Dionysia-Theodora Avgerinopoulou

Science-Based Lawmaking

How to Effectively Integrate Science in International Environmental Law

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Dionysia-Theodora Avgerinopoulou
European Institute of Law, Science and Technology
Athens, Greece

ISBN 978-3-030-21416-6 ISBN 978-3-030-21417-3 (eBook)
https://doi.org/10.1007/978-3-030-21417-3

This Springer imprint is published by the registered company Springer Nature Switzerland AG.
The registered company address is: Gewerbestrasse 11, 6330 Cham, Switzerland

Preface

In the book, I criticize the current *corpus* of International Environmental Law (IEL) as inadequate to effectively and in a timely manner protect our global environment. I explore this inadequacy by tracking two factors: first, under the current global governance system, IEL is influenced primarily by political and financial factors, rather than scientific inputs; second, the lawmaking processes that prevail in IEL follow an old-fashioned paradigm, where political entities hold the legislative power, and experts, including natural and social scientists, retain only consultative or review powers, without any decision-making competence. Since the traditional lawmaking models consistently fail to protect the natural environment, I argue that experts, legitimized by their knowledge of issues related to the protection of our global environment, and consequently public health should have a stronger say in the lawmaking process at the international level. The present book explores the ways by which such delegation of lawmaking powers can occur based on the redesign of the international lawmaking models, while respecting the necessary requirements of democracy and accountability.

When I started working on this topic, I had already earned an L.L.M., a graduate degree with a specialization in International Environmental Law, and I was working as a researcher at the Yale Center for Environmental Law and Policy (Y.C.E.L.P.) at Yale University. At that time, through my membership in the expert community, I identified with the perspective of the experts. By the end of the writing of this book, however, I had gained an additional identity, and, in many ways, a more influential one; I had been vested with the duties of a Member of the Parliament in Greece. I, then, had the chance to see both perspectives of the lawmaking processes—both the perspective of an expert and a politician. When I first joined the Parliament, I thought my new position might influence my perspective on the dissertation and make me change its basic assumption that, side-by-side with politicians, experts should have a stronger say in the International Environmental Lawmaking procedures that the say they have today. However, my assumption remained unchanged and, indeed, has been reinforced. Further, I have realized that, like the inadequate integration of science in the international context of Environmental Law, similar problems also

exist in the domestic context. States should also adopt more flexible and progressive lawmaking processes in the domestic level, as well, if they are interested into having updated and science-based legislation. Knowledge management procedures could also help substantially at the domestic level, as well.

Before commencing the argumentation in the current book, it is imperative that I, above all, emphasize the significant role that the protection of our natural environment plays in preserving human and non-human life, public health, and quality of life. The fundamental hypothesis of the book is that the protection of our global natural environment has emerged as one of the most fundamental values in societies all over the world. One manifestation of this value climax is the Sustainable Development Goals (SDGs), which the UN adopted in September 2015: most of the SDGs that guide the actions and initiatives of all of the countries and international organizations in the coming years are focused on environment, energy, and climate change-related goals. Now that the international community has agreed on these goals, research should focus on how to achieve them. The present book attempts to explore and propose some of the ways in which the International Institutions can help to this end.

Athens, Greece
April 2019

Dionysia-Theodora Avgerinopoulou

Acknowledgments

The book is based on my Doctoral Thesis at Columbia University School of Law. For this reason, first and foremost, I would like to extend my gratitude to the Chair of my Doctoral Committee, Professor Petros C. Mavroidis, Edwin B. Parker, Professor of Foreign and Comparative Law, at Columbia University School of Law, New York, N.Y. Prof. Mavroidis, who apart from expertly fulfilling his duties as the Chair of the Doctoral Committee, also helped me develop the quality of persistence as a researcher. Further, I would also like to thank Professor Edward Lloyd, Evan M. Frankel, Clinical Professor in Environmental Law, and Professor Edward W. Merrill, Charles Evans Hughes, Professor of Law at Columbia University School of Law, as well as Robert Howse, Lloyd C. Nelson, Professor of International Law at New York University School of Law for all the time they spent reviewing the book. From their perspectives as experts in U.S. Environmental Law and International Law, they provided invaluable insights for the development of the book's argumentation.

Further, I was very fortunate to have been taught by and to have worked with important leaders in the field of Environmental Law, including Justice Michael Decleris at the Greek Council of State and Professors Daniel C. Esty at Yale School of Forestry and Yale Law School, and Lisa Heinzerling at Georgetown University Law Center, who influenced the content of the book through their unparalleled, progressive, and ethical scholarship. I would like to thank my parents, Zisimos and Lambrini Avgerinopoulou, and my close friends who have offered me their invaluable support during the many years that I studied abroad. Further, I would like to thank colleagues and friends working as administrators at international organizations, including the European Union, for all the light they shed upon my misty thoughts about the practices of these institutions regarding the integration processes of science in International Environmental Law. Funding for research was provided by the Alexander S. Onassis Public Benefit Foundation, the State Scholarship Foundation (I.K.Y.) of Greece, the North Atlantic Treaty Organization Scholarship Fund, the Gerondelis Foundation, and the Columbia University School of Law *via* the Cutting Fellowship in International Law. I am immensely grateful to all of the

aforementioned institutions for funding my extensive research and enabling me to complete the book. I am also indebted to Prof. Richard Steward, John Edward Sexton, Professor of Law from the New York University School of Law, and Prof. Lori Damrosch, Henry L. Moses, Professor of Law and International Organization, Hamilton Fish, Prof. of Intl. Law and Diplomacy for giving me the opportunity to work with them in research projects and benefit from their extensive knowledge on Environmental and International Law, respectively, as well as receive additional funds for my research.

Contents

Abbreviations

AB	Appellate Body
AIA	Advance Informed Agreement
AOSIS	Alliance of Small Island States
Area	International Deep Seabed
AST	Antarctic Treaty System
ATCM	Antarctic Treaty Consultative Meeting
ATCPs	Antarctic Treaty Consultative Parties
AWG	*Ad hoc* Working Group for Further Commitments
BAT	Best Available Technology
Bonn Convention	1979 Convention on Migratory Species of Wild Animals
CBA	Cost-benefit analysis
CBD	Convention on Biological Diversity
CCAMLR	Commission on the Conservation of Antarctic Marine Living Resources
CCD	United Nations Convention to Combat Desertification
CEL	IUCN Commission on Environmental Law
CEP	Committee for Environmental Protection
CFC	Chlorofluorocarbon
CFI	Court of First Instance
CGE	Consultative Group of Experts
CGPM	General Conference on Weights and Measures
Chicago Convention	1994 Convention on International Civil Aviation
CIPM	International Committee for Weights and Measures
CIS	Commonwealth of Independent States
CITES	1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora
CLRTAP	1979 Convention on Long-range Transboundary Air Pollution
CMS	1979 Convention on Migratory Species of Wild Animals
COMNAP	Council of Managers of National Antarctic Programs

COP	Conference of the Parties
CSOP	Commission to Study the organization of Peace
CST	Committee on Science and Technology
CTOC	Chemicals Technical Options Committee
DG	Directorate General
DMDS	Dimethyl disulphide
DOT	Department of Transportation
DSB	Dispute Settlement Body
DTIE	Division of Technology, Industry and Economics Division
EAEC	European Atomic Energy Community
Earth Summit	UN Conference on Sustainable Development in 2012
EC	European Community
ECJ	European Court of Justice
ECOSOC	Economic and Social Council of the United Nations
EE	Error Elimination
EEC	European Economic Community
EEZ	Exclusive Economic Zone
EGTT	Expert Group on Technology Transfer
EIA	Environmental impact assessments
EMEP	Evaluation of the Long-Range Transmission of Air Pollutants in Europe
EP	European Parliament
EPA	Environmental Protection Agency
EU	European Union
Euratom	European Atomic Energy Community
FAO	Food and Agriculture Organization
FIELD	Foundation for International Environmental Law and Development
FTOC	Foams Technical Options Committee
GAL	Global Administrative Law
GATT	General Agreement on Tariffs and Trade
GBA	Global Biodiversity Assessment
GEF	Global Environment Facility
GEMS	Global Environmental Monitoring Systems
GEO	Global Environment Outlook
GESAMP	Group of Experts on the Scientific Aspects of Marine Pollution
GHG	Greenhouses gases
GMO	Genetically modified organism
GRF	Global Risk Forum
GRID	Global Resources Information Database
HFC	Hydrochlorofluorocarbons
HTOC	Halons Technical Options Committee
IAEA	International Atomic Energy Agency

IAPA	International Administrative Procedures Act
IC	Implementation Committee
ICAO	International Civil Aviation Organization
ICES	International Council for the Exploration of the Sea
ICFAI	Institute of Chartered Financial Analysts of India
ICJ	International Court of Justice
ICNIRP	International Commission on Non-Ionizing Radiation Protection
ICRW	1946 International Convention for the Regulation of Whaling
ICSU	International Council for Science, formerly the International Council of Scientific Unions
ICTY	International Criminal Tribunal for the former Yugoslavia
ID	Inclusive democracy
IEA	International Environmental Agreement
IEL	International Environmental Law
IGY	International Geophysical Year
ILC	International Law Commission
ILO	International Labor Organization
IMCO	Intergovernmental Maritime Consultative Organization
IMF	International Monetary Fund
IMO	International Maritime Organization
INC	Intergovernmental Negotiating Committee for an International Legally Binding Instrument for Implementing International Action on Certain Persistent Organic Pollutants
INECE	International Network for Environmental Compliance and Enforcement
IO Convention	1969 Vienna Convention on the Law of Treaties Between States and International Organizations and Between International Organizations
IO	Intergovernmental Organization
IOCC	Inter-Organization Coordinating Committee
IOMC	Inter-Organization Programme for the Sound Management of Chemicals
IPCC	Intergovernmental Panel on Climate Change
IQA	Information Quality Act
IS	Informing Science
ISA	International Seabed Authority
ISDR	UN International Strategy for Disaster Reduction
ITU	International Telecommunications Union
IUCN	International Union for the Conservation of Nature and Natural Resources

IWC	1997 Convention on the Law of the Non-Navigational Uses of International Watercourses (International Watercourses Convention)
IWC	International Whaling Commission
IWMI	International Water Management Institute
IWRB	International Waterfowl and Wetlands Research Bureau
JLG	Joint liaison group between the Secretariats of the CBD
LAO PDR	Lao People's Democratic Republic
LDCs	Least Developed Countries
LEG	Least Developed Country Expert Group
LOS Convention	1982 United Nations Convention on the Law of the Sea
LRTAP	Long-Range Transboundary Air Pollution
MA	Millennium Ecosystem Assessment
MAP/UNEP	Mediterranean Action Plan
MARPOL	1974 International Convention for the Prevention of Pollution from Ships
MBTOC	Methyl Bromide Technical Options Committee
MCSD	Mediterranean Commission on Sustainable Development
MEA	Multilateral Environmental Agreement
Med Plan	Mediterranean Action Plan
Montreal Protocol	Montreal Protocol on Substances that Deplete the Ozone Layer
MOP	Meeting of the Parties
MOU	Memorandum of Understanding
MPC	Maximum Permissible Concentration
MSC-W	Meteorological Synthesizing Centre—West
MTOC	Medical Technical Options Committee
NAS	National Academy of Science
NASA	National Aeronautics and Space Administration
NASAP	National Acid Precipitation Assessment Program
NCPPE	National Council for Physical Planning and the Environment
NGO	Non-governmental organization
NLBI	Non-binding Instrument on All Types of Forests
NOAA	National Oceanic and Atmospheric Administration
NOS	Nature of Science
NSTA	National Science Teachers Association
OAS	Organization of American States
OECD	Organization for Economic Cooperation and Development
OEWG	Open-Ended Working Group
OLAF	European Anti-Fraud Office
OMB	Office of Management and Budget
OSA	Office of the Science Advisor

OSHA	Occupational Safety and Health Administration
OSPAR	Oslo and Paris Conventions for the protection of the marine environment of the North-East Atlantic
PH3	Hydrogen phosphide
PIC	Prior Informed Consent
Plan of Implementation	World Summit on Sustainable Development Plan of Implementation
POPRC	Persistent Organic Pollutants Review Committee
POPs	Persistent Organic Pollutants
PP	Precautionary Principle
PS	Problem situation
Ramsar	1971 Convention on Wetlands of International Importance, Especially as Waterfowl Habitat
Rio Plus 20	UN Conference on Sustainable Development in 2012
Rotterdam Convention	1998 Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
RTOC	Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee
SAR	Second Assessment Report
SARPs	Standards and Recommended Practices
SBDM	Science-based decision-making
SBI	Subsidiary Body for Implementation
SBSTA	Subsidiary Body for Scientific and Technical Advice
SBSTTA	Subsidiary Body on Scientific, Technical, and Technological Advice
SCAR	Scientific Committee on Antarctic Research
SCOPE	Scientific Committee on Problems of the Environment
SEA	Single European Act
SPC	Science Policy Council
SPS Agreement	Agreement on the Application of Sanitary and Phytosanitary Measures
SSK	Sociology of Scientific Knowledge
STAP	Scientific and Technical Advisory Panel
STPR	Scientific and Technical Review Panel
STS	Science and technology studies
TBT Agreement	Agreement on Technical Barriers to Trade
TEAP	Technology and Economic Assessment Panel
TT	Tentative theories
UNCCD	1994 United Nations Convention to Combat Desertification
UNCED	1992 UN Conference on Environment and Development
UNCHE	1972 UN Conference on the Human Environment
UNCLOS	United Nations Conference for the Law of the Sea

UNCSD 2012	UN Conference on Sustainable Development in 2012
UNECE	United Nations Economic Commission for Europe
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	1992 United Nations Framework Convention on Climate Change
UNFF	United Nations Forum of Forests
UNFSA	1995 United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stock Agreement
UNGA	United Nations General Assembly
UNHRLC	United Nations Human Rights Law Commission
UNIDO	United Nations Industrial Development Organizations
UNIDROIT	International Institute for the Unification of Private Law
UNSC	United Nations Security Council
UPU	Universal Postal Union
VTR	Varietal testing requirement
WCED	World Commission on Environment and Development
WFO	World Food Organization
WHO	World Health Organization
WMO	World Meteorological Organization
WSSD	2002 Johannesburg World Summit for Sustainable Development
WTO	World Trade Organization
WWF	World Wide Fund for Nature/World Wildlife Fund
YCELP	Yale Center for Environmental Law and Policy

Chapter 1
Introduction: Is Contemporary International Environmental Law Based on Science?

Science and technology. . . must be applied to the identification, avoidance and control of environmental risks and the solution of environmental problems and for the common good of mankind.
—Principle 18, Declaration of the United Nations Conference on the Human Environment, Stockholm, 1972.

[States should] improve policy and decision-making at all levels through, inter alia improved collaboration between natural and social scientists, and between scientists and policy makers, including through urgent actions at all levels to: . . . (c) Continue to support and collaborate with international scientific assessments supporting decision-making, . . . (e) Establish partnerships between scientific, public and private institutions, including by integrating the advice of scientists into decision-making bodies to ensure a greater role for science, technology development and engineering sectors; (f) Promote and improve science-based decision-making.
—Plan of Implementation, Part X, art. 109, World Summit for Sustainable Development, Johannesburg, South Africa, 2002.

Are contemporary international environmental laws based on science?[1] Do international lawmakers give due consideration to the latest findings of environmental and

[1]Science is "a logically organized body of knowledge that attempts to achieve practical purposes through replicable processes." *See* EMMANUEL G. MESTHENE, TECHNOLOGICAL CHANGE: ITS IMPACT ON MAN AND SOCIETY 25 (1970); Joseph W. Dellapenna, *The History of Abortion: Technology, Morality and Law*, 40 U. PITT. L. REV. 359, 362 (1979). By a more detailed definition, "science" is abstract knowledge that, when combined with proper tools, becomes the technology that changes how we do things and ultimately how we live. A tool might exist for a considerable time before its applicability to a particular problem is realized, or a problem and its solution might be known theoretically for some time before the necessary tools are developed to allow for its resolution. *See*, *e.g.*, Joseph W. Dellapenna, *Law in a Shrinking World: The Interaction of Science and Technology with International Law*, 88 KY. L.J. 809, 823 (1999-2000), with reference to LEWIS MUMFORD, TECHNICS AND CIVILIZATION 4, 107 and 139 (1934). The same text continues to define "technology" as follows: "Only when the tools and

D.-T. Avgerinopoulou, *Science-Based Lawmaking*,
https://doi.org/10.1007/978-3-030-21417-3_1

related sciences before promulgating environmental legislation? Do new international rule-making procedures promote what this Book calls as "Science-Based Lawmaking"? Would it be possible to delegate lawmaking powers from the so-called "political bodies" of the international institutions to the "expert bodies" of these institutions?[2] If so, could such delegations lead to more protective regulations for our natural environment? Assuming that it would be possible to give expert bodies lawmaking powers, what would be the appropriate lawmaking procedures on the international level that would allow experts to promulgate regulations, while respecting the democratic governance requirements?

Nowadays, scientific uncertainty is the usual political argument for avoiding regulation of environmental issues.[3] It is true that both a lack of scientific knowledge and scientific certainty exist and prevail in many environmental issues. However, science can already offer solutions and inform guidelines to help the international legislative bodies adopt appropriate laws to effectively address a series of environmental problems. Based on this assumption, I hold that an important obstacle to the adoption of efficient international environmental regulation is contemporary legislators' failure to take due account of currently available, "usable" science. International Environmental Law fails to integrate even basic and generally accepted scientific knowledge.[4] In the following Chapters, the Book presents some of the

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necessary knowledge co-exist in an organized way can we say that a particular technology has come into being" Dellappenna adds. This is a working definition for the purposes of the present Book and is not a final or perfect definition.

There is further a need for a distinction between the terms: "science" and "scientific knowledge": According to Black's Law Dictionary, "scientific knowledge" is knowledge that is to say grounded on scientific methods that have been supported by adequate validation. Four primary factors are used to determine whether evidence amounts to scientific knowledge: (1) whether it has been tested; (2) whether it has been subject to peer review and publication; (3) the known or potential rate of error; and (4) the degree of acceptance within the scientific community. I alternatively use the terms "scientific" knowledge and "science", since in English the word "science" means also "scientific knowledge". Whereas in other languages, such as in Greek, one should discern between "*επιστήμη*" meaning science under an abstract approach or the level of science and refers also to a discipline and "*επιστημονική γνώση*" meaning "scientific knowledge". What needs to be integrated in law is science under the meaning of the *state-of-art* knowledge or existing scientific knowledge. In a larger sense, where social sciences can apply, by "scientific knowledge" or "science" I also mean expert advice or expertise.

[2] *See* the use of the term by ROSALYN HIGGINS, THE DEVELOPMENT OF INTERNATIONAL LAW THROUGH THE POLITICAL ORGANS OF THE UNITED NATIONS (Oxford University Press, Royal Institute of International Affairs, London, New York, Toronto, 1963).

[3] See, e.g. W. E. Wagner, Choosing Ignorance in the Manufacture of Toxic Products, 82 Cornell L. Rev. 773, 777 (1997).

[4] *See* Nicholas A. Robinson, *Legal Systems, Decisionmaking, and the Science of Earth's Systems: Procedural Missing Links*, 27 ECOLOGY L.Q. 1077 (2001), who fully upholds my assumption. Specifically, Robinson sees a disjunction that exists today between how scientists and government leaders view global changes in Earth's natural systems, such as the rapid loss of biodiversity accompanying species extinction or the modification of Earth's climate through global warming. According to the author, this fault line extends between the institutionalized perceptions of each nation's governmental decision -makers and the findings of scientists studying the Earth's natural

many cases that illustrate this phenomenon. The reasons behind this phenomenon vary, although they are mainly economic and political, as well as structural and institutional reasons.[5,6] I hold that, despite scientific uncertainty, usable science exists and regulators should use it to adopt new international environmental laws.[7] It is crucial that the international legislative bodies be appropriately equipped to further consider science, independent from the relevant work of the domestic legislative bodies. It is possible that, if domestic law is based on science, IEL will follow the lead of domestic law and adopt science-based approaches. The likelihood of this occurring may be directly proportional to the likelihood of an influential country taking the lead to initiate international regulation. However, this will not cure the need for the direct injection of science into IEL For many important environmental issues, regulation on the international level is the priority, rather than massive domestic regulation that would later influence IEL For example, IEL was the first body of law to regulate several areas, such as the case of Persistent Organic Pollutants (POPs).[8] The leadership of the international bodies in IEL may

systems. Thus, it needs to be better understood and bridged, and Robinson proposes revising decision-making procedures to this end.

[5]I must distinguish my position from one that does not acknowledge the challenges that uncertainty poses to environmental policy and lawmaking. On the contrary, scientific uncertainty has to be acknowledged. JOHN LEMONS & DONALD A. BROWN, SUSTAINABLE DEVELOPMENT: SCIENCE, ETHICS, AND PUBLIC POLICY 18–19 (1995).

[6]*See* Lee A. Kimball, *Institutional Linkages Between the Convention on Biological Diversity and Other International Conventions*, 6 REV. EUR. CMTY. & INT'L ENVTL. L. 239, 242 (1997) "[O] f all the institutional relationships, the ability to tap into worldwide knowledge and translate it effectively for decision-making is the least well developed."

[7]Even authors that embrace the opinion that science is only uncertain still recognize the need for adopting further protective environmental legislation, if only by incorporating socially-constructed science. These authors would also not accept the invocation of scientific uncertainty as a reason for the not adopting regulation. *See, e.g.*, GIORGOS BALIAS, ΠΕΡΙΒΑΛΛΟΝΤΙΚΟΙ ΚΙΝΔΥΝΟΙ–ΔΙΑΠΛΟΚΗ ΕΠΙΣΤΗΜΗΣ, ΔΙΚΑΙΟΥ ΚΑΙ ΠΟΛΙΤΙΚΗΣ, [ENVIRONMENTAL RISKS: INTERACTION BETWEEN SCIENCE, LAW AND POLITICS] 122 (Ant. N. Sakkoulas Publications, Athens, Greece 2009); Wendy E. Wagner, *Congress, Science, and Environmental Policy*, U. ILL. L. REV. 181, 221 (1999).

[8]The Persistent Organic Pollutants (POPs) are chemical substances that are persistent and toxic, that bioaccumulate in fatty tissue, achieving higher concentrations as they move up a particular food chain, and that are prone to long-range environmental transport. Additional information about science and law regarding POPs is available at the official UNEP's POPs website https://www.unenvironment.org/explore-topics/chemicals-waste/what-we-do/persistent-organic-pollutants/why-do-persistent-organic (last accessed December 2018). Studies have found that POPs are of particular concern. In combination with the features of persistence, long-rand transport, and bioaccumulation, data show that POPs can disrupt endocrine systems and are linked with cancer, reproductive disorders, birth defects and immune-system deficiencies. *See*, *e.g.*, World Resources Institute, World Resources, 1998-1999: Environmental Change and Human Health (1998); THEO COLBORN, DIANNE DUMANOSKI & JOHN PETERSON MYERS, OUR STOLEN FUTURE (1996); Bruce Rodan, Noelle Eckley & Robert S. Boethling, International Action on Persistent Organic Pollutants (POPs): Developing Science-Based Screening Criteria, in Proceedings of the Subregional Awareness Raising Workshop on Persistent Organic Pollutants (POPs), Cartagena, Colombia 70 (1998).

occur because the issue at stake has global and regional dimensions. It may also be appropriate to adopt international regulations before domestic regulations, when, for instance, environmental issues are similar in all of the countries. In other cases, international bodies seem to have the necessary expertise and collective knowledge to regulate more effectively and speedily than domestic bodies or single jurisdictions that do not enjoy the same capacities. In other cases, international regulation may be more appropriate than domestic legislation alone due to the interconnectedness of various ecosystems, the regulation of which cannot be limited by national borders. The current Book focuses first and foremost on increasing the effectiveness of IEL, rather than that of domestic environmental law, for the following reasons: the interconnectedness of the ecosystems, the common features of the environmental issues at stake in many countries, the global and regional dimensions of some issues, the fact that science can be more easily gathered and evaluated on the global level rather than the domestic level, the inability of many countries around the world to provide adequate environmental protection for the benefit of their citizens and their natural resources, and the need to protect the common heritage of humankind—including natural resources that are outside of national jurisdiction.

There are both political and institutional factors that undermine the effectiveness of IEL First, current political circumstances have an erosive effect on IEL. The open market philosophy that prevails in the international arena is infused in most countries' political systems and imposes the market's deregulatory agenda on the countries' legislation. Industry has successfully lobbied legislators to enact extensive deregulation in many fields. This has prevented national legislatures from adopting protective legislation in the name of the public interest, such as environmental and public health Legislation.[9] In these two particular fields, legislators often invoke scientific uncertainty to justify both regulatory inaction and deregulatory action. In addition, there has been an effort in the last decade to devalue the *command-and-control* approach in the law as ineffective, while simultaneously, the free market approach has emerged to restrict markets by using voluntary regulation.[10] Further, cost-benefit analysis, as a method used by both governments and international institutions to make legislative decisions, has often led to deregulation. In other

[9] *See*, *e.g.*, John C. Coffee Jr., *The End of an Era*, N.Y. TIMES (Jan. 29, 2009), *available at: https://roomfordebate.blogs.nytimes.com/2009/01/29/bonuses-for-bad-performance/* (last accessed December 2018). Peter Lallas, *The Stockholm Convention on Persistent Organic Pollutants*, 95 AM. J. INT'L L. 692, 694 (2001).

[10] For example, in Environmental Law and Policy, Richard L. Revesz and Robert Stavins identify the "historical dominance of command-and-control" approach and further develop the prevalence in new proposals of tradable permits allocated without charge; and the relatively recent increase in attention given to market-based instruments". Richard L. Revesz & Robert Stavins, Environmental Law and Policy 2 (November 2007) (working paper 13575) (National Bureau of Economic Research). Furthermore, in assessing the validity of the command-and-control approach, Revesz and Stavins argue that for entire genres of environmental policy, command-and-control is ineffective and should be replaced with market- based instruments. Richard L. Revesz & Robert Stavins, Environmental Law and Policy 2 (November 2007) (working paper 13575) (National Bureau of Economic Research) at 34.

cases, the cost-benefit analysis may lead to inaction regarding the adoption of new regulation, especially when evaluations of the situations or their impacts are not very clear. This happens because, in many law and policy formation cases, nature's value is not evaluated properly or is not evaluated at all. Thus, the evaluation of the benefits of nature cannot countervail other types of benefits that derive from anti-environmental regulation.

Second, a variety of factors contribute to the structural and institutional reasons for the failure to adopt science-based regulations. Barriers to the adoption and implementation of effective and timely international environmental legislation include, but are not limited to, the lack of experts in the decision-making processes, the demand for unanimity in the decision-making process, which is based on the principle of state sovereignty and the fragmentation of international institutions with environmental competence. A shift occurs from the open market as the prevailing economic and political system towards developing compromise-based solutions that address the major issues created by the open market approach, such as, for instance, a social open market approach. Similarly, there have been recent shifts within institutions away from the open market approach and towards a more compromise—centered approach. These changes manifest either in the functioning of the institution itself or as changes in the institution's lawmaking processes.

What I propose is to attribute new legislative or *quasi*-legislative powers to bodies of international organizations. Prior to this, it is imperative to ensure those bodies are composed of highly qualified experts. In addition, those experts should work exclusively for the international institution at the time of the legislative exercise, irrespective of what other affiliation(s) they may have held in the past. Empowered by expertise and independence, the new administrators of the international institutions would be able to meaningfully contribute to environmental protection by their active participation in the vital stages of the lawmaking procedures.

A legal book cannot address the question of how the international community could overcome all possible factors leading to the existing insufficiencies of International Environmental Law. From the perspective of an international lawyer and a legal researcher, a book can, however, address an assumption regarding the possible relevant factors that are more limited in scope, as well as a few questions elaborating this assumption. The basic assumption of the Book is that if MEAs and international institutions with environmental competence further transform their lawmaking procedures with the objective of achieving better integration of science in IEL, then the resulting laws will offer a much higher degree of protection for our natural environment and public health. My research on the lawmaking process of the International Seabed Authority (ISA) was the first case that I investigated which led me to formulate this assumption.[11]

[11] *See* the official site of the International Seabed Authority, https://www.isa.org.jm/ (last accessed December 2018).

1.1 Arbitrary Adoption of Laws Before the Eyes of an Environmentalist

While I was conducting research on the application of the precautionary principle[12] in the international regulations of the exploration and exploitation of mineral resources in the "Area", namely the deep seabed that lies outside national jurisdictions, I came across the following paradox: while negotiating the International Seabed Authority's mineral mining code for the Area,[13] a code that would regulate all of the mining activities that take place in the Area, the international community indicated its intention to adopt separate and distinct legal principles governing the protection of the Area's natural environment for the mining of one class of minerals versus another. The only reason the members of the International Seabed Authority considered adopting separate standards for the two types of minerals was the allegedly different financial importance of the two classes of minerals. As a result, the countries adopted the precautionary principle in the case of the less valuable set of minerals, the polymetallic nodules; however, the International Seabed Authority contemplated to abolish the precautionary principle in the case of the more valuable cobalt-rich ferromanganese crusts, in order to proceed with exploration and exploitation as soon as possible, provided that technology allowed them. This latter environmentally insensitive approach directly contradicted the strong advice of the independent experts advocating for the adoption of the precautionary principle for the regulations governing both classes of minerals. The case of ISA follows[14]:

1.2 Case Study: The Regulations of the International Seabed Authority

The International Seabed Authority (ISA) was created by the 1982 United Nations Convention on the Law of the Sea (the LOS Convention) as a competent international organization for the management of the International Deep Seabed, commonly called the "Area". The Area is the part of the Deep Seabed beyond the limits of every national jurisdiction and it is considered part of the common heritage of humankind.

[12]The precautionary principle emerged in the mid '80s. Article 15 of the 1992 Rio Declaration states that: "Where there are threats of serious and irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." See also Science for environment policy, The precautionary principle: decision-making under uncertainty, future brief (2017).

[13]See, International Seabed Authority (ISA), Mining Code, https://www.isa.org.jm/mining-code (last accessed December 2018).

[14]This abstract is part of a previous publication of mine: Dionysia-Theodora Avgerinopoulou, *The Lawmaking Process at the International Seabed Authority as a Limitation on Effective Environmental Management*, 30 COLUM. J. ENVTL. L. 565 (2005).

It functions as the custodian of the Area on behalf of humankind. In this role, the ISA functions as an international environmental organization to the extent that its duties include not only the management of the mineral wealth of the Area, but also the environmental protection of the whole region. The constituent instruments of the ISA and its administrative law set out only in broad outlines the duties of ISA and the rules and principles that ISA is to implement in its legislative and administrative work. The signatories to the LOS Convention and the Agreement delegated broad discretion to ISA, but they also provided for cooperation between "political" and "expert" bodies, to help ISA to make sound decisions about the complex issues involved in the management of the Area. However, despite the existence of several such bodies, the provisions for close cooperation with scientific bodies, the autonomy given to ISA under the LOS Convention and the Agreement, and other innovative mechanisms, strict management of the natural environment of the Area has yet to materialize.

Some years ago, ISA, responding to the applications of States interested in mining in the Area, promulgated legislation regulating activities preliminary to the commercial mining of the Deep Seabed, entitled "Regulations on Prospecting and Exploration for Polymetallic Nodules in the Area". These Regulations were not a uniform code addressing all the potential mining activities and minerals in the Area. On the contrary, the Regulations were subject specific and referred only to those mining activities that concerned the polymetallic nodules known at that time. In the years to come, however, two additional kinds of minerals drew the attention of the investors in the Area: hydrothermal polymetallic sulphides and cobalt-rich ferromanganese crusts. Several States have already filed applications at ISA's headquarters and are pressing for permission to commercially exploit these two new Deep Seabed minerals. Due to the lack of an overall regulatory regime, ISA must now promulgate new rules that will specifically address these two new substances. The need for a new regulation was informally among the subjects discussed at the Eighth Session of ISA. The new regulation has not yet been issued. However, the Council of ISA has already entered into negotiations with interested investors concerning the main policies governing the commercial mining of the new substances. Although this second set of regulations has not been finalized, it seems that there will be an important difference between the original set of Regulations and the new Regulations: while for the management of the first set of substances ISA adopted the precautionary principle to deal with scientific uncertainty, this does not seem to be the case for the new substances. During the Eighth Session, the Council, a political body of ISA that represents mostly the States with special interests in the Area, did not seem willing to adopt the precautionary principle for the regulation of the two new substances. Only one delegation supported the adoption of such a rule. The other delegations held that it was premature to discuss the precautionary principle in the context of the newly discovered minerals.

The Council implicitly takes the position that it has the discretion to decide whether to adopt the precautionary principle as a governing principle for the management of the minerals in the Area. The Council, by rejecting the adoption of the precautionary principle as part of the new regulation, created a regime for

activities concerning the new minerals that will be less protective of the environment than was the original regime governing the rest of the minerals. Without any justification for such differentiation, if the precautionary principle does not eventually become part of the new legislation, ISA's policies will be inconsistent. The Council has chosen to attribute different levels of protection to the natural environment in the face of similar risks. The similarity between the extraction of the first set of minerals and the extraction of the second set of minerals calls into question the difference in policies. The soundness of the decision not to adopt the precautionary principle is particularly questionable, because it ignores the suggestions of the majority of the scientists and, as shown below, those of the expert bodies of ISA.

The debate between expert bodies, which include scientists, lawyers and other specialists, and the Member-States of the international institutions has a predictable winner: the Member-States. This is the case with ISA, which is structured under the same traditional model as the majority of currently existing intergovernmental organizations. In this framework, the political bodies, namely bodies composed of representatives of the Member-States, which reflect and protect the individual or collective self-interest of the Member-States, possess the legislative power. The expert bodies of ISA and the scientific groups collaborating with ISA have only consultative status. As a result, the decisions of ISA reflect mostly the self-interests of the States and provide for environmental protection at the lowest common denominator and only to the extent that the environmental protection does not oppose their interests. If the Member—States do not perceive that their foremost common interest is environmental protection, the current structure of ISA will result in regulations with limited protection for the environment. Until this mentality changes, both the expert bodies and the scientific groups must gain greater status in the structure of ISA, in order to support the adoption of sound environmental management methods.

Restrictions on the work of the intergovernmental organizations are posed from the current structure of the decision-making process, where the self-interests of the States thrive. The case study indicates that the present decision-making process does not result in enough environmental protection. This is the case mainly because several self-interests do not allow the States, which are the main actors at the international level, to make environmentally sound decisions. No matter what the mandate of the organization is and the extend of expertise the organization holds, the traditional scheme allowing political bodies to ultimately dictate the organization, is not appropriate for the management of global environmental issues. When it comes to natural resources that belong to humankind and are out of the jurisdiction of the States, the temptation for the States to act as "free riders" is even greater. The self-interest was and will be a strong incentive to States' behavior on the international level. This is especially true in the case of the management of the natural resources in the Area, since the cumulative interests of the States create a powerful common force against the protection of the Area environment.

Environmental management is mostly a scientific issue and less a social and economic one. Of course, human interests cannot be ignored, and all the parameters should be dealt with in a systemic way. This systemic approach requires

intergovernmental organizations to reform the decision-making process. Since States are not able to decide what constitute the best laws and policies for environmental protection, the best solution seems to be to transfer, at least partially, the decision-making power to the less political and the more expert, managerial bodies. Through such a reform, the international institutions could become the appropriate place to achieve the platonic goal to "unite the political power with the wisdom."

Several years later, by overcoming legal fragmentation, ISA has finally drafted a single Mining Code for all of the activities that take place in the Area. The Code's standard template for mining contracts includes a clause requiring mining contractors to—take necessary measures to prevent, reduce and control pollution and other hazards to the marine environment arising from its activities in the Area as far as reasonably possible using the best technology available to it.[15] The Code thus adopts the principle of prevention and requires the use of best available technology; however, it does not adhere to the precautionary approach. Article 31 paragraph 2 of the Regulations for Prospecting and Exploration of Polymetallic Nodules ("Regulations"), which is one segment of the Mining Code, adopts the precautionary principle.[16] The Regulations are more specific in comparison to the introductory and other general provisions in the Code and prevail over the latter (*lex specialis derogate legi generally*); thus, the precautionary principle applies in the case of the exploration and exploitation of the Pollymetalic Nodules. Still, Regulations governing the mining of other minerals, including cobalt—rich ferromanganese crusts, have not yet been enacted, and the question of whether the Member-States of the ISA will or will not adopt the precautionary principle remains open. This question will only be answered by the States and their seldom scientifically justified criteria.[17]

1.3 Definitions of the Main Terms-of-Art

1.3.1 Composition of and Role Distinction Between Political and Expert Bodies

At this early stage of the Book it is useful to clarify issues of terminology that recur throughout the analysis. First, throughout a major part of the Book, the analysis of

[15]International Seabed Authority, Standard Clauses for Exploration Contract, § 5, para. 5.1, *at https://www.isa.org.jm/document/isba6a18* (last accessed December 2018).

[16]International Seabed Authority, Regulations on Prospecting and Exploration for Polymetallic Nodules, art. 31, para. 2 (July 13, 2000), *available at https://www.isa.org.jm/documents/isba19c17* (last accessed December 2018).

[17]The precautionary principle emerged in the mid '80s. Article 15 of the 1992 Rio Declaration states that: "Where there are threats of serious and irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation."

the structure of the international arrangements that participate in international lawmaking is based on the distinction between "political bodies" and "expert bodies." There are other more inclusive categorizations used by Eyal Benvenisti: the governments that represent the Signatory States to the treaties establishing the institutions; domestic interest groups, and officials of the institution itself (bureaucrats and judges) who enjoy discretionary powers under the rules of the institution.[18] The distinction between the terms "political bodies" and "expert bodies"[19] or "political bodies" and "expert bodies" is already in use.[20] The term "political body" or "political organ" refers to a body/organ of an international institution in which the body's members represent the States participating in the international arrangements. For example, the Council of the Organization or the Assembly of the Organization are bodies composed of members representing the countries that have appointed them. In most cases, the representatives hold various positions in the Administration of their States or belong to the diplomatic corps.

In some cases, bodies might be comprised of representatives of Member States that are scientists or other experts working for the government, such as forestry scientists working permanently at the ministries and representing their governments only for the duration of international meetings of the bodies of the international institutions.[21] Even in these cases, the bodies fall within the category of the "political bodies," since, irrespectively of their professions, they are legally obliged to represent the interests and of their States and to express the official positions of their States. The essential contribution of the participation of experts in these kinds of political bodies is that the expert representatives, in contrast to the non-expert representatives, have the necessary background to understand the environmental issues concerned.

Alternatively, bodies comprised of experts that do not directly represent Member States but are appointed by bodies of various international arrangements, are categorized as "expert bodies." Further, the "secretariats" fall within the category of the "expert bodies" *lato sensu* to the extent that their personnel are usually specialized in disciplines consistent with the mandate of the organization or the objective of the agreement. As a result, secretariats represent the international arrangement itself and not the interests of the States that reflect the political factor during the lawmaking process. Technical bodies are, by definition expert bodies, and should fall within this

[18] *See* Eyal Benvenisti, *The Interplay Between Actors as a Determinant of the Evolution of Administrative Law in International Institutions*, 68 LAW & CONTEMP. PROBS. 319, 325 (2005).

[19] *See*, *e.g.*, Theodor Meron, *Reform of Lawmaking in the United Nations: The Human Rights Instance*, 79 AM. J. INT'L L. 664 (1985). Meron supports active involvement in the preparation of legislative drafts for the UN purposes by experts, even in the case of human rights.

[20] *See*, *e.g.*, Jochen von Bernstorff, *Procedures of Decision-Making and the Role of Law in International Organizations*, 9 GERMAN. L. J. 1939 (2008), *available at: http://www.germanlawjournal.com/volume-09-no-11/* (last accessed December 2018).

[21] For example, many of the state representatives that participate in the meetings of the United Nations Forum of Forests (UNFF) are foresters/forestry experts.