

Pace University

DigitalCommons@Pace

Pace Law Faculty Publications

School of Law

1-1-1998

Comparative Environmental Law Perspectives on Legal Regimes for Sustainable Development

Nicholas A. Robinson

Elisabeth Haub School of Law at Pace University

Follow this and additional works at: <https://digitalcommons.pace.edu/lawfaculty>



Part of the [Comparative and Foreign Law Commons](#), and the [Environmental Law Commons](#)

Recommended Citation

Nicholas A. Robinson, Comparative Environmental Law Perspectives on Legal Regimes for Sustainable Development, 3 Widener L. Symp. J. 247 (1998), <http://digitalcommons.pace.edu/lawfaculty/377/>.

This Article is brought to you for free and open access by the School of Law at DigitalCommons@Pace. It has been accepted for inclusion in Pace Law Faculty Publications by an authorized administrator of DigitalCommons@Pace. For more information, please contact dheller2@law.pace.edu.

COMPARATIVE ENVIRONMENTAL LAW PERSPECTIVES ON LEGAL REGIMES FOR SUSTAINABLE DEVELOPMENT

NICHOLAS A. ROBINSON*

I. SUSTAINABLE DEVELOPMENT

As the world's largest summit meeting ended in Rio de Janeiro in 1992, the heads of state and their representatives assembled at the United Nations Conference on Environment and Development (UNCED), commonly referred to as *Agenda 21*. They embraced *Agenda 21* as "a dynamic programme" which can "evolve over time in the light of changing needs and circumstances," and as a process making "the beginning of a new global partnership for sustainable development."¹ *Agenda 21* is premised on two factual perspectives. First, the documentation of trends in the deterioration of the environmental conditions in many parts of the world is key. The United Nations World Commission on Environment and Development articulated these challenges and called for nations to build the systems needed for a "sustainable" development that could successfully counter these trends.² Second, the recognition is needed that the political, social and economic development programs established after the Second World War were largely failing. Not only were socio-economic conditions in a significant number of "developing" nations in fact declining, but expenditures of natural resources and labor were making it likely that the present generation would prejudice the options of future generations for the improvement of their condition. Thus, "sustainable development" would be the paradigm which would reverse these factual perspectives.

Both The World Commission on Environment & Development and UNCED presented many recommendations by which the new paradigm could be established. However, neither discussed the measures by which the success or failure of these recommendations could be assessed or compared. Nevertheless, both examined the role of law and agreed that law was critical to any endeavor to establish the processes for sustainable development. Comparative legal analysis provides a relatively objective basis for evaluating how the sustainable development recommendations function.

* Professor of Law, Pace University School of Law; Chairman, Commission on Environmental Law of the International Union for the Conservation of Nature and Natural Resources (IUCN); Of Counsel, Sidley & Austin; and founder of Pace University's environmental law program and co-director of its Center for Environmental Legal Studies.

1. AGENDA 21: EARTH'S ACTION PLAN 2-3, ¶ 1.6 (Nicholas A. Robinson, ed., 1993) [hereinafter AGENDA 21].

2. WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT, OUR COMMON FUTURE (1987).

II. ENVIRONMENTAL LAW & SUSTAINABLE DEVELOPMENT

The World Commission observed that "[h]uman laws must be reformulated to keep human activities in harmony with the unchanging and universal laws of nature."³ UNCED recommended that governments provide an effective legal and regulatory framework to integrate environmental protection with socio-economic sectors. *Agenda 21* states that "although the volume of legal texts in this field [sic] is steadily increasing, much of the law-making in many countries seems to be ad hoc and piecemeal, or has not been endowed with the necessary institutional machinery and authority for enforcement and timely adjustment."⁴

There is, of course, no "field" of law yet denoted as "Sustainable Development Law." However, commentators have been re-examining existing fields of law in an effort to reconfigure them into themes that resonate of the sustainable development debates.⁵ The field of law that is most central to these themes is Environmental Law. The conservation aspects of Environmental Law have long examined issues of resource depletion, sustainable yield, and the health of natural systems. The public health aspects of Environmental Law are essential to restoring or maintaining livable cities. The energy efficiency and waste minimization elements of Environmental Law are basic to furthering a robust economy. The most insightful commentators are those who address the question of how the law can further the objectives of sustainable development.⁶

One could identify a variety of national laws appropriate to advance the objectives of sustainable development;⁷ however, for such normative innovations to gain support, it is essential that empirical studies be undertaken to demonstrate which laws successfully attain the desired sustainable effects. Once legal techniques are proven in the field, the conditions necessary to replicate that legal success could be understood. Thus, a state could adopt and implement such laws for sustainable

3. *Id.* at 330.

4. AGENDA 21, *supra* note 1, at 121, ¶ 8.13.

5. See generally, SUSTAINABLE ENVIRONMENTAL LAW (Celia Campbell-Mohn et al., eds., 1993).

6. See generally, THE LEGAL CHALLENGE OF SUSTAINABLE DEVELOPMENT (J. Owen Saunders, Ed., 1990) (compiling essays from the Fourth Institute Conference on natural resources law); ENVIRONMENTAL OUTLOOK—LAW & POLICY (B. Boer et al. eds., 1996).

7. Nicholas A. Robinson, *A Legal Perspective on Sustainable Development*, in THE LEGAL CHALLENGE OF SUSTAINABLE DEVELOPMENT, *supra* note 6, at 15, 30-31. It is also possible to formulate progressive developments for international law to harmonize such national legal regimes. See *Draft International Covenant on Environment and Development* (IUNC Commission on Environmental Law, Environmental Policy & Law Paper 31, 1995).

development with some confidence that the laws would achieve their purposes. Of course, there is nothing new in proposing such deliberative legal analysis; since much of the legal debate over "sustainable development" today seems to be uniformed by reference to scholarly analysis, it is necessary to push the point. It is not enough to "think anew"; it is necessary to ground new thinking in historical perspective.⁸

The comparative law analysis of Environmental Law can significantly contribute to an understanding of how law can further sustainable development. Environmental Law has emerged as a field whose objectives are to maintain the health of humans and the natural systems of the biosphere. Further, environmental law is rapidly growing through multilateral environmental agreements and new national statutory regimes in practically every nation. As a result, there is a substantial body of recent legal experience that assesses the alternatives taken by other nations to address comparable environmental or developmental issues.

Comparative environmental law also yields benefits for the legal practitioner. With the globalization of international trade, communications, and finance, there is a growing commercial practice in environmental law. Characteristic of this legal practice are the following:

- a. evaluating environmental standards for the pre-investment surveys;
- b. environmental due diligence for acquisition or sale of real property, especially manufacturing enterprises;
- c. environmental impact assessment for construction or modification of infrastructure and facilities;
- d. environmental audits for compliance, waste minimization of enhancements of environmental efficiency and risk/liability management; and
- e. evaluation of import/export environmental trade of goods.

In each of these transactions, the attorney must access and interpret the salient environmental laws of the jurisdictions where his client conducts business. The volume of this legal practice will grow as international trade increases, as environmental laws assume greater effectiveness in developing countries, and as economies transform from being centrally planned to becoming market based.⁹

8. RICHARD E. NEUSTADT & ERNEST R. MAY, THINKING IN TIME: THE USES OF HISTORY FOR DECISION MAKERS (1986) (analyzing lawmakers and bureaucrats use of experience and history to shape the future).

9. In 1970, around the "birth" of Environmental Law in the United States, I predicted and described a similar phenomenon in the commercial practices involving the very new federal and state laws for environmental protection; in many respects, this transnational practice in environmental law is the mirror of that earlier growth in practice. See Nicholas A. Robinson, *New Dimensions of Corporate Counseling in Environmental Law*, 1 COLUM. J. ENVTL. L. 7(1974).

While these introductory observations state the reasons why Comparative Environmental Law should be studied, the elements of that study still have to be introduced in order to understand the legal aspects of sustainable development. What must the scholar, government lawyer, or private practitioner do to engage in comparative environmental legal studies? This essay is neither a restatement of environmental law from a comparative perspective, nor is it a compilation of comparative studies.¹⁰ Rather, this essay introduces the elements that should be considered in any serious examination comparing the environmental laws of different states.

In turn, the following questions will be posed. First, which jurisdictions can be compared? Second, what are the elements of a comprehensive environmental law regime to identify and compare? Third, how can environmental laws be harmonized and integrated among states in order to give better effect to their objectives? Finally, how one can locate and verify environmental laws of different states?

A. Comparing Jurisdictions

While environmental law takes on the form of the legal culture in which it is adopted and functions, it is defined by a common body of subjects and norms. The substantive ends of Environmental Law are for guiding human conduct to consider consciously and act to maintain the natural systems of the biosphere that sustain human society. Given these ends, the field of environmental law must take instruction from the environmental sciences. In addition, an understanding of how shared atmospheric, hydrologic or biological systems affect different legal jurisdictions is fundamental. Therefore, unlike many subjects of comparative law, the comparison of environmental regimes must begin with an identification of the relevant biomes, watersheds, food chains, habitats, species of flora and fauna and other objects of natural science that are the subject of the legal regime under study.

Comparative environmental law begins, therefore, with the identification of both the legal jurisdictions that must be compared and the natural resources which the law addresses. If the jurisdictions compared have the same resident migratory species, the comparison of land use systems to maintain habitats is feasible. Similarly, when studying aquifer protection and maintenance, the comparative analysis begins with the location of those jurisdictions where the aquifers are situated. Alpine montane legal systems will necessarily be distinct from the management of coastal zones in their environmental problems, forms of land tenure, and economic development pressures. As a result, different types of environmental legal means can, and should, be structured for such places.

10. See, e.g., COMPARATIVE ENVIRONMENTAL LAW (Nicholas A. Robinson, 1996).

Having identified the geographic setting, ecology, and other characteristics of the jurisdiction to be examined, the nature of the jurisdiction must be noted. Analysis of a federal nation, such as Argentina, Australia, Brazil, Canada, Germany, India, Malaysia, the Russian Federation or the United States, entails a threshold examination into the proper managing authority. The question arises of whether the federal, the constituent state, or provincial authority has the competence to manage a given environmental issue under the governing constitution of the federation. Although approximately thirty nations have amended their constitutions to provide contemporary environmental protection duties, most of these constitutions were framed before either the formal emergence of the field of ecology in the early 20th century, or the political awareness of environmental concerns in the period following the 1972 United Nations Stockholm Conference on the Human Environment. A painstaking and detailed study of a federation's constitutional law is often required to determine which level of government has the legal capacity to protect the environment. Where competence is shared by both levels; where the state operates autonomously with respect to most federal functions (such as the Canary Islands in Spain or the Buryat Autonomous Republic in Russia); or where indigenous peoples and local communities have customary rights as well (as do the Inuit around the Arctic Circle or Aborigines in Australia), the task becomes very difficult to frame law governing the management of a natural area or environmental system. Scientists can describe the natural system with some precision; yet, the legal capacity to make decisions based on that scientific understanding can be lacking.

The role of local authorities must also be considered. *Agenda 21* devotes an entire chapter¹¹ to the importance of local governments. Even in unified nations with central governments, very significant powers are delegated to or devolved upon local governments. Land use controls, local parkland designations, supply of potable water, handling of refuse and locally generated wastes, management of sewage, provisions for housing and open space, and a host of comparable environmental issues are the responsibility of the local authorities. Comparative law, therefore, finds it necessary to examine each nation's laws that assign competence over environmental issues to its political subdivisions.

One jurisdictional category requires special comment. These are what political scientists term "failed states." Although these governments have collapsed, the needs of the people and the transboundary impacts of environmental problems continue. Whether caused by civil strife, as in Cambodia, Sudan, Rwanda, or Yugoslavia, or to a gradual erosion of support for governmental services as in some parts of Africa and Central

11. AGENDA 21, *supra* note 1, at 518 (Chapter 28, Local Authorities' Initiatives In Support of Agenda 21).

Asia, one must acknowledge that most government activities are inadequate to undertake the tasks of environmental law. The Special Resumed 50th General Assembly of the United Nations made a number of recommendations for the world community on assisting these "failed states." While economic development may be attractive in many of these areas where natural resources are found, such places lack the environmental protection infrastructure required for effective environmental law regimes. Such investment is likely to be problematic and, in the long run, unsustainable.¹²

12. Lincoln Bailey, in a paper on "Organizational and Managerial Challenges" to a UN Interregional Seminar on the Role of Public Administration in Developing Infrastructure and Protecting the Environment (Rio de Janeiro, 6-8 March 1996), in preparation for the 50th General Assembly, made the following observation:

Sub-Saharan Africa is in deep crisis. Over the last decade and half its GDP growth has averaged only 2 percent per year, whilst its population growth has averaged 3.2 percent . . . its living standards are in free fall, in Nigeria and Somalia for example, the decline has been over 25 percent since the early 1980's. Its agriculture is weak, sector output has been less than 1.5 percent on average per annum resulting in larger sections of the continent increasingly unable to feed itself. Its industrial output is in sharp decline, its exports, largely primary products, is stagnant, leaving Africa's share of world trade at almost half of what it was in 1970. The region is saddled by grinding debt accumulated over the last 20 years, which it is now unable to repay. According to the World Bank, the continent's long-term debt has experienced an almost 20 fold increase since the mid-70's. Its social indicators are in reverse mode, sinking to new levels of despair, its public sector organizations and institutions are dysfunctional and the region suffers growing ecological damage . . .

In most Sub-Sahara Africa countries, established concepts of checks and balances and separation of powers do not exist (with exceptions such as, Ghana, Botswana and Mauritius), or are treated as empty formalisms. The courts are not separate from the government, they usually fall under a ministry of justice. The judicial systems themselves are relics of the colonial past, formal laws are often not well understood and are therefore not effective means of social control. In many Sub-Sahara African countries, the law makers and enforcers consider themselves above the law . . . the patrimonial all-powerful state in Sub-Sahara African countries thus concentrates, monopolizes and personalizes power in the administration. The privatization of the state, the concentration of power and the lack of accountability are a major fetter on the efficient and effective functioning of the public service in Africa.

See generally Lincoln Bailey, *Organizational and Managerial Challenges* (paper written in preparation for United Nations Interregional Seminar on the Role of Public Administration in Developing Infrastructure and Protecting the Environment, March 6-8, 1996)(on file with author).

Once the analysis has focused on a jurisdiction's environmental conditions and the components competent to deal with those conditions, then more traditional comparative law questions arise. One question is whether the governmental structure is in civil law, common law or socialist Law tradition. These varied traditions define basic forms, rights, and functions of the legislative, executive and judicial branches of government, including the citizens which the government represents. There is a large body of comparative law that has examined the substantive and procedural legal elements of these legal traditions. Nevertheless, recourse is needed to this scholarship. However, it is evident that the field of environmental law itself evidences common trends across its existence in civil law or common law traditions. Theoretically, this is also the case in socialist law tradition, although the institution of environmental law norms in that tradition remains more rhetorical than actual.

There is a common trend in substance and procedure across legal traditions because the field of environmental law is influenced by four phenomena that are common to all jurisdictions in the biosphere. First, the ecology and the other environmental sciences are disciplines applied throughout the Earth. Scientists have reached a consensus in understanding environmental conditions and phenomena, thus, this understanding becomes a shared, common body of knowledge. Since natural systems (whether wetlands or boreal forests, the hydrologic cycle or the stratospheric ozone layer) function in much the same ways wherever they are studied, a common perception emerges about the substantive objectives that a society should adopt in order to maintain the environmental benefits of a natural system. In order to efficiently manage their resources and use the best management practices, governments tend to strive to understand how others manage roughly the same sort of natural resources.

Second, many of the externalities that endanger public health or degrade natural systems, such as urban smog or acid rain, result from the same technological systems. Technological solutions for eliminating lead from motor vehicle gasoline or phasing out chlorofluorocarbons in refrigeration systems, will be the same whether the nation is developed or developing, in a civil or common law tradition, or has a central or federal constitution. As engineers shape and adopt new methods for industrial activities, technological solutions are sought and implemented as economic advances. Multinational business enterprises move this transfer of technology forward, then, in turn, regional or national companies adopt the technologies. Governments tend to adopt the same regulations for these new technologies, in order to facilitate and derive the environmental and economic benefits from their implementation.

Third, the complexity of the modern state has given rise to an administrative system that shares a great deal in common. Telecommunication agencies, central bankers, aviation offices, trade ministries, agricultural bureaus, oil and gas managers, and a host of other sectoral activities tend to have more in common with each other in every jurisdiction than do the jurisdictions themselves. The administrative state in the realm of environmental protection is similar. Environment Ministers meet at the ministerial level in all regions and globally through the United Nations system. Similar procedures for permits, financial incentives, norms and standards, monitoring and baseline data analysis, environmental impact assessment, and compliance and enforcement are used by these administrators in their jurisdictions. Thus, administration of environmental protection has tended to use similar means. This is not surprising since similar scientific guidance and technological problems or innovations provide the foundation for these means.

Fourth, the globalization of the Earth, such as the rapid transmission of news, the Internet, quicker travel between continents, and increased volumes of trade between regions has also facilitated collaboration world-wide. When the citizenry learns that a pollutant can be or has been banned in one jurisdiction, citizens demand the same elsewhere. Non-governmental organizations (NGOs) are flourishing at the grass-roots level in all countries. The activist elements in the civil society ensure that the government remains informed about environmental issues, and they advocate a reform agenda. Just as a similar economic activity produces similar incidents of pollution, similar political and social responses emerge to demand that government deal with externalities. When citizens ask for public hearings, planning procedures, environmental education, publication of environmental data, or enforcement of environmental laws, they are pressing forward comprable priorities.

When engaging in research to compare the environmental laws of different nations, one can reasonably expect to be able to identify statutes and legal institutions which bear substantial similarity, depending on the type of natural resource or pollution problem being examined. Having considered these aspects of the jurisdictions, the basic framework or structure of environmental law that should exist in any given jurisdiction will be set forth. Each jurisdiction is inevitably in the midst of completing or changing many of the elements of this framework, so it is not a static or complete body of law. Nonetheless, reference to such a framework can facilitate legal analysis by identifying the broad subjects in Environmental Law for comparison in each jurisdiction.

B. Comparative Elements of an Environmental Law System

Environmental Law typically addresses the ambient environmental conditions for the health of a population and the ecological status of the

natural resources present in the concerned jurisdiction. The elements identified here are presented because they recur in most national environmental law regimes and cover the subjects studied by the environmental sciences. These are useful categories for starting a comparative environmental law analysis, but they can also be used to measure the probable success of a jurisdiction in reaching or maintaining "sustainable development." A useful global consensus of the norms that are implicit in such a framework is set forth in the United Nations World Charter for Nature.¹³ This Charter, like the recommendations of *Agenda 21*, provides a blueprint for future actions of governments and an indicator of the progress, or lack thereof, in a jurisdiction attaining "sustainable development."

Among the useful comparative elements in examining a nation's environmental law is an analysis of which multilateral environmental agreements the State has signed or ratified. These treaties provide a common set of obligations which governments must reflect in national environmental legislation and programs. International Agreements such as the Convention on the Conservation of Biological Diversity,¹⁴ and earlier treaties such as the UNESCO Convention on the Protection of Cultural & Natural Heritage,¹⁵ the Ramsar Convention on Wetlands of International Importance, or the 1973 Washington Convention on International Trade in Endangered Species, tend to be implemented through comparable laws. The Framework Convention on Climate Change, and Part XI of the United Nations Convention on the Law of the Sea, also provide a useful inventory of national obligations which can be compared among different nations.¹⁶

Comparative environmental law may usefully encompass legislation covering three broad categories: (1) substantive environmental law topics, (2) procedural environmental law topics, and (3) institutional arrangements for administering environmental law. These categories can be illustrated with reference to legislation adopted in the United States, where the initial public policies on conservation first took hold pervasively and the largest volume of modern environmental laws was first enacted.

13. G.A. Res. 37/7, U.N. GAOR, 37th Sess, Supp. no 51, at 17, U.N. Doc. A/37/51 (1982); See generally W. E. Burhenne and W.I. Irwin, *WORLD CHARTER FOR NATURE* (Erich Schmidt Verlag, ed. 1986).

14. United Nations Conference on Environment and Development Convention on Biological Diversity, June 5, 1992, 31 I.L.M. 814 (1992).

15. Convention for the Protection of the World Cultural and Natural Heritage, Nov. 16, 1972, 27 U.S.T. 40 (1972).

16. See, e.g., *ENVIRONMENTAL LAW TREATIES OF THE UNITED STATES VOL. I-II* (Nicholas A Robinson, Ed., 1997).

C. Substantive Environmental Law

Substantive fields of environmental legislation may be grouped under headings of natural resource laws, pollution laws, process safety, energy systems, and cultural heritage. In each instance, the analysis should focus on the stage of development of the legislation. In the earlier form, laws simply regulated property or use interests in, and access to, natural resource. The more advanced forms of statutes, the "conservation" statutes, recognize that resources need to be managed, to sustain the yield of renewable resources, and to extend the useful access to non-renewable resources. The most advanced legislation seeks to establish and maintain systems for sustainable use of the resources, through managing demand and eliminating environmental impacts. Many different levels co-exist in nation;¹⁷ however, nations have uniformly advanced to the most sustainable level of these laws because the political regimes are rarely ready for extensive law reform and parliamentary progress is halting and incremental.

1. Natural Resources

Traditionally, legislation allocating access to or exploitation of natural resources was enacted sector by sector. For instance, water law evolved as a field,¹⁸ just as the law of timber concessions,¹⁹ and the laws for mining.²⁰ These laws were enacted without regard for each other or the impacts that each might have on the other. In the first instance, as the resources became scarce, legislation began to provide for avoidance of waste²¹ and conservation of the resources.²² In the case of living resources, the sustainable yield of the resource

17. See generally Nicholas A. Robinson, *COMPARATIVE ENVIRONMENTAL LAW & REGULATION* (1990).

18. See *In re Water of Hallet Creek Stream System*, 18 ENVTL. L. REP. (1988) 20690 (Cal. Feb. 18, 1988) (discussing the riparian rights doctrine in California); Joseph W. Dellapena, *Riparian Rights in the West*, 43 OKLA. L. REV. 51 (1990) (discussing riparian rights in the west, including the doctrine of appropriate rights) and J.W. Looney, *An Update on Arkansas Water Law: Is the Riparian Rights Doctrine Dead?*, 43 ARK. L. REV. 573 (1990) (discussing Arkansas water law and riparian rights).

19. See, e.g., *United States v. New Mexico*, 438 U.S. 696, 705-11 (1978) (evaluating several Federal Acts concerning the national forests such as the Organic Administrative Act of June 4, 1897, 16 U.S.C. § 473 (1986), National Park Service Act of 1916, 16 U.S.C. § 1 (1976)).

20. See, e.g., Mining Act, 30 U.S.C. §§ 22-24, 26-30 (1994).

21. See James M. McElfish, Jr. *Property Rights, Property Roots: Rediscovering the Basis for Legal Protection of the Environment*, 24 ENVTL. L. REP. (Environmental Law Institute) 10231, 10238 (May 1994) (defining the doctrine of waste as "any fundamental alteration by a tenant of the condition of the land was deemed 'waste' and would lead to forfeiture of the estate and payment of damages).

22. See GEORGE EDWIN MOWRY, *THE ERA OF THEODORE ROOSEVELT, 1900-1912*.

came to be the objective.²³ In the case of non-renewable resources, equitable sharing and gradual development was preferred to delay the ultimate exhaustion and extend the beneficial use.²⁴

As we have come to understand sustainable policies, there has been a shift from merely regulating the access to valuable resources, to requiring systems for ensuring conservation. The Convention on Biological Diversity²⁵ sets forth policies that envision stewardship of biotic resources to maintain the complex natural systems of the biosphere. National laws on endangered species²⁶ require conservation systems for their habitat and range,²⁷ rather than their mere preservation in a zoo or botanical garden. Forests are managed as parts of watershed and elements of ecosystems,²⁸ not merely for their "stumpage value" as commercial timber.²⁹

To treat natural resources sustainably means to enact laws managing all parts of the hydrologic cycle. Thus a ground water or aquifer protection law³⁰ is as important as a law on maintaining the quality of the surface waters, and in turn, the laws abating "acid rain" or the long-distance transport of air borne pollutants into water bodies.³¹ If a jurisdiction only has laws on surface water pollution, it is still in the sectoral and not yet at a sustainable stage of environmental legislation.

Other examples of natural resource laws include laws on soil conservation (more than merely erosion controls),³² on sustaining the wild

23. See the Multiple-Use-Sustained Yield Act of 1960, 16 U.S.C. §§ 528-531 (1994).

24. See 15 U.S.C. § 717(g) (1994) (requiring the Federal Power Commission to gather information on natural gas conservation) and 42 U.S.C. §§ 6991-6991(a) (1994) (concerning the regulation of underground storage tanks).

25. United Nations Conference on Environment and Development: Convention on Biological Diversity, Jun. 5, 1992, 31 I.L.M. 814 (1992).

26. Endangered Species Act, 16 U.S.C. §§ 1531-1544 (1994).

27. See 16 U.S.C. § 1534 (1994) (requiring the Secretary to carry out a conservation plan by acquiring land to protect species and their habitat).

28. National Forest and Rangeland Planning Act, 16 U.S.C. §§ 1600-1687 (1994).

29. See *United States v. New Mexico*, 438 U.S. 718, 718-725 (J. Powell, dissenting).

30. See, e.g., 42 U.S.C. §§ 300(h)-300(h)7 (1996) (establishing protections for undeveloped water and sole source aquifers).

31. See Clean Air Act, 42 U.S.C. § 7412(m)(1)-(3) (1994) (requiring a program to assess the atmospheric deposition around the Chesapeake Bay and other waters).

32. See 16 U.S.C. §§ 590-590(q)(3) (1994); ALA. CONST. AMEND. No. 451 (1996) (creating a Commission responsible for soil and water conservation); 14 ARK. CODE ANN. §125-102 (Michie 1997) (stating preservation of soil and farmland is necessary for health and wealth of the state); CAL. PUB. RES. CODE. § 9151 (West 1998) (creating a resource conservation district for soil preservation); Colo. Rev. Stat. § 35-70-103 (1997) (creating a soil conservation board); FLA. STAT. ch. 582 Soil and Water Conservation (1987) and 70 ILL. COMP. STAT. 405/23 (1998) (creating land-use regulations).

stocks of fish³³ (more than merely fishing seasons, but also habitat management and studies to ascertain the range and numbers of sustainable populations of marine or freshwater species), on maintaining habitat for migratory species throughout their range, in every jurisdiction wherein the habitat is located,³⁴ and laws setting aside large expanses of natural areas as parklands and reservations.³⁵ Sustainable agriculture includes establishing systems for integrated pest management, irrigation water conservation (i.e., drip agriculture), no-till planting, crop rotation and managed fertilizer use, and recycling of organic wastes.

Since none of these systems is likely to be instituted without some training and guidance, environmental legislation is needed to establish such programs. The resource user, without such direction by the legislature, is apt to maximize short-term profits by continuing unbridled exploitation as long as there is a market for the resources. The adverse consequences are evident. For instance, the delay in negotiating the Migratory and Straddling Fish Stocks Convention³⁶ occurred until the point where the marine fish stocks were near depletion.

2. Pollution

The initial pollution laws controlled the discharges from the ends of pipes or smokestacks. To these were added laws requiring that the quality of the ambient environment be studied and a baseline that the accumulation of emissions would be prohibited from degrading the water quality. In order to ensure that pollutants would not accumulate in the ambient environment, laws on waste minimization became the next pattern of pollution control laws; such rules also cut the expenses of installing pollution control equipment for end-of-pipe controls, reduced energy demands, and induced innovation in manufacturing processes to reduce the amount of raw materials involved. The most sustainable and latest version of such legal regimes to abate pollution deals with total

33. See 16 U.S.C. §§ 755-760(g) (1996) (establishing the preservation of fishery resources in the Great Lakes, Pacific Ocean, and throughout the country).

34. See Convention for the Protection of Migratory Birds in the United States and Canada, Aug. 16, 1916, *reprinted in* ENVIRONMENTAL LAW TREATIES OF THE UNITED STATES 435 (Nicholas A. Robinson ed., 1997) *and* *Missouri v. Holland*, 252 U.S. 416 (1919) (upholding the Treaty of 1916 between the United States and Canada regarding the protection of migratory birds).

35. See 16 U.S.C. § 460(k)(1) (1994) (authorizing the Secretary of Agriculture to acquire lands for recreational development).

36. See United Nations Conference on Straddling Fish Stocks and Highly Migratory Fish Stocks: Agreement for the Implementation of the Provisions of the United Nations Convention of the Law of the Sea, Dec. 10, 1982, *reprinted in* 30 I.L.M. 1542 (1995).

quality control and product design. By designing products that avoid wasteful systems of production, and that are themselves long-lasting, capable of reuse and recycling, and that do not become pollutants themselves, such "eco-efficiency" systems advance both economic and ecological objectives.

In the case of water pollution laws, regimes were implemented to restore previously polluted waters and to upgrade the quality of other waters. These regimes require reliable undertakings to monitor ambient water quality, to induce the use of innovated process and effluent control technologies, and to monitor compliance and facilitate enforcement. Regimes to restore, enhance and maintain air quality require a comparable system, although the complexities of weather patterns and pollution dispersion necessitate rather more advanced air sampling and monitoring programs.

Noise pollution illustrates these choices. Most noise abatement has been to specify manufacturing standards for the design of equipment that emits noise.³⁷ It must be designed to operate at a low decibel. In urban settings, noise is measured in terms of a decibel level recorded at a specified distance from the source of the sound.³⁸ Both types of noise control systems are needed.

In the case of hazardous materials, the risks of environmental problems are minimized by providing transport safeguards³⁹ and design criteria requiring the use of the least amount of such materials as needed.⁴⁰ The wastes that are produced can be reused, or if not reusable can be carefully contained, and transported safely to a licensed facility for treatment or long-term storage as a form of disposal.⁴¹

3. Process Safety and Quality Controls

Although Occupational Safety and Health Legislation is provided to protect workers in factories and farms, it also establishes norms that protect the ambient health as well.⁴² The International Labor Organization's conventions include many topics that should be reflected

37. 42 U.S.C. § 4905 (1994) (establishing standards for noise levels for equipment sold in commerce).

38. See ENVIRONMENTAL REGULATION OF REAL PROPERTY, Ch. 8 (Nicholas A. Robinson ed., 1997).

39. 42 U.S.C. § 6923 (1994).

40. Pollution Prevention Act, 42 U.S.C. § 13106 (1994) (requiring an owner of a facility to file a toxic chemical source reduction report).

41. 42 U.S.C. §§ 6901-6922 (1994).

42. See e.g., Occupational Health and Safety Act (OSHA), 29 U.S.C. §§ 651-678 (1994).

in national legislation.⁴³ The attention to how a product is manufactured has led the International Standards Organization to adopt the ISO 9000 series on quality control assurance.⁴⁴ The success of these performance standards has led the ISO to adopt the ISO 14,000 Series on Environmental Management.⁴⁵

4. Energy Systems

The production and supply of energy is critical to sustainable development. The production of electricity should in corporate economic incentives to price the cost of externalities and induce energy generators, suppliers, and users to avoid producing such externalities.⁴⁶ Laws encouraging the use of renewable sources of energy, such as wind or solar energy, encourage the use of energy through means that have significantly fewer environmental impacts than do the consumption of fossil fuels such as coal or oil. The production, transport, storage, and use of oil produces such extensive environmental injuries that the volume of regulation is vast at international⁴⁷ and national levels.⁴⁸ The pervasive regulation of the atomic energy industry similarly involved pervasive international⁴⁹ and national laws.⁵⁰ Furthermore, the disposal of radioactive waste leaves residues that must be safely stored for centuries, given the long half-lives of different radio isotopes.⁵¹

43. See UNITED NATIONS AT 50 107-17 (John E. Noyes ed., 1997) (discussing the ILO and some of the conventions which have not received a lot of ratifications, such as the conventions on: maternity protection, protection of seafarers, chemical accidents, and indigenous peoples).

44. See DAVID STEVENSON HUYINK & CRAIG WESTOVER, ISO 9000 (1994)(discussing the ISO 9000 process and project plans).

45. See Dick Hortensius & Mark Barthel, *Beyond 14001: An Introduction to the ISO 14000 Series*, in ISO 14001 AND BEYOND: ENVIRONMENTAL MANAGEMENT SYSTEMS IN THE REAL WORLD 19-21 (1997) and TOM TIBOR & IRA FELDMAN, ISO 14000: A GUIDE TO THE ENVIRONMENTAL MANAGEMENT STANDARDS 22 (1996)(discussing the environmental management systems of ISO 14000 and 14001).

46. See Donald C. Peterson, Jr. & Daniel M. Violette, *Environmental Externalities in Utility Planning*, in EXTERNAL ENVIRONMENTAL COSTS OF ELECTRIC POWER 306 (Richard L. Ottinger et al. eds., 1991).

47. See International Convention for the Prevention of Pollution from Ships (MARPOL), Nov. 2, 1973, reprinted in 12 I.L.M. 1319 (1973).

48. 33 U.S.C. §§ 2701-2719 (1994).

49. See UNITED NATIONS AT 50, *supra* note 43, at 121 (discussing IAEA current activities and management such as its safeguard controls relating to nuclear capabilities).

50. 42 U.S.C. § 2221 (1994)(known as the Atomic Energy Act of 1954).

51. 42 U.S.C. § 10161 (1994)(requiring licensing and various requirements for storing high level radioactive waste).

5. Cultural Heritage

The built environment includes sites of world heritage, both natural and culturally significant. The UNESCO World Heritage Convention⁵² provides an international means to identify and protect these amenities. National laws on historic preservation⁵³ and local ordinances on landmarks and historic districts⁵⁴ provide comparable protection within nations. The maintenance of historic and cultural heritage is essential to defining a sense of place and the personality of a locality or nation. Historic and cultural heritage is as much a part of the environment as are the natural resources being protected.⁵⁵

D. Procedural Laws for Sustainability

Just as ecology and earth science explain the systems of nature and the biosphere, so environmental law establishes administrative systems that facilitate society's efforts to understand, and take into account, the elements of natural science. The procedural and administrative laws for environmental management are a prerequisite for sustainable development.

The basic obligations for environmental protection are often included in the constitutions of nations. For instance, the Republic of the Philippines has both constitutional clauses and a decision of its Supreme Court construing those provisions.⁵⁶ While some written constitutions, including those of the United States, have not been revised to include an environmental right, those same nations have adopted basic statement of environmental policy and have formulated the tools to realize that policy.⁵⁷ Fundamental human rights are increasingly applied in the context of environmental law. For example, "green justice" issues arise in

52. See Convention for the Protection of the World Cultural and Natural Heritage, Nov. 16, 1972, 27 U.S.T. 40.

53. See National Historic Preservation Act; 16 U.S.C. § 470 (1994)(authorizing the President to declare historic landmarks).

54. See *Penn Central Transp. Co. v. New York City*, 438 U.S. 104 (1978)(upholding New York's Landmarks Preservation Law).

55. See *Chinese Staff and Workers Ass'n v. New York City*, 502 N.E.2d 176 (N.Y. 1986)(holding the City should have considered whether a new high-rise in Chinatown would affect the character of the community).

56. See THE CONSTITUTION OF THE REPUBLIC OF THE PHILIPPINES Art. II § 16, reprinted in CONSTITUTIONS OF THE COUNTRIES OF THE WORLD (Albert P. Blaustein & Gisbert H. Flanz eds., 1986) and *Minors Oposa v. Secretary of the Dept. of Environment and Natural Resources*, reprinted in 33 I.L.M. 173 (1994)(decision of the Supreme Court of the Philippines).

57. See 42 U.S.C. §§ 4341, 4369a (1994).

the siting of hazardous waste treatment or disposal facilities.⁵⁸ Also, legislation also increasingly establishes basic policies, such as the polluter pays principle, or waste minimization priorities,⁵⁹ or the precautionary principle. These overarching principles or policies are meant to guide all practices.

The most expansive and extensively enacted system of sustainability is that of Environmental Impact Analysis (EIA). Enacted initially in the National Environmental Policy Act of 1969 (NEPA),⁶⁰ this technique was further enacted in 1970 by Ontario,⁶¹ California,⁶² the City of New York,⁶³ the Netherlands,⁶⁴ France,⁶⁵ Thailand,⁶⁶ and Australia.⁶⁷ In 1985, EIA was mandated in the European Community by Directive.⁶⁸ EIA is

58. See Eileen Gauna, *The Environmental Justice Misfit: Public Participation and the Paradigm Paradox*, 17 STAN. ENVTL. L.J. 3 (1998)(discussing the environmental justice movement); Kent E. Portney, *Environmental Justice and Sustainability: Is There a Critical Nexus in the Case of Waste Disposal or Treatment Facility Siting?*, 21 FORDHAM URB. L.J. 827 (1994)(discussing sustainability and waste disposal in terms of environmental justice); Charles Russell, *Environmental Equity: Undoing Environmental Wrongs to Low Income and Minority Neighborhoods*, 5 WTR. J. AFF. HOUSING & COMM. DEV. L. 147 (1996)(discussing minorities and environmental issues such as waste storage sites) and Robert B. Wiygul et al., *Environmental Justice in Rural Communities*, 96 W. VA. L. REV. 405(1993-94)(discussing RCRA, rural communities, and environmental justice).

59. 42 U.S.C. § 13106 (1994).

60. 42 U.S.C. §§ 4321-4370 (1994).

61. See Ontario Environmental Assessment Act of 1990, in INT'L ENV. REP. (BNA) 212:0302 (1991). For a discussion and analysis of Canadian environmental law see also Ref. File INT'L ENV. REP. (BNA) 212:0101-0301 (Nov. 1996)(discussing environmental assessment procedures established from 1969-1973).

62. CAL. PUB. CODE §§ 21000-21005 (West 1996)(establishing environmental policies for the state of California).

63. N.Y. ENVTL CONSERV. LAW § 8-0101 (McKinney 1997) (establishing the overall environmental policy of New York, otherwise known as SEQRA).

64. See Netherlands Environmental Management Act, ch. 7, in Ref. File INT'L ENV. REP. (BNA) 281:0105 (Sept. 1993) (discussing aspects of the Dutch EIA system).

65. See Ref. File INT'L ENV. REP. (BNA) 231:0301 (Nov. 1994) (listing selected Environmental laws and regulations from France including Law No. 84-512 of June 29, 1984 relating to fresh water and fisheries and Law No. 85-1273 of Dec. 4, 1985 relating to the management and protection of forests).

66. See Ref. File INT'L ENV. REP. (BNA) 294:0104 (Jan. 1995) (discussing the Thai National Environmental Quality Act and Environmental Impact Assessments).

67. See Ref. File INT'L ENV. REP. (BNA) 205:0101, 0102 (May 1990) (discussing several Australian conservation laws such as the 1974 Environment Protection Act, which was enacted to require environmental impact statements).

68. See Stanley P. Johnson & Guy Corcelle, *The Environmental Policy of the European Communities*, 254 (1989)(discussing the 1985 European Community Directive regarding implementing environment impact assessments).

recommended by the United Nations Environment Programme's Governing Council,⁶⁹ and is mandated under the Espoo Convention on Transboundary EIA.⁷⁰ All EIA laws essentially require that before a proposed action is taken the decision-maker shall: identify the effects it will have on the environment; scope out a study of those effects including alternatives to the proposed action; prepare a draft EIA report and consult with the public and affected stakeholders about the report; and prepare a final report with recommendations to avoid or mitigate any adverse effects, having considered the views of the public. The EIA system is flexible enough to work at the level of a village or a nation or across nations and looks at all aspects of the natural science involved.

Where EIA is broad, other administrative techniques are more narrowly focused. Those administrative techniques establishing the scientific base line for specifying the levels of environmental quality to be attained and maintained are a critical category. The ambient water quality standards established for all surface water bodies under the Clean Water Act illustrate this technique.⁷¹ The air quality standards necessary to protect the public health⁷² and welfare,⁷³ or those appropriate to maintain visibility objectives,⁷⁴ represent similar statutory specification of an administrative system through which to establish baseline standards. Once the scientific standards are set, then monitoring systems can be established to ascertain if the standards are being attained. Where they are not attained, appropriate control systems can be set in place.

Administrative systems for compiling and reporting data are also essential. The discharge monitoring reports,⁷⁵ compiled routinely by the holders of permits to discharge liquid effluent into the waters of the United States, serve multiple purposes. They facilitate the compliance by the discharger with permit condition,⁷⁶ they make it possible to evaluate the attainment of water quality standards in the receiving waters of the

69. See United Nations Environment Programme, *UNEP's New Way Forward: Environmental Law and Sustainable Development* IX and app. III in UNEP GOV. COUNCIL Dec. 17-25, 1995 (Sun Lin et al eds., 1995).

70. Convention on Environmental Impact Assessment in a Transboundary Context, Espoo 1991, Feb. 25, 1991, in ENVIRONMENTAL TREATIES OF THE UNITED STATES, Vol. I, 565 (Nicholas A. Robinson ed., 1997).

71. 42 U.S.C. §§ 1311-1319 (1994).

72. 42 U.S.C. § 7409 (1994).

73. *Id.*

74. 42 U.S.C. §§ 7491-7492 (1994).

75. 42 U.S.C. § 1314(i) (1994).

76. Incindives for Self-Policing: Discovery, Disclosure, Correction, and Prevention of Violation, 60 Fed. Reg. 66706 (1995); Restatement of Policies Related to Environmental Auditing, 59 Fed. Reg. 38455 (1994); and TIBOR, *supra* note 42, at 93 (evaluating the Environmental auditing systems).

river or lake, and they are valuable tools in public⁷⁷ and private⁷⁸ enforcement of the controls. The documentary systems for tracking the movement of hazardous chemicals through the Hazardous Materials Transportation Act⁷⁹ and the manifest system for the waste transport, storage and treatment provided by the Resource Conservation and Recovery Act⁸⁰ focus on the safe handling of materials to prevent their release into the environment.

Perhaps the most effective forms of such systems are those that educate managers and others responsible for maintaining environmental quality that their stewardship duties are a primary responsibility and one that necessitates regular attention. The preventative requirements of the Community right-to-know laws,⁸¹ which contain plans for storage and use of hazardous materials must be communicated to the emergency response and environmental protection officials. In addition, the public reporting of gaseous releases generally under the waste minimization requirements of the Pollution Prevention Act,⁸² put the individuals in charge on notice about the activities for which they are responsible. This encourages prophylactic measures and engages the enlightened self-interest of the individuals involved. These systems, have in turn, led to the formation of professional standards for "due diligence" inquiries to ascertain the compliance with environmental laws.⁸³

Finally, there are systems for restoring damaged ecosystems and contaminated lands. The "Remedial Investigation/Feasibility Study" procedures for restoring the quality of ground waters and soils provide a systematic approach to repairing such damage.⁸⁴ Other laws have permitted the development of systems for bioremediation, restoration of

77. See Clean Water Act, 42 U.S.C. § 1319(a)-(g) (1994) (authorizing criminal and civil penalties).

78. 42 U.S.C. § 1365 (1994) (authorizing citizen suits under the Clean Water Act).

79. 42 U.S.C. § 6923 (1994).

80. Resource Conservation & Recovery Act (RCRA), 42 U.S.C. §§ 6901-6992 (1994).

81. See Emergency Planning and Community Right to Know Act (EPCRA), 42 U.S.C. § 11045 (1994).

82. 42 U.S.C. §§ 13101-13109 (1994).

83. See Brooks M. Beard, *The New Environmental Federalism: Can the EPA's Voluntary Audit Policy Survive?*, 17 VA. ENVTL. L.J. 1(1997) (describing the EPA's environmental audit policy and due diligence); Elizabeth Downer, *Buying Into Trouble-Lender Liability Under CERCLA and SARA*, 14 S. ILL. U. L.J. 319, 321 (1990) (discussing due diligence in terms of Superfund Amendments and Reauthorization Act (SARA) and CERCLA) and Bruce Taterka, *Security and Innocence under CERCLA: The Battle Against Confusion*, 9 PACE ENVTL. L. REV. 215, 235 (1991) (discussing the innocent landowner defense under CERCLA and the duty to exercise due diligence).

84. See CERCLA, 42 U.S.C. § 9621 (1994).

damaged wetland ecosystems,⁸⁵ and conservation of species habitat.⁸⁶ By establishing a process for the repair of damage caused by human intervention, the environmental law system provides for the restoration of the natural systems to the point where those natural systems can resume their normal functions and thereby deliver the sustainable yield of benefits upon which human society and the natural systems depend.

E. Institutional Arrangements

Few of these substantive fields of environmental law nor the procedural systems for implementing them, can exist without an institutional context in human society. The government must therefore establish agencies to set up the protocols for scientific inquiry and fact finding, the rules for establishing the quality standards, and permit and control regimes. Institutions must also enforce the systems in the event of non-compliance or outright criminal behavior. This may seem self-evident, but, there are still nations without a functioning environmental protection agency today. In the United States, the US Environmental Protection Agency is still the creation of President Nixon's Executive Order⁸⁷ and has no organic statute defining its statutory mission. Given the volume of statutes administered by EPA, this is an anomaly that should be corrected.

Since the environment is found literally wherever society has created a governmental jurisdiction, whether it be a hamlet, city, province, nation, or supranational level, there should be a clear assignment of environmental responsibility for that level. However, the supranational European Union⁸⁸ only recently created its Environmental Agency⁸⁹ to collect and report ambient environmental data. Moreover, many of the EC Member States do not yet have adequate systems for all of the substantive and procedural systems outlined above. In the United States, over half of the States have not yet enacted EIA legislation,⁹⁰ although, all the Canadian Provinces have such rules⁹¹ and EIA is a mandatory part of the federal and

85. See Clean Water Act, 42 U.S.C. §§ 1266, 1267, 1269, 1270 (1994).

86. See 16 U.S.C. § 1534 (1994).

87. See Reorganization Plan No. 3 of 1970, 35 Fed. Reg. 15623, 42 U.S.C. § 4321 (1970) (statement to Congress by President Nixon following § 4321 of WEPA).

88. See RICHARD CORBETT, *THE TREATY OF MAASTRICHT FROM CONCEPTION TO RATIFICATION: A COMPREHENSIVE REFERENCE GUIDE* 382 (1994).

89. The European Environment Agency was established in 1993 with a goal to set up a uniform environmental policy for Europe. See *ENVIRONMENTAL LAW AND POLICY IN THE EUROPEAN UNION AND THE UNITED STATES* 93 (Randall Baker ed., 1997).

90. See Nicholas A. Robinson, *SEQRA's Siblings: Precedents From Little NEPAs in the Sister States*, 46 ALB. L. REV. 1155, 1157 (1982).

91. See INT'L ENV. REP., *supra* note 57, at 205:0101.

State laws in Mexico. As a result of the creation of the tri-nation Commission on Environmental Cooperation as a side agreement⁹² to the North American Free Trade Act,⁹³ EIA will eventually need to exist in all the States and Provinces of Canada, Mexico, and the United States.

Indeed, all the regional work of the Great Lakes International Joint Commission between Canada and the United States⁹⁴ may be a good illustration of the work that will need to be undertaken by the CEC for the entire continent. The harmonization of standards for the protection of shared water resources in the boundary waters of these two nations has led to elaborate and detailed regimes.⁹⁵

Shared resources of the commons, high seas, and the atmosphere, also require institutional arrangements. Part XI of the United Nations Convention on the Law of the Sea⁹⁶ provides a common set of rules for all nations. However, this law depends on national implementation. This is in stark contrast with the mandate of the International Maritime Organization that provides detailed rules for ships to prevent pollution of the oceans by vessels.⁹⁷ Thus, there will be a need for a coordinating agency to work on the pollution from coasts, on global standards for coastal zone management, and on environmental quality for coastal marine resources generally.

Atmospheric law is also in its infancy. The United Nations Framework Convention on Climate Change (UNFCC)⁹⁸ provides the most rudimentary set of rules for gaseous emissions into the atmosphere. As the

92. See North American Agreement on Environmental Cooperation, in *NORTH FREE TRADE AGREEMENTS: TREATY MATERIALS* (James R. Holbein & Donald J. Musch eds., 1994) and PIERRE MARC JOHNSON & ANDRE BEAULIEU, *THE ENVIRONMENT AND NAFTA: UNDERSTANDING AND IMPLEMENTING THE NEW CONTINENTAL LAW* 119 (1996).

93. North American Free Trade Agreement (NAFTA), in *NORTH AMERICAN FREE TRADE AGREEMENTS: TREATY MATERIALS* (James R. Holbein & Donald J. Musch eds., 1994).

94. See Agreement between the United States of America and Canada on Great Lakes Water Quality, Nov. 22, 1978 in *ENVIRONMENTAL LAW TREATIES OF THE UNITED STATES*, Vol I, 103 (Nicholas A. Robinson ed., 1997).

95. See Protocol Amending the 1978 Agreement between the United States of America and Canada on Great Lakes Water Quality, Nov. 18, 1987 in *ENVIRONMENTAL LAW TREATIES OF THE UNITED STATES*, Vol. I, 159 (Nicholas A. Robinson ed., 1997).

96. United Nations Convention on the Law of the Sea, Dec. 10, 1982, Part XI, *reprinted* in 21 I.L.M. 1261, 1293 (1982).

97. See International Convention for the Prevention of Pollution from Ships, *supra* note 44.

98. United Nations Framework Convention on Climate Change (UNFCC), May 9, 1992, *reprinted* in 31 I.L.M. 849 (1992).

Kyoto Protocol⁹⁹ is implemented in the coming decade, these rules will be elaborated upon further. The Vienna Convention on the Protection of the Stratospheric Ozone Layer,¹⁰⁰ and the Montreal Protocol,¹⁰¹ with the London and other amendments,¹⁰² provide detailed rules for the prevention of the release of chlorofluorocarbons and other gases that impair the stratospheric ozone layer. These detailed rules are in stark contrast to the still vague rules of the UNFCCC. In the case of acid rain, some specific but rather poorly monitored and badly enforced rules are in effect for the Northern Hemisphere,¹⁰³ but no comparable rules for the Southern Hemisphere exists. Acid rain within Asia is growing and is acute.

Since the systems of the biosphere are global and interrelated, none of the national environmental law regimes can, by themselves, secure the protection of their national environments. The national regimes need to be integrated and made congruent with the natural systems and then improved as scientists have better understanding of those natural systems. Comparative environmental law techniques are essential to understanding the current status of a nation's environmental regimes. Without a clear comprehension of the substantive fields and procedural systems that each nation has instituted to protect the environment, it will not be possible to effectively shape the international regimes and institutions needed to integrate such national systems. From the opposing view, international treaty obligations will be still born until each nation has the capacity to effectively implement them.

Agenda 21 provides a blueprint¹⁰⁴ for the national policies and laws that need to be implemented as a priority matter for each of these sectors of social and economic activity in each nation. Some states have made *Agenda 21* a central element of their national policy formation. However, many, including the United States, have not done so despite the establishment of the advisory President's Commission on Sustainable Development. Indeed, both the 104th and 105th Congress of the United

99. Kyoto Protocol to the United Nations Framework Convention on Climate Change, COP 3d Sess., U.N. Doc. FCCC/CP/1997/L.7/Add.1 (1997).

100. See Vienna Convention for the Protection of the Ozone Layer, Mar. 22, 1985, in ENVIRONMENTAL LAW TREATIES OF THE UNITED STATES, *supra* note 90, at 733.

101. See Montreal Protocol on Substances that Deplete the Ozone Layer (Composite Text of the Protocol as Amended in London in June 1990, in Copenhagen in Nov. 1992, and in Vienna in Dec. 1995) INT'L ENV'T REP. (BNA) 21:3151.

102. *Id.*

103. See United Nations: Convention on Long-Range Transboundary Air Pollution, Nov. 13, 1979, in ENVIRONMENTAL LAW TREATIES, *supra* note 90, at 733.

104. See generally AGENDA 21 & THE UNCED PROCEEDINGS (Nicholas A. Robinson et al. eds., 1992).

States largely ignored, if not forgotten, *Agenda 21*. Therefore, it will be left to those who establish local, national, or international environmental laws whenever the opportunity arises to act on the basis of the recommendations of *Agenda 21* and seek to link the substantive, procedural, and institutional elements outlined above into an operational system.

Comparative legal analysis of some or all of the elements of this environmental law framework can provide instructive insights. Although nations confront similar situations in terms of natural environmental conditions,¹⁰⁵ every culture responds to these similar situations in ways that are shaped by their own traditions. The study of one or more elements of environmental law in several different states often reveals that one State is particularly adept at one subject while largely ignoring others. From successful implementation, one can discern the criteria for effectiveness and, thus, be better able to advise other jurisdictions on how to also attain success. From the less successful experiences, the inhibitions and obstacles to implementing environmental law can be identified. Both analyses contribute to determining the best method to harmonize and integrate comparable environmental norms regionally or internationally. Either analysis is useful to the lawyer whose clients have similar operations in two or more states.

III. HARMONIZING ENVIRONMENTAL NORMS INTERNATIONALLY

The study of comparative environmental law can identify instances in which nations may be addressing the same problems in different ways. Where one nation in a region abates acid rain while another does not, the environmental damage continues and the non-abating nation "wins" some incremental, short-term economic exploitative gain at the other nation's expense. There is an obvious need to promote comparable norms and equivalently effective administration of those norms among all states sharing the same environmental resources.

When a nation falls short of meeting its obligations to protect the environment, it may be because either it lacks the means to do so, or has the means but lacks the will. Many developing countries and economies in transition from planned to market economies, have sought assistance from industrialized States in providing these means. The Global Environmental Facility (GEF)—established by the United Nations Development Programme, the United Nations Environment Programme,

105. Impacts on public health, standardized technological processes and means, and environmental problems resulting from the externalities of the economic market (e.g., accumulated incremental run-off pollution in a water course) or human errors such as the Chernobyl or Bhopal accidents.

and the World Bank—is working to build this capacity. In federal systems, the federation often provides means to ensure that each constituent jurisdiction can meet a shared duty. For example, in Canada, this took the form of an inter-provincial agreement to coordinate air pollution laws. In the United States, it took the form of a massive financial assistance program to design and construct municipal sewage treatment works.¹⁰⁶

The varying geographic situations and levels of economic wealth of nations have given rise to an international standard that accommodates such differences. The international agreements on Climate Modification and on Bio-Diversity provide mandates for “common but differentiated responsibilities.”¹⁰⁷ In essence, these treaties contemplate that each state must do its particular and fair share in any measures internationally agreed upon to protect the environment. For instance, although the European Union, the United States, India, and China have common duties to attempt to contain emissions of “greenhouse” gases that could alter the climate, just how they do so, and to what extent, will depend on their varying industrial and economic conditions. The details of such a common but differentiated duty remain to be negotiated in each context. However, in either case, unless all States concerned have a thorough understanding of each other’s environmental laws, there will be very little basis to realistically define their responsibilities or know if they are indeed functioning toward a common end. Here, again, it is essential to have a solid understanding of comparative environmental law.

There is significant evidence that various jurisdictions are, in fact, creating very comparable environmental legal systems. The rapid transference of environmental impact assessment from its creation in NEPA in the United States in 1969, to its unilateral adoption in over 130 jurisdictions world-wide, is a very apt example.¹⁰⁸ In the context of the European Union, even in such distinct areas as the Flemish, Walloon, and Brussels areas of Belgium, there is evidence that Environmental Law takes on the same kind of content. Professor Kurt Deketelaere reports that:

It is clear that environmental legislation in Belgium in general and in the Flemish Region in particular, is becoming less “sectoral” and more “general:” there are less and less places for different sectoral permits, plans, procedures, et cetera. A great effort has been made to harmonize, as much as possible, topics which are arising in every sectoral environmental legislation The “greening of law” in general, on the basis of the integration principle, must

106. Section 201, 86 stat. 833 (1972) (amending Pub.L.No. 87-88, 75 stat. 204 (1961)).

107. See *supra* note 24.

108. This EIA process is described in Nicholas A. Robinson, *EIA Abroad: The Comparative and Transnational Experience*, in ENVIRONMENTAL ANALYSIS: THE NEPA EXPERIENCE (Stephen G. Hildebrand & Johnnie B. Cannon eds., 1993).

be the ambition for the future. The introduction of ecological elements in the classical branches of law is already now, in a modest way, a reality.¹⁰⁹

Harmonization of Environmental Law is the active concern of a number of international entities where, for example, it is an objective of the European Union. In common trade areas such as ASEAN or MERCOSUR, harmonization is an active element of cooperation. Organizations such as the Commission on Environmental Law of the International Union for the Conservation of Nature and Natural Resources (IUCN) actively undertake measures leading to harmonization.

In an insightful study on the relationship of environmental law and international trade,¹¹⁰ the Association of the Bar of the City of New York stressed that, while reasonably uniform environmental standards are important to establish a level playing field for commercial competition across nations, there is a need to allow each jurisdiction to establish more advanced or refined standards as necessary to meet local conditions and values. If environmental protection objectives are to be advanced worldwide, a floor is needed, not a race to the bottom.

Another element of harmonization is the voluntary codes of conduct, such as the International Chamber of Commerce's "Business Charter for Sustainable Development," issued in 1991. The International Standard Organization's ISO 14000 Environmental Quality Standard will promote a common methodology by which business can ensure compliance with environmental standards in different countries. In order to complete the ISO 14000 audit process, however, it will be necessary to access and understand the Environmental Law of each country where a manufacturing facility is situated.

Finally, Comparative Environmental Law can be important in the context of international dispute resolution. Whether the forum is the European Court of Justice or a trade dispute panel of the World Trade Organization, or an international arbitral panel, there is an increasing need to identify and objectively set forth the environmental law of the states involved in a dispute.

IV. LOCATING AND AUTHENTICATING ENVIRONMENTAL LAW

Environmental law is a complex subject, rapidly evolving, with legal ties to many varied bodies of law. Therefore it is often a challenge to find current texts for environmental statutes, regulations, administrative

109. Kurt Deketelaere, *Public Environmental Law in Belgium in General and in The Flemish Region in Particular*, in *COMPARATIVE EUROPEAN ENVIRONMENTAL LAW*.

110. The Committee on the United States in a Global Economy, *Harmonizing and Coordinating the Economic Law of Nations: A Comparative Study*, 49 *THE RECORD OF THE ASSOCIATION OF THE BAR OF THE CITY OF NEW YORK* 800 (1994).

rulings, judicial decisions, and implementing procedures. Eventually, however, there will be ample introductory surveys for all nations. Such references will provide needed orientation to identify the laws and indicate where they can be found.

The Internet is also providing a tremendously important access tool. Universities and governments are posting and maintaining Environmental Law reference services on the Internet in many countries. For instance, the Center for Environmental Legal Studies of Pace University has designed The Virtual Environmental Law Library as a research reference linking international environmental agreements and national environmental legal regimes.¹¹¹ In addition, the University of Singapore has established the Asia-Pacific Centre for Environmental Law to post the environmental legislation of the ASEAN nations on the Internet.¹¹² Furthermore, the University of Rhodes maintains the South African environmental laws online.¹¹³

The only fully reliable means to obtain the environmental laws of a given jurisdiction is to identify the official source of the statute, rule, or decision, and then obtain a duly verified copy of that text. Where locally admitted counsel have obtained such official texts, they can provide copies. In many instances, legal publishers will publish official texts or reliable texts provided by University libraries or legal experts. Before relying on any of the legal texts on the Internet, it will be necessary to ascertain whether the entity responsible for the Internet service inspected an official copy of the law before posting it on the Internet. One must also inquire when the law was inspected for amendments and when the Internet copy was last updated.

Comparative law has long been concerned with how to find and research the laws of different jurisdictions. This includes issues of translation and meaning, authentication of texts, and interpretation in accordance with the canons of the jurisdiction involved. Here, again, the traditional Comparative Law scholarship is most useful to those undertaking comparative analysis of Environmental Laws.

One non-traditional source for environmental law in a given subject may be the environmental scientists concerned with that subject. These scientists have frequently been consulted in the design or implementation of a given statute or regulation. They know which government offices are responsible for the law and have current copies of the laws. Equally

111. *Virtual Environmental Law Library* (visited Jan. 20, 1998) <<http://www.law.pace.edu>>.

112. *Asia-Pacific Centre for Environmental Law* (APCEL) (visited Jan. 20, 1998) <<http://sunsite.nus.sg/apcel/>>.

113. *Southern Africa Environment Page* (visited Jan. 21, 1998) <<http://www.ru.ac.za/departments/law/SAenviro/saep.html>>.

important, they tend to know about pending or possible proposals for amendments to the laws.

V. CONCLUSION

Environmental law, evaluated across nations through the techniques of comparative law, is both a foundation for sustainable development in terms of *Agenda 21* and serves as an indicator of the success or failure of a nation's measures to attain or maintain sustainable development. The systematic analysis of environmental law in this way is still in its infancy, and much more attention has been devoted to international environmental law. This is partially because it is difficult to know how to compare Environmental Law and where to find it in different jurisdictions. By clarifying the processes of comparative environmental legal study, the objectives of sustainable development can be materially advanced.

APPENDIX: The United Nations World Charter for Nature
(UNGA RES. 37/7)

1.23 WORLD CHARTER FOR NATURE. Adopted by the U.N. General Assembly, 28 October 1982. G. A. Res. 37/7 (Annex), U.N. GAOR, 37th Sess., Supp. No. 51, at 17, U.N. Doc. A/37/51, 22 I.L.M. 455 (1983)

THE GENERAL ASSEMBLY

Reaffirming the fundamental purposes of the United Nations, in particular the maintenance of international peace and security, the development of friendly relations among nations and the achievement of international cooperation in solving international problems of an economic, social, cultural, technical, intellectual or humanitarian character,

Aware that:

- (a) Mankind is a part of nature and life depends on the uninterrupted functioning of natural systems which ensure the supply of energy and nutrients,
- (b) Civilization is rooted in nature, which has shaped human culture and influenced all artistic and scientific achievement, and living in harmony with nature gives man the best opportunities for the development of his creativity, and for rest and recreation,

Convinced that:

- (a) Every form of life is unique, warranting respect regardless of its worth to man, and, to accord other organisms such recognition, man must be guided by a moral code of action,
- (b) Man can alter nature and exhaust natural resources by his action or its consequences and, therefore, must fully recognize the urgency of maintaining the stability and quality of nature and of conserving natural resources,

Persuaded that:

- (a) Lasting benefits from nature depend upon the maintenance of essential ecological processes and life support systems, and upon the diversity of life forms, which are jeopardized through excessive exploitation and habitat destruction by man,
- (b) The degradation of natural systems owing to excessive consumption and misuse of natural resources, as well as to failure to establish an appropriate economic order among peoples and among

States, leads to the breakdown of the economic, social and political framework of civilization,

(c) Competition for scarce resources creates conflicts, whereas the conservation of nature and natural resources contributes to justice and the maintenance of peace and cannot be achieved until mankind learns to live in peace and to forsake war and armaments,

Reaffirming that man must acquire the knowledge to maintain and enhance his ability to use natural resources in a manner which ensures the preservation of the species and ecosystems for the benefit of present and future generations,

Firmly convinced of the need for appropriate measures, at the national and international, individual and collective, and private and public levels, to protect nature and promote international co-operation in this field,

Adopts, to these ends, the present World Charter for Nature, which proclaims the following principles of conservation by which all human conduct affecting nature is to be guided and judged.

I. GENERAL PRINCIPLES

1. Nature shall be respected and its essential processes shall not be impaired.
2. The genetic viability on the earth shall not be compromised; the population levels of all life forms, wild and domesticated, must be at least sufficient for their survival, and to this end necessary habitats shall be safeguarded.
3. All areas of the earth, both land and sea, shall be subject to these principles of conservation; special protection shall be given to unique areas, to representative samples of all the different types of ecosystems and to the habitats of rare or endangered species.
4. Ecosystems and organisms, as well as the land, marine and atmospheric resources that are utilized by man, shall be managed to achieve and maintain optimum sustainable productivity, but not in such a way as to endanger the integrity of those other ecosystems or species with which they coexist.
5. Nature shall be secured against degradation caused by warfare or other hostile activities.

II. FUNCTIONS

6. In the decision-making process it shall be recognized that man's needs can be met only by ensuring the proper functioning of natural systems and by respecting the principles set forth in the present Charter.
7. In the planning and implementation of social and economic development activities, due account shall be taken of the fact that the conservation of nature is an integral part of those activities.
8. In formulating long-term plans for economic development, population growth and the improvement of standards of living, due account shall be taken of the long-term capacity of natural systems to ensure the subsistence and settlement of the populations concerned, recognizing that this capacity may be enhanced through science and technology.
9. The allocation of areas of the earth to various uses shall be planned, and due account shall be taken of the physical constraints, the biological productivity and diversity and the natural beauty of the areas concerned.
10. Natural resources shall not be wasted, but used with a restraint appropriate to the principles set forth in the present Charter, in accordance with the following rules:
 - (a) Living resources shall not be utilized in excess of their natural capacity for regeneration;
 - (b) The productivity of soils shall be maintained or enhanced through measures which safeguard their long-term fertility and the process of organic decomposition, and prevent erosion and all other forms of degradation;
 - (c) Resources, including water, which are not consumed as they are used shall be reused or recycled;
 - (d) Non-renewable resources which are consumed as they are used shall be exploited with restraint, taking into account their abundance, the rational possibilities of converting them for consumption, and the compatibility of their exploitation with the functioning of natural systems.

11. Activities which might have an impact on nature shall be controlled, and the best available technologies that minimize significant risks to nature or other adverse effects shall be used; in particular:

- (a) Activities which are likely to cause irreversible damage to nature shall be avoided;
- (b) Activities which are likely to pose a significant risk to nature shall be preceded by an exhaustive examination; their proponents shall demonstrate that expected benefits outweigh potential damage to nature, and where potential adverse effects are not fully understood, the activities should not proceed;
- (c) Activities which may disturb nature shall be preceded by assessment of their consequences, and environmental impact studies of development projects shall be conducted sufficiently in advance, and if they are to be undertaken, such activities shall be planned and carried out so as to minimize potential adverse effects;
- (d) Agriculture, grazing, forestry and fisheries practices shall be adapted to the natural characteristics and constraints of given areas;
- (e) Areas degraded by human activities shall be rehabilitated for purposes in accord with their natural potential and compatible with the well-being of affected populations.

12. Discharge of pollutants into natural systems shall be avoided and:

- (a) Where this is not feasible, such pollutants shall be treated at the source, using the acticable means available;
- (b) Special precautions shall be taken to prevent discharge of radioactive or toxic wastes.

13. Measures intended to prevent, control or limit natural disasters, infestations and diseases shall be specifically directed to the causes of these scourges and shall avoid adverse side-effects on nature.

III. IMPLEMENTATION

14. The principles set forth in the present Charter shall be reflected in the law and practice of each State, as well as at the international level.

15. Knowledge of nature shall be broadly disseminated by all possible means, particularly by ecological education as an integral part of general education.

16. All planning shall include, among its essential elements, the formulation of strategies for the conservation of nature, the establishment of inventories of ecosystems and assessments of the effects on nature of proposed policies and activities; all of these elements shall be disclosed to the public by appropriate means in time to permit effective consultation and participation.

17. Funds, programmes and administrative structures necessary to achieve the objective of the conservation of nature shall be provided.

18. Constant efforts shall be made to increase knowledge of nature by scientific research and to disseminate such knowledge unimpeded by restrictions of any kind.

19. The status of natural processes, ecosystems and species shall be closely monitored to enable early detection of degradation or threat, ensure timely intervention and facilitate the evaluation of conservation policies and methods.

20. Military activities damaging to nature shall be avoided.

21. States and, to the extent they are able, other public authorities, international organizations, individuals, groups and corporations shall:

(a) Co-operate in the task of conserving nature through common activities and other relevant actions, including information exchange and consultations;

(b) Establish standards for products and manufacturing processes that may have adverse effects on nature, as well as agreed methodologies for assessing these effects;

(c) Implement the applicable international legal provisions for the conservation of nature and the protection of the environment;

(d) Ensure that activities within their jurisdictions or control do not cause damage to the natural systems located within other States or in the areas beyond the limits of national jurisdiction;

(e) Safeguard and conserve nature in areas beyond national jurisdiction.

22. Taking fully into account the sovereignty of States over their natural resources, each State shall give effect to the provisions of the present

Charter through its competent organs and in co-operation with other States.

23. All persons, in accordance with their national legislation, shall have the opportunity to participate, individually or with others, in the formulation of decisions of direct concern to their environment, and shall have access to means of redress when their environment has suffered damage or degradation.

24. Each person has a duty to act in accordance with the provisions of the present Charter; acting individually, in association with others or through participation in the political process, each person shall strive to ensure that the objectives and requirements of the present Charter are met.