Tropical Conservation and Liability for Environmental Harm

by Carol Adaire Jones, John Pendergrass, John Broderick, and Jacob Phelps

Carol Jones is a Visiting Scholar and John Pendergrass is Acting Vice President for Research & Policy at the Environmental Law Institute (ELI). John Broderick was a Law Fellow at ELI from 2014-2015 and is currently a Trial Attorney with the U.S. Department of Justice Environment and Natural Resource Division. Jacob Phelps is an environmental scientist at the Lancaster Environment Center, Lancaster University, United Kingdom.

Summary

Tropical countries face a host of challenges to their natural environment and resources. Environmental law liability provisions offer one set of potential protections. This Article surveys such provisions in a variety of tropical country contexts. Of the seven countries studied, spanning a range of legal systems and economic development and environmental governance performance, all but one have the authority to bring liability claims for harms to the environment. However, a variety of impediments to effective implementation have resulted in a limited number of cases being resolved, and frequently with low damage awards relative to the injuries. The authors offer a range of recommendations for improving the effectiveness of the drafting and implementation of liability provisions to promote environmental protection.

I. Introduction

Many tropical developing countries face widespread unsustainable resource extraction, landclearing, and industrial development, placing them at the center of global efforts to conserve tropical biodiversity and ecosystem services and reduce greenhouse gas emissions.[1] These losses not only have profound ecological effects, but also impact human well-being[2] and deprive national economies of billions of dollars in revenues, impeding sustainable development. Beyond revenue losses, the indirect, long-term losses total trillions of dollars annually.[3]

Despite the high costs to society from environmental degradation, individual incentives to participate in many environmentally deleterious activities often remain strong. Policymakers are challenged to realign incentive structures to promote environmental sustainability. One approach is to enact effective laws and promote compliance, incentivizing individuals who weigh the costs of compliance against the benefits (and risks) of noncompliance.[4]

The international community has long promoted the environmental rule of law. In 1982, the Governing Council of the United Nations Environment Programme (UNEP) adopted the Montevideo Programme to guide the development of environmental law.[5] Among its objectives was the "development of international law

Authors' Note: The research for this Article was conducted by ELI and the Center for International Forestry Research (CIFOR) as part of the CGIAR Research Program on Forest, Trees and Agroforestry (CRP-FTA). The authors gratefully acknowledge funds received from DFID KnowFor and ELI. Many individuals have contributed research and insights into the country studies, including Nicholas Bryner (Brazil), Annelise Steigleder (Brazil), Augustin Mpoyi Mbunga (Democratic Republic of the Congo), Else Reynaers (India), Sairam Bhat (India), Geetanjoy Sahu (India), Laode Muhamad Syarif (Indonesia), Alejandra Rabasa (Mexico), Ali Ahmad (Nigeria), Grizelda Mayo-Anda (Philippines), Antonio Tony Oposa Jr. (Philippines), Jellie Molino (Philippines), and Sandra Nichols Thiam. We also thank Talia Fox, Elana Harrison, Michael Lerner, Spencer Gall, Norka Michelen, Aletta Brady, and Schuyler Lystad for their assistance with research.

1. *See, e.g.*, Navjot S. Sodhi et al., *Southeast Asian Biodiversity: An Impending Disaster*, 19 Trends Ecological Evolution 654-60 (2004).
2. Sandra Diaz et al., *Biodiversity Loss Threatens Human Well-Being*, PLoS Bio. 4(8), e277 (2006).
3. World Health Organization, Millennium Ecosystem Assessment: Ecosystems and Human Well-Being, Health Synthesis (2005), *available at* http://www.who.int/globalchange/ecosystems/ecosys.pdf; *The Economics of Ecosystems and Biodiversity*, http://www.teebweb.org/ (last visited June 29, 2015).
4. Gary Becker, *Crime and Punishment: An Economic Approach*, 76 J. Pol. Econ., 169-217 (1968).
5. United Nations Environmental Programme (UNEP), Montevideo Programme for Development and Periodic Review of Environmental Law, Decision 10/21 of the Governing Council (May 31, 1982), *available at* http://

with respect to liability and compensation, including the improvement of remedies available to the victims of pollution."[6] The Montevideo Programme has been renewed and updated each decade; Montevideo IV's first objective is to "achieve effective implementation of, compliance with, and enforcement of environmental law,"[7] recognizing "the role of law, justice, and good governance in achieving sustainable development."[8] These efforts are, in principle, premised on the concept that actors who harm the environment, especially high-level responsible parties and in cases involving egregious harm, must be held accountable for their actions.

The 1992 Rio Declaration on Environment and Development also embraces these challenges, urging nation-states to enact environmental legislation, including laws "regarding liability and compensation for the victims of pollution and other environmental damage." Principle 16 of the Rio Declaration explicitly balances environmental harm and economic growth, seeking to "internalize environmental costs" through "economic instruments" that leave the polluter "in principle, bear[ing] the cost of pollution, with due regard to the public interest and without distorting international trade and investment."[9] Liability provisions often focus on pollution but are equally relevant to other types of environmental harms of mounting importance to tropical conservation, such as deforestation, trafficking of protected wildlife, illegal mining and logging, and soil, water, and air contamination from mining and illegal waste disposal.

Many countries have drafted environmental enforcement legislation informed by Montevideo and the Rio Declaration. Nation-states have incorporated sanctions for environmental crimes and civil violations in their criminal and civil codes and regulations; increasingly, they have also included liability for environmental harm (also known as liability for natural resource damages). These elements of enforcement collectively reflect the essence of the "polluter-pays" principle.[10]

In this Article, we examine the concept of liability for environmental harm, beginning with the emergence of environmental liability legislation in the United States and its spread to the European Union (EU). We then review the status of environmental liability in seven tropical and developing countries: Brazil; the Democratic Republic of Congo (DRC); India; Indonesia; Nigeria; Mexico; and the Philippines. These countries are globally significant for their extensive forest cover and biodiversity, and for their emerging statutory provisions for environmental liability. The Article offers a comparison of statutory provisions across countries, and concludes with recommendations for how liability provisions can be strengthened to better support tropical conservation and sustainability efforts.

II. Liability and Compensation for Environmental Harm

Civil and criminal sanctions are generally designed to promote compliance with laws and regulations. Liability for environmental harm is designed to compensate affected parties, with a particular focus on restoring or replacing injured resources and/or providing compensation for lost value. By increasing the costs for those who harm the environment, liability provisions can serve an important deterrent role.[11] Liability provisions can also serve as gap-fillers, covering activities not specifically identified as illegal, but nevertheless resulting in environmental harm.[12]

Courts in all seven tropical countries that we studied recognize private causes of action to recover economic losses, including lost income or profits, or loss of property values, from injuries to privately held resources. Yet, in many countries, a substantial share of natural resources are owned or regulated by the public sector. For example, the United States (for the most part) has not created private ownership rights to the atmosphere, oceans, estuaries, rivers, and plant and animal species, but rather has designated them as public trust resources, and has established a system of public management to promote beneficial uses of the resources at no (or limited) charge to the public. Consequently, establishing the authority to collect damages for

www.unep.org/delc/Portals/119/publications/Montevideo_ProgrammeI.pdf (last visited June 16, 2015).

6. *Id.* at 6.
7. UNEP Fourth Programme for the Development and Periodic Review of Environmental Law, UNEP/GC/25/INF/15, Feb. 16-20, 2009, *available at* http://www.unep.org/delc/Portals/119/montevideoIV.pdf (last visited June 16, 2015).
8. UNEP, Environmental Rule of Law, *available at* http://www.unep.org/delc/worldcongress/TheInternationalAdvisoryCouncil/tabid/105851/Default.aspx. Recent policy fora, such as the newly instituted United Nations Environment Assembly (UNEA), the Rio+20 UN Conference on Sustainable Development, the International Union for the Conservation of Nature World Conservation Congress, and the Inter-American Congress on the Environmental Rule of Law, have highlighted "rule of law" as an under-recognized instrumental factor in promoting sustainability. *See, e.g.*, Rio+20 Declaration on Justice, Governance, and Law for Environmental Sustainability §2.
9. United Nations Conference on Environment and Development, Rio de Janeiro, Braz., June 3-14, 1992, *Rio Declaration on Environment and Development*, princs. 11, 13, 16, U.N. Doc. A/CONF.151/26 (Vol. 1), 31 ILM 874 (1992).
10. *See, e.g.*, *id.* princ. 16; International Convention on Civil Liability for Oil Pollution Damage (Nov. 29, 1969), 973 U.N.T.S. 3 (replaced by 1992 Protocol (Nov. 27, 1992), 1956 U.N.T.S. 255); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. §§9601-9675, ELR Stat. CERCLA §§101-405 (1980); Oil Pollution Act (OPA), 33 U.S.C. §§2701-2761, ELR Stat. OPA §§1001-7001 (1990).
11. Adam D.K. Abelkop, *Tort Law as an Environmental Policy Instrument*, 92 Or. L. Rev. 381, 391-92 (2013). Wayne B. Gray & Jay P. Shimshack, *The Effectiveness of Environmental Monitoring and Enforcement: A Review of the Empirical Evidence*, 5 Rev. Envtl. Econ. & Pol'y 3, 12-17 (2011).
12. Abelkop, *supra* note 11.

harms to resources in the public domain is critical to protecting a country's natural heritage.

In comparing statutes on liability for environmental harm across countries, we consider five key features:

1. What scope of resources and classes of injuries are covered? In one approach to liability, some statutes only apply to specific identified resources (for example, migratory birds, endangered species, and resources in protected zones) and/or specific types of injuries (for example, oil/chemical spills and long-term releases). In another model, the coverage is not circumscribed to protected resources or inherently dangerous activities, but covers adverse loss of any resources in the public domain.

2. What liability standard applies? As a matter of public policy, a government may decide that under certain circumstances a strict liability standard applies, creating legal responsibility even when an actor does not possess the requisite intent or culpable mental state to be charged with a violation. Because strict liability expands potential legal liabilities to individuals who did not depart from a reasonable standard of care, it is used sparingly, most often in the context of abnormally hazardous activities.[13] Strict liability may be used in tandem with joint and several liability, where multiple parties are held liable and the plaintiff can collect the entirety of damages from any of the responsible parties. Alternatively, a negligence standard may apply, where liability is based upon the actor's failure to exercise the standard of care that a reasonably prudent person would have exercised in a similar situation.[14]

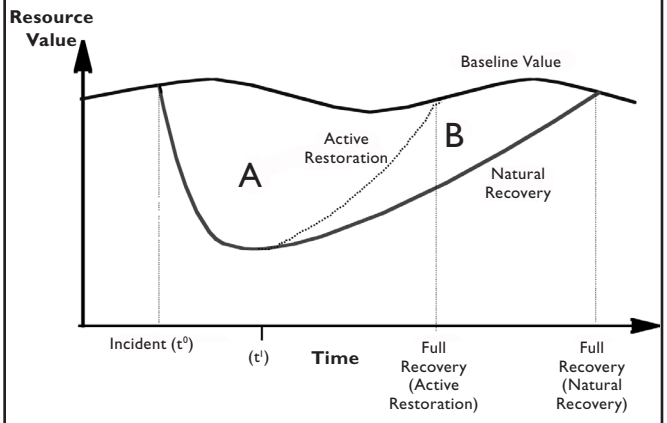
3. Who has standing to bring claims for damages? Typically, the government has standing to bring cases against parties that harm public resources. However, standing can be expanded to allow affected citizens, communities, civil society groups, and others to bring environmental liability cases. When standing is expanded, however, liability provisions may differ depending upon the type of plaintiff.

4. What is the measure of damages for environmental harm? The measure of damages has evolved over time. Recognizing that compensation for economic losses is insufficient to make the claimant whole, lawmakers have focused on the restoration or replacement of injured resources. One approach allows either for restoration or replacement of injured resources or, when restoration is not possible, monetary compensation for damages to resources. In contrast, another approach focuses on making the public whole for the injuries, which requires compensation not only for the costs of restoration or replacement, but also for the interim lost value from time of injury to full recovery of resource (see Figure 1). This is particularly important in cases where recovery may take a very long period or may never occur completely, such as releases of hazardous materials that do not readily degrade in the environment (heavy metals, radiation, or polychlorinated biphenyls) or deforestation of old growth forests. Making the public whole also requires taking into account all ecosystem services provided by the injured resources, not just lost income or profits from resources sold on the marketplace (for example, timber and fish) with which courts are familiar from private tort claims, but also the broader set of provisioning, regulating, habitat, and cultural services (see Box 1).

5. Is there a mandate that recovered funds are to be spent on the restoration? Is a system of oversight and accountability established to ensure that restoration of resources occurs and is successful? Some statutes establish specific funds dedicated to restoration and resource-related uses, into which recovered funds are to be deposited. Others do not designate restricted uses, with collected monies going into the general treasury for distribution according to broader government priorities. Oversight may involve monitoring the performance of restoration by public agencies or by the responsible parties, when they are ordered to perform the restoration.

Figure 1 illustrates how the value of a resource changes after a harmful environmental incident occurs, relative to the resource baseline value; and the relationship between the rates of resource recovery, either with active invest-

Figure 1: A "Make Whole" Measure of Damages: Restoration Costs Plus Interim Lost Value



Source: Figure 1 was adapted by the authors from graphics available at the National Oceanic and Atmospheric Administration (NOAA) website. A compendium of NOAA technical guidance documents on habitat equivalency analysis and scaling compensatory restoration is available at http://www.darrp.noaa.gov/economics/papers.html (last visited Aug. 11, 2015).

13. *See, e.g.*, Rylands v. Fletcher, 3 H. & C. 744, 159 Eng. Rep. 737 (1865), *rev'd* L.R. 1 (Ex. 265) (1866), *aff'd* L.R. 3 H.L. 330 (1868) (English & Irish Appeals).
14. Black's Law Dictionary, *Negligence* (10th ed. 2014).

ment in restoration or via natural recovery (without investment), and interim losses in resource value pending recovery. Time is represented on the horizontal axis. The vertical axis represents the value of services provided by an ecosystem affected by a particular release occurring at time t^0. Consider, for example, a fuel oil spill in a tidal wetland area. The oiling causes a die-back in the wetland vegetation and exposes birds, fish, and other animals to oil. On-site ecosystem services provided by the wetland may be impaired, including faunal food and shelter, sediment stabilization, nutrient cycling, and primary productivity. Off-site services (which are supported by the on-site ecological functions) that may be impaired include storm protection and flood control for shoreline properties, bird-watching along the flyway, and commercial and recreational fishing.

The loss in value (absent any restoration) is equal to the sum of the areas A+B in Figure 1. Restoration or replacement of injured or destroyed resources may expedite and/or increase the probability of recovery of resources and the associated ecosystem services. In this illustration, the losses with an active restoration program are represented by A. In other words, the benefits of the projects accrue as reductions in the interim lost value experienced by the public (where the reduction is equal to area B in the figure). If the damage claim is only for restoration and there is no claim for interim lost value, then the public will be worse off by the value A relative to the case where the incident did not occur.

Box 1 sets out the UNDP-UNEP's Millennium Ecosystem Assessment framework for ecosystem services, as recently updated.[15] Public resources can be considered natural capital, which provides a flow of many diverse services from which humans benefit both directly and indirectly. According to the most widely recognized framework for ecosystem services, articulated in the assessment, service flows include commercial products, such as minerals or timber, as well as a wide range of services not sold on the market. The challenge in compensating for all losses from natural resource injuries is to capture the value of losses to nonmarketed services. Box 1 shows the sets of market and nonmarket services identified in the framework.

Box 1: Framework for Ecosystem Services

Provisioning services (may be sold in a market)
Products obtained from ecosystems:
- food (e.g., seafood, game, crops, wild foods, spices)
- raw materials (e.g., lumber, skins, fuel wood, organic matter, fodder, fertilizer)
- genetic resources (e.g., crop improvement genes, health care)
- water
- minerals (e.g., coal, natural gas, diamonds)
- medicinal resources
- energy (e.g., hydropower, biomass fuels)

Regulating services (not sold on a market)
Benefits obtained from the regulation of ecosystem processes:
- carbon sequestration and climate regulation
- waste decomposition and detoxification
- purification of water and air
- pest and disease control
- water regulation

Habitat services (not sold on a market)
Benefits from the quality of the habitat include:
- Maintenance of life cycles of migratory species (e.g., nursery services)
- Maintenance of genetic diversity (especially in gene pool protection)

Cultural and amenity services (not sold on a market)
Nonmaterial cultural and amenity benefits people obtain from ecosystems include:
- recreational experiences (e.g., ecotourism, outdoor sports, recreation)
- cultural benefits (e.g., use of nature as motif in books, film, painting, folklore, national symbols, architect, advertising)
- spiritual and historical (e.g., use of nature for religious or heritage value or natural)
- science and education (e.g., use of natural systems for school excursions and scientific discovery)

Source: The Economics of Ecosystems & Biodiversity, Ecological and Economic Foundations (Pushpam Kumar ed., 2010), *available at* http://www.teebweb.org/our-publications/teeb-study-reports/ecological-and-economic-foundations/.

III. Emergence of Environmental Liability Provisions in the United States

Environmental liability has strong roots in early U.S. environmental law,[16] which possesses well-articulated, long-standing statutes and guidelines on liability provisions that have heavily influenced legislation globally. Federal environmental legislation dramatically expanded in the 1970s, a decade that saw passage of the Clean Air Act (CAA)[17] and Clean Water Act (CWA).[18] The first wave of statutes, however, did not provide for liability to compensate for environmental harm. Liability provisions evolved over the following decades, with innovative mechanisms surmounting historical restrictions that limited standing and the types of damages claimed and recoveries permitted. One set of statutes, including the Comprehensive Emergency Response, Compensation, and Liability Act (CERCLA) and the Oil Pollution Act (OPA), established protocols dedicated to the prevention and response of oil spills and liability for discharges of hazardous substances and oil.[19] Another set of provisions, including the National Marine

15. The Economics of Ecosystems & Biodiversity, Ecological and Economic Foundations (Pushpam Kumar ed., 2010), *available at* http://www.teebweb.org/our-publications/teeb-study-reports/ecological-and-economic-foundations/.
16. *See* Robert V. Percival, *Liability for Environmental Harm and Emerging Global Environmental Law*, 25 Md. J. Int'l L. 37, 42-43 (2010).
17. 42 U.S.C. §§7401-7671q, ELR Stat. CAA §§101-618.
18. 33 U.S.C. §§1251-1387, ELR Stat. FWPCA §§101-607.
19. 42 U.S.C. §§9601-9675 (CERCLA); 33 U.S.C. §§2701-2720 (1990) (OPA).

Sanctuaries Act (NMSA) and the Park System Resource Protection Act, established protected areas for special resources and mandate the development of resource management plans with liability provisions prohibiting injuries to the protected resources.[20]

Liability under the U.S. natural resource damages statutes is thus circumscribed, covering certain actions, such as oil spills, hazardous substance spills, long-term discharges; and certain places, such as marine sanctuaries and national parks. Within these contexts, the U.S. Congress chose to impose strict, retroactive, joint and several liability for environmental harm, which in the U.S. statutes is generally referred to as natural resource damages.[21] As the U.S. Supreme Court emphasized in 1989 in *Pennsylvania v. Union Gas Co.*, "The remedy that Congress felt it needed in CERCLA is sweeping: *everyone* who is potentially responsible for hazardous-waste contamination may be forced to contribute to the costs of cleanup."[22]

The statutes designate federal and state resource management agencies and tribal authorities as trustees on behalf of the public for natural resources—including the atmosphere, oceans, estuaries, rivers, and plant and animal species—and grant the public trustees authority to recover damages from responsible parties.[23] Further, the statutes extend the measure of damages beyond the traditional limited common-law measure of lost income or profit, or the diminution in value of the resources as a result of the injury.[24]

Recognizing that diminution in value is not always adequate to make the claimant whole, courts began awarding restoration costs.[25] The statutes expand the measure of damages beyond restoration costs, because the recovery of injured resources takes time during which the public continues to incur losses from the injury. As a consequence, the U.S. measure of damages for natural resource injuries typically covers the cost of restoring the resources to baseline conditions, plus the interim loss in value (market and nonmarket) from the time of the incident until full recovery.[26]

Underscoring the legislations' resource protection goals, Congress mandated that trustees spend all recovered funds on restoring injured resources or acquiring equivalent natural resources. Monies are paid to resource agencies specifically to finance restoration activities. Compensation is not paid directly to the public in dollars but rather in resources.

The OPA, enacted following the *Exxon Valdez* oil spill, contains the most complete and explicit expression of penalties and liability for damages among the statutes discussed above. It provides a right to recover damages for injuries to public trust resources and creates a right of recovery for purely private-party damages from oil spills. The implementing regulations further elaborate on the concept and measurement of environmental harm/natural resource damages.[27]

Because the statute specifies that all recoveries are to be spent on restoring injured resources or acquiring equivalent natural resources, the approach of OPA trustees has been to quantify the injuries across all ecosystem services and determine the type and amount of compensatory restoration projects that will make the public whole. The damage claim becomes the cost of the restoration projects, plus the costs of assessing the damages. Ecosystem services covered include those people directly enjoy (for example, food, fuel, timber, and recreation) and the regulating and habitat services that have more indirect linkages to people, but are nonetheless critical (for example, nutrient cycling and soil formation).[28] Regulations identify several methodological approaches for implementing the resource compensation measure of damages, and technical information on methods is further elaborated in a series of guidance documents.[29]

Many cases have been brought under the various liability statutes. For example, in 2015, BP Exploration and Production, Inc. agreed in principle with the state and federal trustees to a settlement of $8.1 billion in natural resource damages for the 2010 *Deepwater Horizon* oil spill.[30] Over the past 20 years, numerous entities have also settled CERCLA claims, the largest of those being the 1995 Blackbird Mine settlement for just over $59 million in restoration costs.[31]

---

20. 32 U.S.C. §§1431-1445c (2000) and 54 U.S.C. §§100701-100755 (2014), respectively. Other federal statutes containing natural resource trustee provisions include the CWA; Deepwater Port Act of 1974, 33 U.S.C. §§1501-1524 (1974); Outer Continental Shelf Lands Act Amendment of 1978, 43 U.S.C. §§1801-1866 (1978); and the Trans-Alaska Pipeline Authorization Act, 43 U.S.C. §§1651-1656 (1973). These statutes broadly define natural resources to include land, fish, wildlife, biota, air, water, groundwater, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States, any state or Indian tribe, or any foreign government.
21. 33 U.S.C. §2702(b)(2) (OPA); 16 U.S.C. §1443(a)(1)(A) (NMSA); 54 U.S.C. §100721(1) (Park System Resource Preservation Act). Strict liability is not actually mentioned in CERCLA, but courts have consistently held that Congress intended to impose strict liability upon enacting CERCLA. *See, e.g.*, United States v. Monsanto Co., 858 F.2d 160, 167, n.11, 19 ELR 20085 (4th Cir. 1988) ("We agree with the overwhelming body of precedent that has interpreted [CERCLA] as establishing a strict liability scheme.").
22. 491 U.S. 1, 21, 19 ELR 20974 (1989).
23. *See, e.g.*, 42 U.S.C. §9607(f)(1)(2).
24. *See* J.H. Cooper, Measure of Damages for Destruction of or Injury to Trees and Shrubbery, 69 A.L.R.2d 1335 (1960).
25. *See, e.g.*, Heninger v. Dunn, 101 Cal. App. 3d 858 (Cal. Ct. App. 1980).
26. *See, e.g.*, 33 U.S.C. §2702(b) (damages under the OPA).
27. Natural Resource Damage Assessments, 15 C.F.R. §990 (1996) (promulgated by the National Oceanic and Atmospheric Administration (NOAA)).
28. *See* Carol Adaire Jones, *Economic Valuation of Resource Injuries in Natural Resource Liability Suits*, 126 J. Water Resources Plan. & Mgmt. 358-65 (2000).
29. 43 C.F.R. pt. 11; 40 C.F.R. pt. 300.
30. U.S. Dep't of Justice (DOJ), Statement by Attorney General Loretta E. Lynch on the Agreement in Principle With BP to Settle Civil Claims for the Deepwater Horizon Oil Spill (July 2, 2015*), available at* http://www.justice.gov/opa/pr/statement-attorney-general-loretta-e-lynch-agreement-principle-bp-settle-civil-claims. This was the largest environmental settlement in the history of the United States ($18.7 billion), and the largest civil settlement with a single entity ever by DOJ. Other elements of the settlement include a $5.5 billion CWA civil penalty (the largest civil penalty in the history of environmental law), $5.9 billion to settle claims by state and local governments for economic damages they have suffered as a result of the spill, and $600 million for other claims, including claims for reimbursement of natural resource damage assessment costs.
31. Press Release, NOAA, United States, Idaho Announce $60 Million Superfund Settlement; Mining Companies Agree to Restore Chinook Salmon,

IV. Spread of Liability Provisions: The EU's Environmental Liability Directive

U.S. environmental liability provisions have heavily informed similar statutes globally. This influence is particularly evident in the EU's Environmental Liability Directive (ELD),[32] adopted in 2004 and integrated into Member States' legislation by 2010.[33] The ELD provides a lowest common denominator template for national regulations to establish a common liability framework.

The ELD imposes liability for the prevention and remediation of certain classes of environmental harm, including damage to species and natural habitats protected under prior directives[34] and, at the option of Member States, nationally protected biodiversity, water, and soil/land, including any contamination of land that creates a significant risk to human health.[35] Some environmental harms are explicitly exempted, including those that do not meet certain threshold criteria of adverse effects, or that fall within the scope of several listed international civil liability conventions relating to oil spills.[36]

Strict liability applies in limited circumstances involving risky, or potentially risky, activities or in cases where operators are found at fault or negligent.[37] Liability is generally Member State-specific; depending on the State's implementing legislation, liability for environmental damages could be joint and several, several, or proportional.[38]

Member States are authorized to designate a "competent authority" responsible for fulfilling enforcement and other duties under the ELD, as in the U.S. trustee system. Individuals do not have standing to bring actions, but are provided a procedural right through "request(s) for action" on the part of its Member State.[39] Should the competent authority choose not to act, the persons are permitted to access a court or other independent and impartial public body that reviews the legality of the agency's decision.[40]

Similar to the OPA in the United States, damages under the EU's ELD are based on the costs of remediation measures rather than on the monetary value of the natural resources impacted.[41] Compensation further involves interim losses, at least in situations concerning bodies of water, protected species, and covered habitats.[42] In addition, operators can be held liable for the costs of assessing environmental damage; the administrative, legal, and enforcement costs; the costs of data collection and monitoring; and oversight costs.[43] Unlike CERCLA, however, the ELD provides no retrospective liability. The EU has created guidance materials for developing damage claims, drawn extensively on U.S. methods.[44]

The ELD does not place a numerical limit on the size of damage claims, but notes that remediation costs should not be disproportionate to the monetary value of the natural resources injured or to the benefits of a particular remediation option. Competent authorities are required to weigh a variety of criteria, including cost, when selecting the most appropriate remediation options.[45] The ELD does not apply to claims for personal injury, property damage, or economic loss, but does not preclude Member States from establishing a civil liability system, as the OPA does in the United States.[46] To date, the ELD has been applied in only a few cases of environmental damage. According to a 2013 study by the European Commission, in the majority of cases studied across seven Member States, it was not possible to apply the ELD due to limitations in coverage, related notably to the high thresholds for harm (particularly for water and biodiversity damage) set by the ELD or the limits to strict liability; in other cases, the ELD was not

Natural Resources (May 1, 1995), *available at* http://www.publicaffairs.noaa.gov/pr95/may95/blkbrd2.html.

32. European Union (EU), Envtl. Liability Directive (ELD), Council Directive 2004/35/EC, 2004 O.J. (L. 143/56) (discussing liability with regard to the prevention and remedying of environmental damage).
33. Barbara J. Goldsmith & Edward Lockhart-Mummery, *The ELD's National Transposition*, *in* The EU Environmental Liability Directive: A Commentary 140 (Lucas Bergkamp & Barbara Goldsmith eds., 2013).
34. Council Directive 92/43/EEC 1992 O.J. (L. 206/7) (discussing the conservation of natural habitats and wild fauna and flora); Council Directive 2009/147/EC 2010 O.J. (L. 20/7) (discussing the conservation of wild birds).
35. Council Directive 92/43/EEC 1992, *supra* note 34; Council Directive 2009/147/EC 2010, *supra* note 34; Council Directive 2000/60/EC 2000 O.J. (L. 327) (establishing a framework for community action in the field of water policy). Unlike the ELD, these directives do not contain provisions that enable Member States to order certain persons to remediate environmental damage, or to recover costs. *See* EU, *Resource Equivalency Methods for Assessing Environmental Damage in the EU*, Deliverable No. 5: Legal Analysis, at 13 (2006), *available at* http://www.envliability.eu/docs/LegalAnalysis_D5_PRDF_071206_FINAL.pdf.
36. The International Convention on Civil Liability of Oil Pollution Damage, in force in most of the Member States, covers environmental damage caused by oil tankers and other oil transporting ships. *See* International Maritime Organization Protocol of 1992 to Amend the International Convention on Civil Liability for Oil Pollution Damage of Nov.29, 1969 (Nov. 27, 1992).
37. *See* ELD Annex III (includes activities that release heavy metals into water or air, installations producing dangerous chemicals, landfill sites, and incineration plants).
38. *See* The EU Environmental Liability Directive: A Commentary 212-20 (Lucas Berkamp & Barbara Goldsmith eds., 2013).
39. ELD art. 12(1). In a request for action, any natural or legal persons affected or likely to be affected by environmental damage, having a sufficient interest in environmental decisionmaking relative to the damage, or alleging the impairment of a right guaranteed by a Member State "can submit to the competent authority any observations relating to instances of environmental damage or an imminent threat of such damage . . . and . . . to request [it] to take action . . . ." Individual Member States are entitled to determine what constitutes a "sufficient interest" or "impairment of a right" that triggers a request for action, though the ELD notes that "the interest of any non-governmental organization promoting environmental protection and meeting any requirements under national law" shall be deemed to have such a sufficient interest.
40. ELD art. 13(1).
41. *See id.* art. 8(4).
42. *See id.* art. 2(11) & (13), Annex II, ¶ 1(c) & (d). For soil pollution or land damage, remediation measures do not take into account interim losses.
43. *See* ELD arts. 2(16), 8(1), *available at* http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32004L0035&from=EN.
44. *See* EU, *Resource Equivalency Methods*, *supra* note 35.
45. *See* ELD, Annex II, ¶ 1.3.1. However, the ELD offers one other option for Member States to prevent the operator concerned being confronted with a disproportionate claim. According to paragraph 1.3.3(b) of Annex II, the competent authority is entitled to decide that no further remedial measures need to be taken if "the cost of the remedial measures that should be taken to reach baseline condition or similar level would be disproportionate to the environmental benefits to be obtained." No guidance is provided on how to determine when this is the case; it is up to the Member States to decide.
46. ELD art. 3(3).

applied for nonlegal reasons, including lack of expertise or experience.[47] In several cases, preexisting legislative frameworks in the Member States were used instead of the ELD because they were considered more stringent.[48]

V. Spread of Liability Provisions: Seven Tropical Developing Countries

A. Introduction

Liability provisions have also emerged in the laws of a number of tropical and developing countries. In considering the role of liability for environmental harm to help conserve and sustainably manage tropical biodiversity and ecosystems, we selected seven tropical countries of global significance for their forest ecosystems, biodiversity, and forest carbon stocks. These include Brazil, the DRC, and Indonesia, which host the world's three largest remaining tropical lowland rainforests,[49] as well as three additional megadiversity countries India, Mexico, and the Philippines.[50] Several of these countries also rank among the highest in global environmental impact in terms of total resource use, emissions, and species threatened.[51] The countries are also exploring the use of liability provisions to address leading threats to tropical biodiversity and ecosystems, such as deforestation from agricultural expansion, environmental degradation from development, illegal resource takings, oil spills, and chemical contamination from mining and industrial production. As a contrast, we also selected Nigeria, a high biodiversity country facing rapid environmental change[52] but without significant public resource liability provisions in its laws.

The sample spans a range of human development[53] and environmental governance contexts.[54] Liability authority exists across legal regimes: India and Nigeria are common-law jurisdictions; Brazil, the DRC, and Mexico are civil law jurisdictions; and Indonesia and the Philippines are a mixture of civil, common-law, and other legal systems. We provide an overview of the state of environmental liability in each country, informed by national statutes and subsidiary regulations, public reports of cases, and inputs from legal experts from each country.

B. Nigeria

To establish a baseline, our analysis begins with Nigeria, whose laws lack significant liability provisions. Nigeria's system of governance is rooted in common law, but also includes a constitutional prohibition against the exploitation of natural resources and a mandate that the state "shall protect and improve the Environment and safeguard the water, air and land, forest and wild life of Nigeria."[55] Nigeria also recognizes the right to life and the right to respect and dignity of one's person,[56] which the Federal High Court of Nigeria has held includes the right to a clean, poison-free, pollution-free, and healthy environment.[57]

The National Environmental Standards and Regulation Enforcement Agency Act (NESREA)[58] of 2007 authorizes the government to ensure compliance with environmental laws.[59] It does not contain provisions regarding natural resource damages or causes of action for liability for harm to public resources. However, several Nigerian statutes and regulations provide causes of action for victims of oil pollution and environmental harms to private resources.[60] Under the Oil Pipelines Act, courts are to consider several factors including any damage done to buildings, crops, or profitable trees; disturbances caused by the holder; and the loss (if any) in value of the land or interests in land. Individuals and communities have successfully used this law to seek compensation for damage to their property.[61]

47. European Comm'n (EC)-DG Env't, *Implementation Challenges and Obstacles of the Environmental Liability Directive* 13 (May 16, 2013).
48. *Id.*
49. United Nations Food and Agric. Org. (FAO), *Global Forest Resources Assessment 2010* (2010), *available at* http://www.fao.org/forestry/fra/fra2010/en/; UNEP, *Forest*, *available at* http://www.unep.org/ecosystemmanagement/UNEPsWork/TerrestrialEcosystems/Forests/tabid/3166/Default.aspx (describing Congo Basin forest as the second largest rainforest in the world); U.S. Agency for Int'l Dev. (AID), *Brazil: Property Rights and Resource Governance Profile* 13 (2010), *available at* http://usaidlandtenure.net/sites/default/files/country-profiles/full-reports/U.S.AID_Land_Tenure_Brazil_Profile.pdf (noting that Brazil contains nearly one-half of the world's remaining rainforests); Global Forest Watch/Forest Watch Indonesia, *The State of the Forest: Indonesia* 1 (Emily Matthews ed., 2002) (noting that Indonesia has the third most tropical rainforests in the world, behind Brazil and the DRC).
50. Norman Myers et al., *Biodiversity Hotspots for Conservation Priorities*, 403 Nature 853-58 (2000); Russell A. Mittermeier & Cristina Goettsch Mittermeier, Megadiversity: Earth's Biologically Wealthiest Nations (1997).
51. Corey J.A. Bradshaw et al., *Evaluating the Relative Environmental Impact of Countries*, PLoS One 5, e10440 (2010) (placing Brazil, India, Indonesia, and Mexico among these countries).
52. U.S.AID, Nigeria Biodiversity and Tropical Forestry Assessment 1 (2008), *available at* http://pdf.usaid.gov/pdf_docs/PNADN536.pdf.
53. United Nations Development Programme (UNDP), *Human Development Index*, http://hdr.undp.org/en/content/human-development-index-hdi (reflecting health, education attainment, and standard of living indicators) (last visited Aug. 15, 2015).
54. Jesse Worker & Lalanath De Silva, World Res. Inst., The Environmental Democracy Index, *Technical Note* (2015) (reflecting indicators of access to information, access to public participation, and access to justice of citizens regarding decisions about the natural resources that sustain their communities), *available at* www.environmentaldemocracyindex.org (last visited Aug. 15, 2015).
55. Constitution of Nigeria (1999), §§17(2)(d), 20.
56. *Id.* §§33(1), 34(1).
57. Gbemre v. Shell Petroleum Co. Dev. Nigeria, Ltd [2005] AHRLR 151 (NgHC 2005).
58. National Environmental Standards and Regulation Enforcement Agency Act No. 25 (2007) (NESRAE) (Nigeria).
59. NESRAE §7.
60. Oil Pipelines Act (1956) Cap. (226) §11(5) (Nigeria). *See also* Nigerian Minerals & Mining Act §125 (2007); Petroleum Act (1969) (Cap. 350) §37, sched. 1 (Nigeria) (obligating operators to pay "adequate compensation" to any person whose fishing rights are interfered with by the unreasonable exercise of the operator's rights).
61. Oil Pipelines Act §20(2). *See* Bodo Cmty. v. Shell Petroleum Dev. Co. of Nigeria, Ltd., 2014, EWHC 1973 (TCC), ¶ 7. In *Bodo*, the High Court of London, applying Nigerian law, found that the statutory remedies under the

Moreover, Nigerian courts have also extended the private cause of action to include damages on behalf of entire communities. For example, in *Agbara v. Shell Petroleum*, the Federal High Court of Nigeria awarded the Ejama-Ebubu community 14.5 billion Naira (approximately US$72.5 million) in damages arising from an oil spill. The award included N4.5 billion (US$22.5 million) for special damages such as agricultural damage, forestry, fishing and hunting losses, and health hazards; and N10 billion in punitive damages. It also required remediation and cleanup to rehabilitate the affected area to baseline status.[62]

Despite this statutory liability, many claims in Nigeria are brought as common-law claims under the theories of negligence, nuisance, and strict liability.[63] Courts have used Nigerian common law to hold defendants liable for damage to plaintiffs' ponds, lakes, and farmlands, but there is no recognition of environmental injury separate from injuries suffered as a result of ownership of property.[64]

In practice, the primary determinant of compensation for oil spills in Nigeria is the rate schedule established by the Oil Producers Trade Sector in 1997 for the market value for certain traded resources, including certain species of trees and crops. Injured parties often complain that court delays, lack of public information regarding settlement sizes, and the relative imbalance of bargaining positions between claimants and oil producers result in a lack of fair and adequate compensation for environmental harms.[65]

C. Indonesia

Indonesia shows a strong potential for natural resource liability, but significant problems remain, particularly in enforcement of fines and damage awards. Indonesia's Constitution expressly incorporates environmental rights, including the human right to "a proper and healthy environment" for every Indonesian citizen.[66] Indonesia's first environmental laws were enacted in 1982 and substantially revised in 2009 by Law No. 32, Environmental Protection and Management (Act),[67] and implemented in part through supporting regulations.[68] Law No. 32 implements the constitutional right to a healthy environment and includes the "polluter-pays" principle, defined in a statutory annotation to mean that "every personnel in charge of business and/or activities polluting and/or damaging the environment is obliged to bear the cost of environmental restoration."[69] The statute provides that "[e]verybody shall be obliged to preserve the environmental functions as well as control environmental pollution and/or damage," and prohibits, among other things, "committing action causing environmental pollution and/or damage."[70] Prohibitions are enforced through a permitting regimen and include administrative sanctions, civil enforcement, or criminal charges.[71]

Law No. 32 also establishes liability for harm to natural resources. It is not limited to specific resources or types of injuries. Actionable damages are defined as human actions that "directly or indirectly" change the "physical, chemical and/or biological characteristics of the environment so as to exceed the standard criteria for [pollution and/or] environmental destruction."[72] Any entity found to be polluting or otherwise damaging the environment must mitigate damages and restore the environment.[73] Parties are obliged to restore "the environmental function" in phases: discontinuation of the source of pollution and cleaning of the pollutant; remedy; rehabilitation; restoration; and other methods in accordance with scientific and technological advances.[74] The government forces polluters to restore the environment, or alternatively to appoint a third party to do so at the polluter's expense.

Article 87 requires polluters to pay compensation for losses and to install or improve waste treatment units, restore environmental functions, and/or eliminate the causes of environmental pollution and/or destruction.[75] Accompanying regulations further specify categories of environmental goods and services, including biodiversity, genetic resources, timber stocks, carbon stocks, and hydrological services, and provide basic guidelines for calculating damages, including default values per hectare for losses to biodiversity, genetic resources, and carbon stocks.[76] For lost timber stocks, compensation includes the cost of restoration and maintenance; for lost hydrological services, compensation includes costs of waste management, evaluating environmental impact and monitoring environmental recovery, and interim losses from environmental harms.

Strict liability is selectively imposed, including for entities handling hazardous and toxic materials "and/or causing serious threat to the environment."[77] The Act also requires permit holders to provide funds to guarantee restoration

Oil Pipelines Act superseded any common-law causes of action and therefore limited the plaintiffs to statutory damages.

62. Agbara v. Shell Petroleum Dev. Co. of Nigeria, Ltd., No. FHC/ASB/CS/231/2001 (June 14, 2010).
63. Danielle Schopp & John Pendergrass, *Natural Resource Valuation and Damage Assessment in Nigeria: A Comparative Analysis* 20 (Envtl. L. Inst. 2003).
64. *See* Umudje v. Shell BP Petroleum Dev. Co. of Nigeria, Ltd. (1975) 9-11 S.C. 155 (Nigeria S. Ct.); Edhemowe v. Shell BP Petroleum Dev. Co. of Nigeria, Ltd., Suit No. UHC/12/70 (Ughelli High Court Jan. 29, 1971) (unreported) (discussed in Ambrose O.O. Ekpu, *Environmental Impact of Oil on Water: A Comparative Overview of the Law and Policy in the United States and Nigeria*, 24 Denv. J. Int'l L. & Pol'y 55, 93 (1995).
65. Schopp & Pendergrass, *supra* note 63, at 23.
66. Undang-Undang Dasar Republik Indonesia 1945, UUD '45 [Constitution] art. 28 (1945) (Indon.).
67. Environmental Protection and Management (EPM) Act, Law No. 32/2009.
68. Ministry of Env't Reg. No. 7 of 2014 on Environmental Loss Due to Pollution and/or Environmental Damage.
69. EPM Act art. 2; annot. art. 2(j).
70. *Id.* arts. 65, 67, 69.
71. *Id.* arts. 76, 97-120
72. *Id.* art. 1(14)-(17).
73. Mitigation is defined as: (1) providing warnings and information about the environmental damage to affected communities; (2) isolating the pollution/damage; (3) discontinuing the source of pollution/damage; or (4) other methods in accordance with scientific and technological advances. EPM Act arts. 53-54.
74. *Id.*
75. *Id.* annot. art. 82.
76. Ministry of Environment Regulation No. 13 of 2011 on Compensation for Pollution and/or Environmental Damages.
77. EPM Act art. 88.

of environmental function. The Indonesian government holds these funds, which do not affect an entity's liability, and can dispense them to third parties in the event that a party violates its permit and damages the environment.[78]

Many different actors are authorized to sue or seek settlement to resolve environmental disputes.[79] Both the federal government and "regional governments in charge of environmental affairs" may file suit. Additionally, communities may file class action lawsuits in their own interest and/or the public interest when they have suffered losses from environmental pollution/damage. Environmental organizations may also sue in the interest of conserving the environmental function, but such suits "shall be limited to the implementation of certain measures without demand for compensation, except the real cost or expenditure."[80] "Everybody" is permitted to file lawsuits against the state on the grounds that an administrative decision did not comply with procedural duties, such as the failure to conduct a proper environmental impact assessment.

Liability provisions are also included in the 1999 Forestry Law.[81] All Indonesian land is designated as either "forest" or "non-forest," and the Forestry Law applies to all forest land. Forests in Indonesia are considered a "state controlled asset" to be managed for "the maximum prosperity of the people,"[82] with the important recent exception of indigenous customary forest lands, which are beginning to be reconsidered in light of community land claims.[83] Parties with non-forest-related licenses are required to reclaim or rehabilitate any altered lands that have been changed pursuant to their activities.[84] The Forestry Law states that no one may "destroy the infrastructure and facilities of forest protection," and anyone using forests "is not allowed to undertake any activities leading to forest damage."[85] In practice, Indonesia is increasingly employing the full range of legal tools—domestically referred to as the multi-door approach—to address environmental problems, drawing upon anti-corruption and agricultural-sector legislation as well as Law No. 32 and the Forestry Law.

Indonesia's courts are beginning to play an important role in environmental enforcement. The Indonesian Supreme Court established a "Green Bench" via a national certification scheme to help prepare judges to deal with environmental legislation. In a precedent-setting case, PT Kallista Alam, a palm oil company holding a disputed concession permit to operate a plot in Leuser National Park, was found liable in 2014 for more than US$9.5 million in fines[86] and approximately US$21 million in cleanup, restoration, and rehabilitation costs for illegally destroying over 1,000 hectares of protected peat forest critical to endangered orangutans.[87] The decision was affirmed by the Indonesia Supreme Court in August 2015.[88] Kallista Alam was found to have violated Law No. 32 and numerous implementing regulations. Injuries included (1) soil damages to peat land; (2) greenhouse gas emissions; and (3) environmental damages to the land, which covered ecological losses (loss of water storage function from peat land, compensated by building a reservoir); biodiversity and genetic resources losses; losses from carbon sequestration and reduction; economic losses (loss of service life, replanting, and maintenance for 15 years); and other expenses (compost, transportation, and rehabilitation costs). In additional criminal proceedings, several members of the company's leadership were found criminally liable and face fines, imprisonment, and property confiscation.

Questions remain as to whether the *Kallista Alam* decision represents the emergence of a broader enforcement trend. Two recent Sumatran cases, however, closely mirror its facts and charges. In 2014, Malaysian-owned PT Adei Plantation Industry was charged with operating a palm oil plantation without a license and illegally clearing peat lands.[89] Though the company was originally acquitted, on appeal, the Riau District Court found company representatives guilty of negligence and sentenced the general manager to one year imprisonment and a fine of approximately US$150,000. The company was fined US$113,000, in addition to US$1.1 million in restoration costs for 40 hectares.[90] Even this sentence has been criticized as inadequate, and the prosecutor is reportedly seeking an appeal.

78. *Id.* art. 55.
79. *Id.* arts. 90-93.
80. *Id.* art. 92. Environmental organizations are defined as "a group of organized people and established on the basis of their own will, having goal and activity related to the environment." *Id.* art. 1(27).
81. Forestry Law, Law No. 41/1999.
82. Forestry Law art. 4. Over 95% of Indonesian forestry lands are public lands administered by the government; less than 2% are private lands. *See* Global Forest Watch, *Indonesia*, *available at* http://www.globalforestwatch.org/country/IDN.
83. *See* Case No. 35/PUU-X/20 (May 16, 2013), Mahkamah Konstitusi Republik Indonesia [Constitutional Court of the Republic of Indonesia] (granting indigenous people the right to manage the forests in which they live).
84. The statute gives the example of mining permit holders as a non-forest-related permit holder. Forest Law arts. 35, 45.
85. Forestry Law art. 50.
86. Calculations are based on the Ministry of Environment Regulation No. 13 (2011) (on Compensation for Pollution and/or Environmental Damages), where fines are based on the schedules for losses of carbon stock, biodiversity, and genetic resources per hectare of peat land and calculation of lost timber production value.
87. *See* Rhett A. Butler, *In Precedent-Setting Case, Palm Oil Company Fined $30M for Destroying Orangutan Forest*, Mongabay.com (Jan. 9, 2014), http://news.mongabay.com/2014/0109-aceh-tripa-court-decision.html (last visited Oct. 11, 2015).
88. Hans Nicholas Jong, *Record Fine Against Plantation Company Upheld*, Jakarta Post, Sept. 13, 2015, *at* http://www.thejakartapost.com/news/2015/09/13/record-fine-against-plantation-company-upheld.html#sthash.SYwx6cmT.dpuf (note that the difference in dollar value for the award between the original and Supreme Court decisions is due to a change in the exchange rate, not a change in the award).
89. Made Ali, *Kisah hakim bebaskan terdakwa kasus perkebunan ilegal PT Adei Pelalawan Riau*, Mongabay.co.id (July 24, 2014), *available at* http://www.mongabay.co.id/2014/07/24/kisah-hakim-bebaskan-terdakwa-kasus-perkebunan-ilegal-pt-adei-pelalawan-riau-bagian-1-dari-2-tulisan/; Made Ali, Jaksa ajukan kasasi atas vonis bebas PT Adei Plantation, Mongabay.co.id (Aug. 25, 2014), *available at* http://www.mongabay.co.id/2014/08/25/jaksa-ajukan-kasasi-atas-vonis-bebas-pt-adei-plantation-bagian-2-dari-2-tulisan/.
90. *See* Riau Corruption Trial (June 16, 2014) (Agar JPU menuntut PT. Adei Plantation Industry 10 tahun penjara, denda Rp 10 miliar dan penutupan sebagian tempat usaha serta perbaikan kerusakan lingkungan hidup), *available at* http://rct.or.id/index.php/berita/194-jelang-tuntutan-terdakwa-pt-adei-plantation-industry.

In the case of PT National Sago Prima, also charged with fire damages related to palm oil development, a lower court found two managers guilty of negligence in responding to a fire risk on their plantation. Notably, while the managers were sentenced to prison and levied comparatively small fines and the company was required to prepare firefighting equipment to mitigate future risks, the company was not found liable for environmental restoration. Moreover, the two managers were later acquitted on appeal by a higher court, although the presiding judges are now under investigation for corruption.[91] Two additional cases are ongoing, including one against PT Bumi Mekar Hijau, a subsidiary of Asia Pulp and Paper, for over US$500 million in damages and restoration costs for fires on 20,000 hectares in South Sumatra.[92]

These cases indicate a strong potential for natural resource liability in Indonesia, while also illustrating problems, including the considerable variation in the law's application (often a function of judicial and prosecutorial discretion and capacity) as well as broader governance challenges involving due process and corruption. Experts also note that Indonesian courts have levied tens of billions of dollars in fines against logging, pulp and paper, mining, and palm oil companies in recent years, only a fraction of which has ever been paid.[93]

D. Mexico

Mexico has made several significant changes to its system of environmental law in recent years, including imposing liability for damage to the environment, although it is still too soon to assess implementation of the new law. Mexico's legal regime is a civil law system that constitutionally guarantees various environmental rights. The original Mexican federal Constitution, adopted in1917, established federal ownership of all land and natural resources, authorized regulation to guarantee the conservation of natural elements and social wellness, and mandated the establishment of adequate provisions to protect lands, waters, and forests and avoid the destruction of natural resources.[94] In 1987, the Constitution was amended to introduce a concurrent state/federal jurisdictional system to legislate environmental issues, and mandated that adequate provisions must be established to manage lands, waters, and forests to preserve and restore ecological balance.[95] Since then, the Constitution has been amended to include the concept of sustainable development, the right to a healthy environment, and an endorsement of environmental liability: "Environmental damage and deterioration will generate a liability for whoever provokes them in terms of the provisions by the law."[96]

In 1988, Mexico passed its principal environmental law, the General Act for Ecological Balance and Environmental Protection (LGEEPA).[97] Under LGEEPA, as amended in 1996, the federal government is authorized to enforce environmental laws, with corresponding mandates to preserve biodiversity, establish national environmental policies, and introduce the concept of sustainable preservation of natural resources, be they public or privately owned. The law also authorizes the government to bring suit for criminal and civil violations.[98]

More recently, in 2013, Mexico passed the Federal Environmental Liability Act to govern environmental liability for public and privately owned resources.[99] The law requires those causing environmental harm to restore damaged environments to their prior baseline or pay for damages when restoration is impossible. Restoration includes rehabilitating habitats, ecosystems, natural elements, and resources to their baseline chemical, physical, or biological conditions. Environmental damages are defined as the "measurable adverse loss, deterioration, harm, affectation or modification of the chemical, physical and biological conditions of habitats, ecosystems, natural elements and resources as well as of their interaction relationships and the environmental services provided by the same." The law evinces a strong preference for restoring the damaged ecosystems, with a second option of restoring resources in the same region with equivalent natural resources or in an alternative location linked to the affected area. If each of these modes of restoration proves to be inadequate, then parties may seek monetary compensation, which can only be ordered "exceptionally."[100] The statute thus seeks to promote environmental restoration over monetary compensation.

Beyond restoration costs or damages for environmental harm, judges may also impose penalties for intentional violations.[101] Monetary awards, either from economic sanctions or punitive damages, are directed to the Environmental Liability Fund administered by the Secretariat of the Environment and Natural Resources (SEMARNAT). These funds must be used for "urgent or important" actions, including the development of technical documents required by judges.[102]

The Environmental Liability Act differentiates environmental damage to public resources from civil damages to the private-property interests of owners of natural resources, with the latter remaining under Mexico's civil codes. However, the law does provide procedural innovations that guide civil actions for damages to private-property inter-

91. *See Pn Bengkalis vonis bos PT.NSP "bebas" PT.NSP divonis denda Pr.2 Milyar*, ZonaRiau.com News (Jan. 22, 2015), *available at* http://zonariau.com/m/read-1161-2015-01-22-ptnsp-divonis-denda-pr2-milyar.html (last visited June 26, 2015); Tim Redaksi, *Kebun sagu masyarakat jadi korban kebakaran PT. National Sago Prima* Gurindam 12.Co (Feb. 7, 2014), *available at* http://gurindam12.co/2014/02/07/kebun-sagu-masyarakat-jadi-korban-kebakaran-pt-national-sago-prima/.
92. Jong, *supra* note 88.
93. *See, e.g.*, Butler, *supra* note 87.
94. Constitución Política de los Estados Unidos Mexicanos [C.P.], art. 27.
95. *Id.* art. 73, §XXIX-G.
96. *Id.* arts. 4, 25.
97. Ley General de Equilibrio Ecológico y Protección al Ambiente [LGEEPA], *as amended*, Diario Oficio de la Federación, 28 de enero de 1988 (Mex.).
98. LGEEPA, §§182, 203 (establishing criminal and civil liability, respectively).
99. Ley Federal de Responsabilidad Ambiental [Environmental Liability Act], Diario Oficio de la Federación, 7 de junio 2013 (Mex.).
100. Environmental Liability Act, §§14-17 (Mex.).
101. *Id.* §19.
102. *Id.* §§45-46.

ests. It also grants standing to sue for environmental harm to (1) individuals inhabiting communities adjacent to the corresponding environmental damage; (2) Mexican environmental nonprofits, with some restrictions; and (3) federal and state agencies.[103] Additionally, the Environmental Liability Act mandates the creation of district courts with specialized environmental jurisdiction, to be tasked with resolving environmental liability-related controversies.[104]

Generally, strict liability for environmental harm applies in selected contexts, such as where the injury is related to hazardous materials/wastes, involves ships in coral reefs, the undertaking of hazardous activities, or the use of inherently dangerous machinery. Liability also can attach for negligent actions and intentional acts.

The Law on Environmental Liability amended Mexico's 2002 Law of Sustainable Forestry[105] to include the following provision: "Any person or entity that directly or indirectly causes damage to forest resources, the ecosystem and its components, is obliged to repair or compensate, in accordance with the Federal Law on Environmental Liability."[106] Given its recent enactment, the Environmental Liability Act has generated little to no case law regarding its implementation.

In the *Desarrollo Marina Vallarta* (*Mayan Palace*) case, a developer was charged with violating Article 180 of LGEEPA for failing to conduct an environmental impact assessment prior to developing a tourist resort. The developer was held accountable for providing restoration and compensation measures for injuries to wetlands.[107]

A toxic spill at a copper mine owned by Grupo México, Mexico's largest mining corporation, and located in the northwestern state of Sonora, is the Mexican mining sector's worst environmental disaster in recent history. The federal government has filed criminal charges, which if upheld could result in fines of more than $3 million. Rather than filing a legal claim, the federal government has used a dispute resolution approach to specify various obligations the company must fulfill, including creating a $151 million cleanup fund, in order to avoid losing its concession to run the mine. Exercising the expanded standing provisions under the Environmental Liability Act, the seven municipalities whose water supply has been contaminated and whose economic activities have virtually come to a standstill due to the spill are filing a civil claim for damages.

103. *Id.* §28.
104. *Id.* §30.
105. Ley General de Desarrollo Forestal Sustenable [Law of Sustainable Forestry], *as amended*, Diario Oficio de la Federación, 25 de febrero de 2003 (the law is intended to "promote conservation, protection, restoration, harvest, management and the use of forest ecosystems and their resources in a sustainable manner in order to improve the wellbeing of rural communities").
106. Law of Sustainable Forestry, art. 1. *See also* Environmental Liability Act, art. 14 ("The compensation for land use change on forest land, will take place in terms of the provisions of the General Law for Sustainable Forest Development.").
107. Amparo Directo Número: 167/2011, Cuarta Segunda Sala Regional Metropolitana del Tribunal Federal de Justicia Fiscal y Administrativa, *available at* http://jeanclaude.tronp.com/index.php?option=com_docman&task=cat_view&gid=176&Itemid=40).

E. Brazil

Brazil has a long-established environmental liability regime, including substantial development of case law implementing its laws. Brazil's Constitution includes "[t]he right to enjoy an ecologically balanced environment," a "duty of the Government and of the community to defend and preserve [the environment] for present and future generations," and sanctions for environmental wrongdoers as well as the polluter-pays principle.[108] Prosecutors must bring civil actions "to protect public and social property, the environment and other diffuse and collective interests."[109] Resources covered by the guarantees thus include those in both the private and public domains.

Brazil's statutory code provides several means for enforcing these constitutional rights and mandates. Environmental harm is broadly defined to include, among other things, the destruction or harming of certain types of forests and pollution that results, or may result, in damage to human health or the environment.[110] The National Environmental Policy Act of 1981 establishes civil and criminal liability for environmental harm as well as strict liability "to compensate or provide reparations for damage caused to the environment or to third parties, affected by his or her activity."[111] "Polluter" and "pollution" are broadly defined to include direct and indirect actions that cause environmental degradation resulting in "harm [to] the health, safety and welfare of the population; creat[ion of] adverse conditions for social and economic activities; adverse [. . .] effect[s to] the biota; effect[s to] the aesthetic or sanitary conditions of the environment; [and] the introduction of materials or energy at odds with established environmental standards."[112] Courts acknowledge strict liability for environmental harms, broadly interpret causation, apply joint and several liability, and even find that mere ownership of polluted land and natural resources can be sufficient to open an individual to civil liability.[113]

108. Constituição Federal [C.F.] art. 225 (Braz.) ("Conduct and activities considered harmful to the environment subject the individual or corporate wrongdoers to penal and administrative sanctions, in addition to the obligation to repair the damages caused.").
109. *Id.* art. 129. The idea of "social property," as incorporated into Brazilian law, holds that property rights must be "subject to 'restrictions determined by considerations of social order.'" Alexandre dos Santos Cunha, *The Social Function of Property in Brazilian Law*, 80 Fordham L. Rev. 1171, 1174 (2011) (*quoting* 1 Clovis Bevilaqua, Direito das Coisas 134 (1941).
110. Lei No. 9605, de 12 de fevereiro 1998, Diario Oficia da União [D.O.U.], de 2.13.1998 (Braz.); Decreto No. 6514, de 22 de julho 2008, Diario Oficia da União [D.O.U.] de 7.2.2008 (Braz.).
111. Lei No. 6938, de 2 de setembro 1981, Diario Oficia da União [D.O.U.] de 2.9.1981, art. 14 ¶ 1 (Braz.). *See also* Lei No. 10406, art. 927, de 1 de janeiro 2002, Diario Oficia da União [D.O.U.] de 1.11.2008 (Braz.) (establishing Brazil's civil code and allowing for liability, "regardless of fault," in cases as specified by law).
112. Lei No. 6938, art. 3, cls. III, IV.
113. *See, e.g.*, S.T.J. REsp No. 222,349 (under the Forest Code, "causing" environmental harm can include acquiring land not in compliance with the Forest Code); S.T.J. REsp No. 1,071,741 (joint and several liability is "one of the most traditional and undisputed hallmarks of the Brazilian environmental civil liability regime"); Special Appeal No. 1056540 (2009) ("if the person responsible for an environmental disaster can be identified, it has the responsibility to repair the damage, even if jointly with the current owner of the property damaged"). *See also* Nicholas S. Bryner, *Brazil's Green Court:*

In addition to government-filed suits, Brazilian law allows for public class actions for environmental damages, providing that any citizen can file to recover for environmental damage.[114] In doing so, individuals or, in more limited circumstances, nonprofit associations may seek monetary damages and injunctive relief. A party bringing a public class action suit need not choose between the two remedies, but can sue for injunctive and monetary relief in the same suit.[115]

Brazilian courts have recognized the right to full compensation for environmental damages. Federal Decree 43349/02, establishing the National Biodiversity Policy, recognizes the values of biodiversity, stating that "the use value of biodiversity is determined by cultural values and includes the direct and indirect use, option of future use and also the intrinsic value, including ecological, genetic, social, economic, scientific, educational, cultural, recreational and aesthetic values." The Superior Court of Justice has read this provision, together with the principle of full compensation for the damage, to enable suits that may include obligations to recover in situ environmental harms, and obligations to compensate for the costs of restoration or replacement of injured resources, as well as for the interim losses caused by environmental harms and losses associated with ecosystem services disruption.[116] In the case of collective class actions, nonpecuniary pain and suffering damages may be awarded for moral injuries, including those involving environmental injuries.[117]

One of the early adopters of liability for environmental harms, Brazil has a multi-decade history of bringing environmental liability cases.[118] During this time, the courts have grappled with how to value the damage claim. For example, in a 2011 case against a company that illegally removed 15 types of native and exotic trees from the area surrounding a national park, the court calculated the monetary value of environmental harm by transferring estimates for the value of annual global ecosystem services per unit of land (differentiated by 16 global biomes) to the injured areas.[119] Lacking estimates of restoration costs, the court substituted the cost of removal and transport of the trees, as if for logging—which bears no obvious relationship to the cost of restoration. Further, though the restoration of trees to their prior size and function will be a long-term process, the court held the company liable for only one year of lost ecosystem services from the trees. Combining the estimates for transport and removal costs and for lost ecosystem services, the court determined the responsible party owed US$13,948.[120]

Though technical criteria for valuing natural resources have been published,[121] judges have tended to arbitrate the indemnity values based on equity criteria instead. For instance, in one case in the state of Bahia, where a multinational company caused soil contamination with lead, compensation for unrecoverable environmental damage was set at 10% of its gross sales, based on its official reported records over the relevant period.[122]

In the past few years, government entities in several states, including São Paulo and Minas Gerais, have attempted to clarify how damages are calculated and to create standardized methodologies to calculate them; however, the extent of consistency with the concept of making the public whole for the injuries varies.[123] For example, the forestry working group commissioned by the attorney general of São Paulo recommended including in the damage claim the interim loss in value from the time of injury until recovery; in contrast, the São Paulo water contamination working group focused on cleanup costs (but not restoration of other injured resources), and substituted the waste collection and treatment costs the party would have

Environmental Law in the Superior Tribunal de Justicia (High Court of Brazil), 29 Pace Envtl. L. Rev. 470 (2012) (describing court's expansive role in applying statutory law).

114. Lei No. 7347, de 24 de julho de 1985, Diario Oficia da União [D.O.U.] de 25.07.1985 (Braz.) (Public Civil Action Act, regulating "the civil action for liability" for environmental damages, among other things, and allowing public class actions for environmental damages). *See* Antonio Gidi, *Class Actions in Brazil: A Model for Civil Law Countries*, 51 Am. J. Comp. L. 312, 326 n.26 (2003).

115. *See* S.T.J., REsp No. 605. 323/MG (2005) (involving public civil actions).

116. S.T.J., REsp No. 1180078/MG, Rel. Minister Herman Benjamin, Second Class, DJE 28/02/2012, and REsp No. 1410698/MG, Rel. HUMBERTO MARTINS Minister, Second Class, judged on 06/23/2015.

117. Courts have not interpreted the applicability of this provision broadly. *See, e.g.*, S.T.J, REsp No. 598.281/MG (2003) (moral damages for environmental harm permitted only when the harm affected the dignity of specific individuals, not a collective class, with example of person emotionally harmed by cutting down tree planted by ancestor); *but see* S.T.J. REsp No. 1,120,117 (2009) (court upheld collective moral damages for illegally cutting trees on land traditionally occupied by indigenous people).

118. *See, e.g.*, Civil Appeal 2.12.325.2/1 (1993) (fining entity for dumping liquid waste into a stream, thereby altering its biochemical oxygen demand); Civil Appeal 12.739/7 (ordering entity to repopulate a river with fish after the court found that the entity had polluted the river); Civil Inquiry No. 011/2009 (Doc-1959-2010 AREAS PROTEGIDAS) (concerning deforestation of a land parcel in an area of permanent preservation).

119. In arriving at this assessment, the court used Sonia L. Piexoto & Ofélia Gil Willmersdorf (Coords.), Modelo de Valoração Econômica dos Impactos Ambientais em Unidades de Conservação: Empreendimentos de Comunicação, Redeelétrica e Dutos—Estudo Preliminar (2002). The primary study underlying the Peixoto and Willmersdorf approach (*see* Robert Costanza et al., *The Value of the World's Ecosystem Services and Natural Capital*, 387 Nature 15 (1997)), covers the following ecosystem services: atmospheric regulation, climate regulation, regulation of disturbances, water storage, erosion control, soil structure, recycling of nutrients, treatment of wastes, pollinating, biological control, habitat, recreation, cultural, option value, and existence values.

120. Civil Inquiry No. 007/2011 (DOC-0145-2012-FLORA).

121. Associação Brasileira de Normas Técnicas (ABNT), Avaliação de bens: Parte 6: Recursos naturais e ambientais (Brazilian Association of Technical Standards, Assets Appraisal pt. 6: Valuation of Natural and Environmental Resources) (2008), *available at* http://www.abntcatalogo.com.br/norma.aspx?ID=38644#.

122. J.F.3a-Pompeu de Sousa Brasil, No. 2003.33.00.000238-4, Relator: Indenização por Dano Ambiental, 8.1.2003, *available at* http://processual.trf1.jus.br/consultaProcessual/processo.php?trf1_captcha_id=08c1c5b346f00741ad41df26e578cacf&trf1_captcha=6pct&enviar=Pesquisar&proc=20033300 0002384&secao=BA.

123. MPSP Centro de Apoio Operacional Civel e de Tutela Coletiva, Relatorio Final do Grupo de Trabalho de Valoração do Dano Ambiental (Sept. 27, 2012), *available at* http://www.mpsp.mp.br/portal/page/portal/cao_urbanismo_e_meio_ambiente/relat%C3%B3rio%20final%20-%20retificado_0.pdf. Memorandum from Advocacia-Geral do Estado de Minas Gerais, to Coordenador do Nucleo do Direito Ambiental do SISEMA, Presidente de Fundação Estadual do Meio Ambiente (Dec. 4, 2014), *available at* http://www.age.mg.gov.br/images/stories/downloads/advogado/pareceres2014/parecer-15.407.pdf.

incurred had it taken proper mitigation measures (avoidance costs) as a proxy for the interim lost value.[124]

F. Philippines

Although its environmental statutes largely lack explicit environmental liability provisions, Philippine courts have been innovators in procedural and substantive environmental law. Due to its various colonial influences, Philippine governance is a mixture of common law, civil law, Islamic law, and other, native traditions. The strong environmental protections embedded in the Philippines' Constitution have been broadly interpreted by the country's judiciary. The Philippine Constitution of 1987 provides that "[t]he State shall protect and advance the right of the people to a balanced and healthful ecology in accord with the rhythm and harmony of nature."[125] The Philippine Supreme Court has interpreted this language to allow individuals standing based on harm to a "balanced and healthful ecology," characterizing the right as self-executing and so basic that it "need not even be written in the Constitution for [it is] assumed to exist from the inception of mankind."[126]

A country where national laws consist of legislative acts and presidential decrees,[127] the Philippines, unlike the other developing countries discussed here, has no framework environmental statute. Similar to the United States and the EU, it has a series of presidential decrees and legislative acts protecting different resources and regulating different activities.[128] All provide for fines and imprisonment for violation of regulations; however, only the Fisheries Code, the Mining Act, and the Forestry Code provide for restoration and compensation.[129]

The Philippines is remarkably innovative in its procedural rules governing environmental cases. In 2010, the Supreme Court of the Philippines drafted the Rules of Procedure for Environmental Cases (Environmental Rules), which govern procedure in lower courts for cases involving enforcement of environmental and related laws and create "Special Courts" for environmental cases.[130] Procedural innovations include citizen suits,[131] the Writ of Kalikasan (Writ of Nature),[132] and the Writ of Continuing Mandamus. The Environmental Rules also rely on the precautionary principle as an actual rule of evidence.[133]

The Environmental Rules provide that "[a]ny Filipino citizen in representation of others, including minors or generations yet unborn, may file an action to enforce rights or obligations under environmental laws."[134] The court may require the violator to "submit a program of rehabilitation or restoration of the environment, the costs of which shall be borne by the violator, or to contribute to a special trust fund for that purpose subject to the control of the court."[135] A party typically cannot recover damages under the citizen suit provisions, but may be able to force violators to pay to rehabilitate the damaged site. Citizens have the right to recover under civil law tort for actual, moral, and exemplary damages simultaneously with filing for citizen suits.

The Writ of Kalikasan is available to "a natural or juridical person, entity authorized by law, people's organization, non-governmental organization, or any public interest group accredited by or registered with any government agency."[136] It allows a party to sue

> on behalf of persons whose constitutional right to a balanced and healthful ecology is violated, or threatened with violation by an unlawful act or omission of a public official or employee, or private individual or entity, involving environmental damage of such magnitude as to prejudice the life, health or property of inhabitants in two or more cities or provinces.

The writ does not allow for damages, but can include injunctive relief to protect, preserve, rehabilitate, or restore the environment.[137] A party bringing an action under the Writ of Kalikasan is not precluded from filing separate civil, criminal, or administrative actions. Successful cases have been brought under the writ for actions to cease and desist mining, close a dumpsite and create an eco-park, and restore the resources impaired when land was excavated to create a port.[138]

The Environmental Rules also address the issue of costs of bringing suits. In citizen suits, payment of filing and other legal fees may be deferred until after the judgment is rendered, instead of being required on the day of filing.[139] (This deferment rule is in addition to the rule concerning indigent litigants, who are exempt from paying filing and other legal fees.) Payment of a bond is not required in

124. MPSP, *supra* note 123.
125. Const. (1987) art. II, §16 (Phil.).
126. Minors Oposa v. Factoran, G.R. No. 101083, 224 S.C.R.A. 792 (July 30, 1993) (Phil.). *See also* Elizabeth Barret Ristroph, *The Role of Philippine Courts in Establishing the Environmental Rule of Law*, 42 ELR 10866 (Sept. 2012).
127. Ristroph, *supra* note 126. Presidential decrees were executed between 1972 and 1981 when President Ferdinand Marcos, through a declaration of martial law, gained control of both the executive and legislative branches. Decrees continue to be upheld to the extent not superseded or amended.
128. Clean Air Act (RA 8749), Ecological Solid Waste Act (RA 9003), Fisheries Code (RA 8550 and recently amended), Forestry Code, and Mining Act (foregoing all Phil.).
129. Exec. Ord. 277 (1987) (Phil.).
130. Supreme Court of the Philippines, A.M. No. 09-6-8-SC, Rules of Procedure for Environmental Cases (2010) (Phil.) [hereinafter Environmental Rules].
131. The Philippines' liberal standing doctrine in environmental cases predates the Rules of Environmental Procedure and is embodied in *Minors Oposa v. Factoran*, G.R. No. 101083, 224 S.C.R.A. 792 (July 30, 1993) (Phil.) (holding that children have the right and legal personality to take action, reasoning that every generation has a responsibility to the next to preserve the rhythm and harmony of nature for the full enjoyment of a balanced and healthful ecology).
132. Hilario G. Davide Jr., *The Environment as Life Sources and the Writ of Kalikasan in the Philippines*, 29 Pace Envtl. L. Rev. 592 (2012).
133. Environmental Rule 20 (Phil.).
134. Environmental Rule 2, §5 (Phil.). A party filing a citizen suit need not pay filing or other legal fees prior to judgment, and if the party prevails it may receive "proper reliefs," including "the protection, preservation or rehabilitation of the environment and the payment of attorney's fees, costs of suit and other litigation expenses." *Id.* §12.
135. Environmental Rule 5, §1 (Phil.).
136. Environmental Rule 7, §1 (Phil.).
137. *Id.* §15 (Phil.).
138. Personal Communication to authors from Jellie Molina, Apr. 2, 2015.
139. Environmental Rule 2, §12 (Phil.).

the application for a Temporary Environmental Protection Order.

The Writ of Continuing Mandamus allows a "person aggrieved" to petition when an agency, instrumentality, or officer of the government unlawfully neglects to perform a mandatory act or excludes an individual from enjoying an environmental right.[140] Judgments rendered pursuant to this writ can include both injunctive relief and damages. The Environmental Rules allow any offended private party to file a criminal complaint, and in certain cases also give citizens the opportunity to participate in criminal actions.[141] When a criminal action is filed, a civil action is also deemed instituted alongside the criminal action "unless the complainant waives the civil action, reserves the right to institute it separately or institutes the civil action prior to the criminal action."[142]

G. India

India's courts have been leading innovators in establishing procedural and substantive environmental rights, including imposing liability for harm to the environment. Article 21 of India's Constitution guarantees the right to life, which the Supreme Court of India interprets to include all aspects of life that make it meaningful, complete, and worth living, including the right to pollution-free water and air. The Court further holds that to disturb the basic elements of the environment, air, water, and soil is a violation of the right to life, and that "the concept of 'sustainable development' is to be treated as an integral part of 'life' under Article 21." The Constitution also mandates that the government and every citizen protect and improve the environment and safeguard forests and wildlife.[143]

India has many environmental statutes, some of which date to colonial times, including the Indian Forestry Act and the Indian Fisheries Act. In the 1970s and 1980s, India enacted additional environmental statutes, such as the Water (Prevention and Control of Pollution) Act in 1974, and the Air (Prevention and Control of Pollution) Act in 1981; but the Bhopal Gas tragedy in December 1984 exposed the need to adopt a more comprehensive environmental law. The Environment (Protection) Act of 1986, an umbrella law, was adopted, under which some key environmental rules have been adopted, including on hazardous wastes, hazardous chemicals, and e-waste.

In 2010, the National Green Tribunals Act created National Green Tribunals (NGTs) to handle environmental and natural resource cases. NGTs have jurisdiction over "all civil cases where a substantial question relating to environment (including enforcement of any legal right relating to environment) is involved," pertaining to the implementation of seven enumerated environmental laws.[144] NGTs include technical experts and judges and are authorized to enter orders establishing liability for environmental damage and requiring restoration or other remedies. Such orders have been entered against both private parties and government agencies. The NGTs are not bound by the general Code of Civil Procedure; rather, they "shall be guided by the principles of natural justice."[145]

Under the NGT Act, courts are authorized to issue orders providing "relief and compensation to the victims of pollution and other environmental damage," as well as restitution for property damaged and restitution of the environment.[146] The court is also granted discretion to divide compensation to claimants and for environmental restitution as it sees fit.[147] Funds are generally to be paid to an environmental relief fund, but the court is able to prescribe how such funds will be utilized.[148] And NGTs are able to issue substantial penalties, including incarceration along with fines, for parties that fail to obey a court order.[149]

The NGT Act also codifies India's expansive standing doctrine in environmental cases, granting standing to "any person, aggrieved, including any representative body or organization."[150] Prior to this codification, the courts of India were at the vanguard of recognizing standing to protect constitutional rights and the public interest,[151] with earlier decisions granting "epistolary standing" by construing a citizen's letter or postcard to the court as a formal complaint, as well as "journalistic standing," granting standing to journalists suing to redress violations that they investigate.[152]

The Supreme Court has also expanded its rulings on environmental matters. Indian courts also recognize "absolute liability" for those engaged in hazardous or inherently dangerous activities.[153] In a seminal case, it found the respondent liable for operating an enterprise engaged in a hazardous or inherently dangerous activity—operating heavy industrial plants producing highly toxic chemicals without permits—that caused serious environmental pollution. Instead of ruling on the total compensation/damages, the court recognized the authority of the central government to determine the amount of money needed to carry out remedial measures. It ruled that the respondents were liable for paying to improve and restore the environ-

140. Environmental Rule 8 (Phil.).
141. Environmental Rule 9, §3 (Phil.).
142. Environmental Rule 10 (Phil.).
143. India Const. art. 21.
144. National Green Tribunals (NGT) Act §14(1) & sched. I (the seven laws are the Water Act, the Water Cess [tax] Act, the Forest Act, the Air Act, the Environment Protection Act, the Public Liability Insurance Act, and the Biological Diversity Act (foregoing all India)).
145. NGT Act, §19(1) (India).
146. *Id.* §15(1).
147. *Id.* §15(4).
148. *Id.* §24.
149. *Id.* §26.
150. NTG Act §18 (India).
151. Environmental Law Inst., The New "Public": The Globalization of Public Participation 35 (Carl Bruch ed. 2002) (*citing* S.P. Gupta v. Union of India, A.I.R. (1982) S.C. 149, 188 (India)).
152. *Id.* at 36 (citing precedent from the Supreme Court of India).
153. M.C. Mehta v. Union of India (the Shriram Gas Leakage case) A.I.R. 1987 S.C. 1086 (1987) 1 S.C.C. 395 (India); Indian Council for Environmental-Legal Action v. Union of India (the Bahri Case) (1996) 3 S.C.C. 212 (India).

ment, their factories were ordered to be closed, and villagers were allowed to institute suits in the appropriate civil courts to claim damages.[154]

In numerous cases, the Supreme Court has ordered the central government to identify the loss to the ecology/environment and individuals/families who had suffered from the pollution and to determine the compensation to reverse the environmental damage and compensate the individuals and families.[155]

Courts in India have ordered parties to pay for the cost of reforestation and related expenditures,[156] and cleanup of polluted rivers.[157] In a case brought against tanneries, the Supreme Court also ordered that each tannery in the listed district pay a fine into an environmental protection fund to be used to restore the environment and compensate the affected persons.[158]

Courts have also fashioned more innovative solutions. In *Vitthal Gopichand Bhungase v. Gangakhed Sugar & Energy, Ltd*, before the NGT in Pune,[159] the defendant was found to have released industrial waste, molasses, and chemical-mixed water into a canal and lake. The company was directed to pay to replenish water in the lake and for environmental damages, but was also directed to pay a substantial sum in environmental restitution to be used for an initiative to raise environmental awareness. In a case against oil companies for groundwater pollution caused by leakage from a storage tank and pipeline, the court ordered the companies to finance a government-run groundwater restoration project. Additionally, companies were ordered to pay compensation for contaminated wells and to pay for any upgrades or improvement to the water supply system necessary to support the affected village's drinking and cattle-feeding uses.[160]

In another case, the NGT ordered a private company to pay a fine of nearly US$4 million for building a facility in the coastal zone without obtaining proper approval.[161] Among the environmental issues that the NGT addressed is "whether the project in question has caused environmental degradation, loss to environment, and destruction" in the coastal zone area. The NGT found restitution to be impractical and instead imposed penalties, directing that nearly US$800,000 be spent on a new mangrove plantation program, the remainder going to the Environment Department. The NGT gave the following detailed instructions for spending the remaining funds: "for development of environment programme, including generate awareness, constructions of solid waste facilities, sewage management, public toilet facilities in small towns, which are not adequately funded and have no Municipal Council . . . special toilets on Highways in the State for womenfolk, so on and so forth."

The Supreme Court also imposes "exemplary damages" for damage to the environment. Further, the Supreme Court has applied the "deep pocket" theory of assessing compensation based upon a company's size and economic clout: In order to deter harmful behavior, the "larger and more prosperous the enterprise, the greater must be the amount of compensation payable by it."[162] This principle was applied in the 2013 *Sterlites Industries* case,[163] where one of the largest copper smelters of India was found to be operating without a valid environmental permit. The court assessed liability and found that the smelter had to pay 10% of its profits before depreciation, interest, and taxes for the 15 years it operated without a permit, or over $15.5 million.[164] The award was required to be spent on "improving the environment, including water and soil, of the vicinity of the plant" after consultation with the State Pollution Control Board and approval by the state-level Department of Environment.[165]

H. The Democratic Republic of Congo

The DRC has recently established and begun to implement its law imposing liability to restore polluted or otherwise damaged sites. The DRC Constitution of 2006 guarantees "all persons" the "right to a healthy environment." This right corresponds to a constitutional "duty to defend [their] right to a healthy environment," as the government is charged with ensuring "the protection of the environment and the health of the population." The Constitution provides that: "Any pollution or destruction resulting from an economic activity gives rise to compensation and/or reparation. The law defines the nature of the compensatory and reparatory measures as well as the conditions for their implementation." Thus, recovery for damages to natural resources, at least those resulting from economic activities, is embedded in the DRC Constitution.

To implement these measures, the DRC passed the Environmental Protection Act in 2011. The Act defines environment broadly to include socioeconomic and cultural dimensions and includes the polluter-pays principle. The Act specifies a variety of sanctions, including substantial fines and imprisonment. The government may order polluters to restore polluted or degraded sites and, if not completed by a specified deadline, a court may order the necessary work and hold the responsible parties liable for

154. Indian Council for Enviro-Legal Action v. Union of India (Bichhri Village case), A.I.R. (1996) S.C. 1446 (India).
155. *See, e.g.*, Vellore Citizens Welfare Forum v Union of India, (1996) 5 S.C.C. 647 (India); *Indian Council for Enviro-Legal Action*, A.I.R. (1996) S.C. 1446 (India); M.C. Mehta v Union of India (the Tanneries case), A.I.R. 1988 S.C. 1037 (India).
156. Naim Sharif Hasware v. M/s Das Offshore Engineering P. Ltd. & Ors. (A. No. 15/2014), NGT Western Bench, Pune (India).
157. *Vellore Citizens*, 5 S.C.C. 647.
158. *See id.*
159. Vitthal Gopichand Bhungase v. Gangakhed Sugar & Energy Ltd. (Misc. Application No. 37/2013), NGT Western Bench, Pune (India).
160. *Two Petroleum Companies Told to Pay for Repair Costs for Repairing Environmental Damage*, Times of India, Nov. 14, 2014.
161. Naim Sharif Hasware v. M/s Das Offshore Eng'g P. Ltd. & Ors. (A. No. 15/2014), NGT Western Bench, Pune (India).
162. M.C. Mehta v. Union of India (Shriram Gas Leakage case) (1987) 1 S.C.C. 395 (India).
163. Sterlites Indus. (India) Ltd. v. Union of India & Ors. (2013) 4 S.C.C. 575 (India).
164. *Id.*
165. *See id.*

the cost. Liability is strict, unless the responsible party can prove that it was impossible to avoid committing the infraction.[166] The Act also requires the government to create a State Environmental Fund for recoveries from responsible parties, to be used for research, conservation, cleanup operations, rehabilitation, and pollution prevention. In addition, the Act imposes risk mitigation requirements on industrial sites, including mandatory insurance to guarantee the restoration of the site after the cessation of its activities.[167]

Since the Environmental Protection Act was passed relatively recently, very few judicial decisions have been found implementing the polluter-pays principle, though at least one case has been brought. A judgment rendered on March 27, 2014, obliged the Congolese state and two mining companies to pay farmers, fish pond owners, and downstream populations a total of US$6,000 in damages for dumping toxic substances into the Kafubu River and destroying their fields and fish ponds, and the fish in the river. The release of arsenic, amylxanthate, and cyanide resulted in contamination over at least 200 kilometers of the river with arsenic levels up to 17 times the World Health Organization standards, which caused a massive fish kill, contaminated the local drinking water supplies, and poses health risks especially to people who rely on produce from the marshes along the river.[168] The plaintiffs have since appealed the decision to seek a larger award.

VI. Synthesis

In the tropical developing countries at the center of global conservation planning, statutory authority for liability for environmental harm is emerging as a component of domestic environmental law. The seven tropical countries we studied—spanning a wide geography, range of legal systems, and environmental governance and human development contexts—have statutory regimes that create extensive environmental protections with civil and criminal sanctions. Six of the countries (all, save Nigeria) have further statutory provisions creating liability for harms to public natural resources. Relative to the U.S. liability statutes, the six countries have generally established broader definitions of environmental harm subject to liability, and have incorporated expanded standing and procedural reforms that increase access to courts.

However, our review also identifies shortcomings in defining the measures of damages relative to the concept of making the public whole, and in designating a repository for recoveries dedicated to resource recovery and protection. Further, there are major weaknesses in the implementation of the liability statutes. We provide a synopsis of these issues, and identify general strategies to strengthen related legislation and practice to help make liability for environmental harm a more prominent component of efforts to protect tropical biodiversity and ecosystems.

A. *Building on U.S. Liability Provisions*

The United States allows for natural resource liability for discrete harms (for example, the OPA for oil spills; CERCLA for the release of hazardous substances) or discrete public resources (for example, the NMSA for injuries to resources in marine protected zones). In contrast, most of the reviewed countries have a single, overarching liability statute that articulates a broad concept of environmental harm for liability, complementing various sector-specific and environmental media-specific regulatory statutes. The lone exception, Philippines, relies on a series of environmental statutes governing specific sectors, including forestry, fisheries, and mining, for its liability authorities.

This overall approach provides a strong legal-regulatory basis for applying a liability-based approach to environmental enforcement. The breadth of the provisions enables compensation for a broad range of environmental harms—not only harm due to pollution, which has been at the center of U.S. legislation, but also harms from illegal natural resource takings (for example, illegal logging, poaching, mining, and fishing) and environmental degradation (for example, landclearing for agriculture or development) that are the leading environmental threats across the tropics. Moreover, the statutes emphasize restoring or replacing all the services provided by the injured resources, not merely those sold in the marketplace (for example, timber or fish) with which courts are familiar from private tort claims.

Importantly, the tropical countries' liability statutes are designed to increase public access to the courts for environmental harm. Expanded access increases the likelihood that environmental cases will be filed for significant environmental harms, which is particularly significant in countries where public resources for environmental enforcement are very constrained. In the United States, affected members of the public can bring cases seeking injunctive relief for cleanup of environmental contamination of public resources, but the authority to file a compensation claim for harm to public natural resources is largely restricted to public authorities. In contrast, all countries in our review authorized some combination of individuals, communities, and (in fewer cases) civil society groups to bring suit to remedy public and collective environmental harms. In India, litigation resulting in compensation and/or mandatory cleanups has generally been driven by citizen suits rather than government initiative.

Another strategy employed by a number of countries (including India, Mexico, and the Philippines) to expand access is creation of specialized environmental courts. These courts not only increase environmental expertise within the judiciary, but also allow litigants to bypass the long waits for access to the general court system. Environmental courts are frequently equipped with specialized procedural rules designed to expedite the judicial process.

166. Const. ch. 7 (DRC).
167. *Id.* ch. 6.
168. *See Pollution de la Rivière Kafubu: L'Etat Congolais, la Gécamines et la CMSK Obligés de Payer 6,000 USD*, http://www.lacroisette.org/xsette/?p=16015 (last visited Aug. 18, 2015).

For example, in India's National Environmental Tribunals, the mandatory rules of civil procedure generally used in the country's courtrooms are supplanted by streamlined "principles of natural justice."

B. Limitations Relative to U.S. Liability Provisions

One limitation is that the statutory measures of damages tend to be vague and many offer more restricted compensation than those in the United States and the EU. With an explicit focus on making the public whole for its losses from the environmental harm, the United States and the EU are clear that damages include both the costs of restoration or replacement and also the interim lost value from time of injury to full recovery of resource. In the study countries, the statutes consistently focus on restoration or replacement of injured resources, but some do not identify interim lost value as part of damages, while others allow "compensation for damages" when restoration is not possible. The rules governing compensation also appear to be underdeveloped in some countries, with omissions that preclude the possibility of making the public whole for the losses. In its implementing regulations, Indonesia lists a broad range of types of injury subject to liability claims (for example, timber resources, hydrological services, biodiversity, genetic diversity, and carbon stocks), but does not fully account for nonmarketed goods and services: for example, non-timber forest products and cultural services, such as recreational use of resources, are excluded.

Further, in some countries, recovery of damages is not available to all parties bringing suit. For example, in the Philippines, entities other than the government (such as communities, individuals, and civil society) can only invoke injunctive action for the responsible party to stop the harm and restore resources; they cannot collect monetary damages. Such omissions can have significant implications for the value of liability claims, particularly in cases involving toxic chemical spills or deforestation, where recovery may take a very long period or never occur completely.

A second, related issue is that the statutes in some of the countries (including Indonesia and the Philippines) are silent on how recoveries are to be allocated; thus, by default, they are directed to national treasury accounts, to be allocated by the legislative process.

C. Limited Courtroom Use of Liability Provisions

Liability provisions have been successfully leveraged to address environmental harm in several key cases. Indonesia stands out for its efforts to target major environmental harm with liability suits, as part of a portfolio of civil and criminal enforcement tools. The government has won large natural resource damage claims, penalties, and jail time for executives in several cases against large companies that destroyed federally protected lands by burning protected peat forests to clear the land, principally to establish palm oil plantations. India has also led in the use of liability provisions in cases involving large-scale compensation for cleanup of pollution, environmental improvement, and restoration of deforested mangroves.

However, our review has found that implementation of liability provisions appears to be limited. Public reports of resolved cases suggest that only a few have been resolved in each country each year since enactment of the liability authority. Most of the countries do not appear to be targeting the most severe environmental harms with liability suits. Among resolved cases, damage awards generally appear low relative to the injuries. For example, Brazil has had authority to bring cases for decades, and yet we could find reports of only a small number of cases, involving limited injuries and negligible payments. In the DRC, the court awarded $6,000 in damages for a spill of toxic mining effluent causing severe major river contamination that resulted in fish kills and contamination of drinking water supplies and of nearby agricultural production. In Indonesia, despite some promising damage awards, many other cases have been dismissed under suspicious circumstances or delayed by extended appeals.

Further, there appears to be limited accountability for ensuring that recoveries intended for restoration of injured resources are actually collected and spent on recovery. For example, studies document the struggles of government agencies in Brazil, Indonesia, and Nigeria to collect money mandated by the court. When monies are collected for restoration, courts do not always require adequate judicial, agency, or other expert oversight of the restoration. As a result, these countries may not be realizing the full potential of liability provisions to provide substantial deterrence incentives, restore injured resources, and compensate the public for interim losses.

Although not the focus of our review, we also note a number of barriers to effective implementation of liability provisions. In many countries, lack of political will against a backdrop of widespread corruption compromises implementation and enforcement of environmental statutes. Other major barriers include deficiencies in the laws and implementing policies and procedures, lack of awareness and appreciation of the liability authorities among public agencies and civil society, limited institutional capacity, and poor interagency coordination. Inadequate budgets compromise the ability of detection and investigation agencies, prosecutorial services, and the judiciary to fulfill their enforcement responsibilities. Limited use of citizen suits may also be attributed to a lack of public awareness of their standing to sue, as well as financial constraints on victims, which are often poor communities suffering damages caused by powerful actors such as the mining and oil sectors.

D. Recommendations

Considerable opportunities remain to strengthen liability provisions and enforcement to ensure that liability achieves the intended deterrence and corrective justice objectives.

We identify seven priority areas through which liability provisions can be strengthened.

1. Expand and Clarify the Scope of Liability Provisions

While specific recommendations for statutory reform need to be tailored to each country context, we recommend several general reforms that are applicable across contexts. The statutory measure of damages should cover not only the costs of restoration and replacement of injured resources, but also the interim loss in value pending full resource recovery. The U.S. and EU compensation measure highlights how the scale of restoration ordered by the court can be increased to accommodate both the lost resources/services and the interim lost value pending recovery of the resources. Statutes or enabling regulations should also more clearly articulate that the value of damages is to cover the full range of lost ecosystem services, including cultural, supporting, and provisioning services, rather than merely the value of goods produced for market sale. Further, parties other than the government, such as communities, individuals, and civil society groups, should be able to recover damages in addition to injunctive relief. Finally, statutes should designate that recoveries are to be spent on resources, and name an appropriate dedicated repository.

2. Integrate Strategic Use of Liability With Broader Environmental Priorities

While our focus is on liability, it is critical to recognize that successfully addressing environmental threats requires an integrated approach across the full array of environmental policy tools such as voluntary agreements, regulatory structures, and civil and criminal enforcement, including for related corruption and money-laundering activities.[169] Given limited resources for prosecuting environmental cases, there is a need for a strategic use of liability that aligns with governments' broader environmental priorities and initiatives. Liability suits can be prioritized to target key issues such as corruption in the allocation of land and natural resource permits, abuse by large corporate entities and local elites, and cases of large-scale environmental harm.[170] For example, Brazil and Indonesia have attempted to coordinate civil, criminal, and other approaches such as voluntary, consumer-led, market-based sustainability strategies in their efforts to curb deforestation.[171]

3. Improve Implementing Regulations

The valuation of environmental damage claims is one area where guidance is sorely needed, particularly given that developing countries often have limited baseline data sets and scarce human and financial resources. The United States and the EU have made considerable investments in the development of implementing regulations and technical guidance documents, as well as related educational materials and training programs. The United States has further created simplified procedures for estimating damage claims for small incidents of environmental harm, such as the habitat-equivalency or resource-equivalency models, which may have direct transferability. Similar resources need to be tailored to the needs of tropical developing countries.

One strategy for improving environmental damage valuations for litigation may be to coordinate with existing national initiatives to quantify and place monetary values on environmental goods and services. Many tropical developing countries are making substantial investments in developing natural capital balance sheets and green accounting to achieve this quantification and valuation.[172] The initiatives can be leveraged to provide methods, baseline resource data, default values, and supporting evidence to inform the quantification of injuries, assessment of restoration options, and valuation of interim losses.

In addition, to increase accountability in the process, there is a need for clear regulations, procedures, public reporting, and oversight systems to ensure that, following court verdicts, monies are collected and the environmental restoration and/or resource replacement are carried out. It is important to ensure the accountability of both public agencies and responsible parties when a court mandates them to carry out restoration actions.

4. Strengthen Interagency Coordination of Environmental Enforcement

Prosecuting liability suits effectively and efficiently requires interagency cooperation. The suits rely on contributions from a wide range of government actors (prosecutors' offices, forest and/or environmental ministries, state auditors) to investigate cases, gather evidence and field data to inform valuation, calculate damages, establish restoration plans and costs, and bring forward cases.[173] Further, investments in detection and prosecution activities are

169. UNEP, *The Environmental Crime Crisis: Threats to Sustainable Development From Illegal Exploitation and Trade in Wildlife and Forest Resources. A UNEP Rapid Response Assessment* (C. Nellemann et al. eds., 2014); Daniel Nepstad et al., *Slowing Amazon Deforestation Through Public Policy and Intervention Through Supply Chains,* 344 Science 1118 (2014).

170. Fiona Downs, Anti-Corruption Res. Ctr., Rule of Law and Environmental Justice in the Forests: The Challenge of "Strong Law Enforcement" in Corrupt Conditions (2013); Marilyne Pereira Gonclaves et al., World Bank, Justice for Forests (2012); Timothy Swanson &Andreas Kontoleon, *What Is the Role of Environmental Valuation in the Courtroom? The US Experience and the Proposed EU Directive*, *available at* https://www.elaw.org/system/files/Environmental.Valuation.Courtroom.pdf (last visited Dec. 12, 2013).

171. Nepstad et al., *supra* note 169; UNEP, *supra* note 169. Oddly, Brazil does not appear to have included liability in the set of approaches applied to combat deforestation.

172. *See, e.g.*, Wealth Accounting and Valuation of Environmental Services, https://www.wavespartnership.org/en.

173. Jacob Phelps et al., Center for Int'l Forestry Research (CIFOR), Environmental Valuation in Indonesia: Implications for Forest Policy Legal Liability and State Loss Estimates (2014).

highly complementary across civil, criminal, and compensation sanctions, so coordination across types of legal actions will increase efficacy. Interagency coordination can enable investments in new, costly, but effective monitoring technologies to detect violations, such as satellite-based monitoring for deforestation activities. It can also reduce the jurisdictional confusion between conflicting provincial and federal laws (for example, laws concerning land use/development permits).

5. Build Capacity and Awareness Among Judges, Prosecutors, Agency Officials, and Legislators

Expanding budgets of agencies that support the environmental enforcement system is essential. Training for participants is also critical. Environmental issues are rarely a focus in training programs for judges and prosecutors, and even environmental agency staff may not be meaningfully informed about liability provisions. Countries should continue to work toward increasing awareness, appreciation, and capacity related to environmental law, including liability provisions. One approach for ensuring judicial capacity to address technical environmental matters is to build a pool of judges with such specialized knowledge, often called "green courts."[174] Indonesia has taken another approach, providing training as part of a "green judge" certification program. Further, India, Mexico, and the Philippines have provided training for judges in courts of general jurisdiction.

6. Build Capacity and Awareness in Civil Society About Standing Rights

Most of the reviewed countries offer standing to affected individual citizens, interest groups, and community groups. For meaningful application of the standing right, however, the public needs to be informed and aware of their rights. Much of the environmental litigation in India has been brought by citizens. Litigation in Indonesia, while often driven by the Ministry of Environment, has equally been the result of aggressive civil society engagement, providing both technical support and domestic and international pressure. Similar efforts by citizens have been important in the Philippines.

7. Research the Role of Liability in Strengthening Environmental Governance

Enforcement is a fundamental part of environmental governance, but not enough is known about how to effectively employ environmental enforcement, environmental law, and different types of sanctions—including those imposed under liability provisions—to promote sustainable management and conservation of tropical biodiversity and ecosystems. Research will be essential to providing the intellectual leadership that will help inform future legislation and its implementation. Bridging the gaps across fields (environmental sciences, economics, law, governance, psychology) and identifying interventions can make liability a more meaningful and active part of environmental governance. Priority topics for research include ways of increasing judicial capacity and expanding citizens' access to the courts (for example, by means of "green courts" and expanded standing principles), and methods for improving the procedures for valuing damage claims, such as coordination with national green accounting programs.

VII. Conclusion

It is striking that of the seven environmentally significant tropical countries studied, spanning a range of legal systems and economic development and environmental governance performance, all but Nigeria have the authority to bring liability claims for harms to the environment. However, a variety of impediments to effective implementation have resulted in a limited number of cases being resolved, and frequently with low damage awards relative to the injuries. The challenge now is in improving the implementation of the liability provisions. We offer a range of recommendations, including strengthening and expanding laws to include a broader concept of damages, increasing awareness and understanding of the legal authorities, improving institutional capacity and interagency coordination, and improving access to data and scientific methodologies for valuing the damage claim. With more effective implementation, liability has the potential to serve as an important complement to administrative, civil, and criminal enforcement in the legal toolkit promoting sustainability.

174. *See* George (Rock) Pring & Catherine (Kitty) Pring, World Res. Inst., Greening Justice: Creating and Improving Environmental Courts and Tribunals, The Access Initiative (2010).