundamental issues in the creation of such a fund is how it might be financed.

5.1. Voluntary Contributions

Today, many international activities are funded voluntarily. While such an approach has had some success, some argue that it has the tendency to focus efforts on the preferences of those who

United States may not have the same type of Superfund system in place, leaving the question of “who pays?” in similar attacks elsewhere unanswered.

Civil conflict is one of the biggest threats to ecosystems in many countries today. Often fueled by existing environmental problems, these conflicts can create a positive feedback system leading to further environmental problems. Belligerent parties in these conflicts are extremely unlikely to have the resources available for remediation. See, e.g., Civil Conflict Poses Biggest Threat to Ecosystem in Angola, XINHUA NEWS AGENCY, June 6, 2001 (reporting remarks of the Angolan Minister of Fishing and Environment on the environmental effects of the Angolan Civil war); Lina Sagatal Reyes, War Extracts Heavy Toll on Environment, PHILA. INQUIRER, June 19, 2000, at 1 (describing the effect on the environment of military efforts to sweep out Islamic rebels). See also Peace & Conflict Studies Program, University of Toronto, Environmental Security Database (containing information on books, journal articles, papers, and newspaper clippings pertaining to the study of environmental stress and violent conflict in developing countries), at http://www.library.utoronto.ca/pcs/database/libintro.htm (last updated May 19, 1999).

Greening of Warfare, supra note 76, at 40. Former Soviet president Mikhail Gorbachev “called for the creation of a ‘new international emergency fund’ to remediate environmental damages caused by military conflict” in a June 1998 speech at the Smithsonian Institution. Id. at 32.

Id. at 36. Jay Austin and Carl Bruch argue for the creation of “a long term fund to monitor, remediate, and compensate for long-term damages if and when they become evident.” Id.


Published by Penn Law: Legal Scholarship Repository, 2014
contribute the most. This approach thus raises concerns as today's wartime environmental damages are often caused by some of the wealthiest nations.

In Kosovo, NATO's use of depleted uranium shells may have contaminated drinking water supplies, and NATO bombing of a petrochemical complex in Pancevo, outside of Belgrade, is said to have created a "Bhopal-type disaster," unleashing a cloud of toxic chemicals. Similarly, the U.S. bombing campaign in Afghanistan will leave a landscape littered with craters and pollutants. It is unlikely that these wealthy and powerful parties will volunteer to pay the full costs of cleanup for the environmental damage caused by their activities. Clearly, a different financing tactic is necessary.

5.2. Taxes

A more advantageous alternative might be to finance the cleanup fund through a tax system rather than through voluntary contributions. Taxes would produce a stable and continuous

\[ \text{Id. at 204.} \]


\[ \text{Fred Pearce, The Wasteland: Afghanistan Will Remain Scarred by War Long After the Bombing Stops, NEW SCIENTIST, Jan. 5, 2002, at 4 ("Bombing will also leave its mark beyond the obvious craters. Defence analysts say that... conventional explosives will litter the country with pollutants. They contain toxic compounds such as cyclonite, a carcinogen, and rocket propellants contain perchlorates, which damage thyroid glands.").} \]

\[ \text{The parties would likely justify their failure to volunteer cleanup costs based on the perceived humanitarian value of their campaigns and on the costs already incurred in their efforts to remove unpopular or politically incorrect regimes.} \]

\[ \text{Taxes in the environmental context are seen as a way to "bring the costs of pollution and other costs of using the environment—called externalities—into the prices of goods and services produced by economic activity." EUROPEAN ENVIRONMENT AGENCY, ENVIRONMENTAL ISSUES SERIES No. 1, ENVIRONMENTAL TAXES: IMPLEMENTATION AND ENVIRONMENTAL EFFECTIVENESS 15 (1996), available at} \]
stream of income for the fund. This stability would allow the fund to operate with greater independence from the more powerful nations and to focus on providing aid where it is needed, regardless of who is responsible for the damages. However, a broad-spectrum tax on all nations, regardless of their involvement in causing wartime environmental damages, is unlikely to garner support. Most parties will require a correlation between the funding source and its use. Jay Austin and Carl Baruch recommend a tax system with "the heaviest burden on states most likely to cause environmental damage in war... calculated on the basis of the size of the army, the size of the arsenal, the types of weapons in the arsenal, etc." 

The 1971 Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage, as amended by the 1992 Fund Convention ("1992 Fund"), provides an example of how this funding model could work. The Convention establishes a regime for compensating victims of oil pollution damage when a ship owner does not or cannot pay the full costs of cleanup plus any ordered compensation. The 1992 Fund is financed by taxes on any person in a state that is a party to the 1992 Fund Convention who has received more than 150,000 tons of "contributing..."
oil” in a calendar year.\textsuperscript{133} States party to the convention are re-
quired to report the names of all persons responsible to contribute
to the 1992 Fund “whether the receiver of oil is a Government au-
thority, a State-owned company or a private company.”\textsuperscript{134} The
Fund’s Assembly annually determines the amount to be levied on
contributing parties per ton of oil received.\textsuperscript{135}

An international fund for wartime environmental damages
could develop a similar assessment system whereby persons or
parties who purchase or accept weapons, munitions, and other war
materials above some threshold quantity would pay a tax for each
additional increment of military hardware obtained. However, the
administrative feasibility of such a system is dubious; unlike oil
purchases, many countries would be unwilling to publicize their
defense transactions. Many countries would oppose an interna-
tional body that required the disclosure of the full extent of their
defense spending and would be unlikely to ratify any proposal re-
quiring them to do so.\textsuperscript{136} To be successful, an assessment scheme
like this would require careful political balancing and, most likely,
cooperation from one or more of the wealthy and powerful na-
tions.

\textbf{5.3. Permit Financing}

Another option might be to not tie the fund’s financing to indi-
cators of possible environmental damages from belligerent con-
duct, but instead to finance the fund through a permit system.\textsuperscript{137}
The fund’s administrators could establish a baseline level of envi-
ronmental damages from combat above and beyond which poten-
tial belligerent parties would be required to purchase permits

\textsuperscript{133} The International Oil Pollution Compensation Funds, The
International Oil Pollution Compensation Fund 1992: Explanatory
Note Prepared by the 1992 Fund Secretariat, para. 3.5 (Oct. 2002), available at
\textsuperscript{134} Id.
\textsuperscript{135} Id.
\textsuperscript{136} The United States, ever suspicious of international intrusion into its de-
cisions, is a likely non-participant in such an arrangement. See, e.g., discussion supra
notes 33 and 132.
\textsuperscript{137} See GNA'T, supra note 123, at 215 (arguing for a permit auction system to
finance a “Global Commons Trust Fund” to pay for damages to the global envi-
noment). Permit systems have gained much support in the context of air quality.
A permit system for “pollution trading” was implemented for sulfur dioxide
emissions in the United States under the 1990 Clean Air Act Amendments. 42
should they foresee the need to cause further environmental damages.\textsuperscript{138} The number of permits for environmental damages (or allowances) issued by the administrators would be established at a level that ensured that the market price would provide cleanup funding for baseline damages in addition to any increment of additional damages allowed by the allocated permits. Limiting the number of available permits and making them available at auction would, in theory, drive up the prices of the permits and create additional income for the fund while deterring combatants from causing environmental harm (particularly if the penalty scale were adjusted in accordance with permit prices).\textsuperscript{139} The fund’s administrators would require belligerents who caused damages above the baseline level allowed by their permits to pay penalties set at a level high enough to deter parties from causing environmental damages without first purchasing a permit and, in essence, providing a security deposit for any cleanup.

Again, however, this system may prove administratively unattainable. As with any issue involving environmental damages, a permit system raises valuation problems.\textsuperscript{140} When the costs of potential environmental consequences are unknown, how is it possible to determine the number of permits to allocate in order to ensure that the permit market will generate revenues sufficient to cover cleanup costs? Further, some may object to a permit system, "calling it offensive to permit [environmental damages]-for-pay. The answer to this protestation is that some [environmental consequences of combat are] inevitable, and it is more of an outrage that

\textsuperscript{138} There are three steps central to constructing a tradable pollution allowance regime: first, the acceptable level of pollution must be established; then allowances are allocated; finally, trading is allowed. Jonathan Remy Nash, Too Much Market? Conflict Between Tradable Pollution Allowances and the "Polluter Pays" Principle, 24 HARV. ENVTL. L. REV. 465, 483 (2000). A permit system for environmental damages from belligerent conduct would function similarly.

\textsuperscript{139} In the air-emissions context:

The fixed supply of permits, created by law, sets the cap on total emissions; the trading process allows industry to decide where and how it is most economical to reduce emissions to fit under the cap.... Congress, the EPA, or other officials set the emissions cap, and the market does the rest.


\textsuperscript{140} See Binger, supra note 75, at 1030 ([N]atural resource damage valuation is not always an easy task and can be fraught with a wide variety of inherent inaccuracies and methodological weaknesses."
we let the polluters get away with it, as they presently do, free of charge.”¹⁴¹ But the deterrence capability of this system is also questionable. What is to stop belligerents who cannot afford the permits in the first place from causing environmental harms, knowing the fund would be unable to collect penalty fees from them either?¹⁴² Recognizing this problem, wealthy parties might be unlikely to agree to such an arrangement, fearing they will be left to pay the bill when poorer countries fail to live up to their end of the bargain.¹⁴³

As an alternative, instead of requiring those who engage in combat to have permits, permit requirements could be imposed on the producers of military hardware. This proposal would also be unlikely to succeed. As with the tax proposal, it might be difficult for an international body to gain complete information about weapons production in each country.¹⁴⁴ And as demonstrated since September 11, traditional military hardware is not always a necessary element of belligerent combat.¹⁴⁵ Additionally, manufacturers would be likely to pass the permit costs along to those who

¹⁴¹ GNAT, supra note 123, at 214. See also Michael J. Sandel, Editorial, It’s Immoral to Buy the Right to Pollute, N.Y. TIMES, Dec. 15, 1997, at A23 (“[T]urning pollution into a commodity to be bought and sold removes the moral stigma that is properly associated with it.”).


¹⁴³ As Fort and Faur point out in the emissions context, “[T]here must be a market to facilitate an effective resource allocation in an international emission trading program.” Id. at 474. If parties choose not to participate in a permit system for wartime environmental damages, the market may fail and not achieve its goal of generating revenue for the global remediation fund.

¹⁴⁴ Again, compare the emissions context “[w]here emission budgets or emission inventories are based on faulty or incomplete information, the trading program participants who have precise data are handicapped and potentially put at a competitive disadvantage.” Id. at 470. Incomplete information is a likely scenario in the context of weapons production. Cf. Howard Schneider, Defiant Iraq Will Not Allow New U.N. Arms Inspectors to Enter, WASH. POST, Aug. 24, 2000, at A26 (discussing Iraq’s refusal to readmit a U.N. Weapons Inspection team following their withdrawal eighteen months earlier “after being denied access to suspected weapons facilities”).

¹⁴⁵ Armed only with knives and boxcutters, the September eleventh hijackers were able to destroy the World Trade Center towers. See David Johnston & James Risen, After the Attacks, N.Y. TIMES, Sept. 13, 2001, at A1 (“[E]ach flight was seized by … hijackers who boarded as passengers, then, with knives and boxcutters, overwhelmed the crew.”).
purchase their weapons, furthering the power imbalance between wealthy and poor nations: many poor nations purchase weapons from companies in the developed industrial nations. Lesser-developed countries would be unlikely to agree to an arrangement with these consequences.

6. CONCLUSION

Following an attack, it is natural to focus recovery efforts on repairing the immediate damage to human lives. Yet, the environmental consequences of belligerent conduct should not be ignored. If left unaddressed, the long-term impacts of environmental damages may have serious consequences for human health, economic stability, and future ecosystem balance.

Existing military law has tried, with some success, to prevent environmental harm from occurring at all. Where these efforts have failed, the international community has begun to recognize the need to provide a structure for remediation. Further international cooperation will be necessary to overcome the liquidity problems that hinder most attempts to provide adequate environmental remediation. Any solution must consider the possibility that a state government may not be responsible for a large-scale international attack. While no one solution seems to provide an easy answer, the international community should consider all available financing schemes in an effort to develop an international fund dedicated to the remediation of the environmental consequences of belligerent conduct.