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## Articles

### The Environment: Adequacy of Protection in Times of War

Andy Rich\*

#### I. The Escalating Capacity for Destruction

It is difficult, if not impossible, to separate warfare from the consumption of the environment.<sup>1</sup> Indeed, the destruction of the environment may be an inevitable consequence of armed human conflict.<sup>2</sup> The extent of environmental degradation in the ancient battlefield was limited to primitive and transient acts, such as salting the enemy's earth and polluting drinking wells with the carcasses of dead animals. Chemical deforestation by the United States in the Vietnam War,<sup>3</sup> in which American forces dusted the territory of Vietnam and Laos with over 200 million gallons of herbicides,<sup>4</sup> and "eco-cide"<sup>5</sup> on the part

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\* J.D., University of Toronto (2003).

1. L.R. Hourcle, *Environmental Law of War*, 25 VT. L. REV. 653, 654 (2001).

2. A. Schwabach, *Environmental Damage Resulting from the NATO Military Action Against Yugoslavia*, 25 COLUM. J. ENVTL. L. 117, 117 (2000).

3. Hourcle, *supra* note 1, at 657.

4. Schwabach, *supra* note 2, at 126. Agents Orange, White and Blue were sprayed on up to 10% of the land of South Vietnam, a tactic that was complemented by the use of "Rome plows" (tractors used to clear 750,000 acres of land) and cloud-seeding (to increase rainfall and render trails and roads unfit for passage). *Id.*

5. M.A. Drumbl, *Waging War Against the World: The Need to Move from War*

of Iraq in the Gulf War, which involved the release of massive quantities of oil into the Persian Gulf and the setting ablaze of over seven hundred oil wells, are two recent instances of environmental degradation resulting from war.<sup>6</sup> As technology advances, the potential for environmental abuse in the name of war grows more alarming. As one author states:

With advancements in science and the development of modern technology, the lethality of weapons has increased dramatically, and so has the potential for environmental damage. A corollary to this is that the nature of modern industrial targets also creates the potential for accelerating environmental damage.<sup>7</sup>

The realization that “[n]ew weaponry threatens to amplify the environmental hazards bred by economic development and population growth”<sup>8</sup> is tempered by the understanding that “[t]he world’s interest in the environmental effects of war relies on the underlying notion that if countries wage war, they do so responsibly.”<sup>9</sup> With these considerations in mind, this article will examine to what extent the system safeguards the environment and constrains the behavior of countries such that they must engage in “responsible warfare.”

## II. Legislative Recognition Of The Effects Of Warfare

International legislation has recognized the inimical relationship between armed conflict and environmental preservation. Principle 24 of the Rio Declaration on Environment and Development reads:

Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its further

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*Crimes to Environmental Crimes*, 22 FORDHAM INT’L L.J. 122, 142 (1998).

6. M.J.T. Caggiano, *The Legitimacy of Environmental Destruction in Modern Warfare: Customary Substance over Conventional Form*, 20 B.C. ENVTL. AFF. L. REV. 479, 479-81 (1993); J.E. Seacor, *Environmental Terrorism: Lessons from the Oil Fires of Kuwait*, 10 AM. U. J. OF INT’L L. & POL’Y 481, 481 (1994); T.Y. Lee, *Environmental Liability Provisions Under the U.N. Compensation Commission: Remarkable Achievement with Room for Improved Deterrence*, 11 GEO. INT’L ENVTL. L. REV. 209, 210-11 (1998).

7. Hourcle, *supra* note 1, at 659.

8. D.L. Houchins, *Extending the Application of the ICJ’s July 8, 1996, Advisory Opinion to Environment-Altering Weapons in General: What Is the Role of International Environmental Law in Warfare?*, 22 J. LAND RESOURCES & ENVTL. L. 463, 480 (2002).

9. *Id.* at 479. In a similar vein, it has been stated: “The laws of armed conflict represent a concerted attempt on the part of nations and individuals to bring the tools of rational analysis to bear upon a field of endeavor that often appears to be incorrigibly rooted in irrationality.” P.J. Richards and M.N. Schmitt, *Mars Meets Mother Nature: Protecting the Environment During Armed Conflict*, 28 STETSON L. REV. 1047, 1047 (1999).

development, as necessary.<sup>10</sup>

Likewise, the 1982 World Charter for Nature states that “[N]ature shall be secured against degradation caused by warfare or other hostile activities.”<sup>11</sup>

International legislation also recognizes the unprecedented destructive potential of modern weapons. Principle 26 of the 1972 Declaration of the United Nations Conference on the Human Environment provides (anthropocentrically) that:

Man and his environment must be spared the effects of nuclear weapons and all other means of mass destruction. States must strive to reach prompt agreement, in the relevant international organs, on the elimination and complete destruction of such weapons.

While this principle is a laudable, the past thirty years have shown little progress towards achieving this end.

Recognition of the need to give the environment particular attention in times of war has not been limited to broad policy documents. The 1997 UN Convention on the Law of the Non-Navigational Uses of International Watercourses addresses these issues in Article 29:

International watercourses and related installations, facilities and other works shall enjoy the protection accorded by the principles and rules of international law applicable in international and non-international armed conflict and shall not be used in violation of those principles and rules.

However, the 1982 United Nations Convention on the Law of the Sea (UNCLOS) and other agreements defer to “the immunities of warships” apparently out of the pragmatic realization that damage is inevitable from war and that war itself may be inevitable.<sup>12</sup> This immunity provides a toothless qualification:

The provisions of this Convention regarding the protection and preservation of the marine environment do not apply to any warship, naval auxiliary, other vessels or aircraft owned or operated by a State and used, for the time being, only on government non-commercial service. However, each State shall ensure that, by the adoption of appropriate measures *not impairing operations or operational capabilities* of such vessels or aircraft owned or operated by it, that such vessels or aircraft act in a manner consistent, *as far as is*

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10. THE RIO DECLARATION ON ENVIRONMENT AND DEVELOPMENT, Principle 24 (Rio de Janeiro, June, 13 1992) [hereinafter RIO DECLARATION].

11. WORLD CHARTER FOR NATURE, Principle 5 (Oct. 28, 1982).

12. Legality of the Threat or Use of Nuclear Weapons, 1996 I.C.J. 226, ¶ 27 (July 8).

*reasonable and practicable*, with this Convention.<sup>13</sup>

This restriction on the conduct of vehicles of war is illusory because war vessels are not subject to any regulation that would impair their abilities. Additionally, war vessels are required to follow regulations only if following the specific regulation is practical, even if doing so would not create any impairment on the war vessel. The UNCLOS regulations require vessels of war to “act in a manner consistent” with the convention.<sup>14</sup> This standard reflects the pragmatism that permeates international negotiations and, perhaps, a measure of wisdom in not creating requirements that cannot be met by nations in the world today.

In support of a noble principle, one author calls for development of an empirical norm, specifically “a norm where harm to the environment and the humans who depend on it is no longer tolerated for any purpose.”<sup>15</sup> While establishing this type of constraint may be the ultimate goal of any discussion of warfare as it pertains to environmental and humanitarian concerns, an examination of the existing conditions suggest that achievement of such a widespread level of enlightenment is distanced from the present day by a great deal of time and effort.

### III. The Law of War

A critical aspect of international law and warfare norms is combatant expectations held while engaged in conflict. This body of law examines the treatment of prisoners, civilians, and sick or wounded individuals, while taking on a measure of relevance to environmental concerns when the rules for conduct of hostilities are examined. The rules for conduct of hostilities are based upon four general principles: humanity, necessity, discrimination, and proportionality.<sup>16</sup>

The humanity doctrine primarily pertains to the avoidance of unnecessary suffering, especially by way of indiscriminately cruel weaponry.<sup>17</sup> The other three principles require detailed examination.

#### A. Necessity

To be a justifiable action under the necessity doctrine, an action

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13. UN Convention on the Law of the Sea, Dec. 10, 1982, art. 236, 1833 U.N.T.S. 3 [hereinafter UNCLOS] (emphasis added).

14. Need Citation

15. Hourcle, *supra* note 1, at 670.

16. Carl E. Bruch, *The Environmental Law of War: All's Not Fair in (Civil) War: Criminal Liability for Environmental Damage in Internal Armed Conflict*, 25 VT. L. REV. 695, 702 (2001).

17. Hourcle, *supra* note 1, at 662. An example is the Petersburg Declaration of 1868, motivated largely by a novel form of explosive rifle bullet.

must be required to achieve a military objective. An example of a military object would be defeating a target that would result in a military advantage. Examples of legitimate targets may include munitions factories, military camps, ports, and railroads used for transporting soldiers and military supplies, and even a city or town if it can be considered as an indivisible whole with enemy forces.<sup>18</sup>

### B. *Discrimination*

The weaponry utilized in pursuing military objectives must have the capacity to discriminate between lawful and unlawful objectives. The 1977 Additional Protocol to the Geneva Conventions (Protocol I) incorporates this doctrine to some extent. Protocol I specifically prohibits "those [attacks] which employ a method or means of combat which cannot be directed at a specific military objective."<sup>19</sup> It mandates the avoidance of unnecessary casualties and damage to civilians and non-military targets,<sup>20</sup> while declaring that parties shall not embed their military resources within civilian populations for the purpose of creating sanctuaries for their weaponry.<sup>21</sup>

### C. *Proportionality*

The means used to pursue a military goal must be proportional to the magnitude of the objective. At its simplest, this principle dictates that any force used shall not be "excessive."<sup>22</sup> Again, Protocol I requires forces to select the mode of attack that is least likely to result in damage to civilian populations and objects<sup>23</sup> and provides an example of a military operation that would be classified as disproportionate:

an attack which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.<sup>24</sup>

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18. *Id.* at 665.

19. Protocol Additional to the Geneva Conventions and Relating to the Protection of Victims of International Armed Conflict, Aug. 12, 1949, art. 51(4)(b), 1125 U.N.T.S. 3 [hereinafter Protocol I]. This protocol is but one example of the international instruments relating to warfare and bearing some consideration on the environment. It is, however, among the most directly relevant. A second Protocol was also established (governing non-international armed conflicts) but its provisions bear less directly on the environment.

20. *Id.* at art. 57.

21. *Id.* at art. 58.

22. Hourcle, *supra* note 1, at 668.

23. Protocol I, *supra* note 17, at art. 57(3).

24. *Id.* at art. 51(5)(b).

Notably absent in the international battlefield, however, is a generally accepted formula for balancing the gravity of civilian casualties (or environmental concerns) against the military value of a legitimate target.<sup>25</sup> Likewise, the lack of common procedures and decision-making methodologies for such situations may tragically result in the classic “prisoner’s dilemma” outcome. In that scenario, both sides of the conflict jointly engage in the most damaging conduct because each side blindly assumes that their opponent is doing likewise. The practical result in times of war may be the infliction of extraneous suffering upon the innocent and destruction of the environment.

*D. Relationship to the Environment*

With these principles in mind, as well as the understanding that the environment will not, under normal circumstances, constitute a legitimate military target, the issue arises as to whether collateral damage to the environment may lawfully be inflicted while pursuing a valid military target.<sup>26</sup> It is not difficult to draw an analogy between the illegitimacy of sickbays and farm villages as military targets, and that of intentionally or recklessly damaging the environment of an opposing combatant.

For example, a dam within the territory of a state would not constitute a legitimate military objective and would be protected from attacks by the principle of necessity. However, if the dam were lined with anti-aircraft artillery that threatened opposing forces, necessity would validate an attack on the gunneries. However, the principles of proportionality and discrimination would constrain the manner in which opposing forces could target the artillery, permitting a level of force adequate to eliminate the threat posed by the weaponry, but not superfluous and avoidable damage to the dam and, consequently, to the environment.

What is clear is that difficult decisions will have to be made regarding military objectives during highly stressful times. These decisions become particularly difficult without a framework for balancing various interests in times of war. Professor Laurent Hourcle highlights this difficulty in consideration of the Gulf War:

- (1) Should allied forces have accepted greater casualties and adopted a Gulf War strategy that used less environmentally harmful munitions and tactics? And (2) should NATO forces have used a less

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25. Richards, *supra* note 9, at 1082-86; Hourcle, *supra* note 1, at 669; Bruch, *supra* note 14, at 717.

26. Hourcle, *supra* note 1, at 662.

aggressive bombing campaign, thereby likely prolonging the war and increasing the likelihood of more humanitarian crimes and greater suffering by ethnic minorities?<sup>27</sup>

#### IV. Examples of International Instruments

##### A. *Protocol I to the Geneva Conventions*

Protocol I<sup>28</sup> provides some comfort in that it contains provisions that specifically address destruction of the environment and weapons with such a capacity. It establishes a prohibition on the employment of “methods or means of warfare which are intended, or may be expected, to cause widespread, long-term and severe damage to the natural environment.”<sup>29</sup> This prohibition centers on the protection of the environment and is buttressed by complementary—although anthropocentric<sup>30</sup>—provisions in Article 55 of the same instrument:

(1) Care shall be taken in warfare to protect the natural environment against widespread, long-term and severe damage. This protection includes a prohibition of the use of methods and 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.

(2) Attacks against the natural environment by way of reprisals are prohibited.<sup>31</sup>

These two provisions were specifically recognized by the International Court of Justice in a 1996 opinion regarding nuclear weapons.<sup>32</sup> However, an analysis of the scope of these provisions reveals that while the provisions should constrain the decisions of national policymakers in the development of unconventional weaponry, the provisions’ influence does not reach any further. The provisions’ effect is less likely to extend

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27. *Id.* at 669.

28. Environmental protections are also provided by The Hague Convention Respecting the Laws and Customs of War on Land, Oct. 18, 1907, U.S.T.S. 539, 2 A.J.I.L. Supp. 90, and its related instruments. Relevant provisions prohibit, *inter alia*, the use of poisonous weapons and extraneous seizure and destruction of enemy property. Protocol I, *supra* note 17, at art. 23(a), (g). “Since the environmental resources of a country are generally the property of a state or its citizens, this provision can be regarded as prohibiting wanton environmental degradation.” Schwabach, *supra* note 2, at 124.

29. Protocol I, *supra* note 17, at art. 35.

30. M.N. Schmitt, *Humanitarian Law and the Environment*, 28 DENV. J. INT’L L. & POL’Y 265, 276 (2000).

31. Protocol I, *supra* note 17, at art. 55 (emphasis added).

32. Legality of the Threat or Use of Nuclear Weapons, 1996 I.C.J. 226, ¶ 27 (July 8).



directly to the battlefield and restrain the behavior of those individuals actually engaged in hostile conflict.<sup>33</sup>

Protocol I does, however, contain additional provisions of potentially greater significance for warfare and the environment. Destroying and rendering useless agricultural or water supplies for the purpose of denying subsistence are prohibited, subject to considerations of military value.<sup>34</sup> Of greater importance is Article 56, which establishes a protective regime for certain facilities containing dangerous forces:

Works or installations containing dangerous forces, namely dams, dykes and nuclear electrical generating stations, shall not be made the object of attack, even where those objects are military objectives, if such attack may cause the release of dangerous forces from the works or installations and consequent severe losses among the civilian population.<sup>35</sup>

While these facilities may be targeted when they provide direct support to enemy combatants, precautions must be taken to prevent the dangerous forces from being unleashed.<sup>36</sup>

The underlying principle of Protocol I and other related instruments is encompassed within Article 35, which states that “[i]n any armed conflict, the right of the Parties to the conflict to choose methods or means of warfare is not unlimited. . . .”<sup>37</sup>

#### B. 1976 Environmental Modification Convention (ENMOD)

Article I(1) of ENMOD declares that parties shall not:

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 injury to any other State Party.<sup>38</sup>

Article I(2) also precludes assisting other states with respect to activities prohibited in article I(1). There is no deference provided for military necessity, and a combatant has violated ENMOD once the threshold of

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33. Hourcle, *supra* note 1, at 673.

34. Protocol I, *supra* note 17, at art. 54.

35. Protocol I, *supra* note 17, at art. 56. Conspicuously absent, however, are industrial facilities, the destruction of which can release large quantities of toxic fumes and have disastrous environmental consequences.

36. Protocol I, *supra* note 17, at art. 56; Schwabach, *supra* note 2, at 127-128.

37. Protocol I, *supra* note 17, at art. 35.

38. Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, Dec. 10, 1976, 31 U.S.T. 333, T.I.A.S. No. 9614, reprinted in 16 I.L.M. 88, art. I(1) [hereinafter ENMOD] (emphasis added).

damage has been established. The wording of ENMOD is significant as it applies the disjunctive “or” when listing the criteria of “widespread, long-lasting or severe effects.” Thus, unlike Protocol I, which requires all three adjectives to be applicable, ENMOD is violated if the environment has been modified in at least one of the listed ways.

Also, in contrast to the vague guidelines of Protocol I, the Conference of the Committee on Disarmament provides specific guidelines for construing these terms as they pertain to ENMOD. The threshold for “widespread” is “several hundred square kilometers”; the threshold for long-lasting is “approximately a season.” The interpretation of “severe” is a “serious or significant disruption or harm to human life, natural and economic resources or other assets.”<sup>39</sup>

However, while ENMOD’s premise of eliminating the manipulation and destruction of the environment as a method of warfare is laudable, its significance in practice is questionable. Although it was established largely in response to warfare techniques utilized by the United States in Vietnam,<sup>40</sup> critics have suggested that harm from environmental modification techniques is “a term that contemplates the kinds of methods used by villains in science fiction rather than conventional warfare.”<sup>41</sup> This criticism is based largely on the wording of the convention, which requires the weapon in question to involve the “deliberate manipulation of natural processes.” ENMOD does not, for example, preclude conventional forms of manipulating the environment, such as destroying dams and other waterworks to create flooding.<sup>42</sup> This flaw has led critics to characterize ENMOD as “ineffectual”<sup>43</sup> and a “toothless artifact.”<sup>44</sup>

### C. *The Rome Statute and the International Criminal Court*

The Rome Statute pertaining to the establishment of the International Criminal Court provides for environmentally centered offences. Conduct prohibited by the statute includes:

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39. Schmitt *Humanitarian Law*, *supra* note 28, at 279; Richards, *supra* note 9, at 1064.

40. Schmitt *Humanitarian Law*, *supra* note 28, at 279; Richards, *supra* note 9, at 1064.

41. Hourcle, *supra* note 1, at 675.

42. Hourcle, *supra* note 1, at 675.

43. Caggiano, *supra* note 6, at 490.

44. Hourcle, *supra* note 1, at 676; see also Schmitt, *supra* note 28, at 280. With respect to its applicability to modern conflicts, there is generally universal agreement that the conduct of Iraq during the Gulf War was not within the scope of ENMOD, adding that “environmental manipulation is no longer viewed as a promising operational technique.” *Id.*

intentionally launching an attack in the knowledge that such attack will cause incidental . . . widespread, long-term, and severe damage to the natural environment which would be clearly excessive in relation to the concrete and direct overall military advantage anticipated.<sup>45</sup>

However, critics suggest that the International Criminal Court is a relatively ineffective forum for dealing with treachery against the environment, given its burdensome procedural requirements. Obstacles include a high threshold for an environmental “crime” and a military necessity balancing test.<sup>46</sup>

#### D. *The Rio Declaration*

Principle 24 of the Rio Declaration acknowledges the destruction inherent in warfare. Also key to the Rio Declaration is Principle 23, which states that “[T]he environment and natural resources of people under oppression, domination and occupation shall be protected.”<sup>47</sup> This provision establishes an environmental safeguard that includes not only scenarios of traditional international warfare, including occupation of enemy territory, but extends further to situations involving the oppression and domination of groups. These latter circumstances may more aptly characterize the lion’s share of modern conflicts, with the exception being large-scale international showdowns, and the norm being perpetual intra-national skirmishes between warring tribes and ethnic groups in the developing world.<sup>48</sup> A troubling aspect of this characterization is that warring tribes and ethnic groups have weaponry of increasing sophistication and destructive potential at their disposal.

#### V. Problems Of Enforcement

What sanctions are realistically faced by a state that has no respect for international norms of armed conflict and haphazardly jeopardizes civilian populations or the environment? More warfare? Having its own environment treated with similar disrespect by hostile forces? The most prominent example is the current War in Iraq, which could be characterized in some respects as the admonishment of Iraq for not disarming itself of unlawful weaponry. No pretense can be made that the relentless bombing of Iraqi territory to date does not have significant

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45. Rome Statute on the International Criminal Court, U.N. Diplomatic Conference of Plenipotentiaries on the Establishment of an International Criminal Court, 52 Sess., U.N. Doc. A/Conf. 183/9 (1998), art. 8(2)(b)(iv), 37 ILM 1002.

46. Hourcle, *supra* note 1, at 688.

47. Rio Declaration, *supra* note 10, at principle 23.

48. Bruch, *supra* note 14, at 720; Hourcle, *supra* note 1, at 678.

detrimental effects for both civilian populations and the local environment.

There is disillusionment in the academic community regarding the enforcement regime for environmental war crimes. Even if a coherent framework does exist for protecting the environment in times of war, a mechanism for enforcement is required to give any meaningful effect to those protections. Hourcle concludes that:

By and large there is none. While there were allegations of environmental war crimes in the Gulf War, there have been no enforcement tribunals in a Nuremberg sense.<sup>49</sup>

Likewise, other commentators similarly conclude that:

[T]here remain significant gaps in the norms proscribing environmental harm during internal armed conflicts. As a result, prosecution of international environmental crimes committed during internal armed conflict is problematic at best.<sup>50</sup>

This is exacerbated by the limitations of the International Criminal Court for dealing with environmental misconduct. Furthermore, as “the International Criminal Court is principally designed to punish and to deter genocide and crimes against humanity per se . . . [and] environmental offenses are basically just an add-on . . . [they] might be lost in the shuffle.”<sup>51</sup> Also disturbing is the observation that “there appears to be no rush by nations to develop more concrete standards for enforcing environmental protection during war.”<sup>52</sup>

## VI. Conclusion

It has been accurately observed that “development of international law regarding the protection of the environment during wartime has lagged behind the development of peacetime environmental protection.”<sup>53</sup> While the existence of a great number of treaties<sup>54</sup> provides some form of environmental protection, “treaty congestion” suggests that greater attention must be paid to the implementation and

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49. Hourcle, *supra* note 1, at 687.

50. Bruch, *supra* note 14, at 736.

51. Drumbi, *supra* note 5, at 145. It is further noted that adjudicators of this court will be unlikely to have expertise in the area of environmental law and policy, prompting a call for a specialized international environmental tribunal. *Id.* at 145-46.

52. Hourcle, *supra* note 1, at 688; Bruch, *supra* note 14, at 705; Schmitt, *supra* note 28, at 281-84.

53. Schwabach, *supra* note 2, at 117.

54. Hourcle, *supra* note 1, at 675. There are some 900 such treaties decorating the international legal landscape.

enforcement of these treaties.<sup>55</sup> Furthermore, a greater understanding of the effects of armed conflict on the environment must be developed.<sup>56</sup> The international community must adopt precautionary principles and focus on anticipatory and preventive measures in addition to existing post-war liability.<sup>57</sup> Part of the solution to preventing environmental degradation by way of armed conflict will involve governance of international trade in<sup>58</sup> and development of<sup>59</sup> destructive weapons.

The Rio Declaration holds that nations shall cooperate in further development of international law that provides protection for the environment in times of armed conflict "as necessary."<sup>60</sup> The next step in further developing the law is enforcement of the current restrictions. A great driving force for the current state of warfare conditions in the Middle East is the fact that Iraq has never been effectively prosecuted internationally for its actions during the Gulf War. Much of Iraq's conduct during the Gulf War was environmentally catastrophic.<sup>61</sup> The Iraqi regime's history of using chemical weaponry and the ineffectual nature of conventional international measures to curb Iraq's development of unlawful instruments of war provided the arguable justification for invasion of the country and initiation of armed conflict.

In order to complement an anticipatory approach, the importance and profile of environmental crimes must be intensified, so that violators may expect to be burdened with post-conflict responsibility for their

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55. *Id.* at 675-76.

56. Schmitt, *supra* note 28, at 318. Schmitt concludes that hoping "to protect the environment without understanding the dynamics of the risks it faces is a pipe dream." *Id.*

57. R.J. Parsons, *The Fight to Save the Planet: U.S. Armed Forces, "Greenkeeping," and Enforcement of the Law Pertaining to Environmental Protection During Armed Conflict*, 10 GEO. INT'L ENVTL. L. REV. 441, 487 (1998).

58. See generally Barry Kellman, *Bridling the International Trade of Catastrophic Weaponry*, 43 AM. U. L. REV. 755 (1994); see Drumbl, *supra* note 5, at 151.

59. Drumbl, *supra* note 5, at 151. The author endorses "creation of economic disincentives to producing environmentally destructive weaponry, technology transfers to assist developing countries to pursue national security interests in a more environmentally friendly manner, and financial assistance mechanisms."

60. See Rio Declaration, *supra* note 10, at principle 24.

61. W.G. Sharp, *The Effective Deterrence of Environmental Damage during Armed Conflict: A Case Analysis of the Persian Gulf War*, 137 MIL. L. REV. 1, 3 (1992). Sharp claims that "Saddam Hussein inflicted unprecedented environmental damage on the Persian Gulf region." The Iraqi regime clearly engaged in reprehensible anti-environmental conduct; it is notable, however, that Major Sharp's 66-page article, including a discussion of ENMOD and the history behind various international instruments, mentions American defoliation in Vietnam only in a one-sentence footnote, footnote 98, suggesting a possible pro-American bias and rose-colored tint to American conduct. Likewise, Sharp never mentions Hiroshima nor Nagasaki, his only reference to Japan being the following: "For example, during World War II, the United States sunk the entire Japanese tanker fleet. In the vast and relatively clean Pacific Ocean of the 1940's, however, the environmental damage was only transitory." *Id.*

actions. This would provide a similar framework of foreseeability in comparison to crimes against humanity.<sup>62</sup> Such recognition has served as the impetus for calls to establish a separate regime for dealing with environmental crimes and “geocide” in times of conflict, apart from the traditional approach entailing war crimes.<sup>63</sup>

Commendable progress has been made in effectively deterring some formerly prevalent and environmentally destructive forms of warfare, such as poison gas.<sup>64</sup> Despite the sound legal foundation established for regulating the behavior of participants in times of war, it is the duty of the international community to build upon these foundations and to erect a system where parties to conflict are equally constrained by a transparent code of conduct and subject to a credible threat of effective sanctions for breaches of that code.

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62. This is not to suggest that the history to date of prosecuting and punishing crimes against humanity in times of war is anywhere close to adequate or effective.

63. See Drumbl, *supra* note 5, at 122-23.

64. Geneva Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or other Gases and of Bacteriological Methods of Warfare, June 17, 1925, 26 U.S.T. 571, T.I.A.S. No., at 8061; Schwabach, *supra* note 2, at 124.

