Comparative Environmental Law and Regulation

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Editors

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Introduction to the 2025-2 Edition of Comparative Environmental Law and Regulation

The 2025-2 update to Comparative Environmental Law and Regulation includes new Chapter 9, Nuclear Governance, Public Health, and Environmental Dynamics, and new sections 4:1-4:7

This 2025-2 Edition fully replaces existing Volumes 1 to 3. Please recycle or discard those volumes.

Preface

Environmental Law has matured greatly since it emerged following the 1972 UN Conference on the Human Environment in Stockholm. In fifty years, we now can describe "the environmental rule of law" as crafted by both the UN Environment Programme (UNEP) and the World Commission on Environmental Law (WCEL) of the International Union for the Conservation of Nature (IUCN) [see IUCN World Declaration on Environmental Rule of Law, 2016]. While on-line references to statutes and regulations are growing (e.g., the IUCN/UNEP/FAO **Ecolex** database), there remains the need for commentary and analysis of environmental law in a comparative law context. Environmental Law is now a required course in all law schools in the Philippines, but this is rare. Education in environmental law is uneven in nations around the world.

This treatise has provided such analysis since its earlier edition in 1994, launched in consort with the law firm Sidley & Austin. It has covered the emergence of the principles and practices of "sustainable development," as this dimension of socio-economic development incorporated environmental protection into its framework following the 1992 "Earth Summit," the UN Conference on Environment and Development (UNCED).

Notwithstanding the growing capacity of environmental ministries, and the expertise of environmental law in law firms and in companies in all regions of the Earth, the challenges confronting the environment have only grown. In February of 2021, the United Nations issued its scientific synthesis report on the three crises of climate change, biological diversity loss, and pollution. (See https://www.unep.org/resources/making-peace-nature.)

As the impacts of climate disruption become evident, in altering the hydrologic cycle (flood and droughts), in desiccation (wildfires), in sea level rise (coastal erosion), in heat waves on land and in the oceans – governments call upon environmental legal systems to build resilience and preparedness, as well as rebuilding "better" to cope with the new conditions after catastrophes. There will be a premium for those environmental law systems that can bolster stable ecological and socio-economic conditions.

This book has benefited from the contributions of WCEL and the International Council of Environmental Law (ICEL), and its environmental law library in Bonn, Germany. It had the benefit of past contributions from the Asia Pacific Centre for Environmental Law (APCEL) at the Law Faculty, National University of Singapore, and from the Center for Environmental law at Pace University's Elisabeth Haub School of Law. It has above all, benefited from the many scholars and experts who have provided commentaries.

A book like this is never complete. Users are cautioned to go beyond this text to make their own investigations into the current state

of affairs of any of the environmental laws examined in these commentaries. We invite users to share suggestions, corrections, and emendations to us through our publisher, Thomson Reuters.

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November 2024

Introduction

Nicholas A. Robinson

Since its emergence as a distinct field of law about the time of the 1972 United Nations Stockholm Conference on the Human Environment, Environmental Law has become a significant corpus of law in practically every country. Few government programs or private practices of law can ignore the various functions or rules that Environmental Law provides. Yet, despite the acknowledged relevance of this still young field of law, it is often rather difficult for legal specialists in one country to identify, obtain and evaluate the legal significance of the Environmental Law of another State. It is the aim of this treatise to remedy this deficiency.

Environmental Law can rarely be examined from an isolated, sectoral perspective. For instance, the prospective purchase of an industrial site must be examined from numerous environmental legal points, related to past manufacturing practices on the site, waste disposal, pollution control technologies, presence of surface waters or aquifers, adjacent residential or other land uses that may be affected by factory operations, energy supply services, transportation infrastructure, and other possible environmental issues. No one law covers all these aspects.

The chapters in this treatise offer initial research frameworks facilitating further investigation of a nation's Environmental Law. Each chapter has addressed comparable aspects, so that the framework throughout the work has common elements. When the elements of this framework are addressed for each country, it becomes clear that some States have given greater emphasis to one dimension of Environmental Law rather than another. Environmental Law has uneven application around the world, partially because of the differentiated conditions in each region and partially because Environmental Law is new and growing rapidly. Until a stable cadre of Environmental Law specialists exists around the world, and until consensus emerges on the acceptable state-of-the-art technology for handling certain types of pollution control, when one seeks to explore the Environmental Law of another State, in large measure what one may find will be unpredictable at least in the all crucial detail.

The overall context in which Environmental Law functions internationally has been provided by the policies favoring "sustainable development." In some States, such as the Netherlands, many of the nation's law have been restructured to serve a central policy focus based on analysis of what is sustainable in that country. In Australia, for instance, the strength of the Environmental Law context can be measured by the fact that this policy matrix is almost universally

known as "environmentally sustainable development." In other States, the relevance of a debate over "sustainable development" remains tangential to the current legal system. Nonetheless, since the trend internationally is engaged by a discussion of "sustainable development," it is useful at the outset to examine how Environmental Law provides an important foundation for the attainment of "sustainable development."

As the world's largest summit meeting ended in 1992 in Rio de Janeiro, the heads of state and their representatives assembled in the United Nations Conference on Environment and Development (UNCED) embraced an **Agenda 21** as "a dynamic programme" which can "evolve over time in the light of changing needs and circumstances," and be a process "the beginning of a new global partnership for sustainable development."[1] **Agenda 21** is premised on two factual perspectives. The first is the documentation of trends in the deterioration of the environmental conditions in many parts of the world; the U.N. 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] The second is the recognition 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. "Sustainable Development" would be the paradigm which would reverse these factual perspectives.

But how? Both the World Commission on Environment & Development and the UN Conference on Environment & Development (UNCED) presented many recommendations by which the new paradigm could be established. Neither discussed the measures by which the success or failure of these recommendations could be assessed or compared. 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.

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[1] Paragraph 1.6, Agenda 21, at N.A. Robinson (Editor), *Agenda 21: Earth's Action Plan* (Oceana Publications, Dobbs Ferry, N.Y., 1993) at pp. 2-3.

[2] World Commission on Environment and Development, *Our Common Future* (Oxford University Press, 1987).

Environmental Law & Sustainable Development

The World Commission observed that "Human 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 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," although commentators have been re-examining existing fields of law in endeavoring 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 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]

Although one could identify a variety of national laws appropriate to advance the objectives of sustainable development,[7] and also formulate progressive developments for international law to harmonize such national legal regimes,[8] for such normative innovations to gain support, it is essential that empirical studies be undertaken to demonstrate which laws actually do successfully attain the desired sustainable effects. Once legal techniques are proven in the field, the conditions necessary to replicate the legal success can be understood, and a state could adopt and implement such laws for sustainable development with some confidence that they would achieve their purposes. Of course, there is nothing new in proposing such deliberative legal analysis, but since much of the legal debate over "sustain-

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[3] Id., at p. 330.

[4] **Agenda 21,** Para. 8.13, supra note 1.

[5] C. Campbell-Mohn, B. Breen, J.W. Futrell, J.M. McElfish, Jr., and P. Grant, *Sustainable Development Law* (West Publishing Co., 1993).

[6] J. Owen Saunders, Ed., *The Legal Challenge of Sustainable Development* (Canadian Institute of Resources Law, Calgary, 1990); B. Boer, R. Fowler, N. Cunningham (Eds), *Environmental Outlook—Law & Policy* (The Federation Press, Annandale,NSW, Australia, No. 1, 1965 and No. 2, 1996).

[7] See, e.g. N.A. Robinson, "A Legal Perspective on Sustainable Development," in Saunders, op. cit. Supra note 6, p. 15 at 30-31.

[8] See *Draft International Covenant on Environment and Development* (IUCN Commission on Environmental Law, Environmental Policy & Law Paper 31, 1995).

able 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 ever necessary to ground new thinking in an historical perspective.[9]

The comparative law analysis of Environmental Law can contribute much 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, and is rapidly being elaborated both through multilateral environmental agreements world-wide and through new national statutory regimes in practically every nation. There is a substantial body of recent legal experience suited to comparative legal study of how different nations are addressing the 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 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;
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 is or will be doing business. The volume of this legal practice will grow as international trade increases and environmental laws assume ever greater effectiveness in developing countries, and jurisdictions whose economies are in transition from being centrally planned to becoming market based.[10]

While these introductory observations state the reasons why Comparative Environmental Law should be studied if we are to understand the legal aspects of sustainable development, it remains to introduce the elements of that study. What must the scholar or

[9] R.E. Neustadt and E.R. May, *Thinking In Time: The Uses of History for Decision Makers* (The Free Press, NY, 1986).

[10] 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 N.A. Robinson, "New Dimensions of Corporate Counseling in Environmental Law, 1 COLUM. J. ENVIR'L L. 7 (1974).

government lawyer or private practitioner alike do to engage in comparative environmental legal studies? This essay is not a restatement of environmental law from a comparative perspective. Nor it is a compilation of comparative studies, such as *Comparative Environmental Law*. Rather this study introduces the elements that should be considered in any serious examination comparing the environmental laws of different states.

In turn, the following points are introduced: (a) Which jurisdictions can be compared; (b) what are the elements of a comprehensive environmental law regime to identify and compare; (c) how can environmental laws be harmonized and integrated among states in order to better give effect to their objectives; (d) how can one locate and verify environmental laws. Finally, based on these sorts of comparative law analyses, one can then identify what may be required for comparing elements of sustainable development itself.

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, and an understanding of how different legal jurisdictions are affected by and influence shared atmospheric, hydrologic or biological systems is fundamental. Therefore, unlike many subjects of Comparative Law in which jurists compare the functioning of similar statutes or institutes across two or more nations, the comparison of environmental regimes must begin with an identification of the relevant biomes, watersheds, food chains, habitats, species of flora and fauna, or other objects of natural science that are the subject of the legal regime under study.

Comparative Environmental Law begins, therefore, with *both* the identification of the legal jurisdictions that must be compared and with the natural resources which the law addresses. If the jurisdictions compared each have the same migratory species resident in their lands, airs and waters, the comparison of land use systems to maintain habitats can be made. 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, economic development pressures; it is no surprise that, as a result, different types of environmental legal measures can and should be structured for such places.

Having identified the geographic setting, ecology, and other characteristics of the jurisdiction to be examined, the nature of the

jurisdiction must be then noted. Analysis of a federal nation, such as Argentina, Australia, Brazil, Canada, Germany, India, Malaysia, the Russian Federation or the United States of America, entails a threshold examination of whether the federal or the constituent state or provincial authorities have the competence to manage a given environmental issue under the governing constitution of the federation. Although about thirty nations have amended their constitutions to provide contemporary environmental protection duties, most countries' 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. It often requires a painstaking and detailed study of a federation's constitutional law to determine which level of government has the legal capacity to protect the environment. Where competence is shared by both levels, or where the state is autonomous of most federal functions (e.g. 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), it 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, and 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** devoted an entire chapter[11] to the importance of the governments of urban areas, counties and shires, and districts and small regions. Even in unified nations with central governments, by law and custom very significant powers are delegated to or devolve upon local governments. The land use controls, local parkland designations, supply of potable water, handling of refuse and locally generated wastes, management of sewage, provision of housing and open space, and a host of comparable environmental issues are the responsibility of the local authorities. Comparative Law, therefore, finds it necessary also to examine each nation's laws that assign competence over environmental issues to its political subdivisions.

One category of jurisdiction requires special comment. These are what political scientists term the "failed state." Although the governments in a number of nations have collapsed, the needs of the people and the transboundary impacts of environmental problems continue. Whether the cause be civil strife, as in Cambodia, Sudan, Rwanda or Yugoslavia, or simply the gradual erosion of support for governmental services in a some parts of Africa and Central Asia, it must be acknowledged that most government activities are inadequate for undertaking the tasks of Environmental Law. The Special Resumed 50th General Assembly of the United Nations made a number of

[11] See Chapter 28, "Local Authorities' Initiatives In Support of Agenda 21," in **Agenda 21,** supra note 2.

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 be unsustainable.[12]

Once analysis has focused on the type of environmental conditions in a jurisdiction and the constituent components of that jurisdiction competent to deal with those conditions, then more traditional Comparative Law questions arise. Is the governmental structure in the Civil Law, Common Law or Socialist Law tradition? These varied traditions define basic forms and the rights and functions of the legislative, executive and judicial branches of government, as well as of the citizens. There is, of course, a large body of Comparative Law that has examined the legal elements, both substantive and procedural, or these legal traditions, and recourse is needed to this scholarship. However, in Environmental Law it is evident that the field of Environmental Law itself evidences common trends across its existence in Civil Law or Common Law traditions, and theoretically also across the Socialist Law tradition (although the institution of Environmental Law norms in that tradition remains more rhetorical than actual).

Environmental Law tends to contain the same sort of substance and procedure across legal traditions because the field is influenced by four phenomena that are common to all jurisdictions in the

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[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 damaged. . . .

"In most Sub-Sahara Africa countries, established concepts of checks and balances and separation of powers do not exists (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."

biosphere:

First, as noted above, the ecology and the other environmental sciences are disciplines applied throughout the Earth; as scientists reach consensus in understanding environmental conditions and phenomena, that is 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. Governments tend to want to understand how each other manage roughly the same sort of natural resources, in order to efficiently do so and be considered to be using the best management practices.

Second, many of the externalities that endanger public health or degrade natural systems, such as urban smog or acid rain, are the result of the same technological systems. Technological solutions for eliminating lead from motor vehicle gasoline, or phasing out chloroflurocarbons in refrigeration systems and for use as circuitry solvents, will be the same whether the nation is developed or developing, in a Civil or Common Law tradition, or with a central or federal constitution. As engineers shape and adopt new methods for industrial activities, they are in due course sought and implemented as economic advances; multinational business enterprises move this transfer of technology forward, and regional or national companies in turn 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 much 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. The same sort of procedures for permits, financial incentives, norms and standards, monitoring and base-line data analysis, environmental impact assessment, and compliance and enforcement, are used by these administrators in each jurisdiction. Administration of environmental protection has tended to use similar means, not surprisingly since similar scientific guidance and similar technological problems or innovations provide the foundation for these means.

Fourth, the globalization of Earth, such as the rapid transmission of news, the Internet, travel between continents in a few hours, increased volumes of trade between regions, has also facilitated collaboration worldwide by environmental protection movements. The citizenry comes to learn that a pollutant can be (or has been) banned,

in one jurisdiction and demands the same elsewhere. Non-governmental organizations (NGOs) are flourishing at the grass-roots level in all countries. The activist elements in the civil society make sure that the government is informed about environmental issues and advocate a reform agenda. Just as similar economic activity produces similar incidents of pollution, so similar political and social responses emerge to demand that government deal with the externalities. When citizens ask for public hearings, planning procedures, environmental education, publication of environmental data, or enforcement of environmental laws, they are pressing forward very comparable priorities.

When engaging in research to compare the Environment 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 to be examined, it is useful to outline the basic framework or structure of Environmental Law that should exist in any given jurisdiction. 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.

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 jurisdiction concerned. The elements identified here are presented because they recur in most national environmental law regimes, and cover the subjects studied by the environmental sciences. Not only are these 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] The UN World Charter for Nature, like the recommendations of **Agenda 21,** provide both a blueprint for future actions of governments and an indicator of the progress (or lack thereof) in a jurisdiction's progress toward attaining "sustainable development."

Among the useful comparative elements in examining a nation's Environmental Law is 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

[13] U.N. General Assembly Resolution 37/ 7. Adopted October 28, 1982. See generally W. E. Burhenne and W.I. Irwin, *World Charter for Nature* (Erich Schmidt Verlag, 1986).

environmental legislation and programs. International Agreements such as the Convention on the Conservation of Biological Diversity, and such earlier treaties like the UNESCO Convention on the Protection of World Cultural & Natural Heritage, 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 UN Convention on the Law of the Sea, also provide a useful inventory of national obligations which can be compared among different nations.[14]

Comparative Environmental Law may usefully look for legislation covering the following subjects:

I. Subjects of Substantive Environmental Law

A. Natural Resources

1. Renewables in cultivation: agriculture, silvaculture, aquaculture; soil
2. Renewables *in situ*: conservation of bio-diversity; endangered species protection; habitats for migratory species and wildlife refuges; wetlands
3. Renewables: surface water resources; aquifers; soils
4. Renewables in "preservation" modes: parks, natural monuments, natural heritage generally
5. Non-renewables in managed extraction: oil, natural gas, coal, "hard rock" mining

B. Pollution Abatement and Control

1. Air pollution
2. Water pollution
3. Hazardous chemical manufacture, use and transport
4. Solid waste management: minimization or avoidance, recycling, reuse and storage
5. Noise abatement

C. Process safety and quality controls

1. Work place safety
2. Product quality—total quality assurance systems

D. Energy generation, transmission and efficient use

1. Renewables (wood, biomass, hydropower, wind, solar)
2. Fossil fuels
3. Atomic Energy

E. Cultural Heritage—Historic landmarks, districts and archaeological sites

F. Service Sectors and Infrastructure

1. Transportation
2. Land Use allocation: town and country planning; open space; housing

[14] These multilateral environmental agreements ("MEAs") are included in many different environmental and standard treaty series; see, e.g. N.A. Robinson, *Environmental Law Treaties of the United States* (Oceana Publications, Dobbs Ferry, 1996).

G. Transboundary Environmental Issues

1. Shared resources (e.g., coasts, river basins, migratory species)
2. Transborder impacts (e.g., pollution; phyto-sanitary issues of endemic species; transfrontier hazardous waste movements)

H. Shared Commons—Oceans, Antarctic regions, climate, stratospheric ozone layer

II. Subjects of procedural Environmental Law

A. Basic obligations—Constitutional provisions; human rights aspects; establishment of the precautionary principle; polluter pays principle; intergenerational equity; public participation procedures

B. Scientific surveys and data assembly—baseline data, monitoring, research

C. Reporting, publication and dissemination of environmental information

D. Establishing environmental standards, both ambient for natural resources or public health, and operational or performance norms (process requirements, emission or effluent limits, etc.)

E. Administration of standards and techniques appropriate for each subject sector (e.g. permits, licenses, audits, user fees, other economic incentives)

F. Environmental Impact Assessment (EIA)

G. Compliance and enforcement systems (administrative, civil, criminal)

H. Restoration of damaged ecosystems and resources and compensatory remedies for damages

III. Organization of government for administering procedures in each subject area of law

A. Structure of jurisdiction and allocation of competencies to agencies, local authorities, financing means, etc.

B. Regional and International cooperation in related governance systems (e.g. European Union, North American Free Trade Agreement, Association of South East Asian Nations (ASEAN), MERCOSUR, CIS, etc.)

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 the natural environmental conditions, 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 (e.g. the Chernobyl or Bhopal accidents), every culture responds to these similar situations in ways that are shaped by their own traditions and cultures. The study of one or more element of Environmental Law in several different States often finds that one State is particularly adept at one subject while largely ignoring others. From the suc-

cessful implementation, one can discern the criteria for effectiveness, and thus be better able to advise other jurisdictions about 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 how best to try 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.

Harmonizing Environmental Norms Internationally

Comparative Environmental Law study can identify instances in which nations may be addressing the same problems in different way. Where one nation in a region abates acid rain while another does not, the environmental damage continues and the first "wins" some incremental, short-term economic exploitative gain at the other's expense. There is an evident 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 can be either because it has the means to do so but lacks the will, or it lacks the means. Many developing countries, and economies in transition from planned to market economies, have sought assistance from industrialized States in providing these means. The Global Environment Facility (GEF) established by the UN Development Programme (UNDP), the UN Environment Programme (UNEP) and the World Bank, endeavors to build this capacity. In federal systems, the federation often provides means to ensure that each constituent jurisdiction can meet a shared duty; in Canada this took the form of an inter-provincial agreement to coordinate air pollution laws and in the USA it took the form of a massive financial assistance program to design and construct municipal sewage treatment works.[15]

The varying geographic situations and levels of economic wealth of nations has given rise to an international standard that accommodates such differences. The international agreements on Climate Modification and on Biological Diversity both provide mandates for "common but differentiated responsibilities." In essence, these treaties contemplate that each State must do its particular and fair share in any internationally agreed upon measures to protect the environment. For instance, although both the European Union or USA and India or 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 different industrial and economic conditions. The details of such a common but differentiated duty remain to be negotiated in each context, but in either case unless

[15] Title II of the Federal Water Pollution Control Act Amendments of 1972.

all States concerned have a thorough understanding of each other State's Environmental Law, there will be very little basis realistically to define the 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 the National Environmental Policy Act in the USA in 1969, to its unilateral adoption in over 130 jurisdictions world-wide at present, is a very apt example.[16] In the context of the European Union, even in such distinct areas as the Flemish, Walloon and Brussels areas of Belgium, these is evidence that Environmental Law takes on the same sort of content. Prof. Dr. 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 is less and less place 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 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."[17]

Harmonization of Environmental Law is the active concern of a number of international entities. In the European Union, it is an objective of the EU. In common trade areas such as ASEAN or MERCOSUR, it 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 by the Association of the Bar of the City of New York on the relationship of Environmental Law and international trade,[18] it was stressed that while reasonably uniform environmental (and other) standards are important to establish a level playing field for commercial competition across nations, nonetheless there is a real need to allow each jurisdiction to establish much more advanced or refined standards as necessary to meet local conditions and values. What is needed is a floor, not a rush to the bottom, if environmental protection objectives are to be advanced world-wide.

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[16] This EIA process is described in N.A. Robinson, "EIA Abroad: The Comparative and Transnational Experience," in S.G. Hildebrand and J.B. Cannon, *Environmental Analysis: The NEPA Experience* (Lewis Publishers, 1993, for the 9th Oak Ridge National Laboratory Life Sciences Symposium).

[17] K. Deketelaere, "Public Environmental Law in Belgium In General and In The Flemish Region In Particular," in *Comparative European Environmental Law*.

[18] "Harmonizing and Coordinating the Economic Law of Nations: A Comparative Study," by the Committee on the United States in a Global Economy, 49 *The Record of the Association of the Bar of the City of New York* 800 (1994).

Another element of harmonization are 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, 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, increasingly there is the need to identify and set forth objectively the Environmental Law of the States involved in a dispute.

Locating & Authenticating Environmental Law

Because Environmental Law is a complex subject, with legal ties to many varied bodies of law, and is rapidly evolving, it is often a challenge to find current texts for environmental statutes, regulations, administrative rulings, judicial decisions, and implementing procedures. Eventually, there will be able introductory surveys for all nations, such as *Comparative Environmental Law.* Such references provide needed orientation and identify the laws and where to find them.

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[19] or the University of Rhodes maintains the South African Environmental Laws.[20]

The only fully reliable means to obtain the Environmental Laws of a given jurisdiction is to identify the official source of the statute or 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

[19] The Universal Resource Locator (URL) for this reference is http://www.law.pace.edu.

[20] URL for this reference is: http://www.ru.ac.za/departments/law/S/Aenviro/saep.html

Internet service did inspect an official copy of the law before posting it on the Internet. One must also inquire when the last time the law was inspected for amendments and when the Internet copy was last brought up to date.

Comparative Law has long been concerned with how to find and research the laws of different jurisdictions. Issues of translation and meaning, authentication of texts, and interpretation in accordance with the canons of the jurisdiction are 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. Frequently they have been consulted in the design or implementation of the given statute or regulation, and know which government offices are responsible for the law and have current copies of the laws. Equally important, they tend to know about pending or possible proposals for amendments to the laws.

Conclusions

Environmental Law, evaluated across nations through the techniques of Comparative Law, is at once 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.

About the Editors

Professor Nicholas A. Robinson has developed environmental law since 1969, when he was named to the Legal Advisory Committee of the President's Council on Environmental Quality. He has practiced environmental law in law firms for municipalities and as general counsel of the New York State Department of Environmental Conservation. He drafted New York's wetlands and wild bird laws and was inaugurated as the first chairman of both the statutory Freshwater Wetlands Appeals Board and Greenway Heritage Conservancy for the Hudson River Valley. He has served as legal advisor and chairman of the Commission on Environmental Law of the International Union for the Conservation of Nature and Natural Resources, engaged in drafting treaties and counseling different countries on the preparation of their environmental laws. He founded Pace's environmental law programs, edited the proceedings of the 1992 United Nations Earth Summit in Rio de Janeiro, Brazil, and is author of several books and numerous articles. He teaches a number of environmental law courses.

Professor Robinson served as James D. Hopkins Professor of Law during the 1991–1993 academic years.

On March 2009, the Pace University Board of Trustees conferred the position of University Professor for the Environment on Nicholas A. Robinson for his significant contributions to scholarship in the field of environmental law, both in the USA and abroad.

Elizabeth Burleson received her London School of Economics LL.M. in International Law and has been an advisor to UNICEF's Senior Advisor for the Environment and to the New York Director of UNEP. She writes reports for the UN and presents on treaty making for the UN Office of Legal Affairs / UNITAR, having participated in the drafting process for the United Nations Framework Convention on Climate Change (UNFCCC), Agenda 21, and the Rio Declaration. She is an expert contributor to the International Panel on Climate Change (IPCC). As President of the Burleson Institute, she advises developed and developing countries through the UN's Climate Technology Centre and Network. Burleson was a member of the UNICEF delegation to the Bali Climate Conference; the NWF and UNEP delegations to the Copenhagen Climate Conferences; and the IUCN and ASIL delegations to the Cancun, Durban, Doha, Warsaw, Lima, and Paris UN Climate Conferences. Burleson conducts commissioned research for governmental and nongovernmental entities. She is on the International Law Association's Committees on Sea Level Rise and on Principles Relating to Climate Change, IUCN's Climate Change Core Group, and the National Wildlife Federation President's Advisory Council. As a law professor and Fulbright Senior Specialist,

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Lye Lin-Heng (LL.B. (Singapore); LL.M. (King's College, London); LL.M. (Harvard), is an Advocate & Solicitor, Supreme Court of Singapore. She is Emeritus Professor, former Vice-Dean and Honorary Fellow of the Faculty of Law, National University of Singapore (NUS). She was Director of its Asia-Pacific Centre for Environmental Law (APCEL) from 2013 to 2018. She has taught and researched in Environmental Law and Property Law for many years. She was Visiting Associate Professor at the Yale School of Forestry and Environmental Studies from 2003 to 2019, co-teaching a course on Comparative Environmental Law with Visiting Prof Nicholas Robinson. She initiated the NUS multi-disciplinary graduate program on the environment, the M. Sc. (Env. Mgt.) [MEM], chaired its Program Management Committee, from its inception in 2001 to 2018. She was former Vice-Chair of the IUCN Academy of Environmental Law, and co-chair of its Teaching and Research Committee. She was a member of the Board of Governors, WWF Singapore; and was Honorary Legal Advisor to the Nature Society for many years. She is now a member of the Advisory Committees of WWF Singapore, Nature Society Singapore, & APCEL, NUS. She is a member of Singapore's Strata Titles Board and was a director of Singapore's public housing agency, the Housing and Development Board (HDB). She was awarded Singapore's Public Service Medal (PBM) in 2016.

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of the Law Faculty of Duquesne University School of Law in Pittsburgh, Pennsylvania, the Science Faculty of the Open University in Milton Keynes, UK, and held the first cross-border joint appointment in Ireland at the Queen's University of Belfast and Dublin City University. In legal practice, he was trial counsel for the Pennsylvania Department of Environmental Resources. Junker was educated in the United States and Germany, having earned his Ph.D. at the University of Pittsburgh and completing post-doctoral work at the Universities of Tuebingen and Bonn.

About the Contributors

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ASEAN

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She was one of the organizers of the ADB/APCEL/IUCN/UNEP project on Capacity Building for Environmental Law in the Asia -Pacific Region in 1997 and 1998. She has participated in many international environmental law conferences, and a course on ASEAN environmental law in the University of Mexico, and University of Hawaii. She is in the international resource team of the Konrad Adenauer Stiftung- Rule of Law Programme Asia on "environmental law talks." She initiated and taught a course on ASEAN Environmental Law, Policy and Governance at the Faculty of Law, National University of Singapore from 2009 – 2016.

She established, and chairs the APCEL Specialist Group on Climate Change Adaptation, and is chief editor of an ongoing Climate Change Platform, established by the Group.

She served as a legal officer in the secretariat of the United Nations Commission on International Trade Law (UNCITRAL) in Vienna, 1980 – 1986. She is 2012 Laureate, Elizabeth Haub Prize in Environmental Law conferred by the University of Stockholm and the International Council of Environmental Law. She is one of the awardees of the Singapore Women's Hall of Fame (SWHF) for being "Pioneer in the development of environmental law in the Region."

She holds a Ph.D. LL.M. (Singapore), Diplôme de Hautes Études Internationales (HEI, University of Geneva), LL.B. Hons (University of Malaya in Singapore); Advocate & Solicitor (Singapore).

Australia

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Austria

Willibald Plesser graduated from the University of Vienna with a Masters Degree from the Faculty of Arts and Sciences in English and History and a Juris Doctor degree from the School of Law. His foreign experience includes a one-year scholarship in the United States. Mr. Plesser is a member of the Austrian Bar Association and a partner of Heller, Lober, Bahn & Partners. He specializes in mergers and acquisitions as well as in direct foreign investments in Central and Eastern European countries, and counsels a wide range of clients on a variety of matters, including the environmental aspects of business transactions.

Paul Luiki graduated from the University of Iowa School of Law and practiced environmental law for several years at a large law firm in the United States prior to joining Heller, Lober, Bahn & Partners. Since then he has also obtained a law degree from the University of Vienna School of Law. He specializes in environmental matters, including counseling clients on potential clean-up liability, as well as the environmental aspects of business transactions.

Heller, Lober, Bahn & Partners, one of the largest law firms in Austria, has its main office in Vienna and presently maintains foreign offices in Budapest, Prague, and Bratislava. The firm has extensive experience in all kinds of corporate law matters and provides advice in environmental matters. Its environmental work includes due diligence investigations, contract negotiation, assessment of compliance with environmental laws, and negotiations with regulatory authorities.

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China

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He received a BA from Wuhan Normal College in 1981 and graduated from the Law School of Wuhan University in 1984 (ML). He has an MJS from Washington University Law School (1987) and a Ph.D. in Law from Wuhan University Law School (2000).

He and his team provided inputs to the National People's Congress in their review of the Environmental Protection Law, much of which were accepted and reflected to a large degree in the new Environmental Protection Law of PRC adopted in April 2014.

He represented China at the launch of the IUCN Academy of Environmental Law and was Chairman of the First Colloquium of the Academy in Shanghai in 2003. He was awarded the Sixth Annual Senior Scholar Award by the IUCN Academy of Environmental Law in 2014, and the Elisabeth Haub Award for Environmental Law and Diplomacy in 2021.

His major publications include a university textbook entitled *International Environmental Law* published in 1998 and 2005, a book entitled *Introduction to Environmental Law of USA* published in 1992 and a book entitled *Environmental Law in China*, published by Kluwer Law International in 2012.

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She has published in reputable environmental law journals in both Chinese and English, including the Law Review (in Chinese), Journal of China University of Geoscience (Social Sciences Edition) (in Chinese), Transnational Environmental Law, China: An International Journal, International Journal of Climate Change Strategies and Management, Pace Environmental Law Review and the Environmental Law Reporter.

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Czech Republic

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His publications include Damohorský, M. and others: Environmental Law. 1st, 2nd and 3rd editions. Publishing house C. H. Beck, Prague 2003, 2007, 2010; Damohorský, M.: Czech Environmental Law, Textbook, Czech Law and the European Union, Volume 2, Charles University, Prague 2003 and 2006, Damohorský, M.: Environmental Law of the Czech Republic. Westlaw, Washington 2017. Damohorský, M. and others: Agricultural Law. Publishing house E. Rozkotová, Beroun 2021.

CITES

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Denmark

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Finland

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France

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Founded in 1960, the law firm of ***Soulier Reinard Azéma & Associés*** presently consists of 14 attorneys, including five partners, with offices in Paris and Lyon. In addition to a strong civil and commercial national practice, the firm has an active international department, which is led by Jean-Luc Soulier. He and Carol Fox, an American attorney with the firm, actively participated in drafting the English version of this chapter.

Georgia

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Indonesia

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Italy

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Kyrgyzstan

Zura Akmatova an international lawyer of Kyrgyzstan, has received her LL.M. in international law at International University of Kyrgyzstan and LL.M. in environmental and natural resources law at the University of Oregon.

She has over 15 years of professional experience with specialization in commercial law (both domestic and international) as well as commercial litigation. She is skilled in business, land, antitrust, investment, employment, corporate law and has a sound knowledge in international and local environmental and natural resources policy and law.

Zura has conducted a number of research on international commercial arbitration, on transboundary water management and law of Central Asia, and participated in the biodiversity projects.

Myanmar

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Nigeria

Muhammed Tawfiq Ladan holds a post-doctoral certificate as a Hubert-Humphrey Fellow (1999-2000) from the University of Minnesota, and a Ph.D. degree in Law. With 28 years teaching, research, publication and postgraduate supervision experience at the Law School of Ahmadu Bello University, Zaria, Nigeria, he specializes in environmental, energy, natural resources and human rights law.

Prof. Ladan was the pioneer UNDP/ Sokoto and Kebbi State Governments consultant that reviewed and drafted two comprehensive environmental legislations for the two North-Western States of Nigeria in 1997.

He served as a resource person for the UNEP Nairobi, Kenya (2003-2007) annual training workshops on environmental law for African magistrates and State counsels/legal advisers.

He also served as a member, UNEP advisory group of experts on periodic review of environmental dispute settlement and avoidance, 2006- 2007 at the Hague and Geneva respectively.

He further contributed to the preparation and publication of the UNEP/IUCN course curriculum and materials on Compliance with Enforcement of MEAs: - Lecturer's manual.

As a member of the IUCN Academy and Commission on Environmental Law since 2004, Prof. Ladan has published over ten law books and fifty Journal articles and presented over eighty international and national conference/seminar papers across the world.

In 2014, Ladan served as a member of the UNEP legal and technical experts that peer reviewed the Global Compendium on innovative

laws promoting Green Economy; the Compendium of best Practices on Enforcement of Environmental Law; and participated at the first UN Environment Assembly and Global Symposium on Environmental Rule of Law, held in Nairobi, Kenya.

Philippines

Antonio A. Oposa is one of Asia's leading voices in the global arena of Environmental Law. His work is internationally noted for the cases he fought to protect the Philippines' natural patrimony. In 1990, he initiated a case to protect the country's remaining virgin tropical forests. Losing in the trial court, he took the case to the Philippine Supreme Court which later enforced the principle of inter-generational responsibility. The Court also gave standing to the petitioners-children to take legal action, on their own behalf and on behalf of generations yet unborn (*Minors Oposa v. Factoran*, 1993).

In December 2008, after a ten-year legal battle he waged from the trial court all the way to the Philippine Supreme Court against eleven government agencies, he won the case to clean up Manila Bay. In a continuing mandamus judgment, the Supreme Court ordered all defendant agencies to implement a time-bound action plan to clean up Manila Bay and to report its progress to the Court every 90 days.

As an enforcement operative, he has organized and led some of the most daring enforcement operations against environmental criminal syndicates. Creatively using rules of criminal procedure, he has jailed environmental criminals within hours from arrest. His enforcement work against illegal fishing syndicates has been featured in a British Broadcasting Corporation (BBC) documentary film entitled Blast.[1] He has been the object of death threats and assassination plots.

He founded the SEA Camp (formerly the School of the SEA-Sea and Earth Advocates) in the white-sand shores of Bantayan Island, Cebu in the Central Philippines. The Camp features a free-flying bird sanctuary, a demonstration marine protected area, and a model climate change house. This house is powered by renewable energy and has vertical and roof-deck vegetable gardens to illustrate self-reliance and food sufficiency.

The Camp also completely recycles water and solid wastes. Even methane from human wastes is captured and converted into cooking gas. As a physical demonstration of the working principles for sustainable living, it has trained thousands of children, out-of-school youths, government officials, fishermen, law enforcement officers, teachers, lawyers, and laymen.

[1] Aired on BBC in May 2007. His work was also featured in the Summer 2008 issue of the Harvard Law Bulletin (http://www.law.harvard.edu/news/bulletin/2008/summer/ feature_3.php) and on CNN's Eco-Solutions.

Together with volunteer fishermen, scuba divers, local officials and ordinary citizens, he helps local fishing communities put up a network of marine sanctuaries and fish condominiums in the Visayan Sea.[2]

He received his law degree from the University of the Philippines and his Master of Laws from the Harvard Law School, where he was the commencement speaker of his graduating class. He is the legal adviser and international environmental negotiator of the Federated States of Micronesia to the Montreal Protocol on substances that deplete the ozone layer. He taught Environmental Law at the University of the Philippines College of Law, the Ateneo School of Law and the San Beda School of Law and lectures around the world.

He is the convener of the revolutionary Share-the-Roads Movement in the Philippines, a group of citizens advocating for the fair sharing of road space, clean air, and walkable and bikable communities. The network of citizens has filed an ongoing case against the Philippine Government to compel the latter to divide the roads by half lengthwise—half for motorized vehicles and the other half for sidewalks and bikelanes (www.sharetheroads.net).

For his work, he received The Outstanding Young Man (TOYM) of the Philippines award (1993) and the highest United Nations award in the field of the Environment—the UNEP Global Roll of Honor (1997). He is the only Asian to receive the International Environmental Law Award from the Washington DC-based Center for International Environmental Law (CIEL). In July 2013, he was the Distinguished Visiting Scholar for International Environmental Law of the Vermont Law School. In 2014, he was Visiting Lecturer in the University of Hawaii W. Richardson Law School.

"For his path-breaking and passionate crusade to engage Filipinos in acts of enlightened citizenship that maximize the power of the Law to protect and nurture the environment, for themselves, their children, and generations yet unborn," he received the 2009 Ramon Magsaysay Award.[3]

Romania

Daniela Rat completed her study of law in Romania, where worked as a legal advisor in Timisoara, with practice experience in the private and public environmental sectors. She has been a Research Fellow at the Deutsche Bundesstiftung Umwelt in Osnabrueck (Germany) and was a Visiting Researcher at the Wuppertal Institute for Climate, Environment and Energy (Germany).

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[2] The Visayan Sea is located in the Central Philippines—the geographic heart and the 'Center of the Center of Marine Biodiversity on Earth', a term used by Dr. Kent Carpenter, world-renowned marine biologist.

[3] The Ramon Magsaysay Award is Asia's highest award for public service, also known as the Nobel Peace Prize of Asia.

Victor-George Fercea practices environmental law in Romania, including counseling clients for compliance with environmental regulations. He has both a Bachelor Degree and a Master's Degree in European Union Law from the West University of Timisoara (Romania) and is a graduate of the Leaders for Justice programme, which seeks to consolidate and improve the rule of law in Romania.

Russian Federation

Irina Krasnova, Ph.D., is a Vice-Dean and Director of the Institute for International Law and International Relations at the Faculty of Law, University of Ljubljana, where she also teaches courses in the area of public international law at graduate and postgraduate levels and acts as a Conference Chair of a series of biannual interdisciplinary scientific conferences entitled Contemporary Challenges of International environmental Conferences. She is also a Director of the Centre for International and Business Law. Previously she worked at the Department of International Law of the Ministry of Foreign Affairs of the Republic of Slovenia and now acts as an expert consultant of the Ministry.

Serbia

Dr Mirjana Drenovak-Ivanović (Mag. iur., Ph.D.) is an Assistant Professor in Environmental Law and EU Environmental Policy and Law at the University of Belgrade Faculty of Law and a member of the Government of the Republic of Serbia Negotiating Team for the Accession of the Republic of Serbia to the EU (responsible for environment and climate change). She earned the degree Magister juris in Administrative Law and a Ph.D. in Environmental Law at the Faculty of Law University of Belgrade. During her doctoral studies, she was a junior academic visitor at the Faculty of Law University of Oxford, as a British Government Chevening Scholar, (Research topic: Comparative and Global Environmental Law), visiting researcher at the Institut für Rechts- und Sozialwissenschaften, Universität Hohenheim in Stuttgart (Research topic: German environmental law), visiting researcher at the Faculté de droit international et européen de l'Université Nice - Institut du Droit de la Paix et du Développement, University of Nice-Sophia Antipolis, as a participant in the Western Balkans ERASMUS MUNDUS programme, (Research topics: French environmental law; Court of Justice of the European Union and environmental protection). As Fulbright scholar, she continued her postdoctoral research at the Harvard Law School. She is a member of national and international projects (e.g. an expert on environmental liability on international project Policy and Legal Advice Center (PLAC) organized by EU and European Integration Office of the Republic of Serbia; UNECE expert for strengthening access to justice in environmental matters in SEE countries; OECD expert on environmental law; an associate at the international project "Justice Connections", organized by the University of Canberra, etc.). She was visiting

professor at the *Institut du Droit de la Paix et du Développement*, *University of Nice-Sophia Antipolis* (2014); at the Faculty of Business, Government and Law, University of Canberra (2012), etc. She participated at the several international conferences, e.g. *UNITAR-Yale Conference on Environmental Governance and Democracy*, Yale University (2014); *Justice Connections II*, University of Canberra (2012); *Climate Change - Challenges in South East Europe* in Romania (2012); *Management of Energy, Environment, Food Security and Welfare* in Rome (2011). Her main publications include: *EU Environmental Law,* Belgrade 2016, pp. 230 (forthcoming); *Environmental Protection in Civil and Criminal Law*, Belgrade 2014, pp. 167; *Access to Justice in Environmental Administrative Matters*, Belgrade 2013, pp. 287; *The Development of the Right to Public Participation on Environmental Matters as a New Concept of Administrative Decision Making in Serbia*, Transylvanian Review of Administrative Sciences, No. 44, 2015, p. 74-90; *Environmental Justice in a Comparative Context, in "Justice Connections"* (Patricia Easteal ed.), Cambridge Scholar Publishing, 2013, p. 282-307; *The Application of IT and Environmental Protection,* International Review of Administrative Sciences, SAGE, 4/2012; *Implementation of the Aarhus Convention in Serbia,* European Energy and Environmental Law Review, Kluwer Law International, 2/2011; *Discretionary Power in Administrative Law of Serbia with the comparative analyze of German, French, Great Britain and Europe Union Administrative Law*, Belgrade, 2011, pp. 130.

Singapore

Lye Lin-Heng (LL.B. (Singapore); LL.M. (King's College, London); LL.M. (Harvard), is an Advocate & Solicitor, Supreme Court of Singapore. She is Adjunct Professor, former Vice-Dean and Honorary Fellow of the Faculty of Law, National University of Singapore. She was Director of its Asia-Pacific Centre for Environmental Law (APCEL) from 2013 to 2018. She has taught and researched in Environmental Law and Property Law for many years. She was Visiting Associate Professor at the Yale School of Forestry and Environmental Studies from 2003 to 2019, co-teaching a course on Comparative Environmental Law with Visiting Prof Nicholas Robinson. She chaired the NUS multi-disciplinary graduate program on the environment, the M. Sc. (Env. Mgt.) [MEM], hosted by the School of Design & Environment, from its inception in 2001 to 2018. She was former Vice-Chair of the IUCN Academy of Environmental Law, and co-chair of its Teaching and Research Committee. She is a member of the Board of Governors, WWF Singapore; and was Honorary Legal Advisor to the Nature Society for many years. She is a member of Singapore's Strata Titles Board and was a director of Singapore's public housing agency, the Housing and Development Board (HDB). She was awarded Singapore's Public Service Medal (PBM) in 2016.

Slovenia

Vasilka Sancin—doctor of juridical science (Russia), LL.M. in environmental law (USA), professor of Land Use and Environmental Law of the Moscow State University of Law (MSAL) (Russia).

Slovakia

Marek Prítyi is a Slovak lawyer and , Germany. In 2012 he graduated from the Comenius University in Bratislava, Faculty of Law. In 2014 he received a LL.M. degree from the University of Cologne is completing his doctoral degree at the University of Cologne, Research Associate, Global Law Initiatives for Sustainable Development, Beijing.

Kirk W. Junker is Director of the International Master of Environmental Science Program at the University of Cologne and holds the Chair of U.S. Law there. He is an adjunct faculty member at Bharati Vidyapeeth University Institute of Environmental Education and Research in Pune, India, where he regularly lectures. He was previously a member of the Law Faculty of Duquesne University School of Law in Pittsburgh, Pennsylvania, the Science Faculty of the Open University in Milton Keynes, UK, and held the first cross-border joint appointment in Ireland at the Queen's University of Belfast and Dublin City University. In legal practice, he was trial counsel for the Pennsylvania Department of Environmental Resources. Junker was educated in the United States and Germany, having earned his Ph.D. at the University of Pittsburgh and completing post-doctoral work at the Universities of Tuebingen and Bonn.

South Africa

Hennie Strydom, a graduate from the University of the Free State and the University of South Africa, is currently Professor in International Law at the University of Johannesburg in South Africa and also holds the National Research Foundation Research Chair in International Law at the same university. He specialises in peace and security issues, international human rights, international environmental law and international humanitarian law.

Spain

Mar Campins Eritja is a tenured Professor of Public International Law (European Union Law) at Universitat de Barcelona and researcher at Centre d'Estudis de Dret Ambiental de Tarragona (CEDAT) (Tarragona Centre for Environmental Law Studies) at Universitat Rovira i Virgili.

Antoni Pigrau Solé is a Full Professor of Public International Law at Universitat Rovira i Virgili and Director of Centre d'Estudis de Dret Ambiental de Tarragona (CEDAT) (Tarragona Centre for Environmental Law Studies) at Universitat Rovira i Virgili (www.cedat.cat).

Sri Lanka

Naazima Kamardeen is a lecturer at the Department of Commercial Law, Faculty of Law, University of Colombo. Her major area of interest is Intellectual Property Law, with a special focus on community rights to IP. In addition she has also written on Environmental law and sustainability, public law, women's rights and medical ethics. She currently serves a member of the national committee that drafted the proposed legislation on the protection of new plant varieties in Sri Lanka. She holds an LL.B. from the University of Colombo, and an LL.M. in International Legal Studies from Georgetown University USA, which she attended as a Fulbright junior scholar. She is also an attorney of the Supreme Court of Sri Lanka and a member of the ethics review committee of the Faculty of Medicine, University of Colombo.

Kaushalya Premachandra, a graduate of Faculty of Law, University of Colombo is an independent researcher in the areas of intellectual property and environmental law. She worked as a legal assistant at the Central Environmental Authority in the making of the proposed new national environmental Act to replace the existing Act. She also worked as a research assistant to a lecturer at the Faculty of Law, University of Colombo. She is a writer to a local newspaper on legal and non-legal issues.

Thailand

Kanongnij Sribuaiam is Assistant Professor at Faculty of Law, Chulalongkorn University in Bangkok, Thailand. She graduated in both Bachelor and Master degrees in law from the Chulalongkorn Law Faculty. She received her LL.M. degree from Harvard Law School in class of 1991, BA in International Environmental Studies from International Pacific College, New Zealand in 1995, and Doctorate degree in environmental public law from University of Nantes, France in 2006. Before joining the Faculty, she had experiences in Laos PDR, Vietnam, Cambodia and Thailand in law reform projects. She was researcher on urbanization and environment at Thailand Environment Institute (TEI) in 1995 – 1997. Her interests include environmental law, disaster law, law and society, law reform, and law and development. She is a frequent contributor to various Thai governmental studies and projects.

Amnat Wongbandit obtained an LL.B. from the Faculty of Law, Thammasat University, Thailand, in 1980 and started working there as a law lecturer in 1981. He received an LL.M. from New York University's School of Law in 1985 and a doctoral degree in law from Osgoode Hall Law School, York University, Canada, in 1990. He is a professor of law at Thammasat University and the head of the Natural Resources and Environmental Law Department for more than ten years. He served as a member of the National Water Resources Com-

mittee and the Natural Research Council for some years. Currently he is a member of the Nuclear Energy for Peace Commission and the Pollution Control Committee, Thailand. He has written a book on environmental law in Thailand and has done a number of research on natural resources and environmental law.

United States

Yiyi Wong is an environmental scientist who transitioned to law. As an undergraduate in the Environmental Science Department at Barnard College-Columbia University, she discovered her love of soil science while interning at the Central Park Conservancy. Yiyi continued to pursue her environmental career at USDA-NRCS, where she worked on the New York City, Bronx River, Central Park, Wake County, and Gateway National Recreation Area (GNRA) Soil Surveys. During Yiyi's time as an urban soil scientist, she became interested in anthropogenic carbon and coastal interfaces. This led her to the Marine, Earth, and Atmospheric Sciences Department at North Carolina State University (NCSU) to pursue her MS in Oceanography and interest in subaqueous soils. The Fulbright Fellowship and several National Science Foundation (NSF) grants allowed her to explore how urban areas contribute to carbon cycling in coastal ecosystems via subaqueous soils throughout the U.S. and Asia. To contribute further to the field, Yiyi shifted her focus to environmental law and attended Pace Law School where she graduated in 2014 with a J.D. and certificate in environmental law. She then served as a sustainable development and environmental advisor to the Permanent Mission of St. Kitts and Nevis, an Associate Professor of Law at Hubei University of Economics in Wuhan China, and as a Wetlands Compliance Officer at USDA-NRCS enforcing the Swampbuster Act. Currently, Yiyi is a fellow at the Burleson Institute where her research focuses on the effective integration of science and law to create lasting environmental policies.

Elizabeth Burleson received her London School of Economics LL.M. in International Law and has been an advisor to UNICEF's Senior Advisor for the Environment and to the New York Director of UNEP. She writes reports for the UN and presents on treaty making for the UN Office of Legal Affairs / UNITAR, having participated in the drafting process for the United Nations Framework Convention on Climate Change (UNFCCC), Agenda 21, and the Rio Declaration. She is an expert contributor to the International Panel on Climate Change (IPCC). As President of the Burleson Institute, she advises developed and developing countries through the UN's Climate Technology Centre and Network. Burleson was a member of the UNICEF delegation to the Bali Climate Conference; the NWF and UNEP delegations to the Copenhagen Climate Conferences; and the IUCN and ASIL delegations to the Cancun, Durban, Doha, Warsaw, Lima, and Paris UN Climate Conferences. Burleson conducts commissioned research for governmental and nongovernmental entities. She is on

the International Law Association's Committees on Sea Level Rise and on Principles Relating to Climate Change, IUCN's Climate Change Core Group, and the National Wildlife Federation President's Advisory Council. As a law professor and Fulbright Senior Specialist, she has taught Energy Law, Human Rights and Environment, International Environmental Law, Public International Law, UN Law, International Law and China, Land Use, Property Law, International Economic Law, Trade, and the Environment, Water Law, and Environmental Law. She has also been a peer reviewer for Fulbright, Oxford, Cambridge, National Academies, etc. Her ongoing public/private work brings together international economic, social, and environmental communities to coordinate energy-climate-water solutions. She has founded the Burleson Institute to further bridge human rights and environmental fields. The Institute shares information and analysis on emerging best practices and solutions to economic, social and environmental challenges. Participants help address issues ranging from local to global initiatives. Burleson has conducted legal research for Amnesty International's London-based International Secretariat and New York-based Research Division. As a scholar, practitioner, and governmental advisor, she has provided climate-energy expertise to the French, Japanese, United States, Peruvian, and Uruguayan governments. She has also provided legal advice to developing countries through the Legal Response Initiative coordinated by Columbia University School of Law.

US Native American

Elizabeth Ann Kronk Warner, a graduate of the University of Michigan School of Law, is an American law professor at the University of Kansas School of Law, where she specializes in environmental and natural resources law as it applies to American Indian tribes. In addition to teaching, she also directs the University of Kansas Tribal Law and Government Center. Further, she serves as acting Chief Judge for the Sault Ste. Marie Tribe of Chippewa Indians Court of Appeals. Prior to joining the academy, she practiced environmental and American Indian law at the law firms of Troutman Sanders LLP and Latham & Watkins LLP in Washington, D.C.

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