SCIENCE-BASED LAWMAKING: EFFECTIVE INTEGRATION OF SCIENCE IN INTERNATIONAL ENVIRONMENTAL LAW

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ABSTRACT

SCIENCE-BASED LAWMAKING: INTEGRATING SCIENCE IN INTERNATIONAL ENVIRONMENTAL LAW

Dionysia-Theodora Avgerinopoulou

The Thesis takes the approach of a critique of the current international environmental lawmaking processes and the systemic shortcomings and aims to redesign parts of the international environmental lawmaking system on new terms. Through case studies and doctrinal analyses, an array of initial questions guides the research through a variety of factors influencing the International Environmental Law. The Thesis mainly tests and finds the following hypotheses positive; some of the decisive factors that would create an optimized lawmaking framework and advance the purposes of I.E.L. include, but are not limited to, the adoption of:

(a) progressive voting processes, including the majority rule and opting-out procedures as means of adopting primary and, most importantly, secondary legislation resulting in legally binding rules upon the States without requiring prior ratification by the states within the framework of International Organizations or Multilateral Environmental Agreements;

(b) science-based secondary legislation, defined by specific criteria and boundaries that primary laws pose on them, that is more detailed than primary laws and of a more technical nature, promulgated by expert bodies alone, without the intervention of political bodies, and is binding upon States, unless the latter object with reason; and
(c) new procedural rules, related to the pre- and post-lawmaking stages that enhance participation in the lawmaking process by both experts and the public and review the implementation, compliance and validity of science and technology of the laws, while at the same time guarantee all forms of legitimacy. The Thesis does not aim to produce a countervailing lawmaking model. It rather attempts to optimize some of the lawmaking processes based on an enhanced science-base in order to better protect our global natural environment and public health.
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Preface

In this Thesis, I criticize the current corpus of International Environmental Law (I.E.L.) 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, I.E.L. is influenced primarily by political and financial factors, rather than scientific inputs; second, the lawmaking processes that prevail in I.E.L. 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 Thesis explores the ways by which such delegation of lawmaking powers can occur, while respecting the necessities 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 the time, through my membership in the expert community, I identified with the perspective of the experts. By the end of the writing of this Thesis however, I have gained an additional identity, and, in many ways, a more influential one; I have been
vested with the duties of a Member of the Parliament in Greece. I now have the chance to see both perspectives of the lawmaking processes—as an expert and as 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. However, that assumption remains 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.

During the years I was writing this Thesis, I decided to get involved with politics in order to more effectively address global, regional and local environmental affairs. I wanted to bridge the gap that existed between politics and science in international and domestic environmental governance. I thus initiated and supported several environmental initiatives, such as the establishment of a new World Environment Organization yet to come into effect, the establishment of a regional Climate Change Center, whose establishment was recently agreed upon,¹ and part of the reconstruction plan for areas of Greece devastated by the 2007 wildfires.² Due to those efforts and my expertise in International and Environmental Law, the Prime Minister of Greece and President of the

¹ For more information, visit the official website of the launch event for a Climate Change Center for the Mediterranean, available at: http://www.medclimatechangeinitiative.org/content/overview, last visited on October 22, 2010.

² For more information, visit the official website of the European Institute of Law, Science & Technology, which I have founded and directed, and which has served as the official platform for the reconstruction efforts, available at: www.eurilst.org, last visited on October 30, 2010.
“Νέα Δημοκρατία” political party at that time, Mr. Kostas Karamanlis, appointed me as a Member of the Hellenic Parliament. My appointment signified an effort of a current political leader to enrich traditional politics with additional expertise in international and domestic Environmental Law and policy.

It is imperative that I, above all, emphasize the significant role that protecting the natural environment plays in preserving human and non-human life, public health, and quality of life. The fundamental hypothesis of the Thesis is that protecting our global natural environment has emerged as one of the most fundamental values in societies all over the world. Now that the international community has agreed on this goal, research should focus on how to achieve it. The present Thesis attempts to explore and propose some of the ways in which the International Institutions can help to achieve this goal.

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3 Visit the official site of “Νέα Δημοκρατία” (in English: New Democracy), available at: www.nd.gr, last visited on October 12, 2010.
SCIENCE-BASED LAWMAKING: INTEGRATING SCIENCE IN INTERNATIONAL ENVIRONMENTAL LAW

New Lawmaking Processes for the 2012 Earth Summit

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.

[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.

INTRODUCTION

Are contemporary international environmental laws based on science?⁴ Do international lawmakers give due consideration to the latest findings of environmental

⁴ 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
and related sciences before promulgating environmental legislation? Do new international rule-making procedures promote “science-based lawmaking” (S.B.L.M.)? Would it be possible to delegate lawmaking powers from political bodies of international institutions to expert bodies? If so, would such delegation lead to more environmentally protective regulation? Assuming that it would be possible to give expert bodies lawmaking powers, what are the appropriate lawmaking procedures on the international level that would allow experts to promulgate regulations, while respecting the democratic governance requirements?

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 necessary knowledge co-exist in an organized way can we say that a particular technology has come into being” Dellapenna adds. This is a working definition for the purposes of the present Thesis 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.

Nowadays, scientific uncertainty is the usual political argument for avoiding regulation of environmental issues. 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. In the following Chapters, the Thesis presents some of the many cases that illustrate this phenomenon. The reasons behind this phenomenon are varied, although they are mainly economic and political, as well as structural and institutional reasons. I hold that, despite scientific


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

8 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. To this end, I cite an enlightening abstract about the degree of scientific uncertainty that arises when dealing with complex systems, JOHN LEMONS & DONALD A. BROWN, SUSTAINABLE DEVELOPMENT: SCIENCE, ETHICS, AND PUBLIC POLICY 18–19 (1995) (“Large uncertainties are also inevitably inherent in assessments of biological or ecological systems regardless of the scientific study approach utilized. For example, the stochastic state of ecosystems over time increases the ability of scientists to derive data for pertinent ecosystem criteria with certainty. Unexpected human intrusions or mismanagement often are responsible for unpredictable changes in species or ecosystems. Recent advances in chaos theory have called into question whether it is even possible to make long-term ecological predictions about species and ecosystems. For example, people have to decide which ecosystem parameters are more important to base judgments on, often with little or no empirical information available. Assumptions have to be made, often without direct empirical evidence, whether ecosystem parameters
uncertainty, usable science exists and regulators should use it to adopt new international environmental laws.\textsuperscript{10}

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, I.E.L. 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 I.E.L. For many important environmental issues, regulation on the international level is the priority, rather than massive domestic regulation that would later influence I.E.L. For example, I.E.L. was the first body of law to regulate several

should be considered independently or synergistically, and whether threshold values for environmental or health impacts exist, and if so, what such values should be. In addition, a lack of empirical data cannot be separated entirely from practical limitations imposed on environmental scientists. Decision-makers require information in a relatively short time period, and at reasonable costs. These factors constrain the focus of most ecological studies to lower levels of hierarchical organization, the short-term, small spatial areas, and measurement of relatively small numbers of parameters. … Certain environmental problems raise questions of such fundamental scientific uncertainty that any attempt to deal with the uncertainty through probability analysis may be not much better than untutored speculation because it is sometimes difficult to describe even subjective probabilities of various scenarios or to predict the consequences or various scenarios…‖). Despite scientific uncertainty, usable science exists on various issues and could enable regulators to make safe policy and law choices.

\textsuperscript{9} See Lee A. Kimball, \textit{Institutional Linkages Between the Convention on Biological Diversity and Other International Conventions}, 6 REV. EUR. CMTY. \& INT’L ENVL. 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”).

\textsuperscript{10} 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. \textit{See, e.g.}, Giorgos Balias, ΠΕΡΙΒΑΛΛΟΝΤΙΚΟΙ ΚΙΝΑΣΙΟΙ – ΔΙΑΠΑΘΟΙ ΕΠΙΣΤΗΜΗΣ, ΔΙΚΑΙΟΥ ΚΑΙ ΠΟΛΙΤΙΚΗΣ [ENVIRONMENTAL RISKS: INTERACTION BETWEEN SCIENCE, LAW AND POLITICS] 122 (Ant. N. Sakkoulas Publications, Athens, Greece 2009); Wendy E. Wagner, \textit{Congress, Science, and Environmental Policy}, U. ILL. L. REV. 181, 221 (1999).
areas, such as Persistent Organic Pollutants (POPs). The leadership of the international bodies in I.E.L. may 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 Thesis focuses first and foremost on increasing the effectiveness of I.E.L., 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

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11 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 [http://irptc.unep.ch/pops/](http://irptc.unep.ch/pops/). Studies have found that POPs are of particular concern. In combination with the features of persistence, long-range 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), Philippine Case Study: A Developing Country’s Perspective on POPs (1996), [http://irptc.unep.ch/pops/](http://irptc.unep.ch/pops/); 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); Heidi Fiedler, Polychlorinated Biphenyls (PCBs): Uses and Environmental Releases, in Cartagena Proceedings 128, available at [http://irptc.unep.ch/pops/](http://irptc.unep.ch/pops/). See also infra, Chapter III, part 2, p. 231.
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 I.E.L. First, current political circumstances have an erosive effect on I.E.L. 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. In these two particular fields, legislators often invoke scientific uncertainty to justify both regulatory inaction and deregulatory action. In addition, there has been an

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12 See, e.g., John C. Coffee Jr., The End of an Era, N.Y. Times (Jan. 29, 2009), available at: http://roomfordebate.blogs.nytimes.com/2009/01/29/bonuses-for-bad-performance/?scp=5&sq=%22John%20Coffee%22&st=cse#coffee (last visited October 10, 2010). In 2010, deregulation has already shown its negative face, first and foremost in the field of economics. Since 2008, global deregulation in the financial sector, promoted by financial institutions, led to the most important global financial crisis after the financial crisis in 1929. Objections have already been raised about the negative effects that deregulation has on environmental protection, but they have not yet been heard by governments. This can be seen in the case of genetically modified crops. Deregulation and the refusal to adopt protective legislation is projected to deteriorate environmental conditions all over the globe and potentially create domestic, regional and global environmental crises. POPs turn into vapor at higher temperatures and condense at lower temperatures. As vapor, POPs travel over long distances by air currents. Due to the “grasshopper effect” where substances rise and fall in the atmosphere based on temperature, these characteristics also tend to produce higher accumulations in colder climates, where POPs are more likely to condense, putting such places “downwind” of the sources of POPs contamination. The transport features of POPs, in combination with their tendency to bioaccumulate, have led to the contamination even among indigenous populations. This contamination occurs even though the communities have had nothing to do with the creation of these substances, and even though they are located hundreds or thousands of miles from the point of production, use or release of the contaminants. Conclusively, POPs contamination is worldwide in scope and can arise through dietary exposure (consumption of foods contaminated with POPs), workplace exposure, and other ways of exposure, including breast milk. Studies report POPs contamination on animals and wildlife around the world, most know in alligators, polar bears, bald eagles and narwhals, and especially those at the top of the food chain, humans included. Ecosystems that are far away from cities, suffer due to POPs. See, e.g., Peter Lallas, The Stockholm Convention on Persistent Organic Pollutants, 95 Am. J. Int’l L. 692, 694 (2001).
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.\textsuperscript{13} 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 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 econo-political system towards developing compromise-based solutions that address the major issues

\textsuperscript{13} 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. *Id.* at 34.
created by the 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 doctoral thesis in the discipline of law cannot address the question of how to overcome all factors leading to the existing insufficiency of International Environmental Law. From the perspective of an international lawyer and a legal researcher, a thesis can, however, address an assumption more limited in scope, as well as a few questions elaborating this assumption. The basic assumption of the Thesis is that if M.E.A.s and international institutions with environmental competence further transform their lawmaking procedures with the objective of achieving better integration of science in I.E.L., then the resulting laws will offer a much higher degree of protection for our

14 The concept of the social open market is one of these solutions.
natural environment and public health. My research on the lawmaking process of the International Seabed Authority (I.S.A.) was the first case that I investigated which led me to formulate this assumption.15

A. Arbitrary Adoption of Laws before the Eyes of an Environmentalist

While I was conducting research on the application of the precautionary principle16 in the international regulation of the exploration and exploitation of mineral resources in the “Area,” 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,17 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 international community 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

15 See the official site of the International Seabed Authority, www.isa.org.jm.

16 The precautionary principle emerged in the mid 1980s. 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.”

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 I.S.A. case follows.18

Case study: The Regulations of the International Seabed Authority

The International Seabed Authority (I.S.A.) was created by the 1982 United Nations Convention on the Law of the Sea (the L.O.S. 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. It functions as the custodian of the Area on behalf of humankind. In this role, the I.S.A. 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 I.S.A. and its administrative law set out only in broad outlines the duties of the I.S.A. and the rules and principles that the I.S.A. is to implement in its legislative and administrative work. The signatories to the L.O.S. Convention and the Agreement delegated broad discretion to the I.S.A., but they also provided for cooperation between “political” and “expert” bodies, to help the I.S.A. 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 I.S.A. under the L.O.S. Convention and the Agreement, and other innovative mechanisms, strict management of the natural environment of the Area has yet to materialize.

Two years ago, the I.S.A., 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...

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18 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).
filed applications at I.S.A. headquarters and are pressing for permission to commercially exploit these two new Deep Seabed minerals. Due to the lack of an overall regulatory regime, the I.S.A. 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 the I.S.A. The new regulation has not yet been issued. However, the Council of the I.S.A. 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 the I.S.A. 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 the I.S.A. 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, the 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 the I.S.A.

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 the I.S.A., 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 the I.S.A. and the scientific groups collaborating with the I.S.A. have only consultative status. As a result, the decisions of the I.S.A. 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 the I.S.A. 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 the I.S.A., 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’ behaviour 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.

Seven years later, by overcoming legal fragmentation, the ISA has finally started drafting a single Mining Code for all of the activities that will take place in the Area in the future. 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.” 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. The Regulations are more specific in comparison to the introductory and other general provisions in the Code.

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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 Polymetallic 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 I.S.A. will or will not adopt the precautionary principle remains open. What is perhaps worse, this question will only be answered by the States and their seldom scientifically justified criteria.21

**B. Basic Hypotheses of the Thesis**

Initiated by, among others, the aforementioned initial observations, I had the opportunity to formulate the basic hypotheses of the Thesis. I argue that some of the decisive factors that would create an improved lawmaking framework and advance the efficiency of I.E.L. include, but are not limited to, the adoption of:

(a) **progressive voting processes within the framework of International Organizations or Multilateral Environmental Agreement, including the majority rule and opting-out procedures, as a means of adopting primary and, most importantly, secondary legislation so as to promulgate rules that are legally binding upon the States without requiring the States’ prior ratification;**

21 *See supra* note 14.
(b) science-based secondary legislation, confined to the criteria and boundaries imposed by the primary laws, but that endows expert bodies alone with the power to promulgate regulations that are more detailed and of a more technical nature than primary laws, without the intervention of political bodies, and rendering those regulations as binding upon States, unless they object with reason; and

(c) new procedural rules, related to the pre and post-lawmaking stages that enhance participation in the lawmaking process and review of the laws by both experts and the public and create administrative type balancing processes between expert and democratic governance,

Departing from the traditional lawmaking models that prevail today, all of the afore-mentioned measures would bring a meaningful change in the lawmaking process *lato sensu* and establish a new and effective science-based lawmaking model in the field of International Environmental Law.

So as to prove whether my assumptions hold true, in the Chapters to follow the Thesis test the following questions:

A. How have the questions of the integration of science in laws in general and in international environmental laws in particular evolved in time? What are the lessons
learned from the past? What has the international society achieved thus far? What are the questions that the history has left open for us to answer?

B. In case of a disagreement by the majority of the nations to adopt provisions based on certain, usable scientific findings, is there any possibility that the rest of the Member States of an International Organization or the signatory States of a MEA, can adopt the disputed, binding international environmental laws; if yes, (a) under which circumstances and (b) could these provisions also bind the States that object to them?

C. What are the lawmaking competences of the expert bodies of the international institutions? How do they participate in the lawmaking process? Can they issue binding laws upon States?

D. If International Environmental Law delegates lawmaking powers to experts why should stay obey to the laws that experts will issue? What are the objections and limitations against the delegation of such powers to experts, especially issues of democracy and accountability? What are the counter-arguments that will justify such delegation?

E. Would science and expertise legitimize experts to promulgate laws? Is there any lawmaking model that would combine the expertise-based legitimacy and other types of legitimacy upon which the current International Law is based?
C. Structure of the Thesis

In order to answer the aforementioned questions, the Thesis develops the following structure. The Introduction of the Thesis presents the main questions and the Thesis’ basic assumptions, the methodology of the study, and the definitions for some of the main terms used throughout the Thesis’ analysis. This section includes the first attempt to define the “science-based lawmaking” (S.B.L.M.) model as a subcategory of science-based policy-making.
Part I presents the main debate on the question of “who should hold the lawmaking power” in I.E.L. from a historical and a philosophical perspective and describes the development of this debate in the context of contemporary environmental law issues. The historical recapitulation helps identify major shortcomings in the lawmaking process and paves the way for further discussion on how the lawmaking actors and processes influence the essence of the provisions of I.E.L. A presentation on the relevant scientific advancements and treaty developments regarding I.E.L. follows.

Part II examines the departure from the requirement of unanimous adoption of laws towards more flexible legislative schemes including consensus, majority voting, opting-out, tacit acceptance, contracting-in procedures, and hybrid processes. The more the lawmaking processes depart from the traditional treaty-making and lawmaking procedures that require unanimity, the more lawmaking powers may be acquired by International Organizations. The focus of the Thesis lies in Part II, which rests on the basic assumption that giving expert bodies a broader role in the lawmaking processes at the international level, ranging from an institutionalized consulting role to a legislative role under specific conditions, would result in the speedier enactment of more easily updated and more protective I.E.L. In order to prove whether these assumptions hold true, the study presents the various roles that expert bodies hold in international institutions. It discusses some of the most progressive lawmaking procedures that attribute legislative and quasi-legislative powers to expert bodies. There is also reference to expert bodies’ administrative, pre and post legislation competencies.
Part III discusses the objections that might be raised against the delegation of lawmaking powers to expert bodies; namely, that delegating legislative competencies as recommended could exacerbate the democratic deficit at the international level. Accordingly, the Thesis, presents a series of arguments based on which the delegation of lawmaking powers to expert bodies could actually mitigate the democratic deficit in the international environmental governance or, as otherwise called, under the political science lenses “global environmental governance” realm under certain sociological, legal and institutional conditions.

In order to address the need for balance between expertise and democratic governance, Part IV proposes some solutions to balance the experts’ enhanced role in the international environmental lawmaking procedures with the corresponding democratic deficit and tries to develop an improved, democratically accepted, science-based lawmaking model.

D. Methodology

This chapter provides information on the methodological and conceptual background that is necessary for the reader to understand in order to full comprehend the rest of the text. The first part addresses the methodology that I followed in order to perform the research and present the topic of the Thesis. The second part discusses the
definitions of some of the main terms used for the analysis of the argumentation, thereby setting forth the parameters for the Thesis.

Throughout the Thesis, I use case studies in order to illustrate the issues in question regarding the pathology of both the substantive I.E.L. and its lawmaking procedures. I selected the case studies so that each case would illustrate a different moment of the failure to integrate science into I.E.L. including the policy choices that create the overall legislative framework, the content of the provisions of the I.E.L., and the implementation and enforcement of the provisions by the States. I principally use the case study method since many variables influence the subject of this Thesis, and the case study method is generally preferred in such instances.²²

Further, I sort out and compare current models of lawmaking procedures. Specifically, I study the existing lawmaking procedures and pertinent organizational structures in M.E.A.s and international institutions. Here, the objective is to design a better model for the integration of science into the international environmental lawmaking procedures (i.e. optimization of the system).²³


In addition, I use secondary literature on the treaties and regimes that are the principal subjects of the Thesis. For most of the relevant treaties and regimes, there is considerable scholarly analysis. For others, however, I rely mainly on official materials. I also review literature dealing specifically with the effectiveness of international agreements and the effectiveness of international environmental institutions. Even though the Thesis does not assess the effectiveness of international environmental agreements and institutions *per se*, this literature is relevant because of the common assumption that effectiveness is enhanced by the optimization of scientific input and technical knowledge.\(^{24}\)

In general, the method is primarily descriptive and normative, with prescriptive overtones, rather than empirical. Thus, the Thesis does not achieve the precision of quantitative data analyses, such as financial or social studies employing sustainability indicators.

I use the tools provided by the scholars of organizational decision-making in order to better identify the most crucial levels of the lawmaking process. Of course, this analysis is only valid to the extent that exploring the organizational decision-making process is a feasible activity to an observer that is outside the framework of the

international processes and arrangements.\textsuperscript{25} The analytical tools of the organizational theory\textsuperscript{26} are helpful in order to present current lawmaking practices and make comparisons among various contemporary procedures within the framework of the same international arrangements.

Regarding the outcome of the S.B.L.M. model presented by the Thesis, there is no single way to best organize the lawmaking procedures so that they would be appropriate for and applicable to all organizations. As contingency theory advises, the model should adjust and fit each organization’s structure, size, and specific requirements.\textsuperscript{27} However, specific factors that remain constant exist and those are the proposals for which I advocate.

Since cause and effect are not reversible in time, this allows for causal inferences. Any generalization that could be inferred by two or more case studies resulting in the same conclusions would not be “statistical,” but “analytical” generalization, meaning that the data presented support the theory in question and is thus evidence of replication. This


\textsuperscript{26} See John F. Padgett, Hierarchy and Ecological Control in Federal Budgetary Decision-making, 87 (1) Am. J. Sociology 75-129 (July 1981). Embedding organizational decision-making in history is the operational objective in Padgett’s literature, emphasizing the sociological interpretation of decision-making. According to Padgett’s and others’ approaches, organizational theory is … to understand why organizations have the structure that they do. By "structure" I mean things like degree and type of horizontal differentiation, vertical differentiation, mechanisms of coordination and control, formalization, and centralization of power.

\textsuperscript{27} This perspective is known as “contingency theory” and contrasts with the perspective of classical theorists like Weber, Taylor, Fayol, etc. who thought that there probably was one way to run organizations that was the best.
is not to be confused with the enlargement of a sample in statistical tests ("statistical generalization").\textsuperscript{28} However, due to limitations imposed by the structure and extent of the present Thesis, I solely rely upon the "causal analysis" approach by using detailed case studies to illuminate the sources of actor behavior. These case studies primarily come from separate articles. I have conducted research and have written these articles in close relation to the topic of this Thesis and, although I have already published them separately, I am attaching those articles at the end of the Thesis in order for the reader to obtain a more complete picture of the issues raised under the currently prevailing lawmaking procedures within international arrangements.\textsuperscript{29} In addition, portions of the thesis were presented, discussed, and criticized at numerous academic seminars, conferences, and meetings in international fora.

Overall, I have used the following sources: authentic texts of international treaties, the implementing documents and decisions of the bodies established by these treaties, secondary publications, press reports, and extensive law and social science secondary literature.\textsuperscript{30}

\textsuperscript{28} \textit{Id.}

\textsuperscript{29} For an approach to "causal analysis", see Oran R. Young & Marc A. Levy, \textit{The Effectiveness of International Environmental Regimes, in The Effectiveness of International Environmental Regimes: Causal Connections and Behavioral Mechanisms} 3-4 (The MIT Press, Oran R. Young ed., 1999).

\textsuperscript{30} For a comprehensive list of electronic sources of International Environmental Law, visit the official site of the American Society of International Law, \url{http://www.asil.org/env1.cfm} (last visited October 14, 2010).
E. Timeframe

The time period covered in this study extends from the adoption of the first M.E.As. and the establishment of the first IOs with environmental competence to the present. There are also some references to future regulatory instruments that will be adopted. From the Introduction to Conclusion, the study covers more than forty years of International Environmental Law history. However, the main focus of the study is limited to the last two decades, during which the most important developments occurred. In addition, contrary to legal studies that present various regulatory frameworks as static in time, I try to present the evolution of the regulatory practices over time and, when possible, draw conclusions from the perspective of this evolution.
F. Scope

The objective of the Thesis is to propose an optimized procedural lawmaking model, applicable in the field of IEL, in order to better integrate science and therefore produce more environmentally friendly, timely and effective legislation. Accordingly, the Thesis covers many lawmaking processes *lato sensu* within the framework of M.E.A.s and IOs with environmental expertise and interrogates the full process of lawmaking, including the pre- and post-lawmaking stages, but excluding the dispute settlement process. However, the Thesis does not purport to provide a complete picture of all the competent institutions due to the large number of international institutions with environmental competence.

There are some important limitations that prohibit the coverage of all of the relevant institutions. First and foremost, there is no single international institution with exclusive overall competence for the protection of our global environment. The international order regarding environmental issues is highly fragmented. The United Nations is the main active international organization with a truly global outreach and competence in this field, accompanied by an area of subsidiary bodies and affiliated organizations. This Thesis reviews the lawmaking powers and techniques of the major global organizations with environmental competence, provided that this competence is

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31 See in Appendix No. 3 a charter with the intergovernmental organizations with environmental competence.
explicitly laid down in their constituent instruments or is based on the constitutional mandate to protect the environment or public health through a variety of angles, such as the International Maritime Organization (I.M.O.), the Food and Agriculture Organization (F.A.O.), the World Health Organization (W.H.O.), the International Atomic Energy Agency (I.A.E.A.), the World Meteorological Organization (W.M.O.), the International Civil Aviation Organization (I.C.A.O.). In addition, the lawmaking competences of treaty-management organizations addressing global environmental problems are attributed mainly to political bodies and less often to expert bodies, such as the Conferences of the Parties (COPs) or the Meetings of the Parties (MOPs) or review and implementation committees of M.E.A.s respectively.

EU law does not fit within the objective of this study, since the EU supranational structure is different from the traditional international structures within which International Environmental Law is created. However, where necessary, there will be several references to European Union legislation in order to illustrate interesting examples and make insightful comparisons between I.E.L. and EU Environmental Law.

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32 Visit the official site of the I.M.O., http://www.imo.org/ (last visited October 14, 2010).
36 Visit the official site of the W.M.O., http://www.wmo.org/ (last visited October 14, 2010).
38 See Julia Sommer, Environmental Law-Making by International Organizations, 41 ZAÖRV 56/3, at 628.
Especially since the EU is a highly influential actor on the international level, it is very possible that EU Environmental Law could have a substantial impact on the development of I.E.L. in both the academic and the international relations venues.

In the following chapters, I discuss the integration of science into only *stricto sensu* public international lawmaking procedures, as opposed to private or semi-public lawmaking procedures. There are, indeed, other important actors, apart from the IOs and the treaty-specific bodies under M.E.A.s, which are recently exerting a growing normative impact in the face of the erosion of state sovereignty. Such players include non-governmental organizations (NGOs) and civil society at large, multinational corporations, and private transnational networks. However, the study of these phenomena and their private normative practice, such as the generation of voluntary codes of conduct, technical standards etc., remain outside the scope of this study.

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G. Definitions of the Main Terms-of-Art

1. Composition and Role Distinction between Political and Expert Bodies

At this early stage of the Thesis it is useful to clarify issues of terminology that recur throughout the Thesis. First, throughout a major part of the Thesis, the analysis of the structure of the international arrangements that participate in international lawmaking is based on the distinction between “political bodies” and “expert bodies.” The distinction between the terms “political bodies” and “expert bodies” or “political bodies” and “expert bodies” is already in use. The term “political body” or “political organ” refers to a body/organ of an international institution in which the body’s members

40 There are other more inclusive categorizations used by Eyal Benvenisti: “In such institutions there are three main actors: first, the governments that represent the state parties to the treaties establishing the institutions; second, domestic interest groups, such as domestic institutions that compete with their governments domestically (independent legislatures or courts, opposition parties, or NGOs representing civil society), who wish to voice their views independently of their governments in the international arena; and third, officials of the institution itself (bureaucrats and judges) who enjoy discretionary powers under the rules of the institution.” 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).

41 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: “the political perspective would be provided constantly by governmental comments, guidelines and instructions from the political bodies, and the knowledge of UNHRLC members that their drafts would be submitted for adoption to the political bodies. The fact that human rights lawmaking occurs largely in the domain of progressive development should not make the preparation of drafts any less appropriate for a group of individual experts.”

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 country from where they originate. 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. Even in these cases, the bodies fall within the category of the “political bodies,” since, irrespective of their professions, they represent the interests of their States and have a legal obligation to do so. 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 at stake.

Alternatively, bodies comprised of experts that do not directly represent member States but are appointed by bodies or bodies of 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

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43 For example, many of the state representatives that participate in the meetings of the United Nations Forum of Forests (UNFF) are foresters/forestry experts.
agreement. As a result, secretariats represent the international arrangement itself and not the interests of the States that reflect the political influence during the lawmaking process. Technical bodies are, by definition expert bodies, and should fall within this definition, to the extent that the members of the technical bodies do not represent the political interests of the States.

Representatives of States with no scientific background cannot understand the issues and therefore contribute to the vagueness and the unsound scientific bases of I.E.L. provisions. At least some degree of understanding of scientific issues is present in the case of national experts.

There are also cases where technical bodies of the organizations are comprised of government experts, who are sent to the international arrangement occasionally; however, this group falls within the category of the “expert bodies,” such as the technical bodies of the IMO. In these cases, the categorization of those bodies as either experts or political bodies depends on the mandate of the organ, which also defines the character of the organ. These bodies are the subject of Part IV of the Thesis.

2. Experts as Natural and Social Scientists

When defining the word “experts,” one of the issues that arise is the type of expertise that a person should hold in order to qualify as an expert for lawmaking in environmental cases. There are two different approaches to this matter: a strict approach
advocates that only natural scientists with specific expertise on the subject-matter of the environmental issue at stake should be considered “experts.” A broader approach to the meaning of experts includes both natural and social scientists. In literature, the definition of the word “experts” varies: sometimes it is limited only to natural scientists and other times it also refers to social scientists, such as judges and lawyers specialized in environmental and/or international cases.  

In relevant international instruments, the use of the word “experts” applies to either natural scientists alone or applies both to natural and social scientists. For instance, the Johannesburg Plan of Implementation refers to both natural and social scientists. Further, within the framework of the European Union, on December 2002, in an effort to improve its decision-making processes, the European Commission adopted a broad set of measures, among which was reinforcing the “transparent quality of expert advice.” Under this effort, the European Commission developed horizontal principles and guidelines for the collection and use of expertise within the framework of its various Directorates General and EU agencies. The principles and guidelines aim to ensure that the Commission’s institutions mobilize and use the most appropriate expertise. By the use of this expertise, the Commission’s institutions, which are basic actors in shaping the content of the EU law, infuse a high level of science and expert knowledge into the

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44 “Expert” is “a person who, through education or experience, has developed skill or knowledge in a particular subject, so that he or she may form an opinion that will assist the fact finding.” Fed. F. Evid. 702. According to the BLACK’S LAW DICTIONARY (Deluxe, 7th ed., A. Garner, Edition in Chief, West Group, St. Paul, Minn. 1999).

institutions. Included in this category is EU Environmental Law, which appears to be effective in regulating environmental issues, ameliorating thus the natural environment and public health within the EU. Noteworthy, the principles and guidelines apply to the collection and use of expertise in a wide sense, and are not limited to natural sciences.\textsuperscript{46}

In other cases, when political scientists speak of “epistemic communities,” they refer not only to natural scientists, but also to social scientists, including specialized economists and lawyers.\textsuperscript{47, 48} For example, in the case of the Mediterranean Sea, Haas includes under the notion of the epistemic communities:

\textsuperscript{46} For more information visit http://www.anec.eu/print.asp?rnd=7055&ref=02-01.01-01\&lang=en\&ID=102 (last visited March 12, 2010).

\textsuperscript{47} The term “epistemic communities” appears in John G. Ruggie writings: “Institutionalization involves not only the institutional grid of the state, but also the epistemes through which political relationships are visualized. I have borrowed this term from MICHAEL FOUCAULT, THE ORDER OF THINGS (Vintage Books, New York 1973), to refer to a dominant way of looking at social reality, a set of shared symbols and references and a mutual predictability of intention. Epistemic communities may be said to consist of interrelated roles which grow up around an episteme; they delimit, for their members, the proper construction of social reality. The epistemic community that derives from the role of representing a national public authority internationally suggests behavior rules for the determination of collective responses to new situations…” John G. Ruggie, \textit{International Responses to Technology: Concepts and Trends}, 29 Int’l Org. 557, 569 (1975). See further reference in Robert Howse, \textit{From Politic to Technocracy – and Back Again: the Fate of the Multilateral Trading Regime}, 96 Am. J. Int’l L. 94 (2002) speaking, for example, about the impact of the elite of trade experts on the WTO; JOSE E. ALVAREZ, INTERNATIONAL ORGANIZATIONS AS LAW-MAKERS, OXFORD MONOGRAPHS IN INTERNATIONAL LAW 344 (Oxford University Press 2005), including free traders and international lawyers in the expert communities. “Expert bodies are, most obviously, repositories of specialized knowledge grouped among distinct epistemic communities, such as general public international lawyers, experts in lex mercatoria and commercial law, or specialists in labor or aviation law.”; Peter M. Haas, \textit{Knowledge, Power and International Policy Coordination}, 46 Int’l Org. 1, 3 (Special Issue 1992); See also for general theory of international organizations ANTONIO AUGUSTO CANCADO TRINDADE, DIREITO DAS ORGANIZAÇÕES INTERNACIONAIS (3a Edição Revista, actualizada e ampliada, DelRey 2003).

\textsuperscript{48} One example of expert lawyers at the international level is the International Law Commission (I.L.C.) of the United Nations General Assembly. For relevant information, visit the website of the I.L.C., http://www.un.org/law/ilc/ (last visited October 14, 2010). The I.L.C. was established by the General Assembly in 1947 to promote the progressive development of international law and its codification. The I.L.C. is composed of 34 members who are elected by the General Assembly for five year terms and who serve in their individual capacity, not as representatives of their Governments. Article 8 of the Statute of the I.L.C. provides that: “at the election the electors shall bear in mind that the persons to be elected to the Commission should individually possess the qualifications required and that in the Commission as a whole representation of the main forms of civilization and of the principal legal systems of the world should be
“Members of the Greek Government, French modelers and systems scientists, UNESCO bureaucrats, FAO lawyers, and individuals in the Israeli, Spanish and Egyptian governments. These members of the ecological epistemic community had varied professional training, although each one accepted ecological tenets that relate problems to one another.”

Haas clarifies that:

“We are dealing with a new type of community: the epistemic community. An epistemic community is a network of professionals with recognized expertise and competence in a particular domain and an authoritative claim to policy-relevant knowledge within that domain or issue area. Although an epistemic community may consist of professionals in a variety of disciplines and backgrounds, they have (1) a shared set of normative and principled beliefs, which provide a value-based rational for the social value of community members; (2) shared casual beliefs, which are derived from their analysis of practices leading or contributing to a central set of problems in their domain and which serve as a basis for elucidating the multiple linkages between possible policy actions and desired outcomes; (3) shared notions of validity—which is to say, intersubjective, internally defined criteria for weighing and validating knowledge in the domain of their expertise; and (4) a common policy enterprise—which is to say, a set of common practices associated with a set of problems to which their professional competence is directed, presumably out of the conviction that human welfare will be enhanced as a consequence.”

In a footnote accompanying this introductory article to a special volume on relevant issues, Haas clarifies that the term “epistemic communities” has been defined or used in a variety of ways, most frequently to refer to scientific communities. In the volume, however, authors stress that the epistemic communities need not be made up of natural scientists or of professionals applying the same methodologies that natural scientists do. By their definitions, what bonds members of an epistemic community is their shared belief or faith in the verity or applicability of particular forms of knowledge assured”, namely recognized competence in international law as stated in Article 2 paragraph 1. Apart from the filling of casual vacancies that could be performed by the ILC itself, there is no formal procedure of nomination by Governments.

or specific truths. This notion resembles Fleck’s somewhat larger notion of a “thought collective,” that is to say a sociological group with a common style of thinking.\textsuperscript{50}

Other writers contend that lawyers themselves are an epistemic community capable of exercising influence within legal bodies, such as bodies that conduct codification work or in courts - especially those functioning within a case-law system - as well as political bodies, such as the Security Council.\textsuperscript{51} Regarding I.E.L., lawyers may perform activities closer to lawmaking than any other group of experts by, for example, drafting legal instruments, interpreting terms, and creating definitions for terms included in legal instruments. Those lawyers should, however, specialize in international and/or environmental issues.

In principle, in this Thesis, I use the word “experts” in its broader sense. However, in many circumstances I refer only to natural scientists. When I refer only to natural scientists, I use the word “scientists,” rather than the word “experts,” just for matters of distinction. A parallel distinction exists between the terms “science” and


“expertise.” The difference in the degree of certainty between natural and social sciences also reflects the degree of authority that science could have during the lawmaking process. Findings derived from natural sciences are, in principle, more countervailing than findings derived from social sciences and should be harder to ignore in the shaping of law. Accordingly, a rational lawmaking model that aims to regulate nature should successfully integrate first and foremost natural sciences data. Expertise, however, includes not only natural, but also social sciences. All kinds of expertise should be better integrated in I.E.L. in order to make I.E.L. a corpus of law successful in regulating complex, trans-national and global environmental issues. Practical knowledge in administration or other professional fields is also necessary and should be better integrated in the lawmaking processes. Accordingly, and for the coherence of the text, when I use the word “science” I refer to natural sciences, whereas when I make use of the word “expertise,” I also include social sciences.

3. Science-Based Policy Making, Science-Based Decision-Making and Science-Based Lawmaking

One could prima facie accept that the introduction of a science-based approach to lawmaking would be a positive development towards a more rational, responsible, and effective model in the realm of I.E.L. If so, the question that rises is what should

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comprise a science-based lawmaking model (S.B.L.M.).53 First of all, it should be stated that the term “science-based lawmaking” is a new term in literature. Accordingly, there are no pre-existing definitions to be provided. However, other relevant phrases and terms are in use, which can provide some initial indications of the content of the S.B.LM. For instance, the phrase “science-based policy-making” is known in literature and signifies a technocratic model of policy-making.

Science-based policy-making is a notion which is larger in scope than science-based lawmaking, since S.B.LM. partially encompasses the implementation of policies (“legislative policy-making.”) As this Thesis approaches it, science-based policy-making includes policy-making that is grounded in, among other things, the pertinent knowledge that is necessary to make effective policy. 54 In the literature on science-based policy-making, there are various approaches to the significance and the latitude of the concept. Some scholars view science-based policy-making as broadly significant and enjoying wide latitude, while other scholars see it more restrictively. For instance, the “technocratic” model of policy-making has often meant that policy should be exclusively based on “sound science”55 and that scientific and technical considerations are not just

53 There is only rare reference to this term. For instance, William Fisher uses this term in his article: Scientists Hail Return to Fact-based Policies, in The Environment in the News, United Nations Environment Programme (UNEP) (December 24, 2008). Fisher refers to a comment by Dr. Michael Stebbins, director of Biology for the Federation of American Scientists commenting on the Bush’ Administration during which: “The White House and members of Congress under its control have moved in lockstep to block science-based lawmaking.”

54 See also to this direction: Patrick Regoniel, What is Science-Based Policy-Making, http://factoidz.com/what-is-sciencebased-policy-making/ (last visited September 24, 2010); however, this article confuses policy and lawmaking.

55 The paradigm of sound science has come to stand for reliance in decision-making and law-making on “hard science”: scientific studies that are verifiable, reproducible and certified through rigorous
necessary, but sufficient for policy decision-making. Under this model, the responsibility for policy-making stays with the experts, while elected representatives and government ministers’ responsibilities are confined to recruiting the best experts and following their advice.\textsuperscript{56}

In other cases, relevant literature discusses a rather limited scope for the “science-based policy-making” model: the central elements of this model include the assumptions that: (a) an objective measure of risk that can be established with some confidence; (b) only scientists and experts are knowledgeable about the measure of risk; (c) lay perceptions are different from this expert view, but false, and finally; (d) given the latter factors, the public needs to be educated.\textsuperscript{57} These elements proffer a false dichotomy between science-based policy-making and democratic policy-making. It also implies that the lay public does not have the necessary knowledge to understand and effectively respond to risk regulation.\textsuperscript{58} However, science-based policy-making should not \textit{a priori}

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\textsuperscript{56} See, \textit{e.g.}, Erik Millstone, \textit{Can Food Safety Policy-Making Be Both Scientifically and Democratically Legitimated? If so, how?}, \textit{20 Journal of Agricultural and Environmental Ethics} 483 (2007).


\textsuperscript{58} Risk regulation has three stages: (a) risk assessment, (b) risk management and (c) risk communication. Risk assessment refers to the scientific element in risk regulation and contains four steps: hazard identification, dose-response assessment, exposure assessment, risk characterization. Hazard
exclude democratic policy-making for two reasons: first, by appropriately diffusing scientific information to the public, perhaps the public and the expert community could converge regarding preferable solutions. Secondly, in other cases, the public and the scientists may already share the same views. In this case both the scientific and democratic legitimization processes can be employed without any inherent contradiction. Food security provides an example of science and democratic bases comfortably co-existing. This is true in both the EU and the U.S., because food safety is based both on scientific and democratic demands. Public support does not exclude the scientific basis of policy-making. This holds equally true for science-based lawmaking.

For the purposes of the Thesis, accordingly, I build on a larger paradigm of science-based policy-making, where policy-makers effectively use the latest scientific findings that present a reliable degree of certainty to decide upon policies, strategies, and actions to cope with environmental challenges (notwithstanding the public’s preferences.)

Identification refers to the process of determining whether exposure to an agent in the environment can cause an adverse health or environmental effect. It relies upon different kinds of information, such as human tests, epidemiological studies, animal studies etc. Dose-response assessment refers to the process of characterizing the relation between the received dose of the hazard and the likelihood of an adverse health or environmental effect in the exposed population. It is based on observations in human or animal and plant exposures and on mathematical models. Exposure assessment refers to the measurement or estimate of the intensity, frequency, and duration of human exposure to an agent in the environment. Because of the dearth of empirical data, risk assessors frequently rely upon mathematical models to assess exposure. Risk characterization refers to the process of combining the results of the exposure and dose-response assessments in order to produce an estimate of the type and magnitude of the effect that will occur from exposure and the probability that each effect will occur. For carcinogens, the estimate is most often expressed either as the increased probability an individual will experience the effect or as the number of additional cases of disease a population will incur in a year or lifetime as a result of the exposure. For a comprehensive analysis of the afore-mentioned terms, see B ALIAS, supra note 7.

See, e.g., Millstone, supra note 53. This rule, however, has considerable exceptions, such as GMOs, which are a threat to the environment and to public health. GMOs enter the public sphere under the guise of food security and science remains silent on the safety of GMOs, since financial constraints have prevented opponents of the GMOs from conducting sufficient scientific research. See, below, Chapter , page.
Accordingly, a S.B.L.M. model would require lawmakers to effectively use the latest scientific findings that present a reliable degree of certainty in order to decide upon the content of laws regulating human responses to environmental challenges.

The invocation of the necessity to use the latest scientific findings is embedded in the idea that there is progress in science. As an answer to all of the criticism of metamodernity, Popper, among others, sought successfully to explain the apparent progress of scientific knowledge based on the theory of falsification.\textsuperscript{60, 61} Kuhn, on the

\begin{equation}
\text{PS}_1 \sqcap \text{TT}_1 \sqcap \text{EE}_1 \sqcap \text{PS}_2
\end{equation}

In response to a given problem situation ($\text{PS}_1$), a number of competing conjectures, or tentative theories ($\text{TT}$), are systematically subjected to the most rigorous attempts at falsification possible. This process, error elimination ($\text{EE}$), performs a similar function for science as natural selection performs for biological evolution. Theories that better survive the process of refutation are not more true, but rather, more "fit"—in other words, more applicable to the problem situation at hand ($\text{PS}_1$). Consequently, just as a species' "biological fit" does not predict continued survival, rigorous testing does not protect a scientific theory from refutation in the future. Yet, as it appears that the engine of biological evolution has produced, over time, adaptive traits equipped to deal with more and more complex problems of survival, likewise, the evolution of theories through the scientific method may, in Popper's view, reflect a certain type of progress: toward more and more interesting problems ($\text{PS}_2$). For Popper, it is in the interplay between the tentative theories (conjectures) and error elimination (refutation) that scientific knowledge advances toward greater and greater problems; in a process very much akin to the interplay between genetic variation and natural selection. \textit{See} KARL POPPER, ALL LIFE IS PROBLEM SOLVING (Routledge 2001).

Regarding his opinion about institutional development, Popper held that only liberal democracy is the proper form of government allowing institutional improvements without violence and bloodshed. Within the same framework, however, Popper was in direct opposition with Plato, Marx and Hegel, and accused them of promoting totalitarianism. \textit{See} KARL POPPER, THE OPEN SOCIETY AND ITS ENEMIES (Routledge 1945). However, there was much criticism against Popper's interpretation of Plato, Marx and Hegel's writings. \textit{See}, e.g., Sidney Hook, \textit{From Plato to Hegel to Marx}, N.Y. TIMES (July 22, 1951); Leo Strauss, \textit{Plato, in HISTORY OF POLITICAL PHILOSOPHY} 33, 68 (Leo Strauss & Joseph Cropsey ed., 3d ed., Chicago: University of Chicago Press 1987); and Rajeev Bhargava, \textit{Karl Popper: Reason without Revolution}, ECONOMIC AND POLITICAL WEEKLY (1994).

\textit{Bryan Magee expresses a critique on both Plato and Popper’s work that is closer to the spirit of the present Thesis. In the book: “Philosophy and the Real World: An Introduction to Karl Popper”, Magee notes that the vital question is not “who should rule?” but rather “How can we minimize misrule?” BRYAN MAGEE, PHILOSOPHY AND THE REAL WORLD: AN INTRODUCTION TO KARL POPPER (Open Court Publishing 1985). Indeed, the real question regarding I.E.L. is “How can we minimize misrule in I.E.L.?”. Part of the
other hand, followed a different, more common approach, which accepts the probabilistic verification of science. 62 Namely, he argues that by comparing the different theories’ ability to explain the evidence at hand, it is possible to come closer to what he calls “common science” and reach some conclusions that policymakers and lawmakers can use. Kuhn identifies progress as inherent in the definition of science. 63 For Kuhn, there may not be any final answer in science, but there is progress, either through falsification or probabilistic verification or through any other method. Within Kuhn’s framework, infusing more science into I.E.L. would reflect progress. One important way of incorporating science into I.E.L. is to create improved lawmaking procedures. As Daniel L. Albritton noted: “There is no final answer in science. There is no final action in policy. There is an improved answer and an improved set of decisions.” 64 I add, “...and an improved set of lawmaking processes.” I hold that the improvement of the lawmaking processes under the framework of intergovernmental organizations and other arrangements would make a difference in the field of International Environmental Law. Accordingly, effectuating such improvements should be a priority for the international community.

answer, however, can be given through the improvement of the actors participating in the decision-making processes. Thus, the “who” and “how” questions necessarily involve with each other.


63 KUHN, supra note 59.

The next question that arises out of this analysis regards the relationship between science-based policy-making and science-based lawmaking. In order to define this relationship, one should first refer to the relationship between policy-making and lawmaking. Lawmaking is a sub-category of policy-making to the extent that policies are partially implemented via laws (regulatory or legislative policy-making.) The presuppositions that hold true for science-based policy-making hold similarly true for S.B.LM. To the extent that laws implement a larger policy choice, it is necessary that S.B.LM. be a part of and reflect decisions and policies that effectively incorporate scientific findings (i.e. science-based policy, which is the necessary prerequisite for S.B.LM). International, regional or domestic policies are usually the context in which laws are promulgated. The policy context in which S.B.LM. takes place is important, because it influences the scientific validity and the effectiveness of the laws, to the extent that the policy context defines the objectives and possibly the procedures of lawmaking.

**S.B.LM. refers both to the content and the procedures of lawmaking.**

### 3.1. The Relationship between Decision-Making and Lawmaking

International environmental instruments refer to “science-based decision-making” and decision-making precedes policy-making and lawmaking. In general, “decision-making” is:

> an intellectual process directed towards an identification and a definition of a recognized problem, selecting alternative courses for solving it, and applying one of those alternatives toward the final solution of that problem. In a democracy, as a rule, decision-making is the result of interaction among large numbers of individuality and elites, inside as well as outside the decision-making apparatus.\(^{65}\)

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In a “science-based decision-making” approach (S.B.D.M.), one of the decisive factors for the choice among alternatives is the direction given by scientific findings. A further condition for the scientific basis of the decision is the degree of certainty. For the purposes of this first analysis, the Thesis accepts Tarlock’s position as a working proposition: that a decision should be classified as science-based if there is a credible, but not necessarily peer-reviewed, consensus within the scientific community.66 Similarly, as in the case of science-based policy-making, S.B.D.M. can operate within a democracy to the extent that the given democratic structures allow for a meaningful interaction between the people and elites—in this case, expert groups—and thus produce decisions reflecting the public’s choices, but still grounded in the latest, reasonably certain scientific findings.

In the realm of I.E.L., elements of the method to achieve “science-based decision making” have been articulated directly or indirectly in Article 18 of the Stockholm Declaration67 and the Plan of Implementation (Part X, art. 109),68 as well as in various other international legal instruments. As a matter of structure, both provisions (the second more elaborately) indicate that structures for decision-making, especially cooperative patterns with the participation of natural and social scientists at all levels, are indispensable elements of the process. To be most effective, natural and social scientists


should participate both vertically (from States up to the international arena) and horizontally (internationally and inter-institutionally). In essence, the fact that the whole process of science-based decision-making is implemented by policies (science-based policy-making) and laws (science-based lawmaking) touches every aspect of problem solving, from the identification of an issue, to its placement on the agenda, and finally to its ultimate solution.

Decision-making can result in the policy development or in the adoption of a regulation, or in no action at all. Science-based lawmaking’s final product should integrate and reflect the exact quality of science-based decision-making. In order to achieve that result, one should perceive the lawmaking function as part of an integral, large-scale process that does requires more than merely formulating the wording and adopting the text of the law. On the contrary, as seen here, lawmaking starts at the decision-making stage during which policy choices are made regarding which issues should be regulated, and ends with implementing the law through more detailed rules or by other means.\(^{69}\) In order to achieve science-based lawmaking, integration of scientific expertise is necessary at all lawmaking stages.

In practice, the degree of such integration may vary at each legislative stage. Risk perception theory advises that integration of scientific expertise is necessary at the stages of agenda and priority setting since. Especially if popular perceptions about the

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magnitude of environmental risks are conveyed at the international level through the state representatives may imprudently influence the final outcome regarding what issues should be regulated. Control of the agenda is one of the classic sources of power in decision-making bodies and decisively defines the laws that will be produced at the end of the process.

**First Attempt to Define Science-Based Lawmaking**

By including science-based lawmaking into the substance and procedures of I.E.L., the international community could greatly improve the effectiveness and efficiency of I.E.L. Science-based lawmaking stems from science-based policy-making. As defined in the Thesis, science-based policy-making refers to when the international community utilizes reliable and reasonably certain scientific data to mold policies, strategies and actions taken by the international community in response to environmental problems.

Science-based lawmaking is a subcategory of science-based policy-making in that it isolates and zooms in upon one aspect of science-based policy-making: drafting legislation as a means of implementing science-based policies. Further, science-based lawmaking necessarily refers to the procedures by which expert advice is folded into the legislative process and the substantive contributions scientific expertise lends to the development of I.E.L.

For a lawmaking process to be classified as science-based, the relevant legislatures must first utilize science-based decision-making. Science-based decision-making refers to the initial stage of lawmaking during which lawmakers choose which environmental areas require regulation and the comprehensiveness of the regulations to be pursued.

This analysis lays the foundation for the following chapters because first it clarifies

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72 Instead of using the phrase “science-based lawmaking,” one could use the phrase “science-based regulatory decision-making.” For the purposes of the Thesis, both phrases are equal.
the ways in which science-based lawmaking is a subcategory of science-based policy-making. Second, it is clear that in order for a process of lawmaking to be science-based, expertise must be infused at every level, beginning with the decision-making process.
HISTORICAL BACKGROUND

Questions:

How have the questions of the integration of science in laws in general and in international environmental laws in particular evolved in time? What are the lessons learned from the past? What has the international society achieved thus far? What are the questions that the history has left open for us to answer?

CHAPTER I: FROM PLATO’S PHILOSOPHER-KING TO ECO-TECHNOCRACY

Unresolved debates between experts and political representatives about the management of complex, highly scientific environmental issues raise the questions of who should participate in the regulatory decision-making processes within the realm of international environmental governance institutions and how should this participation take shape. Phrased in a different way, the question of who should hold the “legislative” power, which is still debated in both the academic and political arenas, is at least as old as Plato’s philosophy. Plato\(^3\) is among the first philosophers to take up the debate on whether one should govern by technocracy or by democracy in many of his works.

\(^3\) Plato (Greek: Πλάτων, Plátōn), (428/427 BC – 348/347 BC, Athens, Greece.) Classical Greek philosopher who, together with his mentor, Socrates, and his student, Aristotle, helped to lay the foundations of Western philosophy.
including “Gorgias” and, most prominently, “The Republic.” A Republic, according to Plato, should not be run based upon arbitrary opinions, upon authority that has no solid foundation in knowledge, or influenced by persuasive speeches of rhetors, or the majority rule, when that majority has no knowledge regarding the topic about which they are voting. On the contrary, the rulers (“kings”) must be educated and must have a strong knowledge of “philosophy” (“philosophers”), which requires an education in both natural and social sciences. Thus, a Philosopher-King should be very well educated in order to

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74 In “Gorgias” (in Greek: “Γοργίας”), written among his early works in 380 B.C., Plato, at para. 452e, notes that rhetoric is one of the main means to exercise democratic governance in Athens:

>[Gorgias, in defining rhetoric] I am talking about the ability to use the spoken word to persuade – to persuade the jurors in courts, the members of the Council, the citizens attending the Assembly – in short, to win over any and every form of public meeting of the citizen body.” At para. 455b Socrates continues: “Come on, then, let’s see what it is we are actually saying about rhetoric. You see, I have to tell you that I can’t yet make up my mind what to think about it. When there is a public meeting in Athens to elect a doctor or a shipwright or any other professional, the purpose of the meeting is obviously to choose the person with the greatest expertise for each post, so it’s not going to be a rhetorician who advises them under these circumstances, is it? They are not going to use rhetoricians to advise them when there are fortifications to be built or harbors or dockyards to be constructed: they will use master builders. Again, they are not going to use rhetoricians to advise them on who to elect to military command or on troop movements in combat or on capturing enemy territory: it will be military experts who advice them under these circumstances, not rhetoricians.


76 The term “philosophy” in ancient Greece (in Greek: “φιλοσοφία”), meant not only “love for knowledge” or epistemology, but also the desire for the acquisition of actual knowledge of various scientific disciplines, including both the natural and social sciences, at least those that were known, which
run his State with virtue and be able to do so effectively. Lacking the basic foundation of knowledge, a democratically elected representative would still not be appropriate as a governor and a lawmaker.\textsuperscript{77}

The temporary lawmaker who is required to regulate international environmental issues lacks unity of knowledge and a democratic foundation. Plato’s arguments are currently central to the thinking regarding the reform of environmental institutions. For example, Lofdahl refers to governance issues, starting his narration with references to Plato’s *Republic*, and identifies as a purpose of the “ideal state” the promotion of citizens’ well-being \emph{via} reconciling nature and social life.\textsuperscript{78} In addition, Stephen G. Breyer is among the authors that have developed their thoughts on regulating environmental issues along the lines of Plato’s philosophy. In *Breaking the Vicious Circle*, Breyer holds that governing according to the choices of the lay public is not always wise, and contemporary political philosophy and administrative related disciplines

\textsuperscript{77} There are, however, many readings to Plato’s Republic that directly oppose the afore-mentioned analysis. Those readings understand Plato to be a totalitarianist and the Republic to express nothing more than a totalitarian and eugenistic regime. See, e.g., 1 KARL R. POPPER, THE OPEN SOCIETY AND ITS ENEMIES: THE SPELL OF PLATO (Rutledge 1954). Other philosophers just question on whether Plato’s even intended or attempted to describe the best regime in The Republic. For instance, Leo Strauss in his article “Plato”, in History of the Political Philosophy, p. 33 – 89, provides a reference to Cicero’s words: “The Republic does not bring to light the best possible regime, but rather the nature of political things – the nature of the city.” See Leo Strauss, \emph{Plato, in History of Political Philosophy} 33, 68 (Leo Strauss & Joseph Cropsey ed., 3d ed., Chicago: University of Chicago Press 1987).

\textsuperscript{78} See, e.g., C. L. LOFDAHL, ENVIRONMENTAL IMPACTS OF GLOBALIZATION AND TRADE: A SYSTEMS SYTDY 31 (Cambridge, MA: MIT Press 2002).
should devise new ways of uniting democratic governance with wisdom. Plato’s argument that Philosopher-Kings should govern the city-state has also evolved into the idea that epistemic communities could transform political institutions into agents of successful action for global environmental reform. Haas was among the first to argue for such a transformation, saying that “ultimately, epistemic communities may contribute to policy change made in response to new causal understanding, or governmental learning.”

Although more recent scholarship has attempted to modernize Plato’s philosopher king such that the institutions responsible for developing I.E.L. can more effectively utilize expertise, there is a long history of rebuffing science as a legitimate nucleus of authority. For instance, between Plato’s Republic and the 17th century, much of the world was governed by religion-based and/or monarchy-based authorities. However, a decisive historical turning point which ushered in broad support for the integration of science into law, policy, and governance methods occurred during the Age of Enlightenment (hereinafter the “Enlightenment.”) Enlightenment is the era in Western philosophy

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81 Haas, supra note 46, at 58.
covering a large period of time, from the middle of the 17\textsuperscript{th} century to the beginning of the 19\textsuperscript{th} century. The thrust of Enlightenment scholarship took place during the eighteenth century, in which reason was advocated as the primary source of and legitimizing force for authority. The terms "Enlightenment" or "Age of Enlightenment" do not represent a single movement or school of thought, since philosophies categorized under the auspices of Enlightenment were often mutually contradictory or divergent. Enlightenment was less a set of ideas than it was a set of values. At the core of the Enlightenment values was the critical questioning of traditional institutions, customs, and morals. Most notably, late seventeenth century is typically known as the Age of Reason or Age of Rationalism and represents the apex of Enlightenment ideals.\textsuperscript{82}

One of the main tenets during the Age of Reason was faith in the ability of both reason and science to benefit society, while science and law were conceptualized as the twin daughters of reason. The \textit{Discourse on the Method} by Descartes is an illustrative example of the turn in the way in which scholars began to understand reality.\textsuperscript{83} His works formed the base of the Epistemology known as Cartesianism that supported the absolute reliance on science. The use of probabilistic sciences in lawmaking and policy-making played an important role in the reassessment of societal values, the correction of various misunderstandings, and the betterment of both governance structures and everyday life. Descartes’ work marked the turn away from arbitrary orders by the monarchs and

\textsuperscript{82} \textsc{Louis Hackett, The Age of Enlightenment} (1992).

\textsuperscript{83} The \textit{Discourse on the Method} is a philosophical and mathematical treatise published by René Descartes in 1637. Its full name is \textit{Discourse on the Method of Rightly Conducting One’s Reason and of Seeking Truth in the Sciences} (French title: \textit{Discours de la méthode pour bien conduire sa raison, et chercher la vérité dans les sciences}).
oligarchs, or the prejudice of the lay public. Even further, nature and universe was understood to have their own rules to which humans should not only show respect, but should also utilize in order to better organize their own societies.\textsuperscript{84} This belief in the ability of nature to organize human society does not exactly correspond to the assumptions of this Thesis supporting the need for the further integration of science in law. It does, however, create a historical introduction to the idea that science can be integrated in rules that govern societal issues, even more in cases like addressing environmental issues, which are not completely societal, but have themselves strong scientific aspects.

On the one hand, both science and law shared a common heritage in the ideas prevailing during the Enlightenment era regarding the existence of a single truth, which can be proven through repetition and a deterministic approach, namely applying the commonly accepted methods of evaluation.\textsuperscript{85} On the other hand, the Age of Enlightenment offers a strong paradigm for the democratic governance model, which could reinforce a global environmental governance model that is based on, among others, the rule of science. More than any other age, the Enlightenment is held to be the source of critical ideas, such as the centrality of freedom, democracy, and reason forming the primary

\begin{itemize}
\item\textsuperscript{84} During that time scientific literature was proliferated. Natural history in particular became increasingly popular among the upper classes. Works of natural history include RENÉ-AUNTE FERCHAULT DE RÉAUMUR’S HISTOIRE NATURELLE DES INSECTES and JACQUES GAUTIER D’AGOTY’S LA MYOLOGIE COMPLÈTE, OU DESCRIPTION DE TOUS LES MUSCLES DU CORPS HUMAIN, published in 1746.
\item\textsuperscript{85} See, e.g., T. D. Barton, Law and Science in the Enlightenment and Beyond, 13 (2) SOCIAL EPISTIMOLOGY 100, 105 (1999).
\end{itemize}
values of society. This view argues that the establishment of a contractual basis of rights would lead to the emergence of market mechanism and capitalism, the scientific method, religious tolerance, and the organization of States into self-governing republics through democratic means. In this view, the tendency of philosophers, in particular, to apply rationality to every problem is considered to be an essential change. As François-Alexandre Aubert de La Chesnaye des Bois’ *Dictionnaire de la Noblesse* indicated in 1770, natural history was very often a political affair. Further, E. C. Spary submits that the classifications used by naturalists “slipped between the natural world and the social ... to establish not only the expertise of the naturalists over the natural, but also the dominance of the natural over the social.”

Upon this basis, naturalists could then develop their own social ideals based on their scientific works. The scientific enterprise was, for a long time, seen as controlling or managing natural and human systems. This reinforced the values of human dominance over both nature and other humans. In the late Eighteenth and early Nineteenth centuries, more authors were enthusiastically recommending science and technocracy as means to regulate public affairs.

During the Enlightenment a conventional, positivist view of science emerged as being the objective pursuit of knowledge. Philosophers, such as Francis Bacon,

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established the notion of science as a linear, progressive force, which would yield objective truths about nature. The early concepts of science were dominated by the concept of logical positivism, which sees knowledge as emanating from creating and testing hypotheses to verify their accuracy. Positivists hold that science is capable of resolving these differences by revealing the nature of reality in an objective fashion and creating robust facts, the validity of which can be agreed on by all observers. The conventional idea of the scientific enterprise sees it as inherently different from, and superior to, other systems of knowledge.

Theories of expertise can be categorized between two major views: the positivist views of science, which hold that science is linear, objective and separated from political views, and the more constructivist approaches that view science as being influenced by the processes of politics. J. Hastie used the diagram to showcase the key theories and the roles of expertise, both of which are emphasized in his article on “The Role of Science and Scientists in Environmental Policy”.

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In Merton’s survey of scientists, he specifies four general “institutional norms” considered to be characteristics of science. The first is organized skepticism, whereby scientists suspend judgment until sufficient evidence is available, accepting or rejecting nothing without proof. The second is universalism, whereby knowledge claims must be tested with pre-established, universal criteria. The third is disinterestedness, whereby scientists support ideas on the basis of scientific merit, not self-interested motives. The fourth norm is communism, whereby scientists must share findings in order for scientific knowledge to progress. Merton identified these four norms as ideas to which scientists should aspire in their research. Out of these approaches, the concept of science as a process of generating objective truths (based on ideals of disinterested scientists and satisfying the universal criteria) is integral to the ideology of technocracy.

Following World War II, domestic political developments influenced the development of the political philosophy, related sciences, and understanding. For instance, Durkheim, in an effort to provide an intellectual foundation for the French Third Republic, spoke about the “division of labor,” highlighting a contrast between bureaucrats on the one hand and elected representatives that served as government.

---Positivism---

---Constructivism---

ministers on the other hand. Within the same political framework, Weber built the “decisionist” model, according to which the deliberations and judgments of the bureaucrats should be framed as, and secondary to, prior goal-setting policy decisions.

At the same time, the rise of the consumer society and the creation of material wealth and prosperity in the Western World on a scale seldom anticipated in earlier history, produced optimism associated with the rise of science; as a result, science’s capacity to ameliorate the human condition reached a high point de novo. Technocracy refers to a system whereby society is governed according to scientific principles. Proponents of technocracy argue that science can be used to provide objective knowledge about a problem and indicate policy solutions in a way that is free from the influence of political interests. The use of technology and expert knowledge, it is argued, has the potential to generate effective policies to solve major social problems. Science, according to this view, derives its legitimacy independent from the political sphere and

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94 See Anthony Giddens, Capitalism and Modern Social Theory: An Analysis of the Writings of Marx, Durkheim and Max Weber 101 (Cambridge University Press, 1971). About the development of the bureaucratic model in France, see also Auguste Compt, supra note 85.


96 The term “technocracy” originates from the Greek work “technē” which stands for “skill” and “kratos” for “power.” William Henry Smyth used the term Technocracy in his 1919 article “Technocracy - Ways and Means to Gain Industrial Democracy,” in the journal Industrial Management. However, Smyth’s usage referred to Industrial democracy: a movement to integrate workers into decision making through existing firms or revolution. The term came to mean “government by technical decision making” in 1932. See Oxford English Dictionary (3d ed.) (word from 2d ed., 1989).


can provide a widely-accepted universal standard. The conventional view of science suggests that a clear line exists between science and policy and that this line should be upheld. For positivists, the relationship between these two different fields is linear, with science generating objective knowledge about a problem that is subsequently applied by policymakers. This perspective is typical of early work in the field of science and technology studies (STS).\textsuperscript{100}

Specifically regarding policy-making, the technocratic ideal of increasing the role of science in policy has been highly influential since the early 20\textsuperscript{th} century. Especially during the 1960s, withstanding warnings, the United Nations Report underscores the need for an “injection of science” into the “less developed societies” and calls on them “to take science judiciously in their way of live.”\textsuperscript{101} The Report even says science and technology can “sweeten the seas and harvest the deserts.” United Nations experts thought that this idea “would be a good slogan for the Development Decade” of the 1960s,\textsuperscript{102} a decade that, significantly enough, was expected to combine and carry out two revolutions at

\begin{flushleft}
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\textsuperscript{102} Id., at 243.
\end{flushleft}
once: “the revolution of rising expectations and the revolution in science and technology, which can bring those expectations to life” (UN 1963: 243.)

Technocracy is a form of government in which engineers, scientists, and other technical experts are in control. Technocracy is a governmental or organizational system where decision-makers are selected based upon how knowledgeable they are, rather than how much political capital they hold. Technocrats are individuals with technical training and occupations, who perceive many important societal problems as being solvable, often while proposing technology-focused solutions. The administrative scientist Gunnar K. A. Njalsson theorizes that technocrats are primarily driven by their cognitive "problem-solution mindsets" and only in part by particular occupational group interests. Their activities and the increasing success of their ideas are thought to be a crucial factor behind the modern spread of technology and the largely upheld ideological concept of the "Information Society." Technocrats may be distinguished from "econocrats," namely free

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market proponents, \textsuperscript{105} and “bureaucrats”\textsuperscript{106} whose problem-solution mindsets differ from those of the technocrats.\textsuperscript{107}

Some forms of technocracy are a form of \textit{de facto} elitism, whereby the "most qualified" and the administrative elite tend to be the same. Other forms have been described as not being an oligarchic human group of controllers, but rather an administration run by science without the influence of special interest groups. Regardless, technical and leadership skills selected through bureaucratic processes on the basis of specialized knowledge and performance—rather than democratic elections—are used as the most important criteria.\textsuperscript{108} Technocratic movements were developed in both the U.S. and Europe during the 20\textsuperscript{th} century and, although they never prevailed in politics, they influenced main disciplines, including economics and public policy.\textsuperscript{109}

\textsuperscript{105} See Craig S. Volland, \textit{The Ascendency of the Econocrats}, SYNTHESIS/REGENERATION 6 (Spring 1993), available at \url{http://www.greens.org/s-r/06/06-09.html} (last visited December 7, 2008).

\textsuperscript{106} A bureaucrat is a member of a bureaucracy, usually within an institution of the government. Bureaucrat jobs are often "desk jobs" (the French for desk being \textit{bureau}). The term "bureaucrat" today has a largely accepted negative connotation, fueled by the perception that bureaucrats lack creativity and autonomy, while the terms “civil servant” or “public servant” have a more positive connotation and can be used instead.

\textsuperscript{107} See Howard Scott, \textit{History and Purpose of Technocracy 1965}, available at \url{http://www.technocracy.org/Archives/History%20%26%20Purpose-r.htm} (last visited December 7, 2008).

\textsuperscript{108} Id.

\textsuperscript{109} See THORSTEIN VEBLEN, \textit{THE TECHNOCRACY MOVEMENT IN THE UNITED STATES}, a member of the Technical Alliance. See also THORSTEIN VEBLEN, \textit{THE ENGINEERS AND THE PRICE SYSTEM} (1921) available at \url{http://socsci2.mcmaster.ca/7Econ/ugcm/3ll3/veblen/Engineers.pdf} (last visited December 7, 2008). It was later used as reference material by the Technocracy movement. The various schools of thought amongst engineers and other interested parties eventually produced social institutions arguing for purely technical government of society in the 1930s. Technocracy Incorporated formulated a plan for the land mass of North America, to employ a non monetary system "Energy Accounting" (see, e.g., \url{http://telstar.ote.cmu.edu/environ/m3/s3/05account.shtml}, Environmental Decision making, Science and Technology, which uses a post scarcity type of economy as its basis. See Harold Fezer, \textit{The Energy Certificate Essay}, available at \url{http://www.technocracy.org/Archives/The%20Energy%20Certificate-r.htm}
As far as the governmental form is concerned, a technocratic government is a
government of experts designed to ensure that administrative functions are carried out
efficiently. Technocracy can, in theory, take many forms and can incorporate many
systems of government. Technocracy may come about as an early form of noocracy.¹¹⁰
Noocracy or "aristocracy of the wise," as defined by Plato, is a social and political system
that is "based on the priority of human mind."¹¹¹ Under noocracy, the economy is
regulated by economists, social policy is decided by politicians, and the health care
system is run by medical professionals; however, each branch of government is supposed

¹¹⁰ The word itself is derived from the Greek word “νος” (nous) meaning “mind” or “intellect” and the
Greek word “κράτος” (kratos) meaning “authority” or “power”. Namely, under the meaning of
noocracy, the intellect governs.

¹¹¹ See PAUL R. SAMSON & DAVID C. PITT, THE BIOSPHERE AND NOOSPHERE READER: GLOBAL
ENVIRONMENT, SOCIETY AND CHANGE (Routledge Publications, London 1999), with reference to Vladimir
Ivanovich Vernadsky, who refers to Plato’s work. The concept of noocracy was also further developed in
the writings of Pierre Teilhard de Chardin in his book entitled “THE PHENOMENON OF MAN” (LE
PHÉNOMÈNE HUMAIN), 1955.
to work together and share knowledge in order to equally maximize the performance of each, to the extent that equilibrium is feasible. Technocracy is often thought of as “administration of scientists and engineers.” Technocracy can also refer to a system of governance in which laws are enforced by designing the system so that it is impossible to break the laws. For instance, to prevent people from riding a tram without paying, the carriage's doors could be designed in such a way that payment is required to open the doors.

However, it is noteworthy that, regarding economics, the theory of “optimum regime,” developed by economist Jan Tinbergen, combines the promotion of expert government with the institutional design of monetary institutions. The optimum regime is a bundle of institutions designed to maximize social welfare. Politicians, however, produce “doctrinal deviations” from this regime. Citizens therefore should defer to “economic thinkers” and “social scientists” who are “less emotional” and clearer headed.

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113 See, e.g., http://tripatlas.com/Technocracy_%28bureaucratic%29 (last visited September 28, 2010).

114 The same idea can be applied on much larger scales, with automated public surveillance by semi-intelligent systems that automatically control or limit the actions of individuals to prevent illegal activity. This is called the carceral state, in which the whole state is effectively a Panopticon - a place with strict rules, where all individuals are supervised to ensure compliance. Charles Stross called this a Panopticon Singularity. See CHARLES STROSS, THE PANOPTICON SINGULARITY (2002.) In this way, the bureaucratic form of technocracy may be an authoritarian system of governance. See, e.g., JEREMY BENTHAM, THE PANOPTICON WRITINGS 29-95 (Miran Bozovic ed., London: Verso 1995); and Michel Foucault, Discipline and Punish (1975).
than their elected officials. This public deferral should occur at both the national and international level.\textsuperscript{115}

The next step after technocracy within the monetary realm is the idea of “expert technocracy.” This concept holds that citizens are unable or unwilling to make judgments about complex matters, like central bank independence and exchange rate policy, and thus willingly defer to benign technocrats to make such decisions. The identities of these technocrats are less important than their scientific training and presumed commitment to the public interest, including the pursuit of the interest of unborn citizens (intergenerational equity). If necessary, oversight is exercised by a small, highly informed segment of the citizenry together with a select group of legislators who periodically appoint and interact with monetary officials.\textsuperscript{116} On the international level, the establishment of expert institutions, such as the World Bank,\textsuperscript{117} the International Monetary Fund (I.M.F.),\textsuperscript{118} and the World Trade Organization (W.T.O.),\textsuperscript{119} reflects partial applications of this expert technocracy.

\textsuperscript{115} JAN TINBERGEN, SELECTED PAPERS (North-Holland, Amsterdam 1959).


\textsuperscript{118} Visit the official site of the I.M.F., www.imf.org.
Nevertheless, the merits of technocracy were soon overshadowed by the first warnings of the unintended consequences of the technological society, especially consequences in the public health and the protection of the environment arenas. Technocracy was thus succeeded by “technophobia,” a term that describes the nagging misgivings and distrust felt toward the scientific transformation of social life.\textsuperscript{120} The initial warnings of Rachel Carson regarding environmental pollution and Paul Ehrlich’s fears of the population explosion were joined increasingly over the 1960s and 1970s by numerous other thinkers expressing fear over a panoply of disasters: from acid rain to nuclear meltdowns to carcinogenic food additives.

In many different circumstances, technocracy has failed as a means of governance. The above comments are not intended to advocate for the application of technocracy in environmental governance. I have to distinguish the position of this Thesis from the proponents of technocracy. The model of governance for which I advocate here, when compared to technocracy, provides a governance model which is far less dependent on science and technology. To the contrary, this Thesis purports to infuse science and technology into democratically established I.E.L. processes, in order to promote more effective environmental governance. Above all, the Thesis promotes meaningful debate between scientists and politicians, between the expert community and the States, regarding the appropriate regulation of several environmental issues that enjoy a


scientific dimension. Ultimately, the consequences of effective environmental governance serve a fundamentally democratic ideal for a series of reasons. First, because the beneficiaries of effective environmental governance are the people of the individual member States, and secondly, because science-based environmental governance is able to effectively promote the agenda of civil society. A modern version of the aforementioned criticism related to technocracy is the new criticism, which holds that the attempts to manage environmental threats by means of science and technology result in increasing eco-technocracy.\footnote{\textit{Globalization and Environmental Reform: The Ecological Modernization of the Global Economy} (Cambridge, Massachusetts, London, England: The MIT Press 2001). For further discussion on Eco-technocracy, see Murray Bookchin, \textit{Energy, Ecotechnocracy, and Ecology, Liberation} (Feb. 1975); Wilton Ivie, \textit{The Ecology of Man, The Technocrat} (December 1948); M. King Hubbert, \textit{Determining the Most Probable}, 12 \textit{Technocracy} (1938); and Stephen L. Doll, \textit{Accounting for Nature: Moving Toward Resource-Based Economics, 337 The Northwest Technocrat} (4th quarter 1994).}

First, it is noteworthy that there is a \textit{continuum} between social and natural sciences that justifies a different degree of reliance on expert knowledge. The \textit{continuum} begins from a stricter reliance on natural sciences (on the left side) and moves to a more limited reliance with respect to social science (toward the right side). As mentioned above, economics, which is closer to the left end of the \textit{continuum}, has nowadays effectively justified the involvement of economic methods in governance and law, even in comparison to environmental sciences. Environmental sciences, which are mostly natural sciences, are definitely closer to the left side of the \textit{continuum} than economics, and their respective positions on the \textit{continuum} would justify more integration of environmental science into law than the integration of economics into law. This does not, however, occur in practice.
As previously mentioned and as will be seen in the analysis that follows, despite the criticism of eco-technocracy, the international environmental legislation continues to be promulgated not by technocrats or other experts, but by politicians. Criticisms against eco-technocracy could have been valid within the framework of domestic laws and policies in some jurisdictions. In many other countries, domestic lawmaking may successfully reflect expert advice. One reason for this is perhaps the sprawling administrative infrastructures that exist in most developed countries. One of the main objectives of these administrative agencies is to incorporate modern science into lawmaking. However, it is important to emphasize from the very beginning that the Thesis does not address the integration of science and lawmaking within the domestic sphere, but on the international sphere exclusively. Therefore, this Thesis focuses on the international community’s need to incorporate scientific expertise in developing I.E.L.

Unlike domestic law in many jurisdictions - including the U.S. and EU - I.E.L. has not succeeded, thus far, to adequately incorporate (or develop procedures that would incorporate) scientific knowledge into I.E.L. The repetitive calls for such integration by major international conferences, policy, and legal instruments over the years illustrate this gap. Thus, new legislative tools and standards should be devised, in order for IEL to address the environmental challenges of our time in timely and effective ways. In order to evaluate if eco-technocracy or lack of scientific basis of international environmental legislation prevails, it is critical to look at the multilateral environmental conventions and the environmentally related work of scientific bodies. First international seminal, world policy and legal instruments continuously call for further integration of science in
environmental law and policy. Secondly, Chapter II discusses the contributions made thus far by the scientific and technical advancements in the development of I.E.L. and identifies a gap between the existing science and technology and the degree to which I.E.L. integrated them.
CHAPTER II: MILESTONE INSTRUMENTS CALLING FOR EFFECTIVE INTEGRATION OF SCIENCE IN INTERNATIONAL ENVIRONMENTAL LAW

Commencing from the 1972 UN Conference on the Human Environment (UNCHE) in Stockholm, Sweden, up to the most recent global conference for the environment, the 2002 Johannesburg World Summit for Sustainable Development (WSSD) in Johannesburg, South Africa, the international community has posed a steady and increasing call for further integration of science and technology in environmental laws and policies. Article 18 of the Stockholm Declaration notes:

“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.”

Twenty years later, Agenda 21, one of the soft law instruments adopted by the 1992 Rio Conference that took place in Rio de Janeiro, Brazil, recognized that there was an urgent need to increase both the role of scientists in sustainable development decision-making and the scientific understanding of sustainable development problems. Agenda 21 presumes that the international community needs better scientific understanding


regarding which human actions create adverse environmental effects and which countermeasures can be taken to eliminate or ameliorate environmental degradation. There are at least two relevant chapters in Agenda 21. Chapter 31, entitled: “Scientific and Technological Community,” defines as its purpose, “to enable the scientific and technological community… to make a more open and effective contribution to the decision-making processes concerning environment and development.” To this end, Chapter 31 recommends:

“(1) identifying how scientific activities could be responsive to sustainable development needs; (2) creating regional scientific cooperatives; (3) increasing scientific inputs to government processes; (4) strengthening scientific advice to decision-makers; (5) improving the dissemination of scientific research results; (6) improving links between private and government scientific research; (7)…; (8) developing and implementing information technologies to enhance dissemination of scientific information.”

Further, Chapter 35 entitled, “Science for Sustainable Development,” focuses on the role and use of science in supporting the prudent management of the environment and developing needs of humanity. Chapter 35 calls for better use of existing scientific information through interdisciplinary studies and greater research to increase understanding of sustainable development decisions.\textsuperscript{124}

Five years later, the first Global Environment Outlook (GEO) report, produced by the United Nations Environment Program (UNEP), gloomily observed:

“The environment has continued to degrade during the past decade, and significant environmental problems remain deeply embedded in the socio-economic fabric of nations in all regions. Progress towards a global sustainable future is just too slow. A sense of

\textsuperscript{124} For a thorough analysis of Agenda 21 scientific issues and their legal and political context see \textsc{John Lemons} \& \textsc{Donald A. Brown}, \textsc{Sustainable Development: Science, Ethics and Public Policy} (Kluwer Academic Publishers, Dordrecht, Boston, London 1995).
urgency is lacking. Internationally and nationally, the funds and political will are insufficient to halt further global environmental degradation and to address the most pressing environmental issues – even though technology and knowledge are available to do so… Global governance structures and global environmental solidarity remain too weak to make progress a worldwide reality. As a result, the gap between what has been done thus far and what is realistically needed is widening.”

Thirty years later, the World Summit on Sustainable Development Plan of Implementation ("Plan of Implementation") repeats and further elaborates ways to achieve such integration. Pursuant to Article 109 of Part X entitled, "Means of Implementation," the Plan specifies that States and all other parts of the international community should:

"[I]mprove policy and decision-making at all levels through, \textit{inter alia}, by improved collaboration between natural and social scientists, and between scientists and policy makers, including through urgent actions at all levels to: (a) Increase the use of scientific knowledge and technology...; (b) Make greater use of integrated scientific assessment, risk assessments and interdisciplinary and inter-sectoral approaches; (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 \textit{science-based decision-making} and reaffirm the precautionary approach as set out in principle 15 of the Rio Declaration on Environment and Development...[emphasis added]."

The Plan of Implementation, although adopted in 2002, seems to build upon and extend the mandate of Article 18 adopted back in 1972. Even with a mere textual analysis, one could easily infer that the repetition of the word “improve” and the detailed indications of how to achieve such improvement strongly imply that there has been inadequate implementation of Principle 18 over the decades regarding the application of

\footnote{125 Un\text middot; Nations Environment Program (UNEP), Global Environmental Outlook (Oxford, Oxford University Press 1997), p. 3.}

science and technology. Among others, UNEP outlined its commitment to strengthen its scientific base and emphasized technology and capacity-building measures according to the Bali Strategic Plan. The Bali Strategic Plan also enhanced coordination between all of the UN-related bodies.

With a view to the upcoming UN Conference on Sustainable Development in 2012 ("UNCSD 2012" or "Rio Plus 20" or "Earth Summit 2012"), the need for effective I.E.L. and the restructuring of the global environmental governance structures with the view of strengthening will be among the questions on the table of international negotiations.\textsuperscript{127} The very fact that a major part of the topics for the Earth Summit 2012 under discussion is closely related to science is illustrative of the need for furthering the infusion of science into contemporary laws and policies.\textsuperscript{128} The Thesis aims into contributing to these discussions.

\textsuperscript{127} For more information, see the official website of the UNCSD 2012, www.uncsd2012.org (last visited September 28, 2010).

\textsuperscript{128} See Appendix No. 2.
A. Early Environmental Conventions

The early conventions on the environment aimed to regulate natural resources—as opposed to protecting the environment as a whole—in order to allocate rights to natural and legal persons. Legal efforts to address issues of natural resources, including flora and fauna, date back to the 1800s. In as early as 1781, the Prince-Bishop of Basel and the King of France entered a convention to protect game birds and forests. 129 Bilateral treaties, such as the 1818 Convention Respecting Fisheries, Boundary and the Restoration of Slaves between the United States and the United Kingdom, 130 and the 1867 Convention between France and the United Kingdom about fisheries, 131 were exclusively aimed toward allocating resources. In the following years, the European Powers

129 Joe h F. DiMento, The Global Environment and International Law (University of Texas, Austin 2003).


131 Convention between France and Great Britain Relative to Fisheries, Nov. 11, 1867, in 21 International Protection of the Environment: Treaties and Related Documents 1.
concluded a series of international agreements, which addressed fisheries and allocating rights regarding common rivers and water basins transcending common borders.132

In 1900 the International Conference on Protection of African Mammals met in London. This meeting led to the first international agreement, the objective of which was to preserve wildlife in Africa.133 The signatories were the colonial powers: France, Germany, Great Britain, Italy, Portugal, and Spain. The Convention aimed to preserve supplies for trophy hunters, traders, and dealers of ivory and skins. Nevertheless, the Convention contained provisions forbidding people from killing all animals listed as useful for hunting as well as, “all other animals which each local government judges necessary to protect, either because of their usefulness or because of their rarity and danger of disappearance.” In addition, the convention prohibited killing non-adult animals and females, “when accompanied by their young” (Article 2). The Convention also precluded some methods of killing, including killing by explosive, and encouraged the establishment of natural reserves. Thus, this Convention introduced some initial elements of environmental protection.

In 1891, during the Second International Ornithological Congress (S.I.O.C.) in Budapest, Hungary, important data on birds in Europe, their populations, and their

132 E.g., the 1886 treaty on the Rhine among Germany, Luxembourg, the Netherlands, and Switzerland; the 1891 Agreement between the United States and the Government of Her Britannic Majesty for a modus vivendi in relation to fur fisheries in the Bering Sea. For a complete series of conventions signed at that time, also see the International Environmental Agreements (IEA) Database Project, available at http://iea.uoregon.edu/page.php?query=base_agreement_list&where=start&InclusionEQ=BEA&SubjectIN=Species/Fauna/Fish (last visited March 23, 2010).

133 DiMENTO, supra note 126, at 14.
capture was presented. This data focused on birds useful to agriculture.\textsuperscript{134} In response to learning about the dangers imposed upon birds by new science and technology, Blomever of Leipzig, during the S.I.O.C. supported the appointment of a committee and proposed, among other observations, that “the laws should be modified to meet the progress of civilization.”\textsuperscript{135} As a result of the S.I.O.C., the “International Convention” for the protection of all birds that render service to agriculture, concluded in Paris on March 19, 1902. As Otto Herman notes:

“The cause of bird-protection has more need than any other of international cooperation to bring it to a successful issue… The phenomenon that species of birds which have from time immemorial built their nests at certain points of certain districts are disappearing, is becoming daily more frequent: so also is the phenomenon that particularly birds of passage that pass in Spring never return… the only natural explanation of this phenomenon is that the species of birds, flocking together, fall at once and without exception into the nets of the tribe inhabiting the particular distract over which they pass, such tribe being ornithophage.”\textsuperscript{136}

The author charges the technological developments of the 19\textsuperscript{th} century, such as electricity and steam power, as responsible for endowing humans with the power to destroy flocks by either killing them or trading them in other countries. For example, the most imminent threat for the flocks was the new, advanced devices and tools that were used for catching birds (such as nets of gigantic proportions) and that were well-fitted to destroy birds in masses.

\textsuperscript{134}See Otto Herman, The International Convention for the Protection of Birds Concluded in 1902, in Hungary (Royal Hungarian Minister of Agriculture publ., Budapest, Victor Hornýanszky, court printer, 1907), available at http://books.google.com/books?id=bscZAAAALAAJ\&pg=PA33\&dq=first+international+conv\&source=bl\&ots=C4EcngQOvG\&sig=aD5hg9ci2DZJDqRqyDi8e51ETc\&hl=el\&sa=X\&oi=book_result\&resnum=1\&ct=result#PPR1,M1 (last visited November 10, 2008).

\textsuperscript{135}Id. at 47.

\textsuperscript{136}Id. at 22.
As Otto Herman commented at the Congress, a clash among scientists and representatives of professional organizations took place:

“The International Ornithological Congress held at Paris in 1900 is of particular importance in the history of the international protection of birds because of two events...The first event was that the delegates of the Paris feather-merchants and of the millinery houses, - two branches which demanded and still demand the sacrifice of billions of poor birds – appeared at the Ornithological Congress to raise their voices in opposition to the cause of bird-protection which threatened to injure their material interests....The second event implied progress in the cause of bird-protection, for the Ornithological Congress passed a resolution (with which the International Agricultural Congress identified itself) to request the respective Governments to institute thorough researches into the question of usefulness and noxiousness. This was an implicit confession that, up till 1900, expert ornithologists had decided the question of usefulness and noxiousness rather at random, a fact which accounted for the anomaly, witnessed at the Paris International Conference of 1895, that expert ornithologists who were asked their opinion in the matter expressed absolutely antagonistic views.”

The idea of experts introducing new elements, notions, and provisions of law—in this case the notions of “usefulness” and “noxiousness”—and not representatives of professional unions or politicians, emerged. In addition, during this second Congress, it became obvious that not all experts’ views were appropriate for shaping proposals for lawmakers. In fact, more organized and comprehensive studies had to be conducted in order to formulate expert advice for lawmakers specific to the issue of bird conservation. The decisions were not made during the Conference; rather, longer-term venues were created in order to answer scientific questions. However, lasting and more permanent venues did not exist because IOs with environmental competence had not yet been established. The common structures serving international negotiations and lawmakers were still based on the structure of the single States.
In 1906, the Hague Conference on Natural Resources took place. In 1907, the U.S. and the U.K. entered into the Boundary Waters Treaty,\textsuperscript{137} Article 4 of which stated that water “shall not be polluted on either side to the injury of health of property on the other side” of the U.S. – Canadian border. Similarly, the U.S. entered a convention with Mexico addressing equitable distribution of the Rio Grande’s irrigation waters. The International Conference for the Protection of Nature was held in Paris in 1909. The Treaty for the Preservation and Protection of Fur Seals was drafted in 1911, and a Consultative Commission for the International Protection of Nature was created in 1913.

In 1921, the Convention Concerning the Use of White Lead in Painting\textsuperscript{138} was signed in Geneva, Switzerland. The objective of the convention was to protect workers from exposure to white lead and lead sulphate and from all products containing these pigments, especially in the interior of buildings.\textsuperscript{139} This Convention created an absolute prohibition of allowing female workers and male workers under eighteen-years-old to be exposed to the noxious lead. Although there were some exceptions for male workers above eighteen-years-old when such exceptions were deemed necessary, such exceptions could only be granted by a common decision made by the workers and the employers’ associations.\textsuperscript{140}

\begin{footnotes}
\item[139] \textit{Id.} at art. 1.
\item[140] \textit{Id.} at art. 3 \& 1 and \& 3, respectively.
\end{footnotes}
Convention for the protection of public health from chemicals, which indicates that international organizations were appropriate fora for lawmaking regarding issues of environmental protection and public health.

In 1933, nations adopted the Convention Relative to the Preservation of Fauna and Flora in their Natural State, which aimed to promote the establishment of natural parks and reserves, to preserve forest areas, to protect specific wild life species, and to regulate types of hunting and traffic in trophies.\footnote{141} The Convention was based on scientific data that enabled its drafters to create some early listings of endangered species. However, the orientation of the Convention was highly anthropocentric, promoting, \textit{inter alia}, the “domestication of wild animals susceptible of economic utilization.”\footnote{142}

The first conservation agreements addressed migratory species, like seals and birds, which crossed national boundaries. Until the 1940s, there were no official, permanent networks, or other types of institutions, for the exchange of scientific information in connection with the agreements. As a result, scientists exchanged observations regarding species in danger of extinction, and the related impacts of international harvesting through other professional ties. Despite the initial networks that


were created in the 1940s, there were no official, joint information depositories shared by scientists. Therefore, the information remained at the disposal of each individual government, which was free to utilize such information according to its own plan for developing national measures for resource management.

B. Acknowledgment of the Importance of Science in Treaty-Making

The legal framework for the protection of whales was one of the early international regulatory frameworks that acknowledged the importance of scientific information in shaping the content of environmental legislation. Concerns about the overexploitation of whale stocks by the whale oil industry, as well as the inequitable sharing of the resources among nations, inspired the League of Nations to call for regulations and conservation measures in 1925. In 1931, twenty-two nations signed the Geneva Convention for the Regulation of Whaling, which focused on bringing Antarctic whaling into control by regulating the whaling industry under the auspices of the League of Nations.\(^\text{143}\) This first international effort to address whaling did not receive popular attention. In 1937, the International Agreement for the Regulation of Whaling was signed in London and, the following year, amending protocols were added. In addition, in 1945,

the League of Nations established, among others, a sanctuary for baleen whales.\footnote{International Agreement for the Regulation of Whaling, June 8, 1937, 52 Stat. 1460, 190 L.N.T.S. 79.} Replacing the 1937 Convention, the current 1946 International Convention for the Regulation of Whaling (ICRW), which was signed in Washington D.C., acknowledges the importance of science in decision-making.\footnote{International Convention for the Regulation of Whaling, Dec. 2, 1946, 62 Stat. 1716, 161 U.N.T.S. 72 [hereinafter ICRW].} The ICRW States that the “continuous collection and analysis of biological data… are indispensable to sound and constructive management of the whale fisheries” and requires that conservation measures be based on scientific findings.\footnote{Id. at articles 8(4), 5(2) respectively.} The ICRW established the International Whaling Commission (IWC) to keep under review and revise as necessary the measures to conserve whale populations and regulate whaling. Through its Schedule, the IWC protected certain species or stocks, designated specified areas as whale sanctuaries, set limits on the numbers and sizes of whales which could be taken, prescribed open and closed seasons and areas for whaling, and prohibited the capture of suckling calves and female whales accompanied by calves. However, the first steps of the IWC were not successful. One of the reasons for this failure was the fact that those steps were not based on scientific criteria; rather, they were based on purely political criteria thus leaving too broad a margin for the signatory States to take actions and make decisions contrary to the ICRW’s objectives.
In the early 1960s, the need for further international initiatives to protect migratory birds and other endangered species and their habitats became an important subject for the international scientific/conservation community. To this end, some of the most important grass roots and research organizations in the conservation fields were established, such as the World Wide Fund for Nature (WWF),\textsuperscript{147} the International Union for the Conservation of Nature and Natural Resources (IUCN), renamed the “World Conservation Union,”\textsuperscript{148} and the International Wildfowl Inquiry, later named the “International Waterfowl and Wetlands Research Bureau” (IWRB) and finally named, “Wetlands International.”\textsuperscript{149} With the initiative and the assistance of those non-governmental organizations, an international convention was contemplated in 1962, which, after several scientific meetings, concluded in the adoption of the Ramsar Convention.\textsuperscript{150} Those organizations managed to provide the drafters of the M.E.A.s with independent scientific data.

In 1976, after the more active involvement of governments, the 1967 Convention on the Wetlands of International Importance, Especially as Waterfowl Habitat, was adopted. At the same time, the effects of trade on wild animals and plants were raised in the IUCN and, after two important conferences—the 1968 UNESCO conference and the 1972 Stockholm Conference—the 1973 Convention on International Trade in

\textsuperscript{147} Visit the official website, \url{www.wwf.org} (last visited November 15, 2008).

\textsuperscript{148} Visit the official website, \url{www.iucn.org} (last visited November 15, 2008).

\textsuperscript{149} Visit the official website, \url{http://www.wetlands.org/} (last visited November 15, 2008).

\textsuperscript{150} For a short history of the Ramsar Convention, visit \url{http://www.ramsar.org/cda/en/ramsar-about-history/main/ramsar/1-36-62_4000_0} (last visited September 28, 2010).
Endangered Species of Wild Fauna and Flora (CITES) was adopted.\textsuperscript{151} Proliferation of international environmental legal instruments has slowly started, while more sophisticated technologies were giving international community the sense the environmental losses that were happening.

Concerning territories that are mainly outside of national sovereignty—such as the International Seabed, the High Seas, the polar environment and Outer Space—international scientific collaboration and the successful initiation and adoption of treaties have been more successful. In conventions regulating the marine environment, it seems that scientific findings have influenced the relevant international conventions more than in other fields. Regarding the marine environment, developing a common understanding of how to maintain bountiful resources in the marine environment was essential from the outset. As a result, conventions relating to extra-national territories tended to be based on shared information, common methods of analysis, and the consent of the States to be subject to the same standards and regulations for harvesting resources. This is especially true in the framework of the 1982 United Nations Convention for the Law of the Sea (LOS Convention.)

In examining the development of conventions regarding pollution from ships, one can see the international community cooperating in a way that is similar to the spirit of shared information, which characterizes territories outside of national sovereignty. International Law has evolved to cope with many aspects of international pollution. As

early as the 1920s and 1930s, the League of Nations sought to conclude an international convention on the control of marine pollution from ships. After several failed attempts, the 1954 International Convention for the Prevention of Pollution of the Sea by Oil was adopted, based on a report produced by the United Kingdom in 1953.\textsuperscript{152} In the early 1970s, in response to growing tanker traffic and the growing size of tankers, the international community developed a number of key pieces of international legislation to cover accidents, operational discharges, tanker construction, operational codes to avoid collisions, and compensation schemes for the costs of cleaning up oil pollution from spills. For example, since 1959 the International Maritime Organization (“IMO,” formerly called the “Intergovernmental Maritime Consultative Organization” or “IMCO”) has adopted nearly thirty-two treaties, which cover the protection of the sea from the transportation of oil and other sources of pollution, as well as safety at sea.\textsuperscript{153,154}

One of the purposes for adopting the Convention establishing the International Maritime Organization (I.M.O.) in 1948 was to develop and maintain a comprehensive regulatory framework for shipping, which included safety and environmental concerns.\textsuperscript{155} The Organization is also empowered to deal with administrative and legal matters related


\textsuperscript{153} For a list of treaties adopted within IMO framework, visit http://www.imo.org/ (last visited November 15, 2008).

\textsuperscript{154} CHRISTOPH ILG, DIE RECHTSSETZUNGSTATIGKEIT DER INTERNATIONAL MARITIME ORGANISATION – ZUR BEDEUTUNG DER IMO BEI DER WEITERENTWICKLUNG DES MEERESUMWELTRECHTS (Campus Druck, Tübingen 2001).

\textsuperscript{155} I.M.O. Convention, article 1(a).
to these purposes. In 1972, the I.M.O. adopted the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the London Dumping Convention.)\textsuperscript{156} This Convention contained two lists of substances, the dumping into the ocean of which would be limited: substances on the “black list” were absolutely prohibited from being dumped, while substances on the “grey list” were restricted. A permit was required for the dumping of grey-listed substances. In 1973, the I.M.O. concluded the International Convention for the Prevention of Pollution from Ships (the MARPOL convention), extending the 1954 IMCO Pollution of the Seas by Oil Convention.\textsuperscript{157} MARPOL covers pollution by oil and the dumping of noxious liquid substances in bulk, harmful materials carried in bulk, and sewage and garbage generated on board. More stringent pollution standards were set for certain “special areas,” which were particularly vulnerable to pollution (the Mediterranean, the Baltic, the Black Sea, the Red Sea and the Persian/Arabian Gulf.) MARPOL has been effective thus far; since MARPOL entered into force in 1983 up to 1990, the oil released into oceans from spills fell by over 90 percent, indicating real international action in controlling oil pollution.\textsuperscript{158} Taking into account the success shown by the I.M.O., the Thesis presents the structure and lawmaking techniques employed by the I.M.O. more extensively in Chapter II, at 270.

\begin{itemize}
\item \textsuperscript{156} Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, Dec. 29, 1972, 6 U.S.T. 2403, 1046 U.N.T.S. 120.
\item \textsuperscript{158} HAAS, \textit{supra} note 46, at 11.
\end{itemize}
Regional efforts concerning environmental protection progressed in scope, as well. The North Atlantic States adopted the 1972 Oslo Convention on the Control of Dumping from Ships and Aircrafts.\(^{159}\) As the governments realized that land-based sources contributed large amounts of pollutants into the North Sea, they adopted the 1974 Paris Convention for the Prevention of Marine Pollution from Land-Based Sources, with a 1986 amendment that included airborne pollutants.\(^{160}\) Dumping and incineration of waste at sea was common in the North Sea by the beginning of the 1980s and was an important issue at the first North Sea Conference.

The UN and many governments flagged the environmental achievements on this topic as historical landmarks. For instance, the 1983 London Convention, in which Parties, by a majority vote, adopted a two-year moratorium on the dumping at sea of all radioactive wastes, was effective by almost any account. For the first time since World War II, no dumping took place in 1983. The 1985 London Convention extended the moratorium for an indefinite period, pending further studies. In 1985, the countries of the South Pacific signed the Treaty of Rarotonga, which prohibits radioactive waste dumping at sea in the South Pacific; in 1987, during the Second Ministerial Conference for the Protection of the North Sea, the London Convention adopted the Precautionary Principle and agreed to reduce by fifty percent the discharge of noxious wastes by 1995 and to prohibit the dumping of industrial wastes into the North Sea. The 1989 London


Convention also adopted a resolution calling for a ban on the incineration of liquid noxious wastes at sea. In the same year, the OSPAR Commission (the intergovernmental organization that regulates marine pollution in the North East Atlantic) prohibited the dumping of industrial wastes in the North East Atlantic and, a year later, it agreed to ban ocean incineration in the North East Atlantic. Meanwhile, the London Convention adopted a resolution calling for an end to the dumping of hazardous industrial wastes. The Third Ministerial Conference for the Protection of the North Sea (Den Haag) agreed to reduce the discharge of wastes into the North Sea by at least 70 percent and to prohibit the dumping of radioactive wastes into the North Sea. In 1992, a Ministerial Meeting of the OSPAR Commission agreed to ban—notwithstanding opposition from France and the UK—the dumping of radioactive wastes into the North East Atlantic and to reduce the discharge and emission of organohalogens by 2000, with the aim to permanently eliminate them. At its 15th Consultative Meeting, the London Convention formally dropped the word 'Dumping' from its title, symbolizing the shift from a purely regulatory role to one of restricting dumping practices. In 1993, the London Convention was amended to permanently prohibit ocean incineration and the dumping of radioactive and industrial wastes at sea. In 1996, the countries bordering the Mediterranean Sea, within the framework of the Barcelona Convention, adopted a new Protocol to prevent marine pollution from land-based sources, establishing an obligation to adopt time-tables for phasing out of toxic substances that were persistent and liable to bioaccumulate, with a priority for organohalogens, dioxins and furans.
According to its official website the United Nations Economic Commission for Europe (UNECE)\textsuperscript{161} sponsored a 1979 framework treaty: the Convention for Long-Range Transboundary Air Pollution,\textsuperscript{162} followed by the 1984 Geneva Protocol on Long-term Financing of the Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe (EMEP),\textsuperscript{163} the 1985 Protocol on the Reduction of Sulphur Emissions or their Transboundary Fluxes by at least 30 per cent,\textsuperscript{164} the 1988 Protocol concerning the Control of Nitrogen Oxides or their Transboundary Fluxes.\textsuperscript{165} These appeared to be successful and, thus, more protocols followed: the 1991 Protocol concerning the Control of Emissions of Volatile Organic Compounds or their

\textsuperscript{161} “The United Nations Economic Commission for Europe (UNECE) was set up in 1947 by ECOSOC, as one of five regional commissions of the United Nations, with aim to promote pan-European economic integration. UNECE brings together 56 countries located in the European Union, non-EU Western and Eastern Europe, South-East Europe and Commonwealth of Independent States (CIS) and North America. All these countries dialogue and cooperate under the aegis of the UNECE on economic and sectoral issues. To this end, it provides analysis, policy advice and assistance to governments, and gives focus to the United Nations global mandates in the economic field, in cooperation with other global players and key stakeholders, notably the business community. The UNECE also sets out norms, standards and conventions to facilitate international cooperation within and outside the region. The area of expertise of the UNECE covers such sectors as: economic cooperation and integration, energy, environment, housing and land management, population, statistics, timber, trade, and transport. UNECE has 56 member States and over 70 international professional organizations and other non-governmental organizations take part in UNECE activities.” For more information, visit UNECE’s official website, \url{http://www.unece.org/Welcome.html} (last visited November 23, 2008).

\textsuperscript{162} Convention on Long-Range Transboundary Air Pollution, Nov. 13, 1979, 34 U.S.T. 3043, 18 I.L.M. 1442.


Transboundary Fluxes,\textsuperscript{166} the 1994 Protocol on Further Reduction of Sulphur Emissions,\textsuperscript{167} the 1998 Protocol on Heavy Metals and the 1998 Protocol on Persistent Organic Pollutants (POPs),\textsuperscript{168} and the 1999 Protocol to Abate Acidification, Eutrophication and Ground-level Ozone.\textsuperscript{169}

In the Arctic and the Antarctic regions, the cooperative work led by scientists, mainly the International Council of Scientific Unions (ICSU), which later became the Scientific Committee on Antarctic Research (SCAR),\textsuperscript{170} formed the basis of the adoption of the 1959 Antarctic Treaty and its associated legal instruments. SCAR was charged with initiating, developing, and coordinating high quality international scientific research regarding the Antarctic region and its role in the Earth’s system. SCAR continues to play a significant advisory role today. The scientific research and related activities of SCAR is conducted by its Standing Scientific Groups, which correspond to the various scientific disciplines relating to Antarctic research and report to SCAR.\textsuperscript{171} In addition to carrying

\begin{footnotesize}
\begin{enumerate}
\item Visit SCAR’s official website, www.scar.org (last visited November 23, 2008).
\item For more information, visit http://www.scar.org/ (last visited September 28, 2010).
\end{enumerate}
\end{footnotesize}
out its primary scientific role, SCAR also provides objective and independent scientific advice to the Antarctic Treaty Consultative Meetings and other organizations on issues of science and conservation affecting the management of Antarctica and the Southern Ocean. SCAR’s Standing Committee on the Antarctic Treaty System plays an essential role in treaty development. Accordingly, since 1961 SCAR has made numerous recommendations on a variety of matters, most of which have been incorporated into Antarctic Treaty instruments; among the most important recommendations is the advice SCAR provided with regards to the many international agreements protecting the ecology and environment of the Antarctic. In addition, the Antarctic Treaty supported collaboration among the UN specialized agencies and other international organizations - all of which had scientific interests in Antarctica.

The establishment of standing committees in the abovementioned institutions indicated the need to establish more institutions to consistently consider other environmental issues. The Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) represents an interesting institutional approach to scientific and technical information.\(^{172}\), \(^{173}\) According to information found at the official website:

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“The GESAMP was founded in 1969 by United Nations agencies to deal with growing concerns regarding marine pollution problems. GESAMP was first established to advise the agencies and their Member States on scientific aspects of marine pollution. GESAMP’s sponsoring agencies include I.M.O., F.A.O., UNESCO-IOC, W.M.O., I.A.E.A., UN, UNEP and UNIDO. GESAMP’s mission is "to provide authoritative,
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independent, interdisciplinary scientific advice to organizations and governments to support the protection and sustainable use of the marine environment.” GESAMP consists of experts in a wide range of disciplines that are relevant to marine environmental protection, including social science and economics. Within GESAMP, experts act in an individual capacity, not as representatives of their governments or institutions. This independence ensures the objectivity of GESAMP’s advice. Individual studies and assessments are usually carried out by specialist working groups that also include experts who are not current members of GESAMP. The Group regularly provides an overview of the marine environmental monitoring, assessment and related activities of UN agencies and advises on how these activities might be improved and better integrated and coordinated. The Group also identifies new and emerging issues regarding the degradation of the marine environment and produces a global “State of the Marine Environment” report.”

C. The Road to Stockholm

International orders had traditionally been viewed as being short-sighted, incremental, and fragmented without exemplifying strong cooperation in issues, such as common environmental challenges. Institutional developments had only emerged in pieces and in response to crises, while decision-makers had acted as if they believed that
the world consisted of small problems that could be dealt with discretely, neglecting inter-linkages with other issues and externalities that would affect others. This description matched the attitude of the States vis-à-vis environmental issues in the past.

In 1952, the International Council of Scientific Unions proposed a comprehensive series of global geophysical activities to span the period from July 1957 to December 1958. The International Geophysical Year (IGY), as it was called, was intended to allow scientists from around the world to take part in a series of coordinated observations of various geophysical phenomena. The IGY was highly successful in achieving its goals, which were summed up in a National Academy of Science (N.A.S.) IGY Program Report: “to observe geophysical phenomena and to secure data from all parts of the world; to conduct this effort on a coordinated basis by fields, and in space and time, so that results could be collated in a meaningful manner.” The IGY highlighted the relatedness of the Earth’s natural systems.

Some years later, the International Council for Science (I.C.S.U.) organized the International Biological Programme (1964–74), which was reviewed at the 1968 expert’s


175 For more information about the history of the IGY, visit http://www.nas.edu/history/igy/ (last visited November 26, 2008).

176 Visit http://www.nas.edu/history/igy/ (last visited September 28, 2010).

177 Founded in 1931, the International Council for Science (ICSU) is a non-governmental organization with a global membership of national scientific bodies (114 Members, representing 134 countries) and international Scientific Unions (29 Members). The Council is frequently called upon to speak on behalf of the global scientific community and to act as an advisor in matters ranging from scientific conduct to the environment. ICSU’s activities focus on three areas: planning and coordinating research; science for policy; and strengthening the Universality of Science.
conference on the scientific basis for rational use and conservation of biosphere
resources. In 1969, I.C.S.U. established the Scientific Committee on Problems of the
Environment (SCOPE) to address environmental issues—either global or shared by
several nations—in urgent need of interdisciplinary synthesis, assessment and evaluation
of information on natural and human-made environmental changes and their effects on
people. The first SCOPE Report was commissioned by the Secretary-General of the 1972
United Nations Conference on the Human Environment (UNCHE). The report offered
further insights on the state of the environment and paved the way for considering
scientific issues and the eventual participation of scientists at the Stockholm Conference.

It is noteworthy that the emergence of the developing States in the international
arena led to new directions in international research and shifted both the scientific and
policy orientation towards development, poverty reduction, and trade capacity building,
rather than environmental protection. An illustrative example is the establishment of

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178 The World Environment 1972-1992: Two Decades of Challenge 630, 663, 742 (Mostafa K.

179 The Scientific Committee on Problems of the Environment was created by the X Meeting of the
Executive Committee of ICSU in Erevan in 1969. SCOPE’s scientific programme is designed to cover
environmental issues - either global or shared by several nations - in urgent need of interdisciplinary
syntheses through synthesis, assessment, and evaluation of information available on natural and human-
made environmental changes and the effects of these changes on people. SCOPE represents more than 30
years at the cutting edge of interdisciplinary review of existing and potential environmental problems, and
has played an important role in the development of major international research programs. It is a
recognized authority at the interface between the science and decision-making spheres, providing analytical
tools to promote sound management and policy practices. SCOPE relies on a worldwide network of 40
national science academies and research councils, and 22 international scientific unions, committees and
societies to guide and develop its scientific programme. For a recent evaluation supporting that SCOPE
needs to be rejuvenated in order to respond to current needs of science and society regarding environmental
issues, see Geoffrey Oldham, A Review of the Scientific Committee on Problems of the Environment

180 Lee A. Kimball holds that the UN and its specialized agencies did not play the role that they
could have played in research and analysis, because they developed other priorities after the emergence of
and the priorities adopted by the United Nations Industrial Development Organization (UNIDO). However, in the 1970s and 1980s, the UNIDO and other developmental organizations have integrated environmental considerations into their objectives. These new world priorities were also reflected in the world conferences, inaugurated in 1972, for the protection of the environment.

D. The 1972 Stockholm Conference on the Human Environment

In 1949, the UN Scientific Conference on the conservation and utilization of resources was the first UN body to address the depletion and uses of natural land resources. However, the Scientific Conference’s focus mainly centered upon how to

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manage the resources for economic and social development, rather than considering the conservation perspective. It was not until 1968 that environmental issues received serious attention by any major UN bodies. On May 29, 1968, the Economic and Social Council first included conservation issues, as specific and distinct item, in its agenda. The Council later reached the decision to hold the first United Nations Conference on the Human Environment. This was subsequently endorsed by the General Assembly.\footnote{Peter Jackson, \textit{From Stockholm to Kyoto, A Brief History on Climate Change}, UN CHRONICLE ONLINE EDITION, \url{http://www.un.org/Pubs/chronicle/2007/issue2/0207p06.htm} (last visited December 5, 2008).}

In 1970 the report of the Commission to Study the organization of Peace (CSOP)\footnote{Robert Hillman, \textit{Quincy Wright and the Commission to Study the Organization of Peace}, 4 (4) \textit{GLOBAL GOVERNANCE: A REVIEW OF MULTILATERALISM AND INTERNATIONAL ORGANIZATIONS} (1998).} suggested that the United Nations should establish an autonomous authority to conduct and keep abreast of science and research and to recommend new areas requiring international regulation.

Indeed, the 1972 Stockholm Conference, known as the first Earth Summit, represents the first global recognition that the environment was endangered and that governments and industries had to act collectively in order to protect it. The Conference called upon Governments and peoples to exert common efforts for the preservation and improvement of the human environment for the benefit of humanity and for posterity. For the first time, developed countries acknowledged that during their rapid development, they had completely ignored development’s impact on the environment, and that they had to take measures to combat the negative effects of development. However, the Conference took pains to articulate that environmental protection should not contradict...
the need for development and combating poverty on behalf of the developing countries.\textsuperscript{185}

Several issues were meant to be placed on the agenda during the preparatory work for the Conference, according to paragraph 40:

“Certain priorities that required urgent and large-scale action had emerged from the preparatory process; these included water supplies, ocean and sea pollution, and the urban crisis. In addition, there were other areas for priority action: the need for understanding and controlling the changes man produced in the major ecological systems; the need for accelerating the dissemination of environmentally sound technologies and for developing alternatives to existing harmful technologies; the need to avoid commitment to new technologies before adequately assessing their environmental consequences; the need to encourage broader international distribution of industrial capacity; and the need to assist developing countries to minimize environmental risks in their development strategies.”\textsuperscript{186}

Finally, the main environmental issues under consideration were more limited. Among the major concerns that led to the Stockholm Conference were pollution issues, especially marine pollution, pollution from ships, deliberate at-sea disposal of wastes (dumping), and pollution from inland and in offshore areas. There were international instruments issued on “Planning and Management of Human Settlements for Environmental Quality,” as well as on educational, informational, social and cultural aspects of environmental issues. The rest of the important global issues, despite scientific illustrations of their severity remained, at that time, unaddressed.

\textsuperscript{185} See paragraph 44 of the Brief Summary of the General Debate.

The Conference adopted a declaration that set out principles for the preservation and enhancement of the human environment and an action plan containing recommendations for international environmental action. After stating in the Preamble that “for the purpose of attaining freedom in the world of nature, man must use knowledge to build, in collaboration with nature, a better environment,” Principle 18 of the 1972 Declaration of the United Nations Conference on the Human Environment also stated:

“Science and technology, as part of their contribution to economic and social development, must be applied to the identification, avoidance and control of environmental risks and the solution of environmental problems and for the common good of humankind.”

In Article 18, the Conference further defined four ways of acting to achieve science-based policies:

- Research: “to create new knowledge of the kinds specifically needed to provide guidance in the making of decisions”;
- Monitoring: “to gather certain data on specific environmental variables and to evaluate such data in order to determine and predict important environmental conditions and trends”;

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187 Para. 6.

• Information Exchange: “to disseminate knowledge within the scientific and technological communities and to ensure that decision-makers at all levels shall have the benefit of the best knowledge that can be made available in the forms and at the times in which it can be useful”; and

• Evaluation and Review: “to provide the basis for identification of the knowledge needed and to determine that the necessary steps be taken.”\textsuperscript{189}

In order to achieve these goals, the Stockholm Conference established the United Nations Environment Programme (UNEP) with the special objective to promote contributions by “relevant international scientific and other professional communities to the acquisition, assessment, and exchange of environmental knowledge and information and, as appropriate, to the technical aspects” of the UN system programs.\textsuperscript{190} UNEP was established as the single specialized program of the United Nations on the environment. However, it does not have critical features for a robust program, such as authority and the status as an autonomous, independent organization. Its role is purely coordinating and advisory.

Immediately after starting its activities in 1975, UNEP launched its first major initiative, the Global Environmental Monitoring Systems (GEMS), to improve scientific information for environmental management. GEMS was for the first time meant to set

\textsuperscript{189} See Kimball, \textit{supra} note 6, at 45. As indicated at footnote 6, the above listing is an abstract from the Stockholm Conference documentation made available by Peter S. Thacher, Feb. 1996.

forth a cross-sectoral approach to monitoring and to shape a broader agenda that would include meteorological, health-related and environmental conditions and trends. Without GEMS or a similar system able to generate extensive, synthesized, large-scale information, lawmakers would lack the necessary data in order to build I.E.L. on them. Although UNEP supported further environmental monitoring programs, scientific research and collaboration, it did not manage to become a central source for environmental science.\(^{191}\)

Further, UNEP never acquired lawmakers. UNEP’s Governing Council is enabled to “promote international co-operation in the field of the environment” and the Executive Director is permitted to “provide, at the request of all parties concerned, advisory services.”\(^{192}\) UNEP did not adopt a broad-based agenda for either research or lawmakers until 1982. Instead, it focused on the development of non-binding environmental principles and action plans as a means of expediting environmental assessment and management.\(^{193}\) The absence of lawmakers and the UNEP’s preference of non-binding protocols over compulsory have contributed to the UNEP’s ineffectiveness in developing effective I.E.L. In addition, the UNEP has failed to acquire a more influential role in IEL because of the limited funds with which it is endowed to coordinate extensive large-scale research programs and attract competent staff. Finally,

\(^{191}\) For reasons on the failure of UNEP to fully respond to its mandate, see Maria Ivanova, at http://www.yale.edu/gegdialogue/Ivanova-FESReport7.pdf (last visited: October 19, 2005).

\(^{192}\) Part I para. 2(a) and Part II para. 2(e) of G.A. Res. 2997, 27 U.N. GAOR (Supp. No. 30) 43 (Dec. 15, 1972).

\(^{193}\) Kimball, supra note 6, at 45.
political analysts argue that its location in Nairobi, Kenya, further marginalized UNEP’s work and influence on the international environmental lawmaking processes.¹⁹⁴

A step forward towards a more substantive contribution to science-based lawmaking was the establishment of some of UNEP’s Divisions, such as the Early Warning and Assessment Division, the Policy Development and Law Division, the Environmental Policy Implementation Division, the Environmental Conventions Division and, most importantly, the Division of Technology, Industry and Economics Division (UNEP-DTIE).¹⁹⁵ UNEP-DTIE is located in Paris, France, with branches in Geneva, Switzerland, and Osaka, Japan. UNEP is currently supporting a similar center of excellence: the Global Resources Information Database (GRID) centers in Norway, Switzerland and the U.S.A.

Today, UNEP’s flagship assessment is the Global Environment Outlook (GEO), produced in cooperation with a network of national, subregional, regional and global partners. These partners feed into the GEO process and other assessments including the Global International Waters Assessment and the Millennium Ecosystems Assessment. The Global International Waters Assessment presents a comprehensive and integrated assessment of international waters in different regions. It is a systematic assessment of the environmental conditions and problems in transboundary waters, comprising marine,

¹⁹⁴ See, e.g., Maria Ivanova, Dissertation: Understanding UNEP: Myths and Realities in Global Environmental Governance (Yale University 2006).

coastal and freshwater areas, and surface waters as well as ground waters. The Millennium Ecosystem Assessment (M.A.) was called for by the United Nations Secretary-General Kofi Annan in 2000. Initiated in 2001, the objective of the M.A. was to assess the consequences of ecosystem change for human well-being, the scientific basis underlying the action needed to enhance the conservation, the sustainable use of those systems and their contributions to human well-being. The M.A. has involved the work of more than 1,360 experts worldwide. Their findings are contained in five technical volumes and six synthesis reports, which provide a state-of-the-art scientific appraisal of the condition and trends in the world’s ecosystems and the services these ecosystems provide, such as clean water, food, forest products, flood control, and natural resources, and the options to restore, conserve or enhance the sustainable use of ecosystems.

Apart from the positive developments regarding the marine environment and the institutional development regarding the establishment of the UNEP, policy and treaty developments concerning the terrestrial environment after the Stockholm Conference continued to be very slow. For instance, research and assessments stemming from the 1971 Wetlands Convention and the 1972 World Heritage Convention were left to

196 For more information, visit the official website, http://www.unep.org/dewa/giwa/ (last visited December 5, 2008).

197 For more information, visit the official website, http://www.millenniumassessment.org/en/About.aspx (last visited December 5, 2008).

the national governments to administer. These national governments produced dubious results with respect to the complete and correct enforcement of their provisions. According to the MEAs, the national governments are those that would have to pick up the wetlands and the world heritage sites and then conserve them. The criteria provided by both conventions for the selection of the sites and their conservation are vague and do not offer enough guidance to the States on how to act. Later on, the criteria for the amendment of the CITES’ Appendices,200 the 1971 Ramsar Convention on the Wetlands, and the World Heritage Convention201 all spelled out scientific information for the signatory States to take into account. The scientific community involved with the Wetlands, the World Heritage Conventions and CITES operated mainly through the NGOs and UNESCO, which focused on implementation through e.g. determination of priority sites to be protected, guidance for site management and criteria and procedures for project selection and review. Thus, while the predominantly environmental domestic agenda of 1970 was formulated in the 1960s, the global environmental agenda was quietly taking shape in the 1970s.202

Throughout the 1970s, a steady stream of publications took a planetary perspective and called attention to global-scale problems. Most of those publications

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200 Annex IV, No. 7.

201 Annex IV, Nos. 1 and 2.

were authored by scientists with the goal of taking their findings and those of other scientists to a larger audience.\footnote{See, e.g., \textit{MAN'S IMPACT ON THE GLOBAL ENVIRONMENT}, Report of the Study of Critical Environmental Problems authored by a scientific group assembled at MIT in 1970; \textit{RICHARD FALK, THIS ENDANGERED PLANET} (1971); \textit{GARRETT HARDIN, EXPLORING NEW ETHICS FOR SURVIVAL} (1972); \textit{DENNIS MEADOWS ET AL., THE LIMITS TO GROWTH} (1972); \textit{BARBARA WARD \\& RENE DUBOS, ONLY ON EARTH} (1972), \textit{HARRISON BROWN, THE HUMAN FUTURE REVISITED} (1978); and \textit{LESTER BROWN, THE TWENTY-NINTH DAY} (1978).} In addition to those publications, one should mention seminal scientific reports that influenced the major environmental issues of our times, such as the 1974 study by Sherwood Rowland and Mario Molina explaining the connection between CFCs and the stratospheric ozone layer depletion,\footnote{M.J. Molina \\& F.S. Rowland, \textit{Stratospheric Sink for Chlorofluoromethanes: Chlorine Atom-Catlysed Destruction of Ozone}, 249 NATURE 810-812 (June 28, 1974).} and the 1979 “Charney Report” on global climate change, which said most of what one needs to know about climate change to take action.\footnote{\textit{CARBON DIOXIDE AND CLIMATE: A SCIENTIFIC ASSESSMENT}, Report of an Ad Hoc Study Group on Carbon Dioxide and Climate, \textit{CLIMATE RESEARCH BOARD, ASSEMBLY OF MATHEMATICAL AND PHYSICAL SCIENCES, NATIONAL RESEARCH COUNCIL} (July 23-17, 1979, Woods Hole, Massachusetts).}

During the 1980s, a second generation of reports presented new information and pulled the issues together into a more coherent agenda for international action. These included the World Conservation Strategy jointly issued by IUCN and UNEP;\footnote{Issued in 1980, \textit{available at} \url{http://data.iucn.org/dbtw-wpd/edocs/WCS-004.pdf} (last visited August 13, 2010).} the “Environmental Research and Management Priorities for the 1980s,” issued by an international group of scientists organized by the Royal Swedish Academy of Sciences;\footnote{Published in \textit{Ambio} in 1983.} “The World Environment: 1972-1982,” issued by a UNEP scientific team;\footnote{Issued in 1982.}
and “The Global 2000 Report to the President,” and its follow-up report “The Global Future: Time to Act,” issued by U.S. government teams organized by President Carter’s Council on Environmental Quality. These syntheses, resulting from predominantly scientific efforts, were designed to forcefully bring global-scale challenges to the attention of governments. Collectively, they stressed ten principal concerns:

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<th>Principal Environmental Concerns</th>
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<td>1. Depletion of the stratospheric ozone layer by CFCs and other gases;</td>
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<td>2. Loss of crop and grazing land due to desertification, erosion, conversion of land to nonfarm uses, and other factors;</td>
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<tr>
<td>3. Depletion of the world’s tropical forests, leading to loss of forest resources, serious watershed damage (erosion, flooding, and siltation), and other adverse consequences;</td>
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<td>4. Mass extinction of species, principally from the global loss of wildlife habitat, and the associated loss of genetic resources;</td>
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<td>5. Rapid population growth, burgeoning Third World cities, and ecological refugees;</td>
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<td>6. Mismanagement and shortages of freshwater resources;</td>
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<td>7. Overfishing, habitat destruction, and pollution in the marine environment;</td>
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<tr>
<td>8. Threats to human health from mismanagement of pesticides and persistent organic pollutants;</td>
</tr>
<tr>
<td>9. Climate change due to the increase in “greenhouse gases” in the atmosphere; and</td>
</tr>
<tr>
<td>10. Acid rain and, more generally, the effects of a complex mix of air pollutants on fisheries, forests, and crops.</td>
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209 Issued in 1980.
210 Issued in 1981.
Evaluating the response by the international community to these major environmental challenges, James Gustave Speth, former administrator of the United Nations Development Program and Professor of Environmental Law at Yale University, commented:

“it would take at least another decade for governments to respond, but by the mid-1990s most of the ten challenges had become the subject of major international treaties, plans of action, or other initiatives.”

The Environmental Treaties that emerged between 1970 and 2001, in response to the ten Principle Environmental Concerns, are listed below:

<table>
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<th>Principal Environmental Treaties</th>
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<tr>
<td>1. 1973 Convention on Trade in Endangered Species</td>
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<td>2. 1982 Convention on the Law of the Sea</td>
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<td>o 1995 Agreement on Strandling and Highly Migratory Fish Stocks</td>
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<tr>
<td>3. 1985 Vienna Convention for the Protection of the Ozone Layer</td>
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<td>o 1987 Montreal Protocol</td>
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<td>o 1997 Kyoto Protocol</td>
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<td>5. 1992 Framework Convention on Climate Change</td>
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<td>o 1997 Kyoto Protocol</td>
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<td>6. 1992 Convention on Biological Diversity</td>
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<tr>
<td>o 2000 Cartagena Biosafety Protocol</td>
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<tr>
<td>7. 1994 Convention to Combat Desertification</td>
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<tr>
<td>8. 1998 Rotterdam Convention on Prior Informed Consent for Certain Hazardous Chemicals and</td>
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\[supra\] note 199, at 6.
Nevertheless, an array of well-defined environmental problems still remains unaddressed or poorly addressed. Although major environmental challenges have already been the subject of M.E.A.s, there are critical topics that no MEA has seriously addressed, despite the compelling scientific evidence. If you compare the two sets—the set of the ten principal concerns and the set of the MEAs corresponding to those concerns—it is easy to identify the major issues remaining unaddressed, such as issues numbers 2, 3, and 5, or those partially addressed, such as points 6 and 7. In addition, even regarding those issues that were covered by M.E.A.s, with the notable exceptions of the ozone and the acid rain cases, there were substantive and structural inadequacies within the M.E.A.s that were designed to address them. As G. Speth comments:

“Looking back, it cannot be said that my generation did nothing in response to the 1980 Global 2000 Report to the President and similar alerts. Progress has been made on some fronts, but not clearly enough. There are outstanding success stories, but rarely are they scaled up to the point that they are commensurate with the problem. … The threatening global trends highlighted twenty years ago in the Global 2000 Report and elsewhere are still very much with us, ozone depletion being the notable exception. … The results of twenty years of international negotiations are disappointing. These conventions have called attention to the problems and have led to many national plans of action in the three areas. But these agreements do not compel the actions that are needed. … In general, international environmental law is plagued by vague agreements, imprecise requirements, lax enforcement, and underfunded support.”

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212 Id. at 9.
Speth concluded his evaluation by emphasizing not only the late response by lawmakers to cope with the environmental challenges, but also the “pathology” of the agreements, namely the vagueness of their provisions, the lack of details that made many of the provisions inapplicable or difficult to apply, the lack of enforcement and the lack of funds. These features of the agreements, in combination with the weak overall institutional framework that supports the environmental global governance, define not only the agreements concluded in the 1980s, but also subsequent agreements. These features dramatically weaken the MEAs’ effectiveness. Part 3 of the Thesis discusses some of these features.
E. The 1992 UN Conference on Environment and Development

By 1992, it was clearly understood that the findings of the scientific community needed to be better comprehended and included in the political decision-making process. The 1992 United Nations Conference on Environment and Development in Rio de Janeiro adopted Agenda 21, which calls on the UN system to develop a stronger scientific basis for improving the environmental and developmental policy-making processes. Agenda 21 recognizes that:

“to effectively integrate environment and development in the politics and practices of each country, it is essential to develop and implement integrated, enforceable and effective laws and regulations that are based upon sound social, ecological, economic and scientific principles.”

This is the point at which global environmental problems have already started to influence international law. Authors take note of the social transformation of the international agenda-setting:

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“during the last decade we became aware of the existence of problems that cannot be approached without planetary cooperation and thus legislation: for example, the depletion of the ozone layer, the modification of the global climate, and the threats against the world’s genetic heritage. Different factors inherent in such problems need new approaches in the legal techniques used by the international community for lawmaking.”

The Convention on Biological Diversity (C.B.D.) is an example of the successful exercise of science’s influence on the agenda-setting of the international environmental agreements and the shaping of, at least, the general principles of the M.E.A.s. C.B.D. was a landmark in the field of International Environmental Law. As mentioned above, many policy documents and assessments had identified conservation of global biological diversity as being a top priority of the international community. In 1981, experts in the I.U.C.N. had specifically indicated the need for a global convention to conserve biological diversity. Six years later, in 1987, UNEP established a working group with the mandate to explore the possibilities of an umbrella convention, which would cluster the pre-existing international conventions and fill existing gaps in biodiversity conservation. The result of UNEP’s work, and of lobbying by many independent experts’, was the adoption of the C.B.D. The C.B.D. promotes the collection of information and the use of science in implementation measures. However, the C.B.D. has been criticized as being


218 Other authors, such as Barnett and Finnemore, taking notice of the increased influence of the the IOs in shaping the agenda-setting, refer, to a “social construction power” of IOs, because they use their knowledge to help create social reality. M.N. Barnett & M. Finnemore, *Rules for the World - International Organizations in Global Politics* 20-30 (2004).


220 See, e.g., inter alia, the general measures for conservation and sustainable use (art. 6), identification and monitoring (art. 7), conservation measures (art. 8 and 9), impact assessments (art. 14),
generous in its grant of rights to source States of biodiversity, but deficient in its requirements that these nations take real steps to protect those resources.  

The C.D.B.’s anthropocentric approach is one of its most important characteristics; however, there is one additional element that needs to be taken into account regarding the evaluation on the degree of science that has been integrated into the C.B.D.’s provisions. The conclusions of the C.B.D. and the shaping of the content of its provisions resulted from scientific advice stemming from compartmentalized reports generated by scientists all over the world. By the time the C.B.D. was concluded, no global assessment had occurred to assess the state of the biodiversity on Earth; such an assessment only happened after the conclusion of the C.B.D. The momentum of the conclusion of the M.E.A. and the permanent bodies that the C.B.D. established created favorable circumstances for the assessment to commence only a year after the conclusion of the agreement, and to be completed only two years later. Indeed, in 1993, UNEP completed the comprehensive Global Biodiversity Assessment (GBA). The GBA, undertaken by 1,500 scientists from all over the world, aimed to provide policy makers with a peer-reviewed, scientific analysis of the state of environmental knowledge and a review of information resources in the field. The Global Biodiversity Assessment was the most comprehensive analysis of the science underpinning biological diversity ever undertaken. The Assessment finds that the Earth's biological resources are under serious threat. Biodiversity—the myriad genes, species and ecosystems that collectively make-up

access to and transfer of technology (art. 16), exchange of information (art. 17), and technical and scientific cooperation (art. 18).

what we call Nature—may have taken 4 billion years to evolve, but it seems destined to be largely destroyed in just four human generations. Rates of species extinction are estimated to be 50 to 100 times the natural background rate; this could increase to 1,000 to 10,000 times with the forest losses projected in the next twenty-five years. The GBA suggested that unless direct action was taken to immediately protect biodiversity, the opportunity of reaping its full potential benefit would be lost forever. Despite its successful completion, the GBA would have been more influential if it had been concluded before the adoption of the C.B.D., and there had been an opportunity for its findings to shape the content of the provisions of the latter.

Noteworthy, when COP2 met in 1995, it charged the C.B.D. Secretariat with the task of producing a periodic Global Biodiversity Outlook covering biodiversity status and trends. Developing such amendments and lawmaking procedures, which are flexible enough to incorporate new scientific findings in a timely and effective way, represents a new opportunity for enhancing the scientific foundation of the C.B.D. These lawmaking competences and corresponding procedures are at the center of this Thesis’ study and are subject to discussion in the Chapters to follow.

An example of a global scientific report that should precede and influence International Environmental lawmaking is the 1989 Synthesis Report produced by the Ozone Assessment Panels. Nearly five hundred scientists and other experts from around the world were involved in this undertaking, which also included peer review, and

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222 UN Doc. UNEP/CBD/COP/2/CW/L.9 (Nov. 1995).
produced over 1,800 pages of findings on the ozone case. The integrated summary, known as the “Synthesis Report,” became the basis for the negotiations of the Open-Ended Working Group (OEWG), established in Helsinki to prepare recommendations for revising the Montreal Protocol.  

Another example is the Intergovernmental Forum on Chemical Safety (I.F.C.S.) that was created in 1994, in order to gather information on the Persistent Organic Pollutants issue, as new information about POPs became available. The I.F.C.S. was based on earlier bilateral or regional forums of cooperation. It employed both experts and representatives from both the public and private sectors, in order to promote dialogue regarding future efforts in the field. Its members are mainly comprised by government representatives that hold expertise in environmental or chemistry disciplines, and not of independent experts. However, the passage from the bilateral or regional efforts to a global effort soon brought positive results. The I.F.C.S. played a pivotal role in the path toward a treaty on POPs. Indeed, the I.F.C.S. considered several key issues, including the

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225 For more information, visit the official website of the Intergovernmental Forum on Chemical Safety, http://www.who.int/ifcs/.
scientific underpinnings for work on POPs, social and economic aspects, alternatives to POPs, and potential responses. I.F.C.S. presented its proposals and recommendations to the UNEP Governing Council and in February 1997, the Governing Council endorsed these results and set forth a mandate to initiate the POPs treaty negotiations. One of the key elements of this mandate was that a process be included, along with “science-based criteria”, in order to allow for substances to be added in the future. The drafters of the 2001 Stockholm Convention followed the guidelines of the I.F.C.S. and soon created an effective, flexible and science-based legal regime that regulated the POPs.

Conducting such assessments has recently become more common. For instance, recently, in a similar spirit, the UN started compiling biennial global assessment reports on disaster risk reduction. The first global assessment report was prepared in the context of implementing the UN International Strategy for Disaster Reduction (ISDR) and was issued in 2009.\(^{226}\) The report discusses how disaster risk is intensively concentrated in a very small portion of the earth’s surface and unevenly distributed. Based on more than thirty years of disaster data, the report highlights three main risk factors that will be magnified by climate change and proposes twenty recommendations to help make the world safer. This report is a collaborative effort undertaken by UN agencies and partners, member States, the World Bank, regional inter-governmental and technical institutions, civil society networks, academic institutions and other ISDR System partners, like Global

F. The State of International Environmental Law at the 2002 UN World Conference on Sustainable Development

1. “…Shall be Based upon Scientific Findings”

Early multilateral environmental agreements acknowledged the importance of science and included specific references to the fact that regulations geared toward environmental protection had to be based on scientific findings. In the early M.E.A.s, scientific knowledge at the international level was not well accumulated; thus, the provisions of the treaties first urged for international organization through, among other means, collecting information. For example, the 1946 Whaling Convention appears to be the first convention to explicitly provide that “continuous collection and analysis of biological data… are indispensable to sound and constructive management of the whale fisheries” and the first to require that conservation measures “shall be based on scientific findings.” The 1957 Fur Seals Convention affirms that adequate scientific research is necessary to determine measures to achieve maximum sustainable productivity and

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228 See Kimball, supra note 6, at 26.

requires that conservation measures be based upon scientific findings. Later, most of the marine living resources conventions provided for conservation measures based upon scientific findings, and they created institutions that would specifically address the need for accumulation of scientific information, reporting and analysis.

Further, the 1959 Antarctic Treaty provided for an annual exchange of information, while in 1961 the contracting parties encouraged scientific studies “as the essential basis for long-term conservation measures.” However, the mere exchange of information was not enough, especially since these early provisions promoted exchange of information among States. These early provisions did not provide for the collection of information by any international or regional permanent body that would generate further scientific knowledge and would subsequently review its findings’ implementation by the signatory States. As this Thesis discusses below, such institutional developments have been deemed necessary over the more recent years.

2. The Requirement for the Scientific Basis of the Conventions

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230 Id. at preamble and arts. IV.4 and V.2.d.


During the 1970s and 1980s, the provisions included in various MEAs started tracing the requirement for a scientific basis that would support the implementation of the MEAs and amendments or any other future revisions, which the MEAs may undergo. The requirement for such a scientific basis has not always been the norm. In most cases, the role played by a provision requiring a scientific basis for decision-making varies among the different multilateral environmental treaties. This variation is obvious even in the context of the conventions regarding the marine environment. The requirement for the international lawmakers to take into account the relevant science, in most cases, would be satisfied if the lawmakers consulted the experts on the pertinent science surrounding the issue in question. The most progressive conventions to this end are dealing with marine pollution and marine conservation themes. For example, the 1972 London Convention States that any amendments to the annexes must be based on scientific or technical considerations.²³³ The 1974 Paris Convention requires that future common measures take into account the latest technical developments.²³⁴ The Convention also provides that for substances not included in the annex, individual or joint measures may be taken, “if scientific evidence has established that a serious hazard may be created…”²³⁵ The International Convention for the Prevention of Pollution from Ships (MARPOL 73/78) and the 1978 Protocol include many technical and operational standards for ships and

²³³ Annex IV, No. 4.

²³⁴ Annexes III and V, Regulation 3.

²³⁵ Art. 4.4, Annex IV, No. 9.
provides for the classification of ship-borne noxious substances in accordance with hazard ratings developed by GESAMP.\textsuperscript{236}

These early provisions require that scientific information be provided to lawmakers, but they do not require lawmakers to follow the scientific findings. Further, these provisions do not require the lawmakers to examine the depth and quality of the scientific information and utilize only that science which is proven to be the best. Under international law, it is not necessary for the science in these general provisions to be the best available science, unless the provisions specifically require it. Accordingly, some of the MEAs and other international texts raised the bar by requiring the best science available.

3. The Requirement for the Best Scientific Evidence Available

The phrase “best scientific and technical evidence available” or similar expressions first appeared in various international environmental treaties in the 1970s, as, for example, in the 1973 Agreement on the Conservation of Polar Bears,\textsuperscript{237} the 1972

\textsuperscript{236} Annex II, Appendices I, II, III.

\textsuperscript{237} Article III of the Agreement on the Conservation of Polar Bears: “Each Contracting Party shall take appropriate action to protect the ecosystems of which polar bears are a part, with special attention to habitat components such as denning and feeding sites and migration patterns, and shall manage polar bear populations in accordance with sound conservation practices based on the best available scientific data.” Agreement on the Conservation of Polar Bears, Nov. 15, 1973, 27 U.S.T 3918, T.I.A.S. 8409 (entered into force May 26, 1976).
Convention for the Conservation of Antarctic Seals\textsuperscript{238} and the 1979 Convention on Migratory Species.\textsuperscript{239} The meaning of the phrase, however, varies according to the systemic interpretation of the text of the MEA, as well as its historic background, supportive documentation, and purpose. Even within the same legal instrument, the meaning of the phrase may vary depending on the rest of the phrases in the provisions used. This is, for instance, the case in the 1982 UN Law of the Sea Convention (the “LOS Convention.”)

The LOS Convention, which commentators have characterized as an environmentally sensitive international convention, requires the “best scientific evidence available” for the adoption of conservation measures by the signatory States.\textsuperscript{240} However, under the LOS Convention, the degree to which the provisions should be based on the “best scientific evidence available” differs according to the particular geographical zone to which the provisions apply. For instance, provisions that conserve fisheries in the high seas must be “designed on” the best scientific available evidence,\textsuperscript{241} whereas measures that conserve regions within the Exclusive Economic Zone (EEZ) of a coastal state need

\textsuperscript{238} Convention on the Conservation of Antarctic Seals, art. 3 para. 2, June 1, 1972, T.I.A.S. 8826, 11 I.L.M. 251 (entered into force 11 March 1978): “The measures adopted under paragraph (1) of this Article shall be based upon the best scientific and technical evidence available”.

\textsuperscript{239} Convention on the Conservation of Migratory Species of Wild Animals, art. III, para. 2, June 23, 1979, 19 I.L.M. 15 (1980) (entered into force 1 November 1983): “A migratory species may be listed in Appendix I provided that reliable evidence, including the best scientific evidence available, indicates that the species is endangered” etc.


\textsuperscript{241} Article 119 of the LOS Convention.
only “take into account” the best scientific evidence available.\textsuperscript{242} When the provisions refer to issues raised under the national jurisdiction of the signatory States, the standard turns to the “best scientific evidence available to the state concerned.”\textsuperscript{243} By this provision, the LOS Convention, despite its status as a global convention, fails to introduce any global requirement for the use of state-of-the-art technologies. As a global agreement, the LOS Convention could require the “best scientific evidence available on a global scale.” This would promote a unified standard of protection of the natural environment, regardless of the scientific sophistication in the signatory state to which the section of nature in question belongs. In contrast to setting a unified standard, the LOS Convention mainly reflects the interests of the signatory States, particularly their interests in providing just that degree of technological protection with which they are comfortable. The standard introduces a country-based approach, since the availability of scientific evidence is different within each state and could vary just as widely as the degree of technological and economic development among all the signatory States of the LOS Convention varies. The only guarantee that the Convention offers for the protection of the marine and coastal environment under national jurisdiction is the application by all the signatory States of the “generally recommended international \textit{minimum} standards.”\textsuperscript{244} Not only does the Convention demand the application of the minimum technological standards, but it also fails to specify the origin and contours of those minimal standards or the methodology according to which each state concerned could ascertain those

\begin{footnotesize}
\begin{enumerate}
\item Article 61 of the LOS Convention.
\item Article 119 of the LOS Convention.
\item See, \textit{e.g.}, article 119.
\end{enumerate}
\end{footnotesize}
standards. Despite the weaknesses inherent in this fragmented protection provided by the LOS Convention, one positive provision suggests that cooperation between the international organizations and coastal States should take place regarding, *inter alia*, scientific cooperation and the exchange of information.  

Stemming from this provision, the fallacies of the old-generation agreements could be healed by taking the right steps in the global environmental architecture and international cooperation in research, technology and exchange of information.

The 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 (UNFSA) is an implementing agreement following the LOS Convention and introduces the obligation of the signatory States to refer to the “best scientific evidence available” for the management of the species under protection. Simultaneously, this agreement disassociates the degree of protection offered by the States from their individual knowledge and technological capacity. Compared to the LOS, this agreement reflects a more contemporary understanding of the environmental and conservation issues against which the fish stocks are facing. In addition, this agreement has a narrower subject than the LOS Convention, which made it easier to

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245 See, e.g., articles 118, 242, 244, 270 and 278 of the LOS Convention.


247 Id. at art. 5(b), 6 para. 3 (a), (b), 10 (f) and 16.
account for the interests of the actors affected by the treaty, negotiate and conclude to adopt a common measure. Similarly, the epistemic communities working on the narrow subject at issue in the UNFSA are more specifically equipped to formulate relevant data, share information and contribute to the application of a common, global standard. The habits of straddling fish stocks and highly migratory fish stocks to move across borders also plays an important role to the adoption of international rather than national regulation.

G. Deployment of New Environmental Tools

In the meantime, new environmental tools emerged with which the international community can better understand the nature of environmental problems, assess the probabilities of the problems’ occurrences and their potential impacts, such as the risk assessments and the environmental impact assessments. A risk assessment is a common first step in a risk management process.\textsuperscript{248} Risk assessment is the determination of the quantitative or qualitative value of risk related to a concrete situation and a recognized threat.\textsuperscript{249} As the WTO dispute settlement bodies commented: an assessment of risk is, at least with respect to risks to human life and health, a "scientific" examination of data and

\textsuperscript{248} Risk management is the legal and political phase of risk regulation. Risk management can be defined as the process of evaluating alternative regulatory actions and selecting among them.

\textsuperscript{249} Quantitative risk assessment requires calculations of two components of risk \((R)\): the magnitude of the potential loss \((L)\) and the probability \((p)\) that the loss will occur.
factual studies. For instance the Biosafety Protocol requires that importing decisions on genetically modified organisms (GMOs) be based on scientific risk assessments. The Cartagena Protocol “takes as its starting point a risk assessment.”

“...systematic, disciplined and objective enquiry and analysis, that is, a mode of studying and sorting out facts and opinions, the Panel's statement is unexceptionable. However, to the extent that the Panel purports to exclude from the scope of a risk assessment in the sense of Article 5.1, all matters not susceptible of quantitative analysis by the empirical or experimental laboratory methods commonly associated with the physical sciences, we believe that the Panel is in error. Some of the kinds of factors listed in Article 5.2 such as "relevant processes and production methods" and "relevant inspection, sampling and testing methods" are not necessarily or wholly susceptible of investigation according to laboratory methods of, for example, biochemistry or pharmacology. Furthermore, there is nothing to indicate that the listing of factors that may be taken into account in a risk assessment of Article 5.2 was intended to be a closed list. It is essential to bear in mind that the risk that is to be evaluated in a risk assessment under Article 5.1 is not only risk ascertainable in a science laboratory operating under strictly controlled conditions, but also risk in human societies as they actually exist, in other words, the actual potential for adverse effects on human health in the real world where people live and work and die.”

See AB (WTO) EC Hormones, para. 161. The extent and the quality of a risk assessment is being elaborated in an interesting manner at the same case, in para. 171 and 172:


Article 15 of the Cartagena Protocol reads as follows:

“...systematic, disciplined and objective enquiry and analysis, that is, a mode of studying and sorting out facts and opinions, the Panel's statement is unexceptionable. However, to the extent that the Panel purports to exclude from the scope of a risk assessment in the sense of Article 5.1, all matters not susceptible of quantitative analysis by the empirical or experimental laboratory methods commonly associated with the physical sciences, we believe that the Panel is in error. Some of the kinds of factors listed in Article 5.2 such as "relevant processes and production methods" and "relevant inspection, sampling and testing methods" are not necessarily or wholly susceptible of investigation according to laboratory methods of, for example, biochemistry or pharmacology. Furthermore, there is nothing to indicate that the listing of factors that may be taken into account in a risk assessment of Article 5.2 was intended to be a closed list. It is essential to bear in mind that the risk that is to be evaluated in a risk assessment under Article 5.1 is not only risk ascertainable in a science laboratory operating under strictly controlled conditions, but also risk in human societies as they actually exist, in other words, the actual potential for adverse effects on human health in the real world where people live and work and die.”

Agreement on the Application of the Sanitary and Phytosanitary Measures (SPS Agreement)\footnote{255} also requires a risk assessment.\footnote{256}

The basic obligation to ensure that SPS measures were maintained with sufficient scientific evidence was examined in detail in the Japan-Varietals Panel.\footnote{257} In Varietals, Japan sought to defend a measure banning the import of certain plants (including peaches, nectarines, and apricots) on the basis that they could be infested with the codling moth, a pest not found in Japan. An exemption regime existed, which required the importer to fumigate the plants in accordance with a “varietal testing requirement” (VTR).\footnote{258} The Appellate Body (AB) agreed with the Panel that the VTR was maintained without sufficient scientific evidence, in breach of SPS Article 2.2. Japan submitted that its measure was nevertheless justified under the Article 5.7 precautionary principle. The AB disagreed, holding that—given the long history of the exemption regime—Japan had not sought to obtain additional information necessary for a more objective assessment within a reasonable period of time.\footnote{259}


\footnote{256} Article 5 of the SPS Agreement, available at http://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm (last visited August 13, 2010).


\footnote{258} Varietals, supra note 254, paras. 2.1-2.28.

\footnote{259} Varietals, supra note 254, para. 97.
The Panel stated that for an SPS measure to be maintained without sufficient scientific evidence, there needed to be a lack of an objective relationship between the phytosanitary measure at issue (which was the varietal testing requirement) and the scientific evidence submitted before the Panel. The Panel concluded that there was a lack of an objective relationship between the measure and the scientific evidence. However, before finding a violation of Article 2.2, the Panel examined Japan's claim that its measure was a provisional measure in accordance with Article 5.7. The Panel found that four cumulative elements needed to be shown for a measure to be consistent with Article 5.7. A Member was allowed to provisionally adopt an SPS measure if: (i) the measure was imposed to address a situation in which relevant scientific information was insufficient; and (ii) the measure was adopted on the basis of available pertinent information. Furthermore, there were additional obligations to: (iii) seek to obtain the additional information necessary for a more objective assessment of risk; and (iv) review the phytosanitary measure accordingly within a reasonable period of time. The Panel only examined the third and fourth elements and found no evidence that Japan had sought to obtain information necessary for a more objective assessment of the risk and review the measure accordingly within a reasonable period of time. It therefore found a violation of Article 5.7 and, consequently, Article 2.2. The Appellate Body upheld this ruling and confirmed that the four requirements were cumulative.” However, the concept of the risk assessment, as used in the SPS Agreement, as well as the scientific criteria and conditions

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260 On appeal, the Appellate Body described Article 5.7 as a "qualified exemption" from the obligation under Article 2.2 to maintain SPS measures based on scientific principles. *Japan-Varietals*, AB Report, para. 80.
that would satisfy its proper use are not clearly defined in the text of the Agreement, allowing for many interpretations.\textsuperscript{261}

A risk assessment is one of the essential tools providing valuable information that should be taken into account when designing laws, from the agenda-setting stage to the implementation stage, so long as it offers usable science for lawmakers. However, on the international level, when the issues to be regulated are global, current scientific methodologies in use may be inadequate for global environmental legislation. This inadequacy stems from the fact that science has not yet managed to produce the large-scale and multi-factored simulations that are needed to provide authoritative tests of global environmental issues. A risk assessment is the cornerstone of the principle of prevention. It addresses the issues before they occur. It allows for preventive legislation, which, in many cases, might be the only way for effective and timely legislation to take shape. Thus, one of the scientific elements in global treaties requiring the scientific community’s attention is the need to ameliorate the risk assessment models by, when possible developing tests with global reach. This weakness regarding the lack of a solid and trustworthy scientific base for large-scale, global issues is a limitation stemming from the circle of science and not the circle of law itself. Therefore, this subject is not explored further in the Thesis. The only step that a lawmaker could take in order to address this weakness would be to require that the realization of such large-scale and multi-factored risk assessments become one of the objectives of the pertinent scientific

\textsuperscript{261} See, Part III, Chapter I, at 471, discussing the Biotech Products case.
groups. Whenever this is achieved, such risk assessments must precede international environmental legislation.

1. Environmental Impact Assessments

Similar issues emerge with respect to the environmental impact assessments (EIA). EIA are another set of recently developed environmental tools that are useful at two main stages of the international lawmaking: first, at the stage before designing the legal instrument, when the main purpose of the EIA is to provide the data upon which the regulation might be based, and second, at the stage after the agreement has entered into force, when, for example, an EIA can evaluate specific applications falling under the subject-matter of the agreement or can review national policies developed to implement the IEL before they are enacted.

The E.I.A.s, whether they are large-scale global assessments or case-specific assessments, are indispensable tools for I.E.L. If conducted properly, they complement the scientific foundation of I.E.L. However, thus far there are only limited uses of E.I.A.s in the field of I.E.L. Important international legal instruments, such as the LOS Convention, do not require E.I.A.s as prerequisites to granting permission to perform activities that might be harmful to the environment. Contrary to many domestic legal systems, such as the Member States of the European Union, no general requirement of
E.I.A. exists at the international level. Due to its major contribution to S.B.L.M., the conduct of an E.I.A. should be required by a general principle of I.E.L., the constituent instruments of the international organizations with environmental competence, or by the provisions of M.E.A.s.

When E.I.A.s are conducted following the methodology of the large-scale systems, they allow lawmakers to identify issues of conflict between existing or soon to be adopted legal instruments. In addition, if properly conducted, they can enhance the ecosystems approach. Large-scale agreements are indispensable to effectively evaluating the impacts of the subject to be regulated or the impacts of the regulation itself on other environmental elements—even when those environmental elements are not directly related to the subject under consideration. As a result, even MEAs that aim to protect one specific environmental good, such as the ozone layer, may simultaneously and involuntarily end up harming a different environmental good, such as stability in the Earth’s climate.

Given the interconnectedness of the environmental systems—the subjects of I.E.L.—it is not uncommon for legislators to pass laws in an effort to mitigate one environmental problem when, in reality, those regulations inadvertently degrade another environmental arena. For example, most gases controlled by the Montreal Protocol on the depletion of the ozone layer - e.g. chlorofluorocarbons and their initial replacements,

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hydrochlorofluorocarbons - are potent greenhouse gases, but their high levels of concentration have either decreased or slowed down in response to production controls agreed upon under the Montreal Protocol. Concentrations of HFCs, which are increasingly produced as alternatives for the Montreal Protocol compounds are increasing in the atmosphere. Although HFCs do not deplete the ozone layer, they affect radiative forcing similarly to other compounds such as perfluorocarbons and sulphurhexafluoride.\textsuperscript{263}

\textit{2. Unresolved Environmental Issues}

Today, there are still a series of issues that remain unresolved. Those issues range from highly sensitive, political issues, such as overpopulation,\textsuperscript{264} to less complex and easier to cope with issues, such as forest protection. Even less financially significant issues, such as indoor pollution, which is long known to cause health and environmental impacts and which could be addressed through the adoption of already existing measures and techniques, have not yet been effectively regulated on the international level.

\textsuperscript{263} MOHAN MUNASHINGHE & ROB SWART, PRIMER ON CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT, FACTS, POLICY ANALYSIS AND APPLICATIONS 21 (Cambridge University Press 2005).

Indicative List of Environmental Issues that Relate to the Anthropogenic Effects on the Natural Environment

Anoxic waters — Anoxic event • Hypoxia • Ocean deoxygenation • Dead zone
Climate change — Global warming • Global dimming • Fossil fuels • Sea level rise •
Greenhouse gas • Ocean acidification • Shutdown of thermohaline circulation
Conservation — Species extinction • Pollinator decline • Coral bleaching • Holocene extinction • Invasive species • Poaching • Endangered species
Energy — Energy conservation • Renewable energy • Efficient energy use • Renewable energy commercialization
Environmental degradation — Eutrophication • Habitat destruction • Invasive species
Environmental health — Air quality • Asthma • Electromagnetic fields • Electromagnetic radiation and health • Indoor air quality • Lead poisoning • Sick Building Syndrome
Genetic engineering — Genetic cross-polination and pollution • Allergies by genetically modified food
Intensive farming — Overgrazing • Irrigation • Monoculture • Environmental effects of meat production • Slash and burn • Pesticide drift • Plasticulture
Land degradation — Land pollution • Desertification
Soil — Soil conservation • Soil erosion • Soil contamination • Soil salination
Land use — Urban sprawl • Habitat fragmentation • Habitat destruction

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Nanotechnology — Nanotoxicology • Nanopollution

Nuclear issues — Nuclear fallout • Nuclear meltdown • Nuclear power • Nuclear weapons • Nuclear and radiation accidents • Nuclear safety • High-level radioactive waste management.

Overpopulation — Burial • Water crisis • Overpopulation in companion animals • Tragedy of the commons

Ozone depletion — CFC

Pollution — Light pollution • Noise pollution • Visual pollution • Nonpoint source pollution • Point source pollution

Water pollution — Acid rain • Eutrophication • Marine pollution • Ocean dumping • Oil spills • Thermal pollution • Urban runoff • Water crisis • Marine debris • Microplastics • Ocean acidification • Ship pollution • Wastewater • Fish kill • Algal bloom • Mercury in fish

Air pollution — Smog • Tropospheric ozone • Indoor air quality • Volatile organic compound • Particulate matter • Sulphur oxide

Reservoirs — Environmental impacts of reservoirs

Resource depletion — Exploitation of natural resources • Overdrafting

Consumerism — Consumer capitalism • Planned obsolescence • Over-consumption

Fishing — Blast fishing • Bottom trawling • Cyanide fishing • Ghost nets • Illegal, unreported and unregulated fishing • Overfishing • Shark finning • Whaling

Logging — Clearcutting • Deforestation • Illegal logging

Mining — Acid mine drainage • Mountaintop removal mining • Slurry impoundments

Toxins — Chlorofluorocarbons • DDT • Endocrine disruptors • Dioxin • Toxic heavy...
In addition, there is a series of new environmental issues, recently noticed, which no international regulator seems to have taken action to regulate. Science reveals everyday new potential risks affecting our natural environment that the contemporary lawmakers should take into account, at least during the agenda-setting stages or during the preparation of regulations governing interrelated issues. The dead zones in rivers provide such an example. The so-called dead zones correspond to the appearance of zones of low oxygen (hypoxia) at the mouths of large rivers that drain major agriculture and livestock areas. It is estimated that these hypoxic zones are increasing in size and number globally. The nitrogen and other nutrients stimulate the growth of phytoplankton. When the phytoplankton dies, they are decomposed by bacteria. The bacteria consume oxygen. Because the phytoplankton is so abundant, oxygen in the water is severely depleted, sometimes below levels where most marine animals can live. As a result, animals that cannot swim out of the hypoxic zone suffocate. The largest dead zone that exists today in the Western Hemisphere is in the Gulf of Mexico.\textsuperscript{266} It is now estimated

that about forty dead zones exist around the world, all of which appeared in the last half-century, while the dead zone phenomenon expands to the world’s oceans. No international regulation to cope with this issue is yet in place to reduce nitrogen, phosphorus and other destructive chemical elements that create the dead zone phenomenon.

Further, another issue is related to the human impact on thermohaline circulation and methane clathrates. A report by the International Geosphere-Biosphere Program warned that,

"apart from the climate change challenge, it is now possible that human activity could disrupt natural systems, such as thermohaline circulation or the fixing of methane clathrates in permafrost and seabed sediments. The disruption of

\[\text{267} \quad \text{Cheryl Lyn Dybas, Dead Zones Spreading in World Oceans, BioScience (July 2005).}\]

\[\text{268} \quad \text{The term “thermohaline circulation” (THC), or otherwise called: the ocean conveyor belt, refers to the part of the large-scale ocean circulation that is driven by global density gradients created by surface heat and freshwater fluxes. The adjective thermohaline derives from the Greek word “thermos” meaning “warm” and the word “haline” referring to salt content, both of the factors that determine the density of the sea water. Wind-driven surface currents, such as the Gulf Stream, head polewards from the equatorial Atlantic Ocean, cooling all the while and eventually sinking at high latitudes (forming North Atlantic Deep Water.) This dense water then flows into the ocean basins. While the bulk of it upwells in the Southern Ocean, the oldest waters, with a transit time of around 1,600 years, upwell in the North Pacific. Extensive mixing, therefore, takes place between the ocean basins, reducing differences between them and making Earth’s ocean a global system. On their journey, the water masses transport both energy, in the form of heat, and matter, in the form of solids, dissolved substances and gases, around the Earth. In this way, the state of the circulation has a large impact on the climate of the Earth. See, e.g., S. Rahmstorf, Thermohaline Ocean Circulation, in Encyclopaedia of Quaternary Sciences (S. A. Elias ed., Elsevier, Amsterdam 2006); S. Rahmstorf, The Concept of the Thermohaline Circulation, 421 Nature 699 (United Nations Environment Programme 2003); GRID-Arendal, Potential Impact of Climate Change, 2006.}\]

The aforementioned cases are only a few examples of either a tendency of indifference regarding the scientific findings by contemporary policy and lawmakers, or evidence of the lack of venues for scientists to communicate with lawmakers regarding new issues that deserve attention. Of course, the limited resources that the international lawmaker has in her hands in order to research and regulate new issues plays a role in the communication vacuum. Notwithstanding the lack of resources, the international regulator could at least be informed about the new issues and start exploring ways of integrating those issues into the agenda of the international negotiations.

3. New Approaches are Necessary - the “Cocktail Effect” and the Biology Approach

Outside the laboratory, living organisms are never subject to single stressors at set doses. In the real world, they face the intricate array of physical, chemical and biological environmental stressors that vary in space and time. The problem of assessing these complex risks for human health and the environment is a great challenge for scientists and regulators alike. For example, even if the so-called
“Maximum Permissible Concentrations” (MPCs) for individual contaminants are not exceeded in water, in combination, they can still be potentially hazardous to wildlife. Regulators need to become familiar with the results from the scientific research that can help overcome some of the challenges associated with assessing the combination effects of chemicals. They should depart from the regulation of single stressors and move forward to the creation of laws that adopt a realistic biological approach that is in essence a ecosystems type of approach. For instance, the EU’s NoMiracle project has adopted a new biological approach to assessing combination effects.

The NoMiracle project considers the interaction of mixtures with biological processes and how the effects of these mixtures could change over time. This receptor-oriented approach puts the exposed individual, population or ecosystem at the heart of assessment; the physiology and behavior of the receptor are important factors for cumulative risks. A practical example of this new biology based approach is presented in an article on the protection of surface waters from the combined effects of chemical contaminants. The study reveals that water flea populations can rapidly become extinct in surface waters, even if concentrations of each component of a mixture does not exceed MPCs.

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New tools need be employed in order to accurately predict toxic effects of chemical mixtures, such as a new tool for assessment based on the Dynamic Energy Budget theory or the ecological risk maps that combine wildlife vulnerability with soil hazard maps. These maps can be used to improve risk analysis, stakeholder communications etc. They are based on a method called vulnerability analysis that uses trait-based ecological risk assessment. This method analyzes the vulnerability of wildlife species to soil pollutants by assessing the various species’ traits and their vulnerabilities to the effects of pollutants, i.e., food preferences, life cycle and behavioral characteristics. This process is based on three factors: (1) exposure of the species to the chemicals, (2) sensitivity of the species to the chemicals, and (3) the potential for populations to recover from exposure.272

Rather than testing a large battery of species, testing resources should be directed toward a better mechanistic understanding of mixture/multiple stressor effects in order to develop a mechanism-based framework for interpreting mixture effects. The most important steps in future testing would be to change the test schemes to acquire data on how effects change over time to enable better predictions of mixture effects in a dynamic world. Regulators should adopt laws that foster the above-mentioned efforts. Regulators should also make laws that are flexible enough to use the knowledge that results from the above-mentioned research efforts. In general, the essence of both IEL

and domestic law should change to reflect this new understanding of the combined effects of human impact on the environment.  

PART I: PATHOLOGY OF INTERNATIONAL ENVIRONMENTAL LAW

CHAPTER I: FRAGMENTATION OF SCIENCE, FRAGMENTATION OF INTERNATIONAL ENVIRONMENTAL LAW, AND FRAGMENTATION OF INTERNATIONAL INSTITUTIONS

The design and promulgation of International Environmental Law take place under the general principles of Public International Law, which was created during an ecologically innocent era. These principles, in combination with the existing weak international environmental governance institutions, restrain the bodies of international institutions from taking successful, collective steps to protect our global environment. As a result, environmental legislation is being created in the most unsystematic, fragmented way, with a state-specific or issue-specific perspective. International environmental laws that regulate and affect the earth’s ecosystems are not based on the logic of interdependence among the natural ecosystems and do not take into account inputs and outputs of both natural and social systems.

274 For a seminal article contained criticism against domestic environmental legislation due to fragmentation, see JOHN WARGO, Fractured Law, Fractured Science, in OUR CHILDREN'S TOXIC LEGACY (John Wargo ed., New Haven, Conn., London: Yale University Press 1998); further, Robinson, supra note 4, at 1079, addresses state sovereignty and the old world system created after the Congress of Vienna in 1815 as a serious impediment to the development of International Environmental Law and governance.

275 International legislation generally is being created in an unsystematic way. Sass comments: “on the international level the diversity of initiatives is even greater [than the national level], both because of the highly decentralized nature of the entire process and because of the dearth of cumulative and up-to-date information about treaty-making…” PAUL C. SASS, SELECTED ESSAYS ON UNDERSTANDING INTERNATIONAL INSTITUTIONS AND THE LEGISLATIVE PROCESS 11 (Edith Brown Weiss ed., Transnational Publishers, Inc., Ardsley, New York 2001).

276 SYSTEMS THEORY, supra note 20.
Further, domestic environmental laws and standards differ according to areas specified by territorial boundaries, irrespective of the possible *continuum* of the ecosystems beyond the national boundaries. My previous study on the regulation of the activities of exploration and exploitation of mineral resources in the International Deep Seabed and the debate on the adoption of the precautionary principle in the framework of the International Seabed Authority proves that international environmental legislation for the oceans follows the legal separation of waters into various international zones and ignores the high interdependence of the oceanic ecosystems and the *continuum* of the oceanic waters. Even the LOS Convention allows for such differentiation, without any environmental *rationale*. Pearson suggests that most international attempts to manage pollution vary by the type of pollutant (e.g. oil and radioactive wastes), the method of introduction into the marine environment (ocean dumping, routine tanker operation), its spatial location (territorial waters, contiguous zone, high seas) or the institutional framework for its management.\(^{277}\)

Fragmentation\(^{278}\) of international environmental regulations is partially due to the *institutional fragmentation* regarding environmental governance. In addition, the fact

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that there is not one single international institution with the overall responsibility for developing coherent environmental norms contributes to the fragmentation in international environmental regulations. UNEP, which at present seems to play a central role within the constellation of international environmental governance, does not have the capacity to institute cohesion and coordination. The UNEP was created by the General Assembly resolution in 1972\(^\text{279}\) to serve “as a catalyst in developing and coordinating an environmental focus in the programs of other organizations rather than initiating or mandating environmental programs on its own account.”\(^\text{280}\) The adoption of legal standards was not included within UNEP’s first priorities, although UNEP has obtained an increasingly “vigorous role” in this direction, at least with respect to the preparation of treaties and other regulations.\(^\text{281}\) UNEP has not acquired lawmaking competences. The creation of the UN Commission on Sustainable Development to monitor the implementation of Agenda 21 did not fill the regulatory gap, either. Thus, “the lack of a specialized environmental agency within the UN system has impeded the development of a separate institutional and bureaucratic expertise that might develop its own agenda and become a driving force for change.”\(^\text{282}\) This leads to the fragmentation of treaties and the compartmentalization of approaches to environmental issues in general. The International Environmental Agreements (I.E.A.s) Project of the University of Oregon, under the

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\(^{281}\) Id. at 42-3.

guidance of Professor Barrett, counted about 1,000 M.E.A.s up to January 2010. Ivanova and Roy discuss the existence of the numerous M.E.A.s in both positive and negative terms, arguing that on the one hand the organizational proliferation seems encouraging since it represents the mainstreaming of environmental considerations into the mandates of all relevant organizations. On the other hand, the practical result of the treaty and organizational proliferation creates jurisdictional overlaps, gaps in regulation, the inability to respond to overarching environmental problems, inefficiencies, implementation inconsistencies, and creates an overload of national administrations.

Further, international arrangements cannot easily cut across traditional functional or spatial boundaries. They are designed according to geographic or functional logics, and are thus insensitive to recognizing or managing natural resources and environmental quality issues that transcend institutional boundaries. International arrangements are bound by the principle of specialization that that is defined in their constituent instruments and confine their activities to the specific field of action therein permitted. Coherence is, indeed, one of the main objectives of the UNEP leadership. For instance, in 2009 the final decisions adopted by the Governing Council included Decision 25/1 in

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283 See a detailed list of MEAs and other environmental agreements at the official website of the “International Environmental Agreements Project”, http://iea.uoregon.edu/page.php?query=base_agreement_list&name=Multilateral Environmental Agreements<br>for the period from 1800 to 2010, inclusive&where=start&InclusionEQ=MEA&Sig_DateGE=1800&Sig_DateLE=2010 (last visited March 9, 2010). See also Scott Barrett, International Environmental Agreements, in ENVIRONMENT AND STATECRAFT, 131 (2005).


285 HAAS, supra note 46, at 31-32.
which the 25th Session of the Governing Council of UNEP/Global Ministerial Environment Forum:

“reaffirm[ed] its commitment to continuing the discussion on international environmental governance with a view to adopting a General Assembly resolution on advancing and determining specific actions towards greater coherence and efficacy of the international environmental institutional framework.”

Decision 25/1 further notes that incompatibility is especially troublesome when it leads to inconsistency in international law. Legal inconsistencies may hinder compatible outcomes. For instance, the CBD calls for more stringent regulation of the GMOs than the WTO. This has created a regulatory conflict. Raustiala’s article on the multiple and parallel international legal instruments and international institutions that are involved and simultaneously govern the world plant genetic resources is very illustrative. Currently, there exists no comprehensive database where one could find which organizations are active in which environmental issue areas, in what projects the organizations are engaged, what resources are being invested in each area, and what are the results of the various organizations’ efforts. Not to mention there are no common datasets, sources of information etc. The development of concrete science and the development of effective procedures within I.E.L. will help the clustering of the multiple multilateral environmental regimes in practice, and will help international society move forward to more effective, coordinated environmental regimes.


288 Raustiala & Victor, id.
A. The Principle of Specialization in International Institutions

IOs are not intended to be proto-States in the making. They were established under the principle of specialization\textsuperscript{289} of intergovernmental organizations and hold only limited and delegated powers, lacking the plenary powers of sovereign States. Per analogy, the same holds true for the bodies of the international arrangements. The present Thesis does not aim to provide a taxonomy of contemporary lawmaking processes in international organizations, since those are well-documented and analyzed in several outstanding sources.\textsuperscript{290} Nor does the Thesis aim to extensively present the IOs with environmental competence. The present Thesis focuses upon the intersection between those IOs that have environmental competence and those that enjoy lawmaking powers. As a first introductory step, the following box provides a comprehensive presentation of the international institutions that have environmental competence and also a reference on the specific themes they deal.

Fragmentation in I.E.L. has many facets and many sources. One reason for fragmentation in I.E.L. is the fragmentation of the underlying science. “Fragmented science” refers both to fragmented scientific data and the fragmented institutional

\textsuperscript{289} The principle of specialization as applied to international organizations means that IOs were organized around specific purposes, and the powers of each IO are limited to the parameters set by the principle to be addressed. See Jarle Trandel, Contending Decision-Making Dynamics within the European Commission, 5 COMPARATIVE EUROPEAN POLITICS 158, 163 (2007).

cooperation among scientific teams. Fragmented research and fragmented institutional cooperation inevitably leads to fragmented scientific advice, upon which laws are based.291 Since the scientific foundation of the resulting agreement may not be solid and unified, it is likely that the laws emanating from the specific advice will also be fragmented. If an overall policy body existed on the international level that was in charge of the promulgation of I.E.L., it would adopt such procedures and venues of cooperation between various scientific groups, in order to coordinate pertinent science before adopting the laws.292

291 See Harro van Asselt, Dealing with the Fragmentation of Global Climate Governance: Legal Approaches in Interplay Management (2007) (Global Governance working paper No. 30) (on file with the Global Governance Project).

292 See Appendix No. 3.
B. The Need for an Ecosystems Approach and an Integrated Approach

Transferring the focus from a species-to-species approach to the ecosystems approach soon became one of the principles of sustainable development. As early as the 1960s, International fisheries agreements adopted the logic of the inter-fisheries, ecosystems approach as opposed to the species-by-species approach.\textsuperscript{293} Fisheries management practices have recently shifted with the popularization of considering the “large marine ecosystems” as a conceptual tool for managing fisheries. The “large marine ecosystems” tool is a more comprehensive approach because it considers ecological principles that link multiple species within a given region. By applying such principles, it is easier to maintain sustainable yields. In the absence of such ideas informing fisheries management, greater overfishing would occur.\textsuperscript{294}

Among the first conventions to follow the ecosystems approach was the 1980 Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR).\textsuperscript{295} The concept of ecosystem management and the need to manage many species sharing a

\begin{itemize}
\item \textsuperscript{293} William T. Burke, \textit{Aspects of Internal Decision-Making Processes in Intergovernmental Fishery Commissions}, 43 \textit{WASH. L. REV.} 115 (1967).
\item \textsuperscript{294} Joseph R. Morgan, \textit{Large Marine Ecosystems: An Emerging Concept of Regional Management}, 29 (10) \textit{ENVIRONMENT} (December 1987).
\end{itemize}
common habitat, rather than one species in isolation, was a key to the CCAMLR. There are many ways of applying the ecosystems approach regarding fisheries management. For example, when limits are set on fishing the ecosystems approach requires regulators to consider the impact those limits will have on populations of other animals that may rely on such species for their own food. The major focus of the second generation of environmental law and policy is the restitution of degraded natural sites. The focus is reactive and not proactive. Not surprisingly, even the new laws and policies are far from being comprehensive enough to manage large-scale ecosystems or to protect and revive ecosystems.

However, M.E.A.s and other international legal instruments have not successfully applied the ecosystem approach. Currently, I.E.L. is still based on fragmented science. There are no default mechanisms providing for the coordination of research and science worldwide, not even within the same country’s laboratories and scientific groups. These issues of coordination are outside the scope of the Thesis. An S.B.L.M. approach, however, should be based on coordinated research and non-contradictory scientific information. Otherwise, regulations might be protective for one environmental public health goal, but disruptive or adversely impacting another. To the extent possible, inter-institutional research cooperation can be designed during the upcoming convention.


Currently, such cooperation occurs only after the adoption of a treaty and stems from the provisions of the treaty. Such is the example in the Convention of the Biological Diversity, which is presented below.

C. Integrated Approach and Institutional Cooperation

Institutional cooperation between the international climate change legal regime and the regime of the Convention on Biological Diversity (CBD) was established only after the adoption of the climate change legal instruments. Other than the CBD, which explicitly mandates its COP to “contact through the Secretariat, the executive bodies of the conventions dealing with matters covered by this Convention with a view to establishing appropriate forms of cooperation with them” (article 23 paragraph 4 (h)), the UNFCCC and the Kyoto Protocol do not explicitly refer to the need for cooperation with other international environmental legal regimes. It was not until COP-7 that the COP explicitly recognised that “synergies” between the UNFCCC and the CBD “should continue to be explored through various channels, in order to achieve sustainable development.” The need for enhanced cooperation between the UNFCCC and the CBD was then explicitly acknowledged in Decision 13/CP.8 of the COP-8. This decision stated that the aim should be to ensure the convention’s “environmental integrity” and to enhance “synergies under the common objective of sustainable development,” in order to

299 CBD, supra note 216, at art 23.4(h).


301 Decision 13/CP.8 (Cooperation with Other Conventions) para. 1 in Report of the Conference of the Parties on its Eighth Session, Held at New Delhi from 23 October to 1 November 2002 FCCC/CP/2002/7/Add.1 (2002).
“avoid duplication of efforts, strengthen joint efforts and use available resources more efficiently.”

Although the international climate change legal regime now explicitly acknowledges the need for greater cooperation with the CBD regime, in practice, it has not yet taken initiatives to promote an enhanced cooperation. However, the climate change legal regime responded to various initiatives of the CBD regime in an effort to enhance institutional cooperation. On the initiative of the CBD COP, concrete steps have, for instance, been taken in the area of scientific assessment. A pilot assessment of the inter-linkages between biodiversity and climate change is already underway, led by the Subsidiary Body for Scientific, Technical and Technological Advice of the CBD (CBD SBSTTA), in collaboration with the UNFCCC SUBSTA and the UNFCCC.  

Apart from the emerging cooperation between the international climate change legal regime and the CBD in the area of scientific assessment, a key development in enhancing greater cooperation between these two regimes was the establishment of a joint liaison group (JLG) between the Secretariats of the CBD, the UNFCCC and the United Nations Convention to Combat Desertification (UNCCD). In endorsing the JLG, the UNFCCC SBSTA mandated the JLG to “enhance coordination between the three conventions, including the exchange of relevant information” and to “explore

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302 Id.

303 Id. at 524-525.

304 Convention to Combat Desertification (CCD), June 17, 1994, 33 I.L.M. 1332.
options for further cooperation … including the possibility of a joint work plan and/or a workshop. The JLG met for the first time in December 2001 and, since 2001, has met on a regular basis. At first, the JLG’s activities were restricted to the exchange of information, but the JLG has now also begun to enhance cooperation in the implementation of the conventions. Initiatives were taken to identify options regarding technology transfer, education and public awareness, reporting, research and adaptation.

In other agreements there are only general provisions encouraging the establishment of cooperation between institutional arrangements, such as in the case of the Executive Body of one of UNECE’s main conventions, the 1979 Convention on Long-Range Transboundary Air Pollution, which mentions that:

“The Executive Body is keen to foster collaboration with relevant international organizations and with international agreements on air pollution in other regions. (Emphasis added by the author)”

Again, provisions establishing institutional cooperation should be proactive. Relevant institutional arrangements need to be arranged upon the entry into force of a relevant regulation. Even far beyond the entry into force stage, institutional arrangements promoting intra-institutional cooperation can provide the drafters of the regulations


306 Id.

scientific data and expertise. At the very least, such international institutions should provide for the possibility to adopt serious and detailed consideration by the drafters of the regulations and be subject to regulations from the very start. These institutional arrangements and emphasizing inter-linkages among their bodies would support the creation of a stable and trustworthy scientific base for the convention. Further, they should support the steady, timely and accurate input of information to the bodies/bodies of the international environmental arrangements.

**D. Delays in International Responses to Newly Environmental Problems**

There are dozens of environmental cases that represent, in essence, major failures on behalf of the competent international, regional and national fora to get informed in a timely manner, understand pressing issues, and effectively regulate major environmental problems. These failures are due to, among other factors, the inadequate flow of scientific information to international institutional arrangements. It took decades for the international community to deal with the climate change phenomenon and the depletion of the ozone layer, despite longstanding scientific evidence of these problems.\(^{308}\) The structures of the international governance system did not allow for timely and effective scientific input into the law and policy-making procedures. As R. Mitchell has stated, science is not influential, because its influence is usually indirect, i.e. *via* the media or

\(^{308}\) *Speth, supra* note 199, at 92.
other pathways, and there are not specific ways that science could directly influence
lawmaking.\(^{309}\)

Climate change is one of the most “prominent” environmental issues, about which
almost all countries seem to have clustered together and are seriously trying to combat.
Governments in many countries, including the European Union countries, abdicate the
development of many of their major policies to climate change policies, and they keep
the efforts of mitigation and adaptation to climate change very high up in the public
discourse agenda. Emphasis on combating climate change was connected to the efforts of
very prominent politicians, such as Vice President Al Gore, who made the topic
“fashionable” and also easy to understand by the lay public. The advice of scientists did
not bring the issue of climate change into the mainstream and did not exercise influence
upon the development of public law and policy. Had the public legal community adhered
to scientific advice regarding climate change, then governments would have taken action,
if not two centuries ago when they first heard about the anthropogenic influence on
climate change, at least a few decades ago when the first countervailing arguments about
the occurrence of climate change appeared. This was not the case. On the contrary,
climate change is one of the many cases where the political and legal response was
delayed for many years. In order to get a clearer idea of this delay, it is interesting to cite
Schmidt’s narration below:

\(^{309}\) Ronald B. Mitchell, Making Environmental Science Relevant for Policy Makers
“13 The President [George W. Bush], uncertain of the science and following the pattern of his father by calling for more study, commissioned one more look by the National Academy of Sciences (NAS). The result? Once again, the NAS concluded in 2001 that climate change is occurring, and as a result of human activity. 14 This should have been no surprise since warnings about global warming as a result of industrial activity came from the NAS as early as 1975 in Understanding Climate Change: A Program for Action. Two years later, the NAS produced another report, this time saying that the implications of projected climate change “require prompt action.” 15 That President Bush continues to propose further study while the NAS called a quarter century ago for prompt action warrants a brief foray into the history of how we know what we do. The effect of atmospheric carbon dioxide concentrations on the earth’s climate is not a new idea. It was first theorized by the French mathematician and scientist Jean-Baptiste Fourier in 1824. He noticed that certain gases trapped heat in the atmosphere and coined the phrase “greenhouse effect.” 16 The theory was refined in 1860 by John Tyndall, who measured the absorption of heat by carbon dioxide and water vapor. Then, in 1896, the Nobel Prize-winning Swedish chemist, Svante Arrhenius attempted to measure the increases of CO2 concentration and predicted that a doubling would cause a 5.6°C increase, a figure remarkably close to modern estimates. It remained for G.S. Calendar, a British meteorologist who attempted to persuade the Royal Society in 1938 that global warming had taken effect, to gather information from 200 weather stations around the world and demonstrate that average temperatures had increased between the 1880s and the 1930s. His theory that CO2 causes the warming was not well received by the Royal Society. Thus, it was not until 1957 that Roger Revelle (who later taught Al Gore at Harvard) and Hans Suess from the Scripps Institute of Oceanography warned of climate change and began routine measurements of the CO2 increases at a remote 11,000-foot observatory on Mauna Kea, Hawaii. These efforts led fairly quickly to a White House conference on the subject in 1965, an important symposium at MIT in 1970, and a warning about “a catastrophic warming effect” in the UN Secretary General’s environment report. Out of these developments came the 1972 UN Conference on the Human Environment in Stockholm and, in 1979, the first World Climate Conference in Geneva called by the W.M.O. By 1982 the National Academy was ready to put figures on the problem and predicted that a doubling of carbon dioxide concentrations would lead to global warming of 1.5°- 4.5°C. By 1988, the IPCC was formed and during the disastrous heat wave of 1988, James Hansen of the NASA announced to a televised hearing of the US Senate Energy Committee that he was “99% certain” that the warming of the 1980s was not a chance event. Thus, it was public attention turned to the problem of global warming. 17 But science never operates in a vacuum. Even as the evidence of global climate change mounted, so too did opposition to action.”

Moreover, most scientists currently agree that anthropogenic emissions of greenhouses gases (GHG) result in global warming. 311 Beginning in 1995, the reports of the IPCC had forecasted an increase in the mean global temperature by about 2 degrees


311 All relevant information is available at the official website of the IPCC, www.ipcc.ch (last visited April 10, 2010).
Celsius (with estimations ranging from 1 to 3.5 degrees Celsius) over the next century, if no countermeasures are taken.\textsuperscript{312} If the mean global temperature rises beyond 2 degrees Celsius, then the anthropogenic interference with climate may prove to be dangerous. Global warming is going to have severe worldwide effects in various spheres, such as agriculture, forestry, coastal areas and human health. One important consequence of global warming will be a general rise of sea levels. The IPCC estimates an average increase in sea levels by about 50 cm (estimations range from 15 to 95 cm) until the year 2100 under a “business-as-usual” scenario. The questions of how to deal with this human-induced climate change involve various social, economic, political and scientific measures.\textsuperscript{313} It was not until 1992 that the UNFCCC was adopted. Member States to the UNFCCC and other fora have started to take on some of those measures. However, the fact remains that it took several decades for the international community to start putting in effect a comprehensive international climate change regime and valuable time in combating climate change was lost.

In due regard with the case of the ozone layer, it is notable that since the 1970s, there was scientific evidence of the distractive effects of many substances on the ozone layer and the dangers that its depletion could cause. It took almost two decades and a series of “ozone wars” among industry, scientists, environmental groups and


governments, in order for all sides to accept the ozone protection challenge in the early 1990s and begin experimenting with regulatory approaches and the discovery of alternatives that would substitute the substances that were depleting the ozone layer.

Of course, if someone reads the ozone case more closely, one can easily identify one more factor preventing the integration of science in decision-making; the financial weakness of many scientific and environmental groups, which prohibits them from conducting research that would prove and communicate their findings in a timely and effectively manner.314 In the early 1970s several scientists’ requests for funding for fluorocarbon related research were rejected. These scientists had just started to understand the odd concentration of fluorocarbons in the atmosphere (Jim Lovelock in the U.K.) and this concentration’s potential connection to adverse environmental effects (Charles Kolb in the U.S.). The same obstacle presents itself today regarding many environmental problems that require additional research to identify the extensiveness of the problem. This is most prominently the case of the GMOs, where pro-GMO industry is investing billions of dollars in research, while only very limited funding exists for research by environmental groups to ascertain the GMOs’ negative impacts.

In the case of the ozone layer, the delay regarding the adoption of protective measures was also industry-driven. Benedick refers to this by mentioning that the

314 Speth, supra note 199, at 92.
international chemical industry initially vigorously denied any connection between the
condition of the ozone layer and the increasing sales of CFCs.\(^{315}\) Parson States:\(^{316}\)

“Scientific and technological knowledge about the feasibility, performance, and
cost of potential alternatives to CFCs, and the distribution of this knowledge among
economic and policy actors, played crucial roles in sustaining both the early deadlock and
the later rapid progress of the ozone regime. Before the transition, such knowledge was
held predominantly by the CFC producers, who had conducted initial research on
chemical alternatives in the 1970s. These firms had no interest in helping the proponents
of CFC controls to compel them to do something costly, difficult and risky.
Consequently, they sought to promote a pessimistic view of the viability of alternatives.
They consistently characterized alternatives in highly unfavorable terms, kept tight
control over relevant technical information, and attempted to keep detailed arguments
about the potential to develop alternatives out of policy debates as much as possible.

Moreover, these firms were not just able to control the availability of technical
knowledge to other actors; they also had some control over how much they themselves
know, since they could choose how far to investigate alternatives. Their decisions to
abandon alternatives research around 1980 in part simply cut off investment in a project
unlikely to be profitable, but also limited their exposure to the risk of CFC regulation.
By pursuing alternatives far enough to be reasonably confident that they could develop them
if needed, they limited the harms they would face under CFC regulation. But pursuing
alternatives to the point of solving all major problems would have put them in the
position of holding information whose revelation could harm them, by increasing the risk
of CFC restrictions. As long as they were confident of success in opposing restrictions, it
was better not to know how to solve the problems of commercializing alternatives. The
firms trod this line skillfully. Sustaining the widespread belief that CFC alternatives were
infeasible or unacceptably costly, while making no outright false statements, was a great
strategic success of industry through the early 1980s.

Other actors know much less than the CFC manufacturers about alternatives. To
the extent that anyone knew about reducing CFC use through process or product change,
it was the major user firms. But since most known non-CFC alternatives had been
rejected in favor of CFCs or replaced by them, this knowledge had an unfavorable bias:
most alternatives had known problems that would require significant effort to overcome.
Moreover, since users were not mobilized in looking for alternatives absent a salient
threat to CFCs, many alternatives had simply not been identified because there was no
reason to look. For their part, the activists seeking to promote controls could not
demonstrate that significant reductions were feasible, because they lacked the
authoritative technical knowledge necessary to industry expertise, independent attempts
to assess CFC reduction opportunities were thwarted from the start. These studies’
conclusions that the maximum feasible reduction in CFC use at any price was 25 to 50
percent illustrate how totally the industry view prevailed. This distribution of knowledge
sustained a stable equilibrium in which the level of confidence that alternatives could be
developed and the level of efforts made to develop them were both law. Those who

\(^{315}\) BENEDICK, supra note 220, at 12, with reference to LYDIA DOTTO & HAROLD SCHIFF, THE OZONE
WAR 149 - 165 (Doubleday, Garden City, N.Y. 1978).

\(^{316}\) See EDWARD A. PARSON, PROTECTING THE OZONE LAYER 257 (Oxford University Press 2003).
wanted controls on environmental grounds could not show that they were feasible, while those with the best knowledge would not reveal it, lest others use it to make them take costly action.

[surpassing the Low-Confidence Equilibrium thanks to assessments... The transition to regime formation did not depend on a shift in the conditions sustaining this low-confidence equilibrium, but was driven by other forces, principally the new consensus around a freeze formed by the 1986 scientific assessment. A belief that developing alternatives would be easier than widely believed no doubt contributed to the U.S. activist’s 1986-1987 campaign for strict cuts, but the evidence to support such confidence remained extremely thin and the activities were also willing to risk taking a position whose feasibility was uncertain. Once enacted, however, the initial target and other elements of the regime changed the conditions that had supported the low-confidence equilibrium, establishing a new equilibrium that generated sustained progress in identifying and implementing ways to reduce ozone-depleting chemicals. The new equilibrium was supported by interactions between the periodic reviews of Protocol controls, firms’ efforts to limit their exposure to regulatory and competitive risk, and a cluster of activities to produce, evaluate, and distribute technical information about alternatives, with the Protocol’s technology assessment process at its hub.

Establishing these new conditions depended on the regulatory target in the initial Protocol, and the spread of calls for stronger restrictions over the next two years. The initial target and the risk of more to come transformed the business environment for firms producing and using ozone-depleting chemicals. The protocol triggered the beginning of consolidation in CFC production almost immediately. Over the longer term the looming targets posed grave risks for CFC producers but also held opportunities for the largest and most technically sophisticated producers, since they created the market conditions necessary to commercialize chemical alternatives. For CFC uses, on the other hand, the effects of both the initial controls and the threat of more were entirely harmful. Threatened with losing technologies on which they depended to varying degrees, users were offered instead the unrealized promise of costlier chemical alternatives of uncertain availability, performance, and regulatory acceptability. This prospect set off a headlong rush to reduce dependence on the threatened chemicals. User firms collaborated with CFC makers to develop fluorocarbon alternatives, but also pursued their own research and entertained third-party proposals. Diverse routes were explored, including related and unrelated chemicals, old or rejected approaches reconsidered, changes in manufacturing processes and product characteristics, and operational changes to reduce emissions and use.

Government and industry collaborated on several initiatives to help promote this innovation drive and focus its results, by publicizing the need for reductions and promoting open exchange and critical examination of proposals. These collaborations included the annual “Alternatives” conferences on ways to reduce all uses of ozone-depleting chemicals, workshops on sector-specific reduction opportunities, and cooperative organizations to undertake extended work on specific problems. These activities made technical knowledge about alternatives and emission-reduction options much more widely available than previously, breaking the predominant control over information formerly held by the CFC producers."

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317 Id. at 158.
Impotence to discover new science and technology or put them effectively on the agenda of negotiations have made some scholars noting that, “the idea that science and technology has had a profound impact on international law has seldom been recognized or even considered … one will find little direct acknowledgment of such effects in the source materials of international law.”318 They hold that International law, in fact, has had rather little to say about science or technology, except for a few treaties regulating the use of technologies,319 guarantees of freedom of scientific research in the high seas,320 in the Antarctic,321 in outer space,322 and efforts to secure protection for intellectual property.323 Other scholars though hold the science and technology have changed the ends pursued by international law, the means available to international law for pursuing those ends and the nature and structure of international law itself.”324 The present Thesis holds that the truth lies somewhere among those evaluations. Especially regarding the regulation of


324 DELLAPPENNA, supra note 1, at 831.
environmental issues, contemporary science and technology sometimes cannot even provide the necessary information that is necessary for regulation. This is the case where large-scale modeling is necessary.

**E. Impotence to Design Large-Scale Scientific Models**

One of the main issues that contemporary I.E.L. faces is that, apart from a few, distinctive cases, such as the climate change legal regime, the majority of international
environmental legislation is not based on *a priori*, large-scale scientific models that study the interdependence of as many factors as possible on a global scale. No matter how difficult the design of such patterns and their implementation are, these efforts can be fundamental for the promulgation of consistent environmental regulation, especially in cases that the subject-matter of a regulation has global and not regional dimensions, or it is influenced by many factors.\(^{325}\) The application of even scientifically excellent large-scale models presents many difficulties. This is, for instance, the case of the 1980s National Acid Precipitation Assessment Program (NASAP), which failed to contribute to the policy-making as effectively as initially promised.\(^ {326}\) Indeed, the absence of a central political authority with the power to implement global projects, to conduct strategic planning through large-scale systems studies and global scientific assessments further complicates the generation of S.B.LM.\(^ {327}\)

In order to understand the importance and possible geographical spatiality of a large scale measurement, one could mention the following example. In 1970s, Du Pont

\(^{325}\) D\O\’NELL\A H. M\EAD\O\WS ET AL., THE LIMITS TO GROWTH: A REPORT FOR THE CLUB OF ROME’S PROJECT ON THE PREDICATION OF MANKIND xi (Potomac: New York, 1972).


\(^{327}\) See a parallel idea of implementing the natural sciences driven “complexity theory” in global environmental decision-making in MATTHEW J. HOFFMAN, OZONE DEPLETION AND CLIMATE CHANGE 38 (State University of New York Press 2005). Hoffman supports his theory with reference to several scholars that support the need for political science to move beyond Newtonian, linear models of decision-making: JOHN LEWIS GADDIS, History, Science and the Study of International Relations, in EXPLAINING INTERNATIONAL RELATIONS SINCE 1945 32 (Ngaire Woods ed., Oxford University Press 1996); Steven Bernstein et al., God Gave Physics the Easy Problems: Adapting Social Science to an Unpredictable World, 6 (1) EUROPEAN JOURNAL OF INTERNATIONAL RELATIONS 43; Matthew Hoffman & John Riley, The Science of Political Science: Linearity of Complexity in the Design of Social Inquiry, 24 (2) NEW POLITICAL SCIENCE 303. Noteworthy, Hoffman makes an interesting association between the complexity theory and the social sciences driven constructivist theory, which I also follow below in the paper, p. 38.
scientists that created a large-scale model in order to evaluate the adverse effects of the fluorocarbons in the upper atmosphere that led to the destruction of the ozone layer. They, however, failed to do so, because their model was limited to search for adverse effects only in the lower atmosphere and they did not considered the effects in the upper atmosphere. As a result their initial model showed that there was no issue with the ozone layer. The scale Du Pont scientists used was not large enough to illustrate the existence and magnitude of one of the most severe global environmental problems.\textsuperscript{328}

It is not enough that the large-scale system is spatially large. In order modeling to be serve the need for better regulation, it should also encompass all the factors that can influence the outcome of an issue and which legislation should take into account, in order to cope with the issue effectively. Large-scale models should accordingly follow a holistic approach. In the case of the Mediterranean Sea, the countries under the MAP/UNEP followed a holistic approach. ‘Due to the holistic approach, the epistemic community suggested policies that included all Mediterranean countries’ concerns with how to control pollution. The integrative and synergistic nature of the ecology discipline’s beliefs about cause-and-effect relationships in the physical environmental prevented the penetration of key core concerns into the agenda-setting process. The ecological epistemic community’s views did not reflect broader systemic influences, and

\textsuperscript{328} For more information about the experiments conducted by Du Pont back in 1972, see LYDIA DOTTO & HAROLD SCHIFF, THE OZONE WARS (Doubleday & Company, Inc., Garden City, New York 1978).
hence helped to promote integrative outcomes that reflected different countries’ concerns with environmental protection…”\(^{329}\)

\(^{329}\) See HAAS, supra note 46, at 218.
F. Efforts for the Promulgation of a Coherent Set of General Principles of International Environmental Law

The efforts to adopt specific principles of International Environmental Law were aiming at the creation of an overall legal framework for the global environment. An overall, specified set of substantive principles would, first, consist or not of principles promoting the integration of science in law, and, second, would add to the set of primary legislation that specifies the criteria upon which expert bodies of international institutions adopt secondary legislation. A solid overall set of general principles of I.E.L. would also contribute to a system approach in I.E.L. curing the existing fragmentation of the current legal international system. Desai describes the efforts of the establishment of such framework:

“The WCED Legal Principles and IUCN Draft Covenant
The UN General Assembly set up the World Commission on Environment and Development (WCED) in 1983. The Assembly had asked the WCED to formulate a “global agenda for change” that appeared to be rather “unrealistic and much too ambiguous.” The marathon work of the WCED underscored the interlocking crises of the global economy and global ecology, since ecological stress hampers economic prospects in the same way that rampant economic growth causes environmental harm. The WCED set up an Expert Group on Environmental Law in 1985 in order to prepare a report for the consideration of the Commission on “legal principles for environmental protection and sustainable development, and proposals for accelerating the development of relevant international law.” The mandate of this Experts Group was to prepare legal principles which “ought to be in place now or before the year 2000” and to assist the Commission


to design a framework for the legal and institutional changes necessary to address the global environmental challenge.

In its report to the WCED on August 1986, the Expert Group culled out a set of 22 principles covering (i) General Principles concerning Natural Resources and Environmental Interferences; (ii) Principles Specifically concerning Transboundary Natural Resources and Environmental Interferences; (iii) State Responsibility; and (iv) Peaceful Settlement of Disputes. Interestingly, the articles were presented by the Expert Group as, “formal and binding obligations of and among States” and, in turn, as an implicit statement of the “rights of all States.” They were designed to provide elements for a Draft Convention on Environmental Protection and Sustainable Development. It recommended the preparation of a “legally-binding universal convention” under the United Nations’ auspices, preferably before the 20th anniversary in 1992 of the Stockholm Conference.

At the subsequent follow-up United Nations Conference on Environment and Development (UNCED), however, only a few of them could find a place in the Rio Declaration.\textsuperscript{336}

“The WCED Expert Group’s efforts, however, found its echo in yet another move for the purpose by the International Union for Conservation of Nature and Natural Resources (IUCN – the World Conservation Union) for the purpose. The IUCN General Assembly at San Jose in 1988 gave formal support to its Commission on Environmental Law (CEL) to prepare elements for an International Convention on Environmental Protection and Sustainable Development.\textsuperscript{337} … The UN Secretary-General too, in his

\begin{itemize}
\item \textsuperscript{333} Id. at 7.
\item \textsuperscript{334} The Expert Group recommended that:
\item \hspace{1em} (a) The Convention should consolidate existing and establish new legal principles, and set out the associated rights and responsibilities of States individually and collectively for securing environmental protection and sustainable development to the year 2000 and beyond,
\item \hspace{1em} (b) The Convention should also include effective measures for protecting those rights and for fulfilling those responsibilities…” See id. at 15.
\item \textsuperscript{335} BHARAT H. DESAI, INSTITUTIONALIZING INTERNATIONAL ENVIRONMENTAL LAW 84 (Transnational Publishers, Ardsley, NY 2004).
\item \textsuperscript{336} The legal principles enunciated by the Expert Group have been both substantive as well as procedural in nature. They appear to rely on the scattered corpus of existing law and also seek to lay down some principles, such as intergenerational equity, as de lege ferenda. Some of the principles may well be regarded as a part of soft law and in the process of evolution. The efforts put up by the Expert Group in sculpting these principles to be part of a future convention were endorsed by the Brundtland Commission. See Our Common Future, World Commission on Environment and Development, Our Common Future (Oxford: Oxford University Press, 1993), p. 333.
\item \textsuperscript{337} For a detailed account of the drafting history, see Parvez Hassan, The IUCN Draft International Covenant on Environment and Development: Background and Prospects, in A LAW FOR THE
yearly report on the organization, hinted at the need “to devise a covenant regulating relations between humankind and nature.” The draft principles were re-designated as a “covenant” in order to endow them with an authority similar to the United Nations covenants in the field of human rights. A version of the draft covenant (44 articles) was submitted to the third session of the UNCED Prepcom. Following the extraordinary reach and scope of the effort, the Draft Covenant was launched in 1995, on the occasion of the 50th anniversary of the UN. While offering the justification for such a covenant, it was explained: While there already exists a wide body of international law on the subject, it has, like national law, of necessity developed incrementally, largely in a piecemeal and ad hoc manner. Most international agreements are sector specific-in nature, concluded at different times and at uneven stages of international knowledge and concern. They also vary regionally, so that norms applicable to some parts of the world do not apply elsewhere, or are global in scope, but not yet universally ratified.

In this laudatory effort, within a span of 72 articles, a very broad range of issues is covered. They encompass fundamental principles (such as respect for all life forms, common concern of humanity, intergenerational equity), general and specific obligations, transboundary issues, implementation and cooperation, responsibility and liability and application and compliance. Its aim, among others, is to provide a “code of conduct,” which may guide States, intergovernmental organizations and individuals. It considerably improves upon the previous World Charter for Nature drafted by IUCN. However, its scope is wider and not confined only to natural resources conservation.

1. Montevideo Programme


343 DESAI, supra note 331, at 86.
UNEP prepared a set of 15 draft principles on the conduct of States in the field of the environment regarding conservation and harmonious utilization of natural resources shared by two or more States. These draft principles were adopted by the UNEP Governing Council but, for reasons that never became known, were not subsequently considered by the General Assembly. In the background of this initial effort to formulate some general principles of international environmental law, the Governing Council of UNEP adopted an ambitious plan for the development and periodic review of environmental law, which was prepared at an ad hoc meeting of senior government officials that were experts in environmental law at Montevideo (Montevideo Program) in 1981.\textsuperscript{344} This Programme was adopted by the UNEP Governing Council and became an ambitious exercise in laying down a framework, method and program for the development of environmental law.\textsuperscript{345} It recognized the importance of codification and progressive development of environmental law to promote international cooperation, mutual understanding and friendly relations among States, apart from serving as an essential instrument for proper environmental management and improvement of the quality of life. The first phase of the Montevideo Programme led UNEP to focus on framing as well as adopting a series of guidelines, rules and principles, which prescribed the general framework for the behavior of States on a host of issues, such as land-based sources of marine pollution, protection of the ozone layer, and the transport, handling and disposal of toxic substances. Some other areas covered under the Programme included


\textsuperscript{345} The UNEP Governing Council resolution 10/21 of 31 May 1982, adopted the experts’ programme and endorsed their conclusions and recommendations; see UNEP GC report A/37/25, 31 May 1982.
the issues of international environmental cooperation in emergencies, coastal zone management, soil conservation, transboundary air pollution, international trade in potentially harmful chemicals, protection from pollution of inland waterways, legal and administrative mechanisms and methods of environmental impact assessment.

At the following two review sessions of the Meeting of Senior Government Officials Expert in Environmental Law, a second phase of the Montevideo Programme was adopted.\textsuperscript{346} In the second phase, the Montevideo Programme was further elaborated to address emerging environmental challenges and to develop relevant legal regimes. It was adopted by the UNEP Governing Council, as a broad strategy for the activities of UNEP in the field of environmental law for the 1990s.\textsuperscript{347} The Montevideo Programme II identified nineteen principal areas for the development of environmental law, each of which contained the objectives, strategies and activities to be carried out under it. The program, in general, sought to ensure full participation of all States and put emphasis on the development and effective implementation of environmental law and policy; however, it still followed a sectoral approach.\textsuperscript{348} In order to align UNEP’s priorities with


\textsuperscript{348} The Montevideo Programme II comprises the following 19 elements: (A) Enhancing the capacity of States to participate effectively in the development and implementation of environmental law; (B) Implementation of international legal instruments in the field of the environment; (C) Adequacy of existing international instruments; (D) Dispute avoidance and settlement (E) Legal and administrative mechanisms for the prevention and redress of pollution and other environmental damage (F) Environmental impact assessment; (G) Environmental awareness, education, information, and public participation; (H) Concepts or principles significant for the future of environmental law; (I) Protection of the stratospheric ozone layer;
those of the governments, mid-term review of the Montevideo Programme provided an opportunity for stock taking. This was designed to ensure the effectiveness of UNEP’s role in international environmental lawmaking. As such, the mid-term review in 1996 provided a series of suggestions. The Governing Council of UNEP launched a process in 1999 for the third phase of the Montevideo Programme. It had called for convening a meeting of senior government experts in environmental law in the year 2000 to prepare “a new program for the development and periodic review of environmental law.” The Montevideo Programme III was adopted in February 2001 at the 21st session of the UNEP Governing Council providing a roadmap to UNEP for the development of environmental law in the next decade. The Montevideo Programme has facilitated an interesting interplay between the scientific processes and International Environmental Law. It, however, remains soft law instrument that simply sets some guidelines toward future development of International Environmental Law.

(J) Transboundary air pollution control (K) Conservation, management and sustainable development of soils and forests; (L) Transport, handling and disposal of hazardous wastes; (M) International trade in potentially harmful chemicals; (N) Environmental protection and integrated management, development and use of inland water resources (O) Marine pollution from land-based sources; (P) Management of coastal areas; (Q) Protection of marine environment and the law of the sea; (R) International Co-operation in environmental emergencies; and (S) Additional subjects for possible consideration during present decade; see UNEP, Montevideo Programme II, available at http://www.unep.org/law/PDF/Montevideo_II.pdf.


350 340 UNEP GC Decision 20/3 of February 3, 1999 on “Programme for the development and periodic review of environmental law beyond the year 2000”.

The case of the United Nations Forum on Forests

The case of the international negotiations on the regulation of forestry activities are among those cases that prove that scientific uncertainty is not an adequate excuse for failing to adopt legally binding international legislation in a timely manner. To cope with the intense issues of deforestation and illegal lodging, States could adopt some clear and fundamental principles of forestry and integrate them as the governing principles for the management of their forests. In October 2000 the Economic and Social Council of the United Nations (ECOSOC) based on previous soft law, namely Chapter 11 of the Agenda 21 adopted by the Rio Conference, established in its Resolution 2000/35 the United Nations Forum on Forests (UNFF), a subsidiary body with the objective to promote “the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment to this end…”352 The UNFF enjoys universal membership, since it is composed of all the Member States of the United Nations and the competent specialized agencies.

Despite the certainty and clarity in forestry science in combination with the dangerously accelerating rate of deforestation and afforestation and despite several subsequent meetings over the years, the participatory States never managed to adopt a binding instrument. It was mainly, but not exclusively, some of the developing countries that did not want to impose any obligations on themselves, in order to keep gaining income from illegal timbering. As a result of the unsuccessful negotiations, the UNFF produced a Non-binding Instrument on All Types of Forests (NLBI) in 2007, which was adopted by the UNGA.353

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CHAPTER II: CAUSES OF PATHOLOGY

A. Vagueness of the Provisions

The lack of precision of many terms in International Law is often intentional since, quite often, international negotiations may be able to reach only a vague compromise. In many cases, flexible norms have advantages. The positive side of vagueness is that it allows for flexibility and adaptation in changing circumstances and scientific advances.\(^{354}\) Notwithstanding this, there are legal mechanisms, which combine the desired flexibility with precision and importantly exact provisions. For instance, combining a framework convention containing vague terms with specifically outlined implementing protocols successfully balances flexibility and precision.\(^{355}\) However, the case where the signatory-parties create instruments with such vague objectives, in order to cure it via the adoption of consequent legal instruments, is different from the vagueness that is so extensive in I.E.L. The latter vagueness does not allow for a full


\(^{355}\) See, below, e.g at 384 and 466.
understanding of the law adopted and essentially brings the interpreter bewilderment, even after having used all known methods of valid interpretation. The latter is the case of an array of M.E.A.s. Further, most importantly, the more vague the term and looser the standard, the higher the likelihood that scant nations will enter into agreement.\footnote{See Eyal Benvenisti, Collective Action in the Utilization of Shared Freshwater: The Challenges of the International Water Resources Law, 90 AJIL 384 (1996).}

Vagueness in the name of broader participation, may, however, render international instruments meaningless. Treaties may contain aspirational and open-textured language that makes it difficult to determine both the meaning of the provisions and compliance or breach.\footnote{Marti Koskenniemi, New Institutions and Procedures for Implementation Control and Reaction, in GREENING INTERNATIONAL INSTITUTIONS (Jacob Werksmann ed., Earthscan, London 1996).} Use of terms-of-art, even the “holy word” of the 20th century, namely “sustainability,” may add up to different approaches, understandings, interpretation of obligations, culminating in the “diffusion” of environmental law.\footnote{For the use of the concept of “diffusion” as compared to “integration” of environmental law, see Jenny Steele & Tim Jewell, Law in Environmental Decision-Making in Law, in ENVIRONMENTAL DECISION-MAKING: NATIONAL, EUROPEAN AND INTERNATIONAL PERSPECTIVES 3 (Tim Jewell and Jenny Steele eds., Clarendon Press, Oxford 1998).} For instance, in a field that usable science exists, namely, in the fisheries management, there is no coherent or similar phrases that concise the meaning of sustainability. While attempts to define the principle of sustainable use of natural resources have been made, no general definition exists. “Terms such as “proper”,\footnote{FAO Agreement for the Establishment of a General Fisheries Council for the Mediterranean art. IV(a), Sept. 24, 1949, 126 U.N.T.S. 237.} “wise use”,\footnote{Convention on the Conservation of Migratory Species of Wild Animals, preamble, June 22, 1979, 19 I.L.M. 15 (1980).} “judicious
“exploitation”, “sound environmental management”, “ecologically sound”, and “rational use” are used interchangeably without definitions.”

In the face of scientific uncertainty, vagueness of the provisions is more understandable, since there is no countervailing factor to convince the negotiating parties to adopt one solution over the other and thus national and other kinds of interests might prevail. However, in cases where usable science exists, science could be the common denomination for the negotiating parties to agree upon more specific and meaningful provisions. However, this is not the case in a wide range of M.E.A.s. An illustrative example is the 1997 Convention on the Law of the Non-navigational Uses of International Watercourses (International Watercourses Convention – I.W.C.), which is bereft of scientific standards, despite the existence of clear science regarding water management. Since 1992, Agenda 21 has underlined the critical role of planning and cooperation with regard to the world’s fresh water, based on some basic principles. In


367 Freshwater resources are an essential component of the Earth’s hydrosphere and an indispensable part of all terrestrial ecosystems… The widespread scarcity, gradual destruction and aggravated pollution
addition, there are several bilateral and small-scale regional binding agreements that refer to shared watercourses management. The objective of most of these agreements is to share the water resources and to defend States’ rights to profit from the watercourse services. However, on the international level the only binding instrument that lies is the I.W.C. Other international legal instruments are soft law instruments, mostly model laws. These model laws incorporate more environmentally sensitive and science-based provisions than the I.W.C does.

The I.W.C. follows the traditional patterns of international treaties. I.W.C., being the only global convention on the issue, offers a framework for the relations of the riparian States and elaborates rules for the allocation of the watercourses among the States, rather than promoting pollution prevention. It does not affect the rights or obligations of parties to it under pre-existing agreements (Article 3 para. 7); however, it mildly encourages States that become parties to the Convention to “consider harmonizing” existing agreements with “the basic principles of the Convention.” The Convention mainly refers to the allocation of water rights and *in abstracto* requires the use of sustainable management of the international watercourses, while it includes only few provisions on the environmental management of the watercourses *per se*. The Convention discusses environmental management issues in about ten articles out of seven chapters and thirty-seven articles. The purpose of the provisions seems to be avoiding

of freshwater resources in many world regions, along with the progressive encroachment of incompatible activities, demand integrated water resources planning and management… Transboundary water resources and their use are of great importance to riparian States. Agenda 21, ch. 18, paras. 18.1-18.4.

harm to other riparian States and avoiding harm to the watercourses *per se*. Only a few of the provisions incorporate the modern understanding of science and law regarding ecosystem management; most of them are too vague and do not offer specific guidelines for the management of the international watercourses. The sustainable management doctrine is repeated throughout the text. However, discovering the specific meaning of sustainable management according to the I.W.C. would be difficult for a lawyer, practitioner or scholar that may need to implement the convention. I.W.C. does not address major questions on water management, such as whether the I.W.C. views dam construction as sustainable. Accordingly, it is not adequately specific to address major environmental challenges, such as the recent plans of the Indian Government to interlink thirty-seven major rivers in order to divert the water to the southern part of the country. This plan would deprive India’s neighboring countries of valuable water supplies and would create serious environmental degradation.\(^{369}\)

The question is whether the I.W.C. could contain more specific, science-based provisions. The existing model rules, as well as the regional and domestic legal instrument indicate that additional integration of watercourses management science would be possible. For instance, the Helsinki Rules on the Uses of the Waters of International Rivers, adopted in Helsinki in 1966, represent a pioneering – for that time –

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\(^{369}\) Abu Raihan M. Khalid, *The Interlinking of Rivers Project in India and International Water Law: An Overview*, 3(2) CHINESE J. INT’L L. 553-570 (2004). It is difficult to overstate the devastation that would follow the implementation of India’s proposed plan, including damaging the livelihood of 100 million out of the 130 million people living in Bangladesh. *See* Khalid, *supra* at 554-555.
and comprehensive codification of the law of international watercourses.\footnote{International Law Association (ILA), \textit{Helsinki Rules on the Uses of the Waters of International Rivers}, 52 INT'L L. ASS'N REP. CONF. (August 20, 1966).} First of all, the Helsinki rules apply, if not the hydrological cycle approach, at least the approach of the “international drainage basin,” which is defined as “a geographical area extending over two or more States determined by the watershed limits of the system of waters, including surface and underground waters, flowing into a common terminus.”\footnote{Helsinki Rules, Annex II.} DiMento has compared the laconic provisions of the I.W.C. employed to specify the concept of equitable utilization of international rivers with the Helsinki Rules on the Uses of Waters in International Rivers in 1966:

“A 'non-exhaustive' catalogue of the criteria to be employed is part of Article 6.2 of the Draft Articles on the International Law Commission [note: now Article 6.1 of the IWC.] It is composed of seven elements, from (a) geographic, hydrographic, hydrological, ecological and other factors of a natural character” to “(g) the availability of alternatives, of corresponding value, to a particular planned or existing use.” The International Law Association, on the other hand, in adopting the Helsinki rules of the Uses of Waters in International Rivers in 1966, listed eleven relevant factors and concluded that assessment should not be limited to these. Enumerating them makes graphic the gap between existing rhetoric and language that would encourage involvement and realization of a workable international norm:

(a) the geography of a basin, including in particular the extent of the drainage area in the territory of each basin State;
(b) the hydrology of the basin, including in particular the contribution of water by each basin State;
(c) the climate affecting the basin;
(d) the past utilization of the waters of the basin, including in particular existing utilization;
(e) the economic and social needs of each basin State;
(f) the population dependent on the waters of the basin in each basin state;
(g) the comparative costs of alternative means of satisfying the economic and social needs of each basin State;
(h) the availability of other resources;
(i) the avoidance of unnecessary waste in utilization of waters of the basin;
(j) the practicability of compensation to one or more of the co-basin States as a means of adjusting conflicts among users;
(k) the degree to which the needs of a basin State may be satisfied, without causing substantial injury to co-basin State.1

Fuentes adds the environmental impact of the use of the river on other basin States as a relevant factor in establishing equitable utilization as an additional element to the aforementioned list.2 Further specification of the provisions is also possible. One could also draw examples of more concrete regulations adopted by the European Community, such as the EU Water Framework Directive 2000/60/EC3 and the Groundwater Directive 2006/118/EC that was developed in response to the requirements of Article 17 of the Water Framework Directive that sets limits on concentrations of thirty-three priority substances and eight other pollutants that threaten the aquatic environment and human health.4 The pollutants pollute the watercourses to the same degree no matter if the watercourses belong to the European Union territory or not. I.E.L. does not consist of the same specific standards at the EU Environmental Law, providing a much lower, if not inexistent, protection, while underlining science in a factor that remains constant.

The absence of substantive regulation on water management is a pathological phenomenon that characterizes a plethora of international environmental treaties. International environmental treaties should incorporate meaningful provisions that offer

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1 See also Ximena Fuentes, The Criteria for the Equitable Utilization of International Rivers, in 58 British Yearbook of International Law 337 (Ian Brownlie & James Crawford eds.).
2 Id. at 340.
3 Available at http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32000L0060:EN:NOT.
4 For more information, visit http://ec.europa.eu/environment/water/water-framework/groundwater.html.
specific guidelines to policy-makers around the world, incorporate lessons of science, specify best available practices, and focus on the ecosystems’ logic. In the case of the I.W.C., vagueness existed in the provisions that elaborated the specific objective of the convention. There are other cases that vagueness can also extend to vagueness regarding the objective itself. For example, the ultimate objective of the United Nations Framework Convention on the UNFCCC, as defined in Article 2, is too complex:\textsuperscript{376}

“The ultimate objective of this Convention and any related legal instruments that the Conference of the Parties may adopt is to achieve, in accordance with the relevant provisions of the Convention, stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system…”

The objective of the United Nations Framework Convention on Climate Change\textsuperscript{377} (UNFCCC) and its Kyoto Protocol\textsuperscript{378} is the reduction of GHG emissions to combat climate change. The UNFCCC, however, aims to stabilize atmospheric GHG concentrations “at a level that would prevent dangerous anthropogenic interference with the climate system”\textsuperscript{379}, without any further specification on what acts, policies or laws would sufficiently satisfy this goal. Currently, the open question is relatively simple: which specific target should the States agree upon so that they avoid the “dangerous

\begin{footnotesize}
\begin{enumerate}
\item[376] Munasinghe & Swart, supra note 260, at 282.
\item[379] Article 2 of UNFCCC.
\end{enumerate}
\end{footnotesize}
anthropogenic interference” with the climate system. The UNFCCC does not explain either in Article 2 or in any other place what consist DAI. The provision serves as a flexible framework provision that gives power to the experts, or to subsequent legal instruments (protocols), to define which anthropogenic interferences are “dangerous.” However, the issue remains that there is no concrete quantity or features or definitions of anthropogenic interferences that qualify as sufficiently dangerous to the climate to justify prohibition. The I.P.C.C. reports converge on the finding that any rise of the global average temperature more than 2 degrees Celsius will turn out to be dangerous. The signatory States, however, do not accept that under the UNFCCC they have to take all action that is necessary in order to prevent the temperature from rising more than 2 degrees Celsius. Scientific uncertainty that still surrounds the issue plays a destabilizing role in the adoption of strong decisive provisions. Article 2 could have better described the criteria under which an anthropogenic interference with the climate should be considered dangerous. In addition, Article 2 could have given more concrete guidance regarding its implementation.

For instance, the Kyoto Protocol that implements the UNFCCC tightens the UNFCCC’s emissions goal, imposing on developed countries and countries in transition, or otherwise called Annex I countries, reduction of their total GHG emissions to at least 5% below the 1990 levels during the first commitment period from 2008-2012.

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380 Global Climate Change and U.S. Law, American Bar Association Section of Environment, Energy and Resources (Michael Gerrard ed. 2007).

Scientists do not evaluate the 5% target to be adequate in order to prevent the raise of the temperature by the most 2 degrees Celsius, and avoid DAI. Even during the current negotiations for the adoption of the Post-Kyoto Protocol at the United Nations Climate Change Conference in Cancun, Mexico, (COP 16), countries set the targets for the reduction of their GHG emissions based on the percentage of the reduction that they evaluate that is convenient for their economies, rather than that what a desirable objective would be according to scientists. While scientists advocate that global GHG emissions should be lower than 50% by 2050, the average global emissions do not seem to lower more than 30% by 2050.  

Standard setting based not on scientific, but rather financial and other political criteria occur not only in cases that scientific certainty is not so strong as in the climate change challenge, but also in cases that science is certain. For example, during the attempts to regulate the reductions in chemicals that contributed to acid rain, the signatory States adopted an only 30% reduction by 1993 and by using 1980 as the baseline year for the reduction. The baseline of 1980, the target date of 1993, and the 30% reduction target have been characterized as quite arbitrary, while the Protocol that introduced this target Protocol as only remotely related to specific evidence. The 30% reduction of the chemicals was not based on scientific indications, but rather realist

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382 The numbers are not fixed yet, since the negotiations for the Post-Kyoto Protocol are still ongoing at the time of the deposit of the Thesis. Information about the ongoing negotiations at COP 16 can be found at [http://unfccc.int/2860.php](http://unfccc.int/2860.php).

evaluations on behalf of the States, since they thought that a reduction of “20% was too little, and 40% seemed too much…”\textsuperscript{384}

B. Legislative Inaction in the Face of Scientific Uncertainty

Some scholars hold that science does not provide lawmakers with information that is adequate to enable them to make unbiased, objective policy. Science is actually made up of multiple and often contradictory discourses: “it cannot provide natural or obvious definitions for environmental problems or answers to questions of actions.”\textsuperscript{385}

Thus, the question that repetitively comes up is about the existence and the degree of

\textsuperscript{384} \textit{See} JORGEN WETTESTAD, \textsc{Designing Effective Environmental Regimes: The Key Conditions} 26 (Edward Elgar Publishing 1999), at 91.

\textsuperscript{385} MATTHEW J. HOFFMAN, \textsc{Ozone Depletion and Climate Change – Constructing a Global Response} 26 (State University of New York Press 2005).
certainty in science, and whether there is any certain science that can be used for the purposes of law.

1. Chaos Theory and Certainty

The lack of certainty in science has been prevalent since Heraclitus declared the volatile nature of things by saying, “Tha panda rhei,” through Einstein’s theory of relativity and its modern interpretations. The theory of relativity, which demonstrates that space and time are not separate, but exist on a single continuum. The theory of relativity moved the scientific community’s emphasis from matter to motion. The post-relativity scientific community focused on shifts “from one ‘quantum state’ to another,” and the significance of fluid relations\(^{386}\), \(^{387}\) The theory of chaos\(^{388}\) has also influenced public


\(^{387}\) “In such fluidity, the greatest epistemological casualty is scientific certainty. The foremost principle of the new conception of reality is indeterminism, which is a genuine universal principle, not merely a gap in current human comprehension… More recently, chaos theory and its notion of self-organizing systems has taken the principles of unpredictability and random shift still further, applying them to systems of far greater complexity than the level of sub-atomic interaction, such that “the notion of predictability or of a repeatable experiment, long taken to be the basis of scientific method, is now in extreme doubt.” It is now maintained that chaos waits just below the surface gloss of order, ready to pull apart any apparent state of equilibrium. Yes, within this condition of flux, of random shift, a more profound and intangible order is still to be discerned. Chaos and order are, then, not incompatible, but co-existent within a larger whole...”. PETER HAY, MAIN CURRENTS IN WESTERN ENVIRONMENTAL THOUGHT 130 (Indiana University Press, Bloomington and Indianapolis 2002).

\(^{388}\) Chaos theory is a field of study in mathematics, physics, and philosophy studying the behavior of dynamical systems that are highly sensitive to initial conditions. This sensitivity is popularly referred to as the butterfly effect. Small differences in initial conditions (such as those due to rounding errors in numerical computation) yield widely diverging outcomes for chaotic systems, rendering long-term
administration theories and research. To the extent that public administration influenced the management of environmental cases, the theory of chaos influenced the management of environmental cases, too. The theory of chaos augmented uncertainty over the causes and the results in multi-factored natural systems, such as in the case of climate change. On the other hand, however, it helped to promote the importance of utilizing a large scale approach regarding ecosystems, including analyzing the system-wide consequences of technological interventions in biological systems. This emphasis on large scale models should be taken carefully into account when designing environmental policies.

The theory of chaos, other relevant theories, and the incomplete human knowledge regarding nature have all contributed to proponents of deregulation using “scientific uncertainty” as an anthem for minimal environmental regulation over the last decade. Indeed, there are a considerable number of contemporary policy debates and

prediction impossible in general. See Stephen H. Kellert, In the Wake of Chaos: Unpredictable Order in Dynamical Systems 32 (University of Chicago Press 1993). This happens even though these systems are deterministic, meaning that their future behavior is fully determined by their initial conditions, with no random elements involved. Id. at 56. In other words, the deterministic nature of these systems does not make them predictable. Id. at 62. This behavior is known as “deterministic chaos” or simply “chaos”. Chaotic behavior can be observed in many natural systems, such as the weather. Raymond Sneyers, Climate Chaotic Instability: Statistical Determination and Theoretical Background, 8 (5) Environmetrics 517–532 (1997).

literature debates regarding scientific uncertainty in the environmental arena and its implications upon the precautionary principle’s status as a legal or political principle.\textsuperscript{390}

Scientific certainty has been used disproportionately as an argument for deregulation or inaction in regulations in both domestic and international fora. Air tight evidence regarding the magnitude of the environmental risk or damage and the scientific viability of preventing that risk is often insufficient to support environmental regulation. This is especially true if one compares environmental risks to the risks and solutions available in other arenas in which society has traditionally expended efforts, such as development or fostering financial prosperity through free trade. In the absence of scientific certainty, the defenders of the natural environment could only invoke the precautionary principle (“PP”), which gradually becomes a weaker, more restricted concept, with limited results.\textsuperscript{391}

However, debates focusing on scientific uncertainty, namely on what remains unknown, only disorient the international community from a more useful question: how can the international community use what is known? How can international community


\textsuperscript{391} See, for instance, the limited influence of the precautionary principle invoked by the European Community against the arguments of the U.S., Canada and Argentina regarding the EC legislation for the Genetically Modified Products, in the Biotech Case before the World Trade Organization. The case has been a victory of the free trade proponents limiting the ability of the WTO Member States to deny the import and use of GMOs in their respective territories based on the conclusion of the Panel that there was not enough scientific proof that the specific GM products under question could adversely affect public health and the environment. \textit{See} European Communities — Measures Affecting the Approval and Marketing of Biotech Products, WT/DS291/INTERIM, WT/DS292/INTERIM, WT/DS293/INTERIM (Feb. 7, 2006); \textit{See} also the Mutually Agreed Solution reached on 18 March 2010, between Argentina and the European Union, WT/DS293/41.
move forward, beyond the excuse of scientific uncertainty? Is it possible for International Environmental Law to employ “usable” science or, whenever it exists, “clear” science? The terms “usable” or “clear” science approximately indicate the degree of certainty that is required in order to issue international environmental regulation. When the Thesis refers to the integration of science into the lawmaking processes, it refers to uncertain science that cannot offer any credible base for lawmaking; rather, it refers to either “clear science”—to the extent that science can be “clear”, namely science that has certainty prevails in the relevant dimensions surrounding an issue, regarding the reason of its occurrence, the consequences or the means to cope with it—or to a more moderate term—“usable science.” Which science is considered to be usable can vary from different perspectives. In general “usable science” stands for the scientific information offered with some advanced degree of certainty and clarity that can serve for decision-making purposes outside the scientific and academic communities. Cases of clear science or at least usable science include issues in forestry, chemicals, and water management, where specific scientific data and solutions exist.

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393 E.g., clear science exists regarding the consequences of global warming on the polar bear and its sea-ice habitat or forestry. See respectively, Brendan R. Cummings & Kassie R. Siegel, Ursus Maritimus: Polar Bears on the Thin Ice, 22 Fall Nat. Resources & Env’t 3 (2007); and Dionysia-Theodora Avgerinopoulou, Implementation and Enforcement of Multilateral Environmental Agreements – The New EC Generalized System of Preferences Scheme, 12 Colum. J. Eur. L. 827, 834 (2006).

Sometimes, usable science for policy-makers and lawmakers is presented in the form of “scientific consensus.” Scientific consensus is the collective judgment, position, and opinion of the community of scientists in a particular field of study. Consensus implies general agreement, though not necessarily unanimity. Scientific consensus is not by itself a scientific argument, and it is not part of the scientific method. Nevertheless, consensus may be based on both scientific arguments and the scientific method. Consensus is normally achieved through communication at conferences, the publication process, replication (reproducible results by others) and peer review. These lead to a situation in which those within the discipline can often recognize the existence of such a consensus; however, communicating that consensus to outsiders can be difficult. Occasionally, scientific institutes issue position statements intended to communicate a summary of the science from the "inside" to the "outside" of the scientific community. In cases where there is little controversy regarding the subject under study, establishing what the consensus is can be quite straightforward. Scientific consensus may be invoked in popular or political debate on subjects that are controversial within the public sphere but which may not be controversial within the scientific community, such as evolution.

Further, there should be a distinction between “primary scientific claims” and “assessments.” Parson, discussing the science’s success in protecting the ozone layer,

clarifies the distinction between the two notions. He submits that assessments were sufficiently influential to catalyze the world community’s efforts to protect the ozone layer, while primary scientific claims failed:

“By “primary scientific claims,” I mean the direct results of scientific research: new observations, theories, or model results advanced by scientists individually or in groups, published in the scientific literature, or verified through criticism, attempted replication, and consensus in the relevant research community. By “assessments,” I mean collective, deliberative processes of scientific experts reviewing and evaluating the state of scientific knowledge, and synthesizing it with a view to providing information of use to policy makers or decision-makers, typically in the form of an official report issued under the authority of some organization. Assessments can include restatements or critical evaluations of preexisting primary scientific claims, as well as synthetic statements that draw conclusions from the existing body of research. Assessments do not normally include new primary research or analysis, although one important ozone assessment, the 1988 Ozone Trends Panel, did.”

Thus, assessments are a step closer to “usable science.”

It is noteworthy that the latest assessments incorporate social, financial, and scientific data, as well as evaluations of policy-making efforts in areas pertinent to the assessments’ subject matters. Those evaluations go a step beyond usable science, and their results provide useful advice to the lawmaker. However, these assessments do not have the authority of the natural sciences assessments. As mentioned above, the more a piece of expert advice departs from natural science’s findings, the less this piece of advice is countervailing for the lawmakers to use in shaping the content of the laws.

There is discussion about the degree of certainty and credibility of the science upon which a decision is based in order to classify such a decision as science-based. For

396 PARSON, supra note 313, at 263.
example, should scientific information be peer-reviewed on not? In the U.S. jurisprudence, the U.S. Supreme Court required that relevant literature be peer-reviewed in the famous *Daubert v. Merrell Dow Pharmaceuticals, Inc.*.\(^{397}\) On International Law, though, there is not one single standard. Academics, such as Tarlock, however, that the analysis in the *Daubert* case is non-scientific itself and only inhibits the use of science in regulatory decision-making, while credible consensus within the scientific community would be enough for regulation. He accepts a “credible scientific foundation” rather than a higher but unattainable standard as sufficient to promote the accountability necessary to integrate science into democratic decision-making.\(^{398}\)

According to Andersen and Osterng an approach to the possible manipulation of policy and law by science is that only consensual science should guide policy and law.\(^{399}\)

In the same spirit, Hastie adds:

> “Where such consensus is evident, there is less scope for the strategic manipulation of scientific disputes, and scientists are able to draw on the shared credibility of multiple sources. Consensus is a source of authority for scientists and policymakers, as it allows the cognitive authority of scientific knowledge to be mobilized behind a single set of policy recommendations. Scientific assessments for policy are typically designed to produce a report that reflects a consensus among authors, often embodied in a specific summary for policy makers. In most cases, scientific assessments are tasked with summarizing the “state of the art”, outlining points of agreement among all scientists (not just assessment authors) on a specific issue, and areas where agreement remains to be reached.”\(^{400}\)


\(^{399}\) Given what is seen as the widespread “manipulation” of science in the face of uncertainty, a common argument to emerge is that science can only influence policy where it is consensual, that is, shared by all but the most peripheral scientists. S. Andersen & W. Ostering, *International Resource Management Decisions*, 3 FISH AND FISHERIES, 3-19.

\(^{400}\) Hastie, *supra* note 89, at 524.
C. Questioning of Science
There is no value-free position that allows any human to stand outside the interaction between human societies and natural systems. The scientific community is often divided in ascertaining the causes of environmental problems and, accordingly, science is often discredited as an instrument for solutions. Apart from cases where intentional disturbance of objectivity occurs, there are additional critiques of science, such as the feminist critiques, which have shown that the internal logic of the natural sciences is by no means value free: it is, voluntarily or not, subject to cultural and political evaluation. Feminist and postmodern critics of science have attempted to deconstruct the Positivist image of science as objective and value free. Science, these critics argue, exist as a non-privileged social institution in which facts are theory laden, theories are value laden, and values are power laden. In post-modern philosophy of science, even nature itself is alleged to be “socially constructed.”

Although aspects of post-modernism would nullify the legitimacy of the very science which this Thesis exhorts in S.B.L.M, there is an aspect of post-modern theories, which the analysis presented here cannot ignore: post-modernism presupposes the existence of a “non-privileged social institution” within which value-driven science is

401 Lowe & Paavola, supra note 265, at 8.
being made or used. If this factor is omitted or ameliorated, science becomes less value driven and usable for lawmaking. To this end, the first part of this Thesis deals exactly with the ways in which more effective procedures can promulgate more objective scientific advice in the international lawmaking system. Secondly, in order to work and test the assumptions of the Thesis, it is necessary to hold the variable of science’s objectivity constant. And indeed, departing from the absolute relativism of post-modernism, the Thesis underlines the assumption that objective, usable science that can benefit the environment and public health exists.

Scientific uncertainty and controversies over a series of important environmental and public health questions, controversies over BSE and the variant of Creutzfeldt-Jakob disease, genetically modified organisms and cover-ups of the adverse effects of smoking and leaded petrol have accelerated the critique on science. In part, the recognition that science is not objective or neutral and that it is instead value-laden is long overdue. Questioning the value bases of science has led to an increasing politicization of the scientific process. The Intergovernmental Panel on Climate Change (IPCC) was established to give scientific advice on climate change. Once it became clear that its reports had enormous implications for large industries and nation States, its work became politicized. Further, science is not only seen as marked by human fallibility – it is often cynically seen as being at the bidding of government or big business. This is indeed

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405 See, e.g., “The debate about the wording of the Second Assessment Report has been well documented. While the scientific working group concluded that human activity has a “significant influence” on climate change, pressure from business interests and crucially affected nations resulted in the final summary for policy-makers using the less threatening term “discernible influence”. Similarly, the conclusion of the Third Assessment Report – that human activity was responsible for most of the climate change in recent decades – led to charges that the IPCC was claiming more than the science justified. When
one of the counterarguments and one of the structural difficulties regarding the use of science in lawmaking. In acknowledging this phenomenon, one should further emphasize that these reoccurring phenomena are one of the reasons lawmaking processes should be created within structured and reviewable frameworks of international arrangements.

The distortion of science at the national level is also a part of the problem in that it affects the position of the State on the international level. As McGarity and Wagner emphasize, one of the ways to distort science is to “attack” it. “The primary aim when attacking science is to cause others to lose confidence in the reliability of the challenged research.”\textsuperscript{406} As Heinzerling comments, “For quite some time, this strategy worked well for industries attacking the science of climate change. The fossil-fuel industry spent millions in the 1990s on a coordinated campaign to show doubt about the emerging consensus that the planet was warming and that humans were to blame. A now-famous 1991 strategy memo described the goal of this campaign simply: ‘to reposition global warming as theory (not fact).’”\textsuperscript{407} As a result of this strategy the public grew less sure. The position of the U.S. on the international level regarding the ratification of the Kyoto Protocol is by now well known; the U.S. Congress did not ratify the Kyoto Protocol and the voice of the public was not strong enough to “convince” their representatives to do so.

Even now, in 2010, while the international community is heading toward the negotiations


\textsuperscript{407} Heinzerling, \textit{supra} note 403.
of a Post-Kyoto Protocol, a minority of scientists continue to dispute the existence and/or the significance of the global warming phenomenon, potentially depriving the States from signing an effective international instrument at the end of the Kyoto Protocol. The constituencies will not understand why their countries should commit to an e.g. 40% reduction in CO2 emissions, a commitment which would impose additional financial burdens and constraints onto the public, rather than a lower percentage in the range of 25%. The less convinced the constituency is about the gravity of the phenomenon, the fewer commitments the States will be able to undertake on the international level. As a result, the international instrument will be less effective in the fight against environmental deterioration. Undermining science weakens I.E.L. and environmental protection.
The Distortion of Science under the Bush Administration

“WASHINGTON – On Dec. 5, 2007, EPA Administrator Stephen L. Johnson prepared to send the White House an extraordinary document. It declared that climate change imperiled the public welfare – a decision that would trigger the nation’s first mandatory global-warming regulations.

Johnson, a career scientist, knew that his draft would meet with resistance from antiregulatory ideologues at the White House, but he believed the science was solid.

According to confidential records reviewed by the Inquirer, Johnson cited strong evidence: rises in sea level, extreme hot and cold days, ecosystem changes, melting glaciers, and more. Minor doubts about long-term effects, he wrote, were not enough to alter his conclusion.

Two sentences in Johnson’s draft stood out. In sum: The U.S. emits more greenhouse gases from cars than most countries do from all pollution sources. This fact is so compelling that it alone supports The Administrator’s finding.

At 2:10 p.m., Associate Deputy Administrator Jason Burnett e-mailed the climate-change draft to the White House as an attachment.

What happened next became Johnson’s defining moment and cemented President Bush’s environmental legacy, serving as the low-water mark of a tumultuous era that has left the EPA badly wounded, largely demoralized and, in many ways, emasculated.

White House aides—who had long resisted mandatory regulations as a way to address climate change – knew the gist of what Johnson’s finding would be, Burnett said. They also knew that once they opened the attachment, it would become a public record, making it too controversial to rescind. So they didn’t open it.

They called Johnson and asked him to take it back.

The law clearly stated that the final decision was the EPA administrator’s, not Bush’s. Johnson initially resisted – something Burnett admired – but ultimately did as he was told…”

Political interference with scientists over climate change has lasted long and has also become infamous in certain cases, such as the case regarding Dr. James Hansen,


409 Id.
director of the NASA Institute for Space Studies located at Columbia University in New York City and leader in climate-change research who in early 2006 "complained that he had been harassed by White House appointees as he tried to sound the global-warming alarm."
D. Green Critiques on the Power Structure of Science

The direction of modern scientific enquiry, namely how and by whom the priorities of science are set forth, is one of the issues that raise skepticism about the validity and objectivity of science. The reason of the skepticism is that these priorities are set within the power structure of science, since the latter does not only include scientists or other experts in relevant fields, but also various other actions, including, but not restricting to, industry providing funds for research or governments setting research priorities.

Using science to legitimate pre-existing policy preferences does not seriously challenge the positivist viewpoint. It merely suggests that, while science is generated independent of politics, the subsequent products of science are exploited by politicians and industry. However this distinction is not so easy to make where political interests get involved during the assessment process, for example, commissioning new research or pressuring scientists to deliver evidence to support their policy positions.

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411 See Hay, supra note 384, at 121.

Further, the mobilization of new research or expert advice to legitimate preferences often occurs in institutions, where paid researchers are used to generate knowledge that supports industry positions.\textsuperscript{413} Where strong interests are involved in funding research, the separation between science and politics becomes blurred, with scientists no longer conforming to the disinterested ideal. In this case, even where research sponsors seek to remove themselves from the scientific process, there may be pressure on the scientists to deliver findings that comply with the interests of the sponsors.\textsuperscript{414} In some cases this pressure may be explicit, with political interests actively pressuring the scientists to deliver certain results; in other cases it may simply be implicit or perceived.

Woodhouse and Nieusma\textsuperscript{415} argue that the increased awareness of science-based risks and the selective use of experts have caused a shift in public perceptions of science from the strongly positivist technocratic ideal to the other extreme in which society has adopted a highly cynical view of science as a vehicle employed to further any agenda. Stemming from this new perception of science, society also views scientists as unable to generate any objective knowledge.\textsuperscript{416} However, although this may be true in some cases,
currently, there remains clear support among numerous scientists, policymakers and the public for the view that science can generate objective “scientific” knowledge on politicized problems, provided it remains independent of politics. While not as optimistic as the technocratic ideal regarding the potential benefits of science, this conventional view, embodying the normative concept of the clear division between science and politics, remains rooted in positivism.

In what may be seen as an attempt to resolve the political use of science and the positivist notion of objective knowledge, many point to the unique characteristics of “science for policy” to distinguish it from normal or pure science. According to this argument, science for policy is characterized by three key elements: (1) uncertainty, (2) time constraints and (3) high stakes. In science for policy, scientists are required to generate new knowledge about a policy problem, or to apply existing knowledge to a new problem; knowledge which by its very nature is incomplete… it is argued that it is the combination of these three characteristics of science for policy that renders scientific

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knowledge exploitable, easily influenced or even readily ignored by strong political interests.\textsuperscript{419}

The solution to this issue regarding the manipulation of science could and should partially be addressed by the new lawmaking procedures and institutional architectural structures of the international arrangements discussed in this Thesis. First and foremost, it is up to the institutional architecture to allow for (a) a meritocratic hiring process that focuses on building a permanent staff at the international institutions, (b) input from all pertinent scientific groups and the civil society, including individuals and the lay public and then to allow for their direct impact in the lawmaking processes, as the Thesis will discuss in the last Chapter.

\textsuperscript{419} HASTIE, supra note 89, at 522.
E. Ecologic Illiteracy

Another factor that prohibits the infusion of science in I.E.L. is the degree of perception of the issues and the respective solutions by the lawmakers. Only few lawmakers are currently educated in environmental sciences. Indeed, a kind of "ecological illiteracy" is found among government representatives that comprise the majority of the political bodies of international institutions.  

Ecologic illiteracy can also be a feature of the lay public that influences with its perceptions the regulatory agendas of not only the domestic legislation, but also the international legislation according to the two-level game theory.

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420 Term used by ROBINSON, supra note 4, at 1081.

421 See below the discussion about the public choice, at..

422 See below at..
E. Why is Now the Right Time for a Science-Based Lawmaking Model?

It becomes obvious from the history of the debate that the question of the relationship between scientific knowledge and political decision-making - in this case, lawmakers in International Environmental Law - is “old, vexed, and even quaint.” Why then does such a question once again emerge as a topic of a contemporary Thesis? In the past, technocracy seemed to be, but it was not, the right answer to this question regarding the ways in which the decision-making system and other societal systems should be governed by advocating for scientific means and methods. However, the question that one should pose is: how can one effectively integrate the scientific and expert knowledge that humanity has gained and keeps gaining every day in order to protect our natural environment, lives, and the planet, within a political and societal system governed and steered by political and societal principles. This question becomes

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423 PARSON, supra note 313, at 262.
even more critical, since the lawmakers within this system have limited scientific guidance.

Further, the emergence of major environmental challenges has engendered the evolution of environmental scientific disciplines and technologies. Technological advances have allowed the international community to perceive an array of environmental disasters in the last half century, from the outbreak of mercury poisoning near Minimata Bay in Japan and the environmental problems created by World War II, to, more recently, the first strong indications of climate change. The development of new, more finely calibrated scientific equipment and techniques enabled scientists to study the environment with a much higher degree of precision, revealing problems that could not be measured with older technology, such as pervasive toxic wastes and the presence of man-made materials in the stratosphere.

In addition, an innovative environmental science gained popularity in the 1970s, which provided a new way of viewing pollution. Supported by developments in statistical techniques and computer modeling that facilitated the simulation and understanding of complex systems, ecology developed as a framework science in which multiple environmental interactions could be monitored and understood. Observations could be systematically evaluated, complete with alternative forecasts of what could happen without human intervention, and in conjunction with other global trends.\footnote{Haas, Saving the Mediterranean – The Politics of International Environmental Cooperation (Columbia University Press, New York, 1980); Donella Meadows, John Richardson & Gerhart Bruckman, Gropping in the Dark: The First Decade of Global Modeling (Wiley Publ., Chichester 1982); Barry Hughes, World Futures (John Hopkins University Press 1985).}
Back in 1988 Mathews wrote:

“It is the integration of traditional disciplines like geology, oceanography, ecology, meteorology, and many more, into the study of the structure and metabolism of the planet, its atmosphere, geosphere, hydrosphere and its living realm, the biosphere, and of the interactions among them. Its emergence comes from the recognition that mankind’s activities are now on a scale great enough to affect the planet as a whole, and we must understand these natural systems if we are to live successfully with our new ability to alter them.”

In part, interest in such an integrated science emerged from concern with possible environmental degradation. The intellectual development of ecology contributed to the more holistic and popular characterization of environmental issues. This new science started offering a way to organize and model the complexity that these policies seemed to presage and hence provided a basis for policies to manage them.

Science and technology continue to provide new solutions to environmental problems. It is now possible to sensitively monitor global trends from satellites, while gas chromatology and spectroscopy permit technicians to evaluate water quality in parts per trillion. Nanotechnology could help us detect fires at the beginning of their occurrence by placing mini-sensors in the soil that sense any change in the air temperature. Genetics could allow DNA regeneration of the very same trees living in a forest, after a wild fire, thus avoiding the placement of alien organisms in the ecosystem. What is different now from some decades ago, when the first speculations on the role of science in lawmakers.

425 HAAS, supra note 421, at 5-6.

426 Id.
were taking place, is the increased capacity of science to perceive the environmental questions and provide answers to them.

As in all previous historical periods, the same question tends to arise after the generation of a considerable amount of new knowledge: what do we do about the new information? Today, the international community faces novel developments that change the picture. Recent efforts to measure the environmental realities on a global level provide us with specific, usable data. New science occurs and allows for a new understanding of various environmental issues that have been either misunderstood or not at all perceived in the past. New scientific methods and new information technology tools justify, now more than ever, an advanced degree of rational dependence on science for the adoption of environmental legislation. As Esty has commented, the information age provides new instruments for the protection of our global environment, and it is vital to take advantage of them in order to protect the planet. The benefits of the information age and the advancement of science and technology leading to an increasingly higher degree of certainty in several fields create a new reality that makes the science-based lawmaking process more meaningful than ever. This is evidenced by the creation of alternatives for chemicals and other environmentally harmful substances, such as the

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substances that deplete the ozone layer, or the creation of materials that are more quickly recyclable.

In other cases, previous uncertainties gradually turn into certainties. For instance, according to the Intergovernmental Panel on Climate Change (I.P.C.C.) there is sufficient technical capacity to keep the effects of climate change limited to a raise of maximum 2%. A raise in the average global temperature of more than 2% would create dangerous and unavoidable impacts on the living conditions in many parts of the planet. Meanwhile, it would cost the average world citizen not more that 3% of his or her income per year, in order to use technology to fight the effects of climate change by 2030. These are the most important conclusions provided by the IPCC’s Working Group III, which were outlined in a report entitled, “Mitigation of Climate Change”, released in Bangkok on May 4, 2007, addressing technical and economical research.\footnote{C. Gollier, B. Julien & N. Treish, \textit{Scientific Progress and Irreversibility: an Economic Interpretation of the Precautionary Principle}, 2 \textit{JOURNAL OF PUBLIC ECONOMICS} 109-25. Golliers et al. support that society should take prevention measures today in order to cope with future environmental risks, based on a series of economic arguments. Even in cases of uncertainty, humanity should take measures since more uncertainty should induce the decision-maker to favor taking more conservative measures today to value these options more in the future. In addition, early measures are irreversible and irreversibility should induce a risk-neutral society to favor current decisions that allow for more flexibility in the future. “Society will adapt its effort to the severity of the risk. This is the ‘learn then act’ strategy. However, if this strategy is implemented, the risk borne in the future will be larger ex ante, i.e. before information is known. This is due to the sensitivity of the future prevention effort to the information obtained. As stated for instance by the Intergovernmental Panel on Climate Change IPCC (1995), these two effects do not converge but have opposite effects on optimal CO2 emissions: “The choice of abatement paths involves balancing the economic risks of rapid abatement now (that premature capital stock retirement will later proved unnecessary) against the corresponding risk of delay (that more rapid reduction will then be required, necessitating premature retirement of future capital stock).”}
strongly support and justify the Thesis’ underlying assumption that science and technology do exist in order the international community to effectively address environmental issues. However, the competent international institutions and actors lack the funds to promote the appropriate science and technology. In many cases, the political will is missing. All of these are some of the reasons why too many environmental challenges remain unsolved. Most prominently, the first GEO Report explicitly States that:

“The funds and political will are insufficient to halt further global environmental degradation and to address the most pressing environmental issues – even though technology and knowledge are available to do so…”431

New scientific data constantly occur which heighten the need to find feasible ways of integrating verified science into the I.E.L. process. The political and societal systems, or in the case of the Thesis, the international environmental lawmaking procedural framework should be altered to easier integrate science into legislation. Would such sift and the development of science-based international environmental laws leads to a new era of Eco-technocracy? Facing the possibility of an imbalanced lawmaking model, should one return to the purity of the classical political model or enhance a science-based international structure? My assertion up to now is that environmental issues often do not require democratic institutions, but rather expert knowledge. Traditional lawmaking patterns holding legislative power to political bodies and delegating scientific bodies to a mere consultative status might be the reason why strict

environmental standards do not prevail. In order to advance regulatory science-based decision-making, I hold that mere consultation is not enough to guarantee rational, science-based management of our global environment. The international community has to further integrate science and expertise in all stages of lawmaking, from the formation of policy priorities to the actual passing (adoption) of regulation.

In order to discern whether the common assumption or my assertion holds true, I intend to systematically study the status of expert bodies in the international arrangements and their roles in the adoption of international norms. In addition, I look at the extent to which these expert bodies have leverage within the structure of international organizations and other arrangements. This lens provides a means of evaluating how influential the expertise bodies are over the laws that are promulgated by the various institutions.

The Thesis does not advocate a new era of eco-technocracy. This Thesis revisits the question of the influence of science on law. The Thesis’ assumption does not rely on the belief that science can solve societal issues. It rather perceives environmental lawmaking as a far more complex process, which depends on scientific, political, economic and other socio-historical conditions. Skepticism regarding whether I.E.L. is an effective tool to cope with environmental problems is the starting point from which the Thesis’ assumption was formed: political, economic and socio-historical conditions overwhelm the lawmaking process such that scientific and environmental realities are

ignored.\textsuperscript{433} This holds true not only for M.E.A.s, but also for the 
\textit{corpus} of I.E.L. The substance and methods of I.E.L need to be reconsidered, because contemporary methods of lawmaking are too limited in scope to produce environmentally beneficial outcomes. The current state of the global environment proves this point. It is high time that I.E.L. takes into consideration the lessons of science.

The majority of M.E.A.s and other international environmental legal instruments seem to incorporate and promote choices on environmental management methods and technologies that they consider to be politically or financially convenient rather than \textbf{ecologically optimal}. In this way, even if science and technology exist to solve an environmental issue, the international agreements may not require the best available science and technology. On the contrary, they may compromise by enacting what is politically and technologically easy, convenient, or affordable. Providing old technologies and old management methods to environmental issues does not always satisfy the criteria for the effective integration of science and expertise in I.E.L. The science and expertise required to solve some of the most pressing environmental issues require a \textit{state-of-art} status. The quest for effective integration of science cannot be fulfilled by using rudimentary knowledge; rather, it involves employing the most solid, trustworthy, updated, and usable science, since this level of science can lead to optimal legislative solutions that can cope with the contemporary environmental challenges in a timely and effective manner. Thus, another criterion to be taken into account when

\textsuperscript{433} As Desai comments: “The process of MEAS is mainly conditioned more by the economic and political exigencies of the States parties, as compared to scientific evidence or legal requirements \textit{per se}.” \textit{DESAI, supra} note 331, at 109.
evaluating the degree of the integration of science in I.E.L. is the timely and updated feature of the science and expertise.

G. Acquisition of Lawmaking Competences by International Organizations

Developments in science were coupled by developments in International Law and Policy. One single development in international law during the last decades has substantially contributed to the promulgation of more just, transparent and effective international norms: the acquisition of lawmaking competences by intergovernmental organizations and other international institutions. The rise of “international organizations
as lawmakers” has reversed—to a certain extent—the dynamics of power politics that had previously governed the generation of international law. Endowing international organizations with lawmaking powers has also created a more participatory governance system. On grounds of effectiveness and speed, the international community has reluctantly started adopting new lawmaking procedures. *Quasi* legislative procedures, such as opting-out and majority voting, which result in promulgating rules that are binding upon States without for prior ratification culminate in “secondary” legislation that is designed exclusively by expert bodies within the framework of intergovernmental organizations or multilateral agreements. These structures, as well as other relevant legislative processes, give a new impetus to the generation of international norms.

Nevertheless, gaps at the implementation stage of international agreements, the existence of “escape clauses” that allow States to disengage themselves from previous obligations, and the unenforceable nature of the majority of international legal rules inescapably leave applying the rule of international law and justice susceptible to political will and, sometimes, the arbitrary choices of the States. Even at the domestic level, lawmakers are completely independent from the expert advice; here too lawmaking is often the sole venture of politicians. Traditional lawmaking systems are often close

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435 Definition and information on the notion of “secondary” provisions in Jurij Daniel Aston, *Sekundärge setzgebung Internationaler Organisationen Zwischen Mitgliedstaatlicher Souveränität und Gemeinschaftsdisziplin* (2005). Aston comments (at p. 46) that the creation of the notion of “secondary” norms in Public International Law was a “loan” from the framework of European Community Law.

436 See below, the Methyl Bromide case, at Chapter III, at 436.
systems where expert advice comes only as a weak input, which does not actually have the merit on its own to influence the outcome.

Thus, the main assumption of this Thesis is that the purposes of I.E.L. could be fulfilled more easily if expert bodies in international institutions had enhanced competences to adopt binding, “secondary” legislation implementing broader policy decisions or framework legislation previously adopted through conventional lawmaking procedures. The degree to which lawmaking powers are delegated may differ depending on the character of the issue, its gravity and other variables; thus, this assumption holds true in fields, such as public health and environmental protection, where legislation depends not only on “opinion,” but also on scientific findings. Last, at the stage of the passing of the law, voting procedures giving the legislative power to purely political bodies do not allow for scientific input. Most importantly, there is inadequate scientific input at the post-legislation stage. Voting-procedures and post-regulation check and balances are the subjects of the main chapters of the Thesis.

Many factors, including scientific, legal, political, social and economic factors, they all influence both the lawmaking processes and their outcome. In an effort to create an optimized lawmaking model, one should take into account all the inputs that affect the system, and propose changes in all of them, to the extent that such changes are necessary. The analysis of all of those factors and the proposal of a model that would cover them all would though require such amount of time and multi-discipline knowledge that supervene the time available to write the Thesis or the academic background of the
writer, respectively. Due to the limitations, the Thesis focuses on the legal and procedural elements of the lawmaking processes. Holding all of the other factors constant, the Thesis looks to propose changes in the lawmaking process that can positively affect the substance of I.E.L. and its capacity to protect the global natural environment.

H. Integration of Science and Expertise in the Pyramid of International Environmental Law

With respect to primary law, there is already agreement, supported by international law and policy instruments, that environmental protection is part of the
global public interest.\textsuperscript{437} This common acknowledgement of the importance of environmental protection, including the protection of public health and the quality of life, has been elevated to one of the basic norms of law; in other words, it is part of the \textit{Grundrecht} of Public International Law, if Kelsen’s phraseology in the “Pure Theory of Law” is to be followed.\textsuperscript{438} The primary International Environmental law includes, \textit{inter alia}, general principles of law, general principles of International Law and common principles deriving from domestic Environmental legislations. There is also treaty-based law, namely principles and legislation that derive out of main multilateral environmental agreements,\textsuperscript{439} from framework conventions and main protocols,\textsuperscript{440} and non-legally binding documents.

\textsuperscript{437} For discussions of varying views of the public interest, see, e.g., \textsc{Richard E. Flathman}, \textsc{The Public Interest} (John Wiley \& Sons, New York 1966); \textsc{NOMOS V: The Public Interest} (Carl J. Friedrich ed., Atherton Press, New York 1967).

\textsuperscript{438} Kelsen’s “Pure Theory of Law” aims to describe law as binding norms while at the same time refusing, itself, to evaluate those norms. That is, ‘legal science’ is to be separated from ‘legal politics’. Central to the Pure Theory of Law is the notion of a ‘basic norm (\textit{Grundnorm or Grundrecht})’ - a hypothetical norm, presupposed by the jurist, from which in a hierarchy all ‘lower’ norms in a legal system, beginning with constitutional law, are understood to derive their authority or ‘bindingness’. In this way, Kelsen contends, the bindingness of legal norms, their specifically ‘legal’ character, can be understood without tracing it ultimately to some suprahuman source such as God, personified Nature or a personified State or Nation. See, Hans Kelsen, \textit{Reine Rechtslehre}, Vienna 1934; 2nd ed 1960. For an English translation of the book, see \textit{Pure Theory of Law} (1960); Knight trans., Berkeley 1967, Union (N.J.) 2002. On the Pure Theory of Law, see mainly \textit{Introduction to the Problems of Legal Theory} – 1934 by Litschewski Paulson and Paulson trans.), Oxford 1992; William Ebenstein, \textit{The Pure Theory of Law}, 1945; New York 1969; and Lars Vinx, \textit{Hans Kelsen’s Pure Theory of Law}, Oxford 2007.

\textsuperscript{439} E.g., the Vienna Convention on the Substances that Deplete the Ozone Layer, the Framework Convention on Climate Change, and the Biodiversity Convention.

\textsuperscript{440} E.g. the Montreal Protocol, the Kyoto Protocol, and the Cartagena Protocol respectively.
In contradiction to primary law, secondary environmental law\textsuperscript{441} includes norms that derive from a primary environmental legislation.\textsuperscript{442, 443} Within the framework that the general primary rules create and according to procedures established by them, some other laws, that are more detailed and serve specifying and implementing the primary laws. These laws can be considered as secondary law.\textsuperscript{444} These rules could be provisions in annexes, rules of technical nature, rules specifying obligations already accepted by the political bodies, rules that do not impose legal obligations, rules that do not impose additional costs to States or laws fully justified by usable or clear science. The Thesis suggests that, under specified structural and procedural conditions, expert bodies could hold the power to issue secondary legislation.

The distinction between primary and secondary laws is not always that easy, especially because the distinction is not present in all of the domestic jurisdictions. In other cases, the same \textit{terms-of-art} that are used for this distinction, namely “primary” and

\textsuperscript{441} For the use of the terms “primary” and “secondary” laws, see, e.g., Steve Charnovitz, \textit{Recent Scholarship on NGOs}, 103 AM. J. INT’L L. 777, 782 (Review Essay).

\textsuperscript{442} \textsc{The Oxford English Dictionary}, Vol. XIV; \textsc{The Webster’s Dictionary}; and \textsc{Black’s Law Dictionary} (defining the word “secondary” as “coming after which is first in a series of processes, events, stages”, “belonging to the second order in a series related by successive derivation, causation, or dependence”, “derived from or dependent on (something considered primary or original)”, “...based on”, “derivative”, “having only a derived authority”)

\textsuperscript{443} \textsc{Aston, supra} note 432, at 46; \textsc{Stefan Breitenmoser & Stefan P. Bühler, Praxis Des Europarechts} (Zürich 1996). In French, the word “secondary” is “secondaire”, which is defined as “\textit{ce qui vient en second rang dans le temps (se dit d’une processus qui est intervienne historiquement ou se développe normalement après un autre)\textsc{,} “qui dérive d’un autre phénomene ou depend d’un autre objet\textsc{,}”, Grand Larousse de la langue francaise, Bd. 6; from the French language the word got secondaire into the German (and English) language. In German the word is “secondär” meaning “zur zweiten Ordnung gehörend”, “in zweiter Linie (in Betracht) commend (oder stehend)”, “nachträglich hizu commend” etc, in \textsc{Pfeifer, Etymologisches Wörterbuch}.

“secondary” legislation, are used by domestic jurisdictions, in order to define different types of laws. For instance, the reader of European Union Law is perhaps more familiar with the concept of primary and secondary legislation. By virtue of the treaties of the European Union (EU), its Member States by joining the EU agreed to a set of overarching rights, obligations, legal and policy principles, all of which constitute the EC/EU “primary” legislation. By the same treaties, the bodies of the European Union were also vested with lawmaking competences after delegation by the primary political bodies of the Community. Secondary law encompasses all of the “regulations, directives, decisions, recommendations and opinions” that various EU related institutions adopt in order to effectuate EU primary laws. In the U.S. the notions of primary and secondary laws are perceived differently. It is not only the various sources of laws that define the category under which a piece of law falls, but further concepts, too. For instance, secondary legislation can refer to traffic rules that implement a state statute. In general, the distinction between (primary) laws and (secondary) regulations exists, especially in reference to regulations promulgated by the administrative agencies. Namely, it

445 See, e.g., article 249 of the European Community Treaty (after the Treaty of Lisbon’s amendments) reads, “to exercise the Union’s competences, the institutions shall adopt regulations, directives, decisions, recommendations and opinions.” For relevant literature, see, e.g., Andreas Fischer-Lescano et al., Border Controls at Sea: Requirements under International Human Rights and Refugee Law, 21 INT’L REFUGEE L. 256 (2009).


447 Compare the distinction between U.S. laws and regulations, the first responding to the primary laws and the latter to the secondary laws:

1. Some of their differences are that a. a law (or Act) is passed by both houses of Congress and signed by the President. A regulation is issued by a government agency such as the U.S. Environmental Protection Agency (EPA) or the Occupational Safety and Health Administration (OSHA.)
follows a typical criterion based on the type of the body that promulgates the legislation, such an agency, rather than the legislature, and the subsequent form of the law, such as an administrative order, rather than a formal piece of legislation.

If one follows a distinction of the criteria that are used in order to define what primary and what secondary laws are, then, the criterion of the sources of laws can be defined as the typical criterion, while the criterion of the substance of laws as more detailed or implementing primary regulation etc can be defined as the substantive criterion. For the purposes of the present analysis, the Thesis rather follows the substantial criterion. It is the essence of the laws that matters and not their source, in

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2. Congress can pass a law on any subject it chooses. It is only limited by the restrictions in the Constitution. A law can be challenged in court only if it violates the Constitution. It may not be challenged if it is merely unwise, unreasonable or even silly. If, for example, a law were passed that placed a tax on sneezes, it could not be challenged in court just because it was unenforceable. A regulation can be issued by an agency only if the agency is authorized to do so by the law passed by Congress. When Congress passes a law, it usually assigns an administrative agency to implement that law. …

3. Laws include a Congressional mandate directing EPA to develop a comprehensive set of regulations. Regulations, or rulemakings, are issued by an agency, such as EPA, that translates the general mandate of a statute into a set of requirements for the Agency and the regulated community.

4. …

7. Laws are usually brief and general. Regulations are usually lengthy and detailed. The Hazardous Materials Transportation Act, for example, is approximately 20 pages long. It speaks in general terms about the need to protect the public from the dangers associated with transporting chemicals and identifies the Department of Transportation (DOT) as the agency responsible for issuing regulations implementing the law. The regulations issued by the DOT are several thousand pages long and are very detailed, down to the exact size, shape, designs and colour of the warning placards that must be used on trucks carrying any of the thousands of regulating chemicals.

8. Generally, laws are passed infrequently. Often years pass between amendments to an existing law. A completely new law on a given subject already addressed by an existing law is unusual. Laws are published as a “Public Law #_#” and are eventually codified into the United States Code.

9. Regulations are issued and amended frequently. Proposed and final new regulations and amendments to existing regulations are published daily in the Federal Register. Final regulations have the force of law when published.

**LEO STANDER & LOUIS THEODORE, ENVIRONMENTAL REGULATORY CALCULATIONS HANDBOOK 11 (2008).**
order to decide whether it would be legitimate to delegate lawmaking powers to expert bodies in order to promulgate these laws.

In the following parts of the Thesis, there will be many examples that will help illustrate the concept and range of secondary laws. It is noteworthy that the nature of international norms as secondary does not change their position in the pyramid of the hierarchy of laws. Secondary international laws maintain their status as any other part of International Law \textit{vis-à-vis} domestic laws.\footnote{See, \textit{e.g.}, Christopher Weema, \textit{Kadi v. Council: Putting the United Nations in its Place}, 17 \textit{TUL. J. INT'L \\ COMP. L.} 571, 578 (2009), referring that in making this determination, the Court relied on the holding of Intertanko that U.N. regulations are primary over secondary law of the Community (i.e., regulations adopted pursuant to the EU Treaty) but not over primary law of the Community (the EU Treaty itself, along with its underlying basic principles).}

I. The Principles of Sustainability as a First Overall Framework for the Adoption of Secondary Legislation
In the meantime, from the domestic jurisdictions’ experience and the experience gained over many cases of environmental management, the international community gathered some relevant wisdom over the years. Sustainable practices and concrete scientific data were collected in order to shape some initial legal and practical guidelines that would respect the natural environment and advance quality of life on Earth. For instance, in 2000, the European Commission issued a seminal report that codified the principles of sustainable development. The twelve principles of sustainable development are a combination of both policy principles and scientific principles that create the overall framework for the “sustainable polity.”

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**The Twelve Principles of Sustainability**

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- Principle of the public environmental order;
- principle of sustainability;
- principle of the carrying capacity of the ecosystems;
- principle of the obligatory restoration of the disturbed ecosystems;
- principle of biodiversity;
- principle of the common natural heritage;
- principle of the restrained development of fragile ecosystems;
- principle of spatial planning;
- principle of the cultural heritage;
- principle of the sustainable urban environment;
- principle of the aesthetic value of nature; and
- principle of environmental awareness.

These principles that consist an integral part of primary law, could serve as additional guidelines during the exercise of the promulgation of secondary international regulations by expert bodies. These principles would complement the guidelines and the “primary” legislative framework that the political bodies would have created. These substantive principles, along with other sectoral principles and preexisting laws, would create the appropriate restrictive background within which both political and expert bodies would act and create the next generation of science-based I.E.L.

SECOND ATTEMPT TO DEFINE SCIENCE-BASED LAWMAKING

S.B.LM’s call for a more thorough integration of scientific data into the lawmaking process reflects the evolutionary nature of science. Politicians representing certain States most
effectively discharge their democratic duties by representing the environmental interests of the States from where they originate; however, the very nature of environmental law is interconnectedness. Scientists working in environmental arenas are best equipped to take a systemic look at environmental regulation and thereby help promulgate laws that most effectively protect the global environment. S.B.LM. encourages more effective I.E.Ls, because it gives scientists more power to determine the scope of many provisions and ways for their implementation.

Change of the governance structure should aim to the systemic development of laws. The international institutions under the auspices which lawmaking processes take place, such as, first and foremost, UNEP, should play a coordinating and consolidating role among the various instruments of I.E.L., in order to cure legal fragmentation and achieve consistency. They should further promote the consideration of clear or usable science and objective scientific information, while avoiding value-laden science. S.B.LM should also reflect the evolutionary nature of science and endow more flexibility in the lawmaking process. S.B.LM should integrate the latest scientific findings and allow for the adoption of detailed provisions, based on scientific data. Laws should be based on the previous existence of global environmental data open to all to utilize, jointly shared information; environmental monitoring and assessment of the State of the environment. Based on this data, the lawmaker can safely and validly evaluate current important environmental conditions and even predict future trends and create laws that are flexible enough to adapt to future changes and maintain thus a stable and trustworthy legal framework.

In order the model to be able to promulgate science-based laws changes in the content of the framework provisions that define the promulgation of more detailed or implementing laws may be necessary. Specific requirements should be a part of the substantial law that governs the requirements for the promulgation of new environmental legislation, such as the requirement that laws are based on the best scientific data available, the previous deployment of tools, such as risk assessments or environmental impact assessments etc. The environmental impact assessments should be inter-disciplinary and large-scale. In cases that the environmental issues at stake have global dimensions, even global scale assessments are necessary, in order to create a solid base for lawmaking. Large-scale modeling and consequent lawmaking do not only have a spatial dimension, but also a sectoral dimension; they should follow a holistic approach and integrate all relevant data and lessons from all disciplines. S.B.LM. should be based on synergies among several ecology disciplines and attempt to follow an ecosystems approach.

S.B.LM should develop the necessary regulatory mechanisms for timely response via (a) direct input of new scientific information to the lawmakers and (b) flexible provisions that allow for adaptation to new scientific and technical information without lengthy procedures, especially regarding the promulgation of secondary legislation.
PART II: NORMATIVE POWERS OF THE INTERNATIONAL INSTITUTIONS
WITH ENVIRONMENTAL COMPETENCE

“Legal progress is often secreted in the interstices of legal procedure.”
-Oliver Wendell Holmes, Jr.

CHAPTER I: CONTEMPORARY AND PROGRESSIVE LAWMAKING PROCESSES

Question:

In case of disagreement among the States that participate in an international institution whether or not to adopt provisions based on usable science, is there any possibility that the States adopt disputed, binding international environmental laws without unanimous vote? If yes, (a) under which circumstances and (b) could the adopted provisions also bind the States that object to them?

A. Theoretical Framework of the Lawmaking Competences of the International Institutions

Over the past half century a new sub-field of Public International Law, named “International Institutional Law,” emerged regarding the functions of inter-governmental organizations and other international arrangements – comprehensively speaking
“international institutions.” International Institutional Law is the legal aspect of the political phenomenon of the so-called “autonomy” of the inter-governmental organizations (“IOs”). IOs are no longer merely “new settings for old techniques of diplomacy.” They have moved away from the state-centric model, and are now fora for policies that tend to evolve to a certain extent independently from the separate interests of each of their Member States. The autonomy of an IO is a necessary prerequisite for the recognition of the existence of lawmaking powers held by the IOs, and lawmaking itself is a feature of the autonomy of an IO. The IOs’ autonomy has already been ascertained in theory and in practice by, among others, the fact that IOs enjoy a legal personality that is separate from the legal personality of their Member States. The IOs’ legal personality is either outlined in the founding instruments of the IO or inferable from the competences that the founding instrument or other pertinent legal instruments attribute to the IO. The question that still remains open is not whether an IO is an “autonomous arrangement” in

451 By “international institutions” I comprehensively refer to both the inter-governmental organizations (“IOs”) and the treaty-based international institutions. “Treaty-based international institutions” or “treaty-based (international) bodies” are institutions in the framework of a treaty, i.e. in this case, a M.E.A. In other places, I refer to all of these bodies, bodies, and institutionalized elements of the architecture of an M.E.A. collectively, as “international arrangements,” which is another commonly cited and comprehensive term. See DESAI, supra note 331, at 150 (using a comprehensive phrase, “International Environmental Institutions” (IEIs); JORGEN WETTESTAD, DESIGNING EFFECTIVE ENVIRONMENTAL REGIMES: THE KEY CONDITIONS 26 (Edward Elgar Publishing 1999) (analyzing the role of secretariats in M.E.A.s.). Further, by evaluating the role of treaty-based international institutions, DiMento recognizes that those, too, acquire step by step an autonomous presence on international law. This is the reason why DiMento uses the term “autonomous international arrangements” in order to describe them. See DiMENTO, supra note 126, at 37.

452 ALVAREZ, supra note 44, at 109; for a detailed definition of the internal or administrative law of the International Organizations, otherwise called “International Institutional Law”, see, e.g., HENRY G. SCHERMES & NIELS M. BLOKKER, INTERNATIONAL INSTITUTIONAL LAW (2003); JAN KLABBERS, AN INTRODUCTION TO INTERNATIONAL INSTITUTIONAL LAW (Cambridge University Press 2002); C. F. AMERASINGHE, PRINCIPLES OF THE INSTITUTIONAL LAW OF INTERNATIONAL ORGANIZATIONS (Cambridge 1996).

International Law, but what is the degree of autonomy enjoyed by an IO. The present Thesis researches the degree of autonomy to the extent that this is related to the lawmaking functions of the IOs. Under the lawmaking perspective, the answer to this question has two tiers: the first tier provides a general answer that applies to the majority of IOs and relates to the definition of an IO itself; the second tier depends on an analysis of each IO separately.

Regarding the first tier, the definition of an IO itself includes an abstract reference to the range of the IO. Michel Virally was one of the first scholars to give an up-to-date and authoritative definition of an IO as:

“an association of States, established by agreement among its members and possessing a permanent system or set of bodies, whose task it is to pursue objectives of common interest, by means of cooperation among its members.”

Virally distinguishes five core traits of an IO: (i) their inter-state basis, (ii) their voluntary basis, (iii) their possession of a permanent system of bodies, (iv) their autonomy, and (v) their cooperative function. Other definitions elaborated in more recent writings essentially center on the same components. For example, Klabbers mentions three defining elements: IOs (i) are created between States, (ii) are created by treaty, and (iii) possess an independent will. Schemmers and Blokker propose a definition which also contains three elements, stating that an IO: (i) is created by international agreement, (ii) is

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456 JAN KLABBERS, AN INTRODUCTION TO INTERNATIONAL INSTITUTIONAL LAW 8–13 (2002).
established under international law, and (iii) has at least one organ “with a will of its own.”

Bowett further elaborates the definition of an IO by proposing five definitional aspects: (i) its membership must be composed of States and/or other international organizations; (ii) it must be established by treaty; (iii) it must have an autonomous will distinct from that of its members; (iv) it must be vested with legal personality; and (v) it must be capable of adopting norms addressed to its members. While most recently, Alvarez defines IOs as:

“typically collections of sovereign States that have banded together as States to create, under a constitutive international agreement governed by international law usually known as a “charter” or a “constitution,” an apparatus, more or less permanent, charged with the pursuit of certain defined common ends.”

Further, although the basis of the non-character of an IO as a proto-state still remains the same today, there are new features of the IOs that manifest its autonomy, if not its supranational character. Regarding the latter, Alvarez notes that IOs do not have supranational powers, if this means: (1) the power to take binding decisions upon States, (2) the ability to take particular action without the express state consent, (3) the capacity to make rules directly binding on the inhabitants of States without the need for an intervening act by national authorities, [emphasis added by the author] (4) the capacity to enforce decisions without the cooperation of the governments of participating States (5)

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457  Schermers & Blokker, supra note 448, at §§ 27, 28.


459  This definition is the most commonly accepted in the field. See, e.g., Alvarez, supra note 44; Clive Archer, International Organizations (3rd ed. 2001); Schermers & Blokker, supra note 448, at 26.
financial autonomy from member States and (6) the prohibition of a unilateral right by States to withdraw.\textsuperscript{460} There are, however, some IOs that share certain “supranational” characteristics, but no IO possesses. The first three elements Alvarez mentions regarding the features in many of the lawmaking processes/techniques concern the subject-matter of the Thesis, since they refer to lawmaking. The reason why the Thesis explores the competences of the international institutions to make law is because these competences are prerequisite to any competences of any expert body functioning under the international institutions to make law.

The criterion of the autonomy or independent will of an IO is common to all of the definitions, and reflects the statuses of the IOs \textit{vis-à-vis} their Member States. The autonomy or the independent will of an IO is a necessary presupposition for the query of the present Thesis, namely to what extent any lawmaking powers exist within the IOs. There is no definite answer to the question of whether the IOs’ autonomy and the distinct will are reflected in their abilities to promulgate laws independently from the will of their Member States. The second tier of analysis necessary to understand the scope of autonomy enjoyed by the IO requires an examination of an IO’s unique characteristics. An IO’s latitude, depth, and character differ from one to another. The “\textit{volonté distincte}” of an IO is, indeed, shaped and expressed by several legal instruments creating the IO and defining certain functions, most prominently its decision-making procedures. These instruments provide each IO with the competence to determine the extent of its own powers, including issuing rules that, however modest in purport, could be binding upon

\textsuperscript{460} \textsc{Alvarez, supra} note 44, at 16; \textsc{Nigel D. White, The Law of International Organizations} 60 (1996).
the Member States in their totality.\textsuperscript{461} As the present Chapter discusses, following the rise of autonomy within international organizations, many of the international arrangements established under the MEAs have also developed a more permanent character and have started performing activities indicating more autonomy \textit{vis-à-vis} their Signatory States.

The autonomy of the international organizations and the progressive institutionalization of the international arrangements under M.E.A.s, coupled with the increased complexity of the challenges that they both had to face, especially in fields such as I.E.L., also resulted in the development of new lawmaking procedures. These new procedures have elevated the lawmaking role of contemporary international institutions. The degree of acceptance of those new procedures, however, may differ according to the different theoretical perspectives that States, other international relations actors, and scholars have regarding IOs. These perspectives correspond to a relatively large continuum of theories, ranging from functionalism to constructivism.

\textit{1. From Functionalism to Neoinstitutionalism}

Traditionally there are two main theoretical approaches to interpreting the the IOs’ character (nature), the functions, and potential for development: functionalism and

institutionalism. Functionalism, first developed as a theory within the sphere of international relations and subsequently adapted in the domain of Public International Law, assumes that international organizations are designed and defined on the basis of function rather than territory.\footnote{See \textit{The Cambridge Dictionary of Philosophy} 288 (Robert Audi ed., 1995) (defining functionalism in the different disciplines of the social sciences). Even within the juridical domain, there is no single school of Functionalism, but, rather, diverse expressions of functionalist legal doctrine. \textit{See, e.g.}, \textit{Athena Debbie Efraim}, \textit{Sovereign (In)equality in International Organizations} 28 (2000). \textit{Cf.} Douglas M. Johnson, \textit{Functionalism in the Theory of International Law}, 26 \textit{Can. Y.B. Int’l L.}, 3, 56 (1988).} It assumes that States are the dominant actors in international relations; in the absence of institutions, they engage in the anarchic pursuit of power. However, since States have some common interests, they respond rationally to development \textit{via} cooperation under the auspices of international institutions. Under this approach, IOs are not an end in themselves, but rather a means of addressing the priorities dictated by human needs, as the latter are expressed by States, and, therefore, must be flexible and modify their functions according to the needs of the moment.\footnote{See generally David Mitrany, \textit{The Communal Organization of World Affairs, in The Progress of International Government} (1933) (initially presenting the Functional idea as a theory of international organization); \textit{see also} David Mitrany, \textit{A Working Peace System} (1966); David Mitrany, \textit{Functional Theory of Politics} ix, xix (1975).}

Following this theory, IOs are simply agencies called into being by States and directed by States.\footnote{For further elaboration to theoretical approaches, \textit{see Alvarez, supra} note 44, at 24–57.} David Mitrany, who created the theory of functionalism in international relations, and his followers believed that benefits for individuals are greater under a system of purpose-specific internationally organized activities than under the single-State system.\footnote{\textit{See, e.g.}, Mitrany, \textit{Functional Theory of Politics}, \textit{supra} note 459.} In other words, under the spectrum of functionalism, an organization operating across national borders would be able to solve problems common to and for the benefit of
all of humanity. Under functionalism, the IOs have no lawmaking powers, save for the ability to promulgate those norms that are necessary to ensure the proper functioning of the IO. These types of rules are mostly internal rules, i.e. mainly International Institutional Law. Other than that, IOs simply participate in treaty-making and the States hold the genuine legislative power of the international level.

Nevertheless, a mere international co-operation theory as functionalism was not enough to explain the complex reality surrounding all of the functions and roles of international institutions in contemporary international politics and the global governance system. Thus, a new version of functionalism, called “neo-functionalism,” emerged as a functionalist integration theory. Neo-functionalists stress the need for international cooperation via integration on a regional scale in politically important and controversial areas, as well as in routine and technical sectors, while functionalists are concerned with the global issues of co-operation. Neo-functionalism is often known as a “spill-over” process from one sector to another, whereby functions linked together within various policy areas are said to produce progress. Neo-functionalism asserts that the international community can acquire the procedural characteristics of a national political

466 Efraim, supra note 458, at 35.

467 Non-Functionalism is primarily associated with the writings of Ernst B. Hass and L. Lindberg. See generally E. B. Haas, Uniting of Europe (2d rev. ed. 1968); E. B. Haas, Beyond the Nation State: Functionalism and International Organization (1964); Leon Lindberg, The Political Dynamics of European Economic Integration (1963).

system, thus reaching supranationalism. In contrast, functionalism by no means envisions such a scenario. Both theories, however, leave an open window for lawmaking by IOs, since they both dismiss the concept of state sovereignty as an anachronism and envision its erosion. Under the theory of integration and the spillover processes, I.E.L. could be mainstreamed into other fields.

Another version of functionalism is institutionalism, the proponents of which hold that IOs offer an additional service by creating the “conditions for orderly multilateral relations” by means such as reducing the costs of making transactions. The added value of institutions in the sphere of international relations and global governance is emphasized in the core of the “neoinstitutionalism” theory, as well. Neoinstitutionalists have demonstrated the importance of institutions, not just in cases where such institutions are formally established as supranational bodies, but also in cases where they are established informally, since these types of institutions provide the appropriate contexts where actors can conduct a great number of positive sum bargains. Institutionalism and neoinstitutionalism emphasizes the autonomy of IOs and, in this way, indirectly, allows for a margin of lawmaking competences.

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469 Haas, Uniting of Europe, supra note 463 at 59; Nina Heathcore, Neofunctional Theories of Regional Integration, in Functionalism: Theory and Practice in International Relations 38, 40 (A.J.R. Groom & Paul Taylor eds., 1975).

470 Heathcore, supra note 465, at 38, 39.

471 See id.


Responding to the question of how far these theories go relative to the justification of the lawmaking powers in institutional arrangements, none of the above-mentioned theories seem to have fully captured the fact that the need to cope with modern environmental problems has created a new reality in contemporary global governance. In this new reality, neither the global governance institutions, nor the abovementioned theories are fully equipped and sufficiently developed to cope with the needs of contemporary International Environmental Law. The current international institutions may hold some limited lawmaking powers; however, the international community must give all of the necessary lawmaking competences to these institutions so they can efficiently face the environmental impacts of our increasingly interdependent and technologized world and the contemporary patterns of production and consumptions.474 What are the necessary powers and what is the current state of the international institutions’ ability to make laws?

B. Do International Institutions Make Law?

Traditionally, international institutions are thought to promulgate rules governing only internal matters with little external normative relevance. One of the main fields of legislative action of several of the international organizations focuses on internal administrative matters (staff, financing, and rules of procedures). The attribution of legislative powers to international organizations is based on and justified by the principle of self-organization.\(^{475}\) Apart from this case, the autonomy of the lawmaking function of international institutions has been limited to the technical lawmaking on issues of minor political relevance. The Thesis will show that these views do not hold true anymore.\(^{476}\) International Environmental Law is no longer exclusively based on state-centric models of lawmaking. Lately, international institutions have shown that they can elevate themselves to important sources of environmental norms. In some cases, international institutions are equipped to issue even better quality norms than those issued by the States.

\(^{475}\) See I. Detter, Law Making by International Organizations 44 (1965); Seild-Hohenfeldern, Annotation, Das Recht der Internationalen Organizationen einschliesslich der Supranationalen Gemeinschaften, 1522 (5th ed. 1992); Sommer, supra note 35, at 650.

\(^{476}\) See Alvarez, supra note 44, at xiii.
themselves. This holds especially true in the field of I.E.L. Even the various international relations and governance theories or the formal legal interpretations on the competences of international institutions have not managed to capture the gradually increasing lawmaking competences of the international institutions. Although still limited, these small *tesserae* of lawmaking competences form a part of the new mosaic of the science-based lawmaking in I.E.L. In the exploration of these legal *tesserae*, the rest of the present Chapter discusses the legal bases for the lawmaking powers of the IOs, while the next Chapter explores the possibility of the existence of respective powers within the framework of multilateral environmental agreements.

A preliminary question to the question whether IOs are competent to generate I.E.L. norms, and how the IOs would issue science-based I.E.L. is whether IOs are able to promulgate laws at all. In order to answer this preliminary question, it is useful to investigate the question from a different angle, as well, namely to also explore the traditional sources of Public International Law.

1. *Traditional Sources of International Law by Article 38 of the Statute of the ICJ*

A generally accepted classification of the lawmaking functions in the international sphere follows the enumeration of the sources of Public International Law as they are
authoritatively presented in Article 38 of the Statute of the International Court of Justice (I.C.J.); the international conventions, international custom, the general principles of law, and secondly judicial decisions and the teachings of the most highly qualified publicists.\textsuperscript{477} \textsuperscript{478} \textsuperscript{479} However, there is a descriptive gap among those sources, because there is no reference to the acts of the international institutions, despite the fact that, since many decades now. IOs have been promulgating international legislation, at least with respect to their own internal and technical norms. There is a simple historical explanation for this gap: signed in 1945, the Statute of the I.C.J. introduces a \textit{numerus clausus} of the sources of International Law as they were perceived back then, far before the emergence of the current global governance system. The UN itself was born in the 1945 UN Charter, absolutely simultaneous to the Statute of the I.C.J. The understanding at that time no

\textsuperscript{477} See ALEXANDROWICZ, supra note 287, at 2.

\textsuperscript{478} Article 38 reads as follows:
1. The Court, whose function is to decide in accordance with international law such disputes as are submitted to it, shall apply
   a. international conventions, whether general or particular, establishing rules expressly recognized by the contending States;
   b. international custom, as evidence of a general practice accepted as law;
   c. the general principles of law recognized by civilized nations;
   d. subject to the provisions of Article 59, judicial decisions and the teachings of the most highly qualified publicists of the various nations, as subsidiary means for the determination of rules of law.
2. This provision shall not prejudice the power of the Court to decide a case \textit{ex aequo et bono}, if the parties agree thereto.


longer persuasively reflects a complete picture of the present global governance and, consequently, the ways that Public International Law and its subcategory, International Environmental Law, are being promulgated. Article 38 does not refer to IOs as sources of laws, even though those are today main sources of secondary legislation. However, contemporary literature and case law expands the official sources of Public International Law to include acts by IOs, mainly referring to IOs’ actions relating to internal and technical regulations today.

Internal and technical regulations do not exhaust, however, the full spectrum of the regulatory acts of an IO. Other type of acts can be normative in nature. In order to discern those types of acts, one should define under which conditions acts by international institutions are considered legislative. In order to decide on those questions, an exploration of the traditional features of the normative competence follows.

Various approaches exist to define what lawmaking by IOs means. Commentators have described IO-related lawmaking processes from various perspectives. For instance, some authors have followed a more generic approach to define lawmaking. In 1969, Eduard Yemin wrote that IOs “undertake ‘legislative acts’ when they take action that is to say unilateral in a form, capable of creating or modifying some element of a legal norm,

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480 JURIJ DANIEL ASTON, SEKUNDÄRGESETZGEBUNG INTERNATIONALER ORGANISATIONEN ZWISCHEN MITGLIEDSTAATLICHER SOVERÄNITÄT UND GEMEINSCHAFTSDISZIPLIN 219 (2005) (extensively analyzing the issue).

directed at indeterminate addresses, and capable of repeated application over time.\textsuperscript{482} 483 Paul Szasz delineated the IO-mediated “international legal process” as extending to: (1) multilateral treaty-making, (2) the taking of binding decisions and hortatory resolutions, and (3) operational activities, from engaging in peacekeeping to giving succor to refuges, with normative effects - the last category having at least effects to the creation of customary international law, international administrative law,\textsuperscript{484} and internal administrative law.\textsuperscript{485} Domestic Administrative Law textbooks use a similar definition for the lawmaking practices by national administrations.\textsuperscript{486} Contemporary scholars also consider that legislation takes place so long as three prerequisites are met: unilateral form, legal force, and generality.\textsuperscript{487}

\textsuperscript{482} E\textsc{duard} Y\textsc{emin}, Legis\textsc{tative} Powers in the United Nations and Specialized Agencies 6 (1969).

\textsuperscript{483} See Nasser, supra note 213, at 78 (citing Jaen-Didier Sicault, Du Caractère Obligatoire des Engagement Unilatéraux en Droit International Public, 83 Revue Générale de Droit International Public 633 (1979) (categorizing unilateral acts being promulgated by IOs among the sources of international law, and referring specifically to a few categories of unilateral acts as classic study objects: notification, recognition, protest, renunciation and promises).

\textsuperscript{484} Paul Szasz defines international administrative law as basically the law that governs IOs. Its principal manifestations are: the constitutional law of IOs; procedural rules; the privileges and immunities of IOs and their staffs; the rules governing the granting of assistance by IOs to States; the rules governing various types of activities carried out by IOs within States; and the personnel and financial regime of IOs. Some of that law is created mostly by treaties; some by decisions of international bodies; and some by the actions of these organizations, largely through their secretariats.


\textsuperscript{485} Szasz, supra note 431, at 27.)

\textsuperscript{486} See, e.g. E. Spiliotopoulos, Administrative Law I, A. Sakkoulas Publications, Athens, Greece, (in Greek) 1996.

Other authors add majority voting to the list of the elements of international lawmaking. In order to define international legislation, they make use of an analogy between international and national legislation. Kelsen, for instance, considers that if a rule is adopted by the majority decision of an organ and composed only of representatives of the Parties to the constitutive treaty, the enactment of that rule amounts to legislation. He holds that legislation is “conscious and deliberate lawmaking by special bodies.”

In a similar spirit, Potter also views international legislation as the enactment of International Law by formal action of “less than unanimous consent.”

Further, Sommer relates the legislative power to the majority rule. However, in order to accept that IOs exercise legislative powers, Sommer requires the absence of any further necessity for further action on behalf of the States at the stage between the adoption of the rule by the international institution and its enactment within the domestic legal order of a State:

“legislative powers exist where an international organization has the right to bind all States by a majority vote of its competent organ, without requiring ratification or any other act of individual acceptance or providing for an opting-out procedure.”

488 HANS KELSEN, PRINCIPLES OF INTERNATIONAL LAW 441 (2d ed. 1966).

489 P. B. POTTER, AN INTRODUCTION TO THE STUDY OF INTERNATIONAL ORGANIZATION 209 (5th ed. 1948).

490 SOMMER, supra note 35, at 634, 650.
The reason why majority voting is considered a significant indicator of a lawmaking/legislative function of an IO is that, if the majority of Member States’ representatives adopt a decision that binds all of the Member States, then that decision will bind some of the Member States without their consent (notwithstanding the case in which, despite the rule of majority, the decision still receives unanimous support from all Member States. In this latter case, the legislative character of the decision still remains.)

The present Thesis follows Kelsen’s and Potter’s approach, as more descriptive of what international lawmaking is today, as well as a starting point and a baseline for international lawmaking. Sommer’s definition is admittedly a more advanced version of the international lawmaking and an end of its own. Before international legislation processes reach the advanced stage of Sommer’s definition, there are currently less developed stages of lawmaking that are in effect and worth exploring. The present Chapter explores all of the ways international institutions promulgate norms, ranging from what Kelsen’s and Potter’s approaches understand as international laws issued by international institutions up to Sommer’s approach. The first element under investigation is the existence of the unilateral imposition of laws, since the unilateral imposition of an obligation is traditionally a trait of law. Thus, one can infer that the unilateral imposition of a norm and majority voting are two sides of the same coin. By unilateral imposition of law, one does not only mean the the imposition of law on behalf of an international institution upon one or more States, but also among several States, such as, for instance in the case that only a few States take a decision that is, however, binding upon other States that have not take any steps in order to accept or deny the new norm.
CHAPTER II: PROGRESSIVE LAWMAKING PROCEDURES IN THE FRAMEWORK OF INTERNATIONAL INSTITUTIONS WITH ENVIRONMENTAL COMPETENCE

In the present part, I sort out current models of lawmaking procedures and, try to draw conclusions about these conclusions, in order to design a better model for the integration of science in the international environmental lawmaking procedures (optimization of the system).\footnote{SYSTEMS THEORY (Michael De Cleris ed., Athens - Komotini: Ant. N. Sakkoulas 1986) (in Greek).} This is necessary since the various developments of the regimes respond differently to chances in scientific knowledge without need to begin afresh with a new treaty.\footnote{Alan E. Boyle, \textit{Some Reflections on the Relationship of Treaties and Soft Law}, 48 Int’l & Comp. L. Q. 901, 905 (1999); Edith Brown Weiss, \textit{Introduction}, in \textit{INTERNATIONAL COMPLIANCE WITH NONBINDING ACCORDS} 1, 5 (Edith Brown Weiss ed. 1997).} In order a researcher to be able to fully present the overall lawmaking system of I.E.L., it would be more appropriate to use the large-scale systems theory that understands lawmaking as a function that takes place under a complex and interdependent social order, with many actors directly or indirectly participating in the process. This approach is not, however, possible to follow, since the time available to complete the Thesis necessarily limits the scope of the research. As a result, the analysis is much more limited in extent than what a large-scale system analysis would normally require.\footnote{Cf. Niklas Luhmann, \textit{THEORY ON POLITICS AND LAW} (1989): “The core element of Luhmann's theory is communication. Social systems are systems of communication, and society is the most encompassing social system. Being the social system that comprises all (and only) communication, today's society is a world society. A system is defined by a boundary between itself and its environment, dividing it from an infinitely complex, or (colloquially) chaotic, exterior. The interior of the system is thus a zone of reduced complexity: Communication within a system operates by selecting only a limited amount of all
On the domestic level, it is said that Environmental Law has become "one of the most dynamic areas of the international legal system" and has given rise to many regulatory and institutional innovations. This Chapter explores whether this dynamic evolution also features in the realm of International Environmental Law. It explores how far the international community has gone in terms of new ways to make law. Traditional international lawmaking procedures require explicit consent to be expressed through the signature and, in many situations, ratification by the Member States. These procedures are cumbersome and not flexible enough to face environmental emergencies in a timely manner or to incorporate new scientific understanding of environmental problems.

Information available outside. This process is also called "reduction of complexity." The criterion according to which information is selected and processed is meaning (in German, *Sinn*). Both social systems and psychological or personal systems (see below for an explanation of this distinction) operate by processing meaning.

Furthermore, each system has a distinctive identity that is constantly reproduced in its communication and depends on what is considered meaningful and what is not. If a system fails to maintain that identity, it ceases to exist as a system and dissolves back into the environment it emerged from. Luhmann called this process of reproduction from elements previously filtered from an over-complex environment *autopoiesis* (pronounced "auto-poy-e-sis"; literally: self-creation.) As cited in the Wikipedia, he used a term coined in cognitive biology by Chilean thinkers Humberto Maturana and Francisco Varela. Social systems are autopoietically closed in that they use and rely on resources from their environment; yet those resources do not become part of the systems' operation. Both thought and digestion are important preconditions for communication, but neither appears in communication as such. See [http://en.wikipedia.org/wiki/Niklas_Luhmann](http://en.wikipedia.org/wiki/Niklas_Luhmann) (last visited on August 7, 2011.)


To begin, one could hold that, indeed, IOs and international arrangements have started transforming their lawmaking processes, including a shift in the identity of the actors that participate in the lawmaking process. This Chapter explores the ways in which international organizations and treaty specific bodies have recently developed new lawmaking procedures that promote non-consensual majority voting, confer quasi-legislative powers to bodies of international arrangements and, in many cases, elevate the role of expert from mere consultants to influential actors in international lawmaking. These new processes have been characterized as “multifaceted” and “de-formalized.”\footnote{See Dinah Selton, Introduction, in COMMITMENT AND COMPLIANCE 1, 12 (Dinah Selton, ed., 2000).} The developments in the voting system parallel the framework of both IOs and treaty-based bodies.
A. Evolution of the Voting Procedures and Their Influence on the Normative Powers of the International Institutions

The rules governing the voting processes within the framework of international institutions belong to procedural law. The importance of the procedural rules is such that they affect the outcome of the lawmaking process, namely the content of the substantive rules. Due to their importance, in most cases the voting processes are prescribed by the constituent instruments of the respective international institution. In addition referring to the basic voting processes in the constituent instruments, the institutions issue themselves complimentary additional legal instruments containing rules that refer to the voting processes. In this way, the institutions exercise the principle of self-determination regarding the internal matters of the institution. There are some rules in lawmaking procedures though that do not simply fall under the category of its internal matters; they are, on the contrary, immensely important politically. These rules include those provisions that decide how many States or which bodies should participate in the lawmaking process. The dilemma between that international institutions face on whether to choose the rule of unanimity, for example, and other rules of voting is countervailing.
1. The Traditional Rule of Unanimity

The traditional voting rule in the framework of IOs is the rule of unanimity. The rule of unanimity for lawmaking purposes guarantees an “agreement by all parties and implies the presence of the element of consent.” Understood to be a consequence of the principles of state sovereignty and equality, the unanimity rule was believed to be necessary for the formation of written laws in the international legal order. Thus, traditionally, the treaty-making process is governed by the principle of consent. Article 9 of the 1969 Vienna Convention for the Law of the Treaties restates that the rule for the adoption of a treaty is unanimity: “the consent of all the States”. According to the 1969 Vienna Convention, each convention binds only those States that have explicitly accepted its rules. Treaty-making is “the preparation of inter-state lawmaking within an international organization.” Article 9 paragraph 2 of the 1969 Vienna Convention, however, acknowledges an exception to the majority rule:

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499 See Alexandrowicz, supra note 286, at 7.


501 Sommer, supra note 35, at 638; Alexandrowicz, supra note 287, at 6.

502 Noteworthy, more flexible approaches to voting were already underway prior to the advent of modern IOs. See, e.g., Louis Sohn, Voting Procedures in Early International Conferences for the Codification of International Law, in Jus and Societas: Essays in Tribute to Wolfgang Friedmann (Gabriel M. Wilner, ed., 1979).
“the adoption of the text of a treaty at an international conference takes place by the vote of two thirds of the States present and voting, unless by the same majority they shall decide to apply a different rule.”

2. The Departure from Unanimity and Forms of Consensus

The departure from the demand of unanimous voting has been among the most important developments in international lawmaking during the last decades. There are two alternatives to the unanimity rule: either consensus or majority voting. There is a marked trend to operate on the basis of “consensus” and, therefore, to avoid a formal vote. The term “consensus” has two aspects: a formal and a material/substantial one. In the formal sense, consensus is a method of voting. From a material/substantial aspect, consensus refers to the actual conclusions on the document which embodies the decision. Delegates at the World Population Conference defined consensus as being, “general agreement without a vote but not necessarily unanimity.” In essence, consensus requires that a State is present when voting takes place. If the State is absent, then this State does not count.

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504 “The adoption of the text of a treaty at an international conference takes place by the vote of two-thirds of the States present and voting, unless by the same majority they shall decide to apply a different rule.” Vienna Convention on the Law of the Treaties, supra note 497, at art. 9.

505 SANDS & KLEIN, supra note 455, at 263-75.

506 Supra note 495, at 18.

During diplomatic conferences, the tendency has been to avoid voting altogether and aim for consensus. An outstanding example is the Third United Nations Conference on the Law of the Sea, for which David Kennedy notes that, “voting practice ‘has come full circle’ from unanimous voting through majority voting to consensus procedures.” Even more often, regarding practical (procedural) issues, consensus seems to be the rule. For instance, the Montreal Protocol provides that consensus is the only voting rule for the adoption of the rules of procedures for the Meetings of the Parties (MOP). Another category of regulations upon which States consistently decide by consensus is those decisions regarding the finances of the international institution. For instance, the Montreal Protocol also introduces consensus to decisions having to do with funds that are necessary for the operation of the Protocol.

Many bodies of the United Nations have used consensus as a method of decision-making, although their procedural rules do not provide for such a method. In practice, the

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508 Sands & Klein, supra note 455, at 263–75.


510 Art. 11 para 3 (b) in connection with Art. 13 para. 2.
specialized agencies of the United Nations also often adopt their decisions by consensus, particularly when the questions concern technical standards, such as the I.M.O. 511

In some decision-making processes adopted by treaty-based bodies established by MEAs, the possibility of achieving consensus is a necessary prerequisite for proceeding to any other method of voting. For example, the Convention of Biological Diversity (C.B.D.) explicitly requires the COP to try to achieve consensus for the adoption of or amendment to any annex. 512 Only if consensus cannot be reached does the Convention allow for the adoption of a legislative act by majority vote. 513 The Convention on the Transboundary Effects of Industrial Accidents also requires parties to make every effort to achieve consensus before the COP decides on amendments to Annex I. 514 In case consensus is impossible to reach, the Convention allows for the amendment to the Annex to be adopted by a nine-tenths majority vote, which is a significantly large percentage of the parties. In Article 9, paragraph 3, the Vienna Convention for the Protection of the

511 As Henry comments, the first attempt made to institutionalized consensus procedure was probably the adoption of the “Gentleman’s Agreement” appended to the Rules of Procedure of the Third UNCLOS. The “Gentleman’s Agreement” was adopted by the United Nations General Assembly at its 2,169th meeting on 16 November 1973 and approved by UNCLOS at its 19th meeting of the Caracas Session on 17 June 1974, while the Rules of Procedure themselves were adopted at the 20th meeting of the same session, both documents having received the consensus of the Conference. See Doc. A/CONF/62/30/Rev. 3. See also Official Records of the Third United Nations Conference on the Law of the Sea, 1, p. 45.


513 Id. at art. 29 and 30.

Ozone Layer\textsuperscript{515} emphasizes that the Parties should make every effort to reach agreement on the proposed amendments to the Convention by consensus and, only if such efforts are in vain, does the Convention allow for the adoption of amendments by a three-fourths majority vote.

An interesting development occurred when participants in the Montreal Protocol introduced the notion of "flexible consensus." At the 1995 Vienna meeting it was clarified that a sort of flexible consensus has been utilized, because, when only one party objected, the decision could still be "carried by consensus," and the position of the dissenting party was "clearly reflected" in the report of the meeting.\textsuperscript{516} Monnier maintains that the approval of all of the participants is not a condition for the validity of the decision. What actually must exist is a very large convergence of views, which must include the views of States particularly concerned with the decision being made.\textsuperscript{517}

Consensus may, however, still produce results that represent the "lowest common denominator," because it can be determined by the most conservative and reluctant of the participants. Flexible consensus was employed in order to avoid what Robert Cox deprecated. He warned that "the language of consensus is a language of common interest expressed in universalist terms, though the structure of power underlying it is skewed in


\textsuperscript{516} U.N. Doc. UNEP/OzL.Pro.7/12, Decision VII/18, Seventh Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, Vienna, Dec. 27, 1995, p. 53.

\textsuperscript{517} J. Monnier, \textit{La Troisième Conférence des Nations-Unies sur le Droit de la Mer}, 39 \textsc{Annuaire Suisse de Droit international} 9 (1983).
favor of the dominant groups.” As a result, there were calls for even more flexible lawmaking rules, beyond consensus.

3. Beyond Consensus: Stepping into the Realm of Legislation

The adoption of majority voting procedures by various international arrangements represents another step away from the traditional unanimity or consensus voting models. The use of the majority voting rule for lawmaking registered an advance in International Law as compared to that of unanimity; it gave rise to a collective will which does not depend on the concurrence of all of the wills of the participants in the international institutions to come into effect. It thus gave many more possibilities for the States to protect, for instance, the environment, even if one or more States were still unwilling to do so.

As discussed above, according to several definitions of international lawmaking, if a legal instrument is adopted by an international institution’s majority decision, the binding nature and the general application of the legal instrument can be synthesized into a legislative act.

Robert W. Cox, Labor and Hegemony, 31 (3) INTERNATIONAL ORGANIZATION 386 (Summer 1977).
Sommer considers this application of the legislative principle within the treaty-making process as a “hybrid”, existing in between legislation and treaty making.\textsuperscript{519} Alexandrowicz holds that the legislative principle (majority rule and unilateral application of the rule) is an inescapable reality within the framework of specialized agencies of the UN, in order for the latter to be able to cope with the technological challenges.\textsuperscript{520}

As in the case of consensus, issues of a technical nature were among the first to be decided by the majority voting of permanent international arrangements. Further, the joint management of the natural resources was an additional field that soon required the use of majority voting procedures in order to be effective. Back in the 19\textsuperscript{th} century States founded multilateral institutions to resolve issues arising out of the management of natural resources. For example, the Central Rhine Commission\textsuperscript{521} established in 1804 and

\begin{footnotesize}
\textsuperscript{519} SOMMER, supra note 35, at 634. In 1991 Sommer commented that this “hybrid” process is not very relevant for substantive environmental lawmaking, at 635; ALEXANDROWICZ, supra note 287, at 7-10 and 155..

\textsuperscript{520} ALEXANDROWICZ, supra note 287, at 5.

\textsuperscript{521} Visit the official site of the Central Rhine Commission, \url{http://www.ccr-zkr.org/} (last visited August 21, 2009). The annex to the Final Act of the Congress of Vienna in 1815 created the Central Commission to “ensure a precise control of the enforcement of common rules as well as to provide an authority used as a means of communication between riparian States with regard to all aspects of navigation.” The Convention of Mainz, signed in 1831, was the CCNR’s first constitutive treaty. The CCNR has five member States, Belgium, France, Germany, the Netherlands and Switzerland and a Secretariat of nineteen staff members. The CCNR’s structure stems from both an “international diplomatic conference and a regular international organization.” As a result, the CCNR has two bodies: (1) a plenary session in which Member States meet biannually and (2) a permanent Secretariat overseeing administrative work. The plenary session operates in committee and these committees include national experts. Cecil Tournaye, American Society of International Law Publication, Reports on International Organizations, Central Commission for the Navigation of the Rhine (Dec. 1, 2008).
\end{footnotesize}
the European Danube Commission established in 1856 both deal with managing natural resources. In addition, multilateral institutions were established to deal with issues of a technical nature, such as international and regional communications. For instance, the Universal Telegraphic Bureau (presently called the International Telecommunications Union or “ITU”) in 1865, the General Postal Union (presently called the Universal Postal Union or “UPU”) in 1874, the International Committee of Weights and Measures, created by the Peace Treaty of Paris, Mar. 30, 1856, arts. 15-17, 15 Martens Nouveau Recueil (ser. 2) 770, 776-77, 114 Consol. T.S. 409, 415-16. Subsequently amended at the Convention Regarding the Regime of Navigation on the Danube, signed at Belgrade on August 18, 1948. Visit the official site of the Commission, http://danubecommission.org/ (last visited October 17, 2010). The Secretariat of the Danube Commission employs several experts, including a Counselor for Technical Issues and a Counselor for Inland Waterways Exploitation and Environmental Issues. For additional information about the composition of the Secretariat, visit the official website of the Commission, http://www.danubecommission.org/index.php/en_US/secretariat (last visited December 4, 2010).

523 Visit the official site of the ITU, http://www.itu.int/en/history/Pages/default.aspx (last visited August 21, 2009). The ITU was created in 1865 by the International Telegraph Conference in Paris. At this Conference, Parties established the International Telegraph Convention, an intergovernmental treaty setting forth principles of international telegraphy, contained annexes in which the Convention outlined Regulations for International Service (or Telegraph Regulations). See http://www.itu.int/en/history/plenipotentiaryconferences/Pages/1865Paris.aspx. The ITU has two important bodies: (1) the Plenipotentiary Conference which is the top policy-making body of the ITU and meets every four years, and (2) the ITU Council which considers policy issues between plenipotentiary meetings. The Plenipotentiary Conference elects Members of the ITU Council such that the Council is comprised of a maximum of 25% of the total member States, with special regard for each of the five world regions occupying Council seats. The Council also directs administrative issues for the ITU and facilitates implementing the provisions of the ITU Convention and the decisions of Plenipotentiary Conferences. For information on the Council, see http://www.itu.int/en/council/index.html. For information on the Plenipotentiary Conferences, see http://www.itu.int/plenipotentiary/2010/about.html.

524 Visit the official site of the Universal Postal Union (UPU), http://www.upu.int/en/the-upu/history/about-history.html (last visited August 21, 2009). In 1874 the Treaty of Bern established the General Postal Union. In 1878, the name was changed to the Universal Postal Union. The UPU consists of four important bodies: (1) the Universal Postal Congress, which meets every four years as a plenipotentiary of all member countries, passes legislation; (2) the Council of Administration, which consists of forty-one members and meets annually, studies policy and regulatory issues between Congress meetings; (3) the Postal Operations Council, which consists of forty member countries and meets annually, focuses on the technical aspects of UPU policy goals; and (4) the Consultative Committee, which gives voice to non-State actors such as non-governmental organizations, unions, delivery-service providers, and other private organizations with an interest in UPU’s objectives. See http://www.upu.int/en/the-upu/the-upu.html. Importantly, the Council of Administration has the power to resolve urgent matters that would typically be decided by the Congress and can give interim legal effect to the Postal Operations Council’s proposals between Congresses. See http://www.upu.int/en/the-upu/council-of-administration/about-ca.html.
Measures in 1875, and the International Union of Railway Freight Transportation (presently the International Union of Railways) in 1890, all deal with technical subject matters. In addition, Reuter mentions the existence of about fourteen bureaux at the outbreak of the First World War.

Within the frameworks, the same need for effective collective cooperation and solutions to these problems that led to the establishment of multilateral institutions also led to the early adoption of lawmaking processes based on majority voting procedures. For instance, regarding the Central Rhine Commission, Article 46 of the Revised Convention for Rhine Navigation of October 17, 1868, as set out in the text of November 20, 1963, States:

Visit the official website of the BIPM, http://www.bipm.org/en/committees/cipm/ (last visited October 10, 2010). BIPM’s mission is to standardize and oversee measurement systems. The Convention of the Metre (Convention du Mètre), an intergovernmental treaty signed in 1875 and representing seventeen nations, founded the BIPM and set forth general standards for its governance. The Convention established as the BIPM’s authority the General Conference on Weights and Measures (CGPM), which meets every four years. The BIPM also established the International Committee for Weights and Measures (CIPM), comprised of eighteen individuals from different Member States, which meets annually to strategize and develop BIPM work. The CIPM has also established Consultative Committees, which allow experts in various fields to advise the CIPM and CGPM on scientific and technical matters. To qualify as an expert and thus participate in the Consultative Committees, individuals must come from internationally recognized institutions, academic fields, or laboratories, which are housed in one of the Member States territory. Members of the Consultative Committees can also come from intergovernmental organization, scientific unions and international bodies, so long as their work contributes to BIPM’s mission. The CIPM reviews reports and data provided by the Consultative Committees at its annual meetings. See http://www.bipm.org/en/convention.

The UIC was founded at the International Conference held in Paris on October 17, 1922, in order to establish “a permanent rail administration focusing on international traffic for the standardization and improvement of conditions of railway construction and operations.”. See http://www.uic.org/spip.php?article528&artpage=2-2.

“Resolutions adopted by majority shall constitute recommendations... [a]ll resolutions concerning the Central Commission’s internal affairs shall be validly adopted by a majority of votes.”

In the European Danube Convention there is a set of articles that provide for majority voting. Article 10 of the 1948 Convention Regarding the Regime of Navigation on the Danube States that; “the Commission shall draw up its budget and approve it by a majority vote of all its members.” Article 11 States, “the Commission’s decisions shall be taken by a majority of the members present.” Article 12 States:

“the Commission’s decisions on matters provided for in article 8(b), (c), (f) and (g) shall be taken by a majority vote of all members of the Commission but without outvoting the State of the territory on which the works are to be carried out.”

Articles 8(b), (c), (f) and (g) allow the Commission to prepare general works and budgets in connection with the Commission’s mission, to execute efforts to implement regulations within a Danubian State, when such state is unable to implement the regulations independently.

With respect to the International Telecommunication Union, Article 14, paragraph 2(c) establishes the Duties of the Radio Regulations Board, and allows the Council to delegate more responsibilities to the Radio Regulations Board by a majority vote.
The U.P.U. was one of the first organizations to utilize the majority voting rule in the dispute settlement processes. Article 16 of the 1874 Treaty of Bern, which established the U.P.U., States that disputes are to be settled by representatives (acting as arbitrators) from non-litigating member States who, having heard the dispute, will decide according to majority vote. With respect to the B.I.P.M., Article 12 of the 1921 amendments to the Convention du Metre States that Committee votes shall take place by a majority; in case of a tie, the president of the committee's vote shall be decisive.

In the formalized framework of the Unions, unanimity was the rule, although practice shows an occasional departure from unanimity. This practice may be seen as a prelude to the majority decision-making in the later technical organizations. However, at those early years, such majority decisions almost never entailed legal obligations for member States. Likewise, each member state would normally have one vote. One can

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529 The original text in French reads as such: "les votes au sein du Comite ont lieu a la majorite des voix; en cas de partage, la voix du president est preponderante".

530 See Sands - Klein, supra note 455, at 6; Reuter, supra note 523, at 30.

531 Regarding the distinction between political and technical organizations or between IOs that mainly act as a forum for interstate negotiation on the one hand and IOs that act primarily as a machinery for rule-making activity on the other, see Thomas Mensah, The Practice of International Law in International Organizations, in International Law: Teaching and Practice 147 (Bin Cheng ed., 1982).

find a few exceptions in some of the River Commissions, where certain administrative matters were decided by way of an early form of weighted voting which related to the length of the riverbank.\textsuperscript{533} Regarding the internal order of the organization, the River commissions had far-reaching legislative and judicial powers “compared to those enjoyed by supranational organizations.”\textsuperscript{534}

Despite the afore-mentioned exceptions, unanimity was still a rule under the era of the League of Nations, while contemporaries had started noting a new tendency towards majority rule-making.\textsuperscript{535} It is noteworthy, however, that consensus intercepted the way toward the adoption of the majority rule in those early years. As Bederman comments, before any such tendency established itself, the States devised the concept of consensus “as a strong antidote to majority-ruling tendencies,” such as in the case of the Cape Spartel Lighthouse Commission in the early 20\textsuperscript{th} century.\textsuperscript{536} On grounds of functionality and effectiveness, international environmental regimes were soon among the first regimes to adopt non-consensual, majority voting procedures even at the expense of state sovereignty.\textsuperscript{537 538}

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\item[533] Sands - Klein, \textit{supra} note 455, at 6;
\item[536] Id. at 301.
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In the realm of treaty-management organizations in the field of I.E.L., currently there are several examples that introduce majority voting procedures. Those examples include the Vienna Convention for the Protection of the Ozone Layer, the Basel Convention on the Transboundary Movement of Hazardous Wastes and Their Disposal, the United Nations Framework Convention on Climate Change (“UNFCCC”) and the Kyoto Protocol to the UNFCCC that provide for a three-quarters majority. Further M.E.A.s require even less strict majority, such as the Montreal Protocol, the Biodiversity Convention, the UN Convention to Combat Desertification that provide for a two-thirds majority requirement.


539 See supra note 505.


4. Three-Quarters or Three-Fourths Majority

A three-fourths majority requirement is included in Article 9 of the Vienna Convention for the Protection of the Ozone Layer which outlines that a Party may propose amendments to the Convention or the Protocols in response to, inter alia, technical and scientific considerations (para. 1.) The Conference of the Parties (COP) or the Meeting of the Parties (MOP) could amend the Convention or the Protocols respectively first by consensus. However, according to the second clause:

“If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the parties present and voting at the meeting, and shall be submitted by the Depository to all Parties for ratification, approval or acceptance.”

It is noteworthy that the three-fourths majority requirement does not refer to the total of the signatory parties, but only to those that are present and voting. This means that the actual percentage of the parties deciding can in reality be much smaller than three-fourths of the total number of Member States. Further, paragraph 4 of Article 9 of the Convention introduces the three-fourths percentage as the rule for any majority vote regarding amendments for its future protocols, but also allows the Parties to the protocol to agree on an enhanced majority of two-thirds. Paragraph 5 clarifies that amendments to the Convention and any subsequent protocols are binding only to the Parties that affirmatively accept them. The Convention States that amendments which were adopted by the process of Articles 3 and 4 shall enter into force only among the circle of Parties.

546 See paragraph 3 indent (a).
that have accepted them. According to the Convention, the Parties should express their will to be bound by the new provisions by an affirmative act of ratification, approval or acceptance of the amendments.

Article 17, paragraph 3, of the Basel Convention introduces a three-fourths majority vote of the Parties present and voting at the meeting when consensus cannot be achieved, for the adoption of amendments to either the Convention or the Protocols of the Convention. By deciding the amendments the MOP should take due account of relevant scientific and technical considerations. Further, Article 15, paragraph 3, of the United Nations Framework Convention on Climate Change Convention (UNFCCC) provides that amendments to the UNFCCC could be adopted by a three-fourths majority of the States present and voting, if consensus cannot be reached.

547 “Article 17 - Amendment of the Convention
1. Any Party may propose amendments to this Convention and any Party to a protocol may propose amendments to that protocol. Such amendments shall take due account, inter alia, of relevant scientific and technical considerations.
2. Amendments to this Convention shall be adopted at a meeting of the Conference of the Parties. Amendments to any protocol shall be adopted at a meeting of the Parties to the protocol in question. The text of any proposed amendment to this Convention or to any protocol, except as may otherwise be provided in such protocol, shall be communicated to the Parties by the Secretariat at least six months before the meeting at which it is proposed for adoption. The Secretariat shall also communicate proposed amendments to the Signatories to this Convention for information.
3. The Parties shall make every effort to reach agreement on any proposed amendment to this Convention by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the Parties present and voting at the meeting, and shall be submitted by the Depositary to all Parties for ratification, approval, formal confirmation or acceptance.”

548 Article 15 – Amendments to the Convention
1. Any Party may propose amendments to the Convention.
2. Amendments to the Convention shall be adopted at an ordinary session of the Conference of the Parties. The text of any proposed amendment to the Convention shall be communicated to the Parties by the secretariat at least six months before the meeting at which it is proposed for adoption. The secretariat shall also communicate proposed amendments to the signatories to the Convention and, for information, to the Depositary.
3. The Parties shall make every effort to reach agreement on any proposed amendment to the Convention by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the Parties present and
Article 20 of the Kyoto Protocol\textsuperscript{549} provides for the adoption of an amendment by a three-fourths majority voting of the present and voting Parties, in case every other effort at consensus has been exhausted and no agreement is reached.\textsuperscript{550} Those amendments will bind only those Parties that have accepted them.\textsuperscript{551} However, things are different regarding amendments not to the basic text of the Kyoto Protocol, but to its Annexes. As Article 21 paragraph 5 States:

\begin{quote}
"An annex, or amendment to an annex other than Annex A or B, that has been adopted in accordance with paragraphs 3 and 4 above shall enter into force for all Parties to this voting at the meeting. The adopted amendment shall be communicated by the secretariat to the Depositary, who shall circulate it to all Parties for their acceptance. 
4. Instruments of acceptance in respect of an amendment shall be deposited with the Depositary. An amendment adopted in accordance with paragraph 3 above shall enter into force for those Parties having accepted it on the ninetieth day after the date of receipt by the Depositary of an instrument of acceptance by at least three fourths of the Parties to the Convention.
5. The amendment shall enter into force for any other Party on the ninetieth day after the date on which that Party deposits with the Depositary its instrument of acceptance of the said amendment.
6. For the purposes of this Article, "Parties present and voting" means Parties present and casting an affirmative or negative vote."
\end{quote}

\textsuperscript{549} See Article 20 of the Kyoto Protocol: "1. Any Party may propose amendments to this Protocol.
2. Amendments to this Protocol shall be adopted at an ordinary session of the Conference of the Parties serving as the meeting of the Parties to this Protocol. The text of any proposed amendment to this Protocol shall be communicated to the Parties by the secretariat at least six months before the meeting at which it is proposed for adoption. The secretariat shall also communicate the text of any proposed amendments to the Parties and signatories to the Convention and, for information, to the Depositary.
3. The Parties shall make every effort to reach agreement on any proposed amendment to this Protocol by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the Parties present and voting at the meeting. The adopted amendment shall be communicated by the secretariat to the Depositary, who shall circulate it to all Parties for their acceptance.
4. Instruments of acceptance in respect of an amendment shall be deposited with the Depositary. An amendment adopted in accordance with paragraph 3 above shall enter into force for those Parties having accepted it on the ninetieth day after the date of receipt by the Depositary of an instrument of acceptance by at least three fourths of the Parties to this Protocol.
5. The amendment shall enter into force for any other Party on the ninetieth day after the date on which that Party deposits with the Depositary its instrument of acceptance of the said amendment."

\textsuperscript{550} Article 20, paragraph 3.

\textsuperscript{551} Article 20, paragraph 4.
Protocol six months after the date of the communication by the Depositary to such Parties of the adoption of the annex or adoption of the amendment to the annex, except for those Parties that have notified the Depositary, in writing, within that period of their non-acceptance of the annex or amendment to the annex. The annex or amendment to an annex shall enter into force for Parties which withdraw their notification of non-acceptance on the ninetieth day after the date on which withdrawal of such notification has been received by the Depositary.”

In this way, the protocol introduces a type of opting-out voting method, which is rare in the text of the M.E.A.s, but occurs more frequently in the instruments of IOs.  

The procedures of voting under the Stockholm Convention on Persistent Organic Pollutants or otherwise the POP Convention also introduces an amendment procedure that is based on majority voting. The amendment procedure to the POP Convention is governed by articles 21 and 22. Article 21, paragraph 3, describes amendments to the main text of the Convention and provides that these amendments can be adopted by a three-fourths majority vote of the Parties present and voting, if consensus is not possible. This voting procedure resembles the procedure in all of the afore-mentioned institutions. Most importantly, however, Article 22 refers to the adoption of the

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552 The Chapter discusses the opting-out process below, at p. 233.


554 “Article 21 - Amendments to the Convention:
1. Amendments to this Convention may be proposed by any Party.
2. Amendments to this Convention shall be adopted at a meeting of the Conference of the Parties. The text of any proposed amendment shall be communicated to the Parties by the Secretariat at least six months before the meeting at which it is proposed for adoption. The Secretariat shall also communicate proposed amendments to the signatories to this Convention and, for information, to the depositary.
3. The Parties shall make every effort to reach agreement on any proposed amendment to this Convention by consensus. If all efforts at consensus have been exhausted, and no agreement reached, the amendment shall as a last resort be adopted by a three-fourths majority vote of the Parties present and voting.
4. The amendment shall be communicated by the depositary to all Parties for ratification, acceptance or approval.
amendments to Annexes and provides that “any additional annexes shall be restricted to procedural, scientific, technical or administrative matters.” The amendments of the annexes are binding upon the Parties, unless “any party that is unable to accept an additional annex will so notify the depository in writing within one year from the date of communications by the depository of the adoption of the additional annex.”555 In this case, there is an important development within I.E.L., since the Parties are able to adopt the annexes to the amendments by majority vote and the amendments are binding upon all of the parties, unless the parties declare otherwise. For the purposes of the Thesis, it is important to clarify that this advanced voting process refers to secondary laws. As the Protocol itself notes, this voting process deals with “procedural, scientific, technical or administrative matters.”

5. Two-Thirds Majority

The two-thirds majority requirement is even rarer in the M.E.A.s and the legal instruments of the international institutions. Under M.E.A.s, the two-thirds majority is a method of voting that is usually employed to change not the convention itself, but rather the protocols that are annexed to the convention. For instance, while the Vienna

5. Ratification, acceptance or approval of an amendment shall be notified to the depository in writing.

An amendment adopted in accordance with paragraph 3 shall enter into force for the Parties having accepted it on the ninetieth day after the date of deposit of instruments of ratification, acceptance or approval by at least three-fourths of the Parties. Thereafter, the amendment shall enter into force for any other Party on the ninetieth day after the date on which that Party deposits its instrument of ratification, acceptance or approval of the amendment.”

555 Article 22 paragraph 3.
Convention for the Substances that Deplete the Ozone Layer provides for a three-fourths majority for the amendments of its text or of the Protocols adhered to the Convention pursuant to Article 9, paragraph 3, the next paragraph of Article 9 requires a two-thirds majority vote for amending any protocol that changes the majority.\textsuperscript{556} Indeed, in 1989 the Montreal Protocol on Substances that Deplete the Ozone Layer\textsuperscript{557} introduced the two-thirds majority percentage pursuant to Article 2, paragraph 4. Since the Vienna Convention and the Montreal Protocol have already set out the primary law governing the management of protecting the ozone layer, the MOP is free to adopt legislative changes that respond to new scientific challenges by a lower majority.\textsuperscript{558}

One of the key questions the Parties faced with respect to the design of the Montreal Protocol was how the Protocol should take into account the results of the periodic reviews and assessments of scientific and technical issues. Further, the Parties needed to decide how the Protocol could be sufficiently flexible to regulate new substances discovered to pose potential threats to the ozone layer.\textsuperscript{559} In order to attain the necessary level of flexibility, the Protocol provides for flexible voting procedures for adopting new provisions. First, the Protocol differentiates between amendments and

\textsuperscript{556} Article 9 paragraph 4: “The procedure mentioned in paragraph 3 above shall apply to amendments to any protocol, except that a two-thirds majority of the Parties to that protocol present and voting at the meeting shall suffice for their adoption.”


\textsuperscript{558} Article 11 of the Montreal Protocol.

\textsuperscript{559} See Second Session of the Working Group, Vienna, February 27, 1987, UNEP/WG. 167/2.
adjustments and secondly it allocates different voting procedures according to these two different categories.560

Benedick also commented:

“Thus, if a sufficiently large consensus developed for reductions beyond 50%, neither the U.S. nor the EC alone could block it, although both together could. The protocol was so designed that such future changes in the stringency and timing of reductions of already controlled substances would be considered “adjustments” to the provisions and therefore binding on all parties, even those who had not voted with the majority.”561

Article 2.9(c) provides that, after attempts to reach consensus have failed, adjusting the chemicals specified in the Annexes may “as a last resort” be adopted by a two-thirds majority, including a majority of developing countries and developed countries’ constituencies. Article 2, paragraph 9(d), provides that such decisions “shall be binding on all Parties.”562 By the simplified adjustment procedures, the Parties agree to reduce consumption of listed chemicals under Annex A faster and more comprehensively than would have occurred under the text provided. Better yet, this positive outcome occurred without having to use the formal and time consuming amendment procedures.563


Decisions on adjustments should be based on scientific assessments under Article 6. The Protocol allows for adjustments concerning changes in the *timetable* and *targets* set out in Article 2 of the Protocol for reducing the production and consumption of ozone-depleting substances to be “adjusted” by the two-thirds qualified majority vote, representing at least 50 per cent of the combined consumption of the Parties. Even more importantly, such an adjustment needed no ratification by each Party, as an amendment would have, and is binding on all Parties six months after its notification by the depository, the Secretary General of the United Nations. An example of the adjustments made to the Protocol by the Meeting of the Parties in 1990 and 1992 is provided by the adjustments which determined that production and consumption of the CFCs should be phased out completely by 1996 instead of a 50 percent of 1986 levels by 1999. This procedure comes closer to genuine legislation as Sommer perceives it. It is also closer to the domestic legislation processes.

Apart from decisions on scientific issues, the Meeting of the Parties of the Montreal Protocol is also vested with legislative competence in the following case. The MOP may decide on adjustments or amendments regarding the operation of the Multilateral Fund by a two-thirds majority, if no agreement can be reached. The


567  Article 10 paragraph 9.
decisions are binding on all parties without a possibility to opt-out and without the need for ratification.

In the adjustment process, the signatory Parties may adjust the targets and timetables for phasing out chemicals that are already listed without having to go through a formal amendment process. Adjustments become effective six months after Parties receive formal notice and bind all the signatory Parties to the Protocol. A formal amendment is required to add new chemicals to the list of controlled substances. In contrast to the adjustments process, amendments bind only those countries that ratify them. Countries joining the agreement after an amendment goes into effect assume the obligations as of that date, but must ratify any future amendment for it to bind them.\footnote{See Edith Brown Weiss, *The Five International Treaties: A Living History*, in *Engaging Countries: Strengthening Compliance with International Environmental Accords* (Edith Brown Weiss & Harold K. Jacobson eds., MIT Press 1998).}

The amendment procedures provide flexibility and further the objective and the provisions of the framework convention and the protocol. Under this notion they belong to secondary legislation. By adding, though, a completely new substance under the adjustment procedures the new laws entail a strong part of primary law, to the extent that the parties have not agreed in the framework convention or the protocol to automatically add any new substance that satisfies the requirements that they have previously set. They have, thus, a mixed nature with both primary and secondary law aspects. On the contrary, the provisions introduced by the adjustment process belong exclusively to the category of
secondary laws, and the States have easier agreed to a more flexible process for their adoption. In addition, States are willing to be bound by these secondary laws, even without any agreement (expressed or tacit) on their behalf. The clearer it becomes that some provisions fall under the category of the secondary laws, the more willing are the States to agree to flexible ways of voting.

For the record, the Protocol has been amended five times thus far: in 1990 in London, in 1991 in Nairobi, in 1992 in Copenhagen, in 1993 in Bangkok, in 1995 in Vienna, in 1997 in Montreal, and in 1999 in Beijing and there have been several decisions regarding different timelines. According to the Handbook, the most usual voting process is the three fourths majority voting according to Article 9, paragraph 2, of the Vienna Convention.

Article 30, paragraph 3, of the Desertification Convention provides that amendments to the Convention will be adopted by a two-thirds majority vote of the Parties present and voting, if consensus cannot be achieved. According to paragraph 5 of the same article, the amendments enter into force for any other Party ninety days after the date on which that Party deposits with the Depositary its instrument of ratification, acceptance or approval of, or accession to the said amendment. Similarly, the COP of the Convention of Migratory Species of Wild Animals (C.M.S.)\textsuperscript{569} is empowered to adopt amendments to Appendices I and II by a two-thirds majority, according to Article XI of the Convention. The annexes comprise lists of migratory species requiring special

conservation.\textsuperscript{570} Further, the Convention for Long-Range Transboundary Air Pollution also provides for a two-thirds majority for the entry into force of a Protocol or the amendment of a protocol.\textsuperscript{571} Article 15 of the 1980 Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources\textsuperscript{572} (L.B.S. Protocol) provides: “The meeting of the Parties shall adopt, by a two-thirds majority, the programs and measures for the abatement or the elimination of pollution from land-based sources, which are provided for in articles 5 and 6 of this Protocol.” Articles 5 and 6 refer to the adoption of national and regional action plans and programs, the use of best available technology and best environmental practice, the adoption of preventive measures to avoid accidents that might cause pollution in the Mediterranean and the regulation of point sources, as well as the inspections and sanctions are all under the authority of the signatory States. This is the case with other M.E.A.s, which aim to protect the seas. As Wirth mentions:

“While not a true non-consensus approach, a number of maritime pollution agreements incorporate specific, streamlined provisions for establishing technical requirements. Most notable are those for the protection of the Mediterranean and Caribbean Seas and the South Pacific region, and the prevention of marine pollution by ships and from dumping at sea. Similar rules govern the establishment of harvest limits

\textsuperscript{570} As discussed in the following chapters, recommendations for such amendments are usually done by the Scientific Council, an advisory body specifically established to make recommendations to the COP for the inclusion of species on the Annexes.


under the International Convention for the Regulation of Whaling and the Convention for the Conservation of Antarctic Seals.\textsuperscript{573}

Similar flexible voting processes are also distinctive features of M.E.A.s which aim to protect global biodiversity, such as the Convention for the Protection of Biological Diversity and the 1973 Washington Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES.)\textsuperscript{574} Article 30, in conjunction with Article 29 of the Convention on Biological Diversity (C.B.D.), provides for a two-thirds majority vote by the COP for the adoption and amendment of annexes, if no agreement by consensus can be reached. The new amendments will be in effect only for the signatory parties who approved them. In contrast to the amendment of the provisions of the C.B.D., the entry into force of a protocol to the Convention is governed by Article 30 paragraph 1 (c), which States that the protocol will come into effect for all the signatory parties to the Convention irrespectively of whether the signatory members to the Convention have ratified the protocol. The only way that the protocol does not bind the signatory States is for the States to communicate their disagreement to the adoption of the protocol. Thus, the C.B.D., like the Kyoto Protocol, introduces a type of opting-out process. The COP of the CITES meets at least every two years to adopt binding amendments to the Convention’s appendices which limit trade in listed species, review progress that has been made, and make recommendations for improving the treaty’s effectiveness. According to Article XVII, paragraph 1, the COP is able to adopt amendments to Appendices I and II by a two-thirds majority vote of the present and voting parties. As in

\textsuperscript{573} WIRTH, supra note 491, at 798.

\textsuperscript{574} Supra note 148.
many other agreements, “voting parties” mean the parties that cast either a negative or affirmative vote.

Similar procedures have been adopted in the framework of many intergovernmental organizations with environmental competence. For instance, a seemingly technocratic specialized agency is the International Atomic Energy Agency (I.A.E.A.), which is permitted to establish and administer safeguards to ensure the peaceful uses of atomic energy with respect to services made available by the Agency, or at the request of any state with respect to that state’s relevant activities in the field. The functions of the I.A.E.A. are, _inter alia_ “to establish or adopt […] standards of safety for protection of health and minimization of danger to life and property.” I.A.E.A. bodies make their decisions by a two-thirds majority vote of the Members present and voting in a large range of issues including the adoption of standards, financial issues, and issues of suspension of privileges. According to its statute, amendments also enter into force for all parties after adoption by a two-thirds vote and acceptance or ratification by two-thirds of all member States have taken place. The amendments enter into force for the Parties which have accepted it sixty days after two-thirds of the Parties have deposited an

575 Statute of the IAEA, articles 3 (a) (5), 9, and 12, 276 U.N.T.S. 3 (entered into force July 29, 1957) (for a current version, see [www.iaea.org/About/statute_text.html](http://www.iaea.org/About/statute_text.html)).


577 See article V paragraph C, article XIV paragraph 2 (e), article XIX paragraph B of the Statute of the International Atomic Energy Agency.

578 Statute of the International Atomic Energy Agency, _supra_ note 571, art. XVIII, para. C.
instrument of acceptance with the Depositary Government. A similar provision exists in other M.E.A.s and aims to make the process of the adoption of the amendments speedier.

A variety of requirements concerning the percentages of majority voting existed in the M.E.A. landscape. For instance, the Convention on the Transboundary Effects of Industrial Accidents, after requiring the parties to make every effort to reach agreement by consensus, permits amendment of Annex I only by a nine-tenths majority vote.579 Further, the afore-mentioned treaties are not all of the M.E.A.s that provide for the majority vote. However, these are some of the most representative and known global M.E.A.s that represent the most progressive procedures up to now.

Regarding the type and content of laws to which these procedures refer, there is no specific classification that the analyst would follow. Majority voting may be especially desirable for highly scientific and technical matters, which are often associated with other policy-oriented, legal, and economic issues in the environmental field.580 However, from the adjustments to the Montreal Protocol that mainly address technical issues, to the amendments referring to the extensive measures for the protection of the Mediterranean Sea, there is no direct correlation between the type of majority vote permitted and the technical nature of the rule. In addition, there is no connection in the latter features of lawmaking and the requirement that the law only binds those States that have explicitly accepted it. Generalizing about the type of legislation International

579 Article 26 paragraph 4.

Institutions are empowered to pass and how extensively those rules can be enforced against non-signing powers is dangerous because of the myriad considerations that play into negotiations. For instance, a nine-tenths majority requirement does not necessarily mean that the issues at stake are more politically volatile that other issues upon which other institutional arrangements decide with a less demanding majority vote requirement. Just as a preliminary conclusion, one could say that the technical or scientific base of some of the rules condones—in most of the afore-mentioned cases—the majority vote mechanism more readily than other, traditionally political issues.

The effectiveness of these procedures depends upon, among other factors, on whether, after the decision is taken, ratification or any other legal step by States is required in order for the new laws or standards to come into effect. For example, in the cases of the Vienna Convention for the Protection of the Ozone Layer, the Basel Convention, and the Climate Change Convention the amendments are in force only for those parties that have ratified them. In most of the cases the amendments bind only those States that have accepted them by ratification or by any other means. This is, for instance, the case of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal requiring a three-fourths majority vote to amend

581 Article 9 paragraph 5.
582 Article 17 paragraph 5.
583 Article 15 paragraph 4.
an annex, with such amendments being binding on all States that do not object within 180 days of adoption;\textsuperscript{585} the Vienna Convention requiring a three-fourths majority vote to amend the annex, binding on all States that do not object within six months of circulation of the amendment);\textsuperscript{586} the Convention on Biological Diversity requiring two-thirds majority vote to amend annexes, binding all States that do not object within one year of the notification of adoption;\textsuperscript{587} the CITES requiring two-thirds majority vote to amend certain annexes binding all States that do not object within 90 days of adoption;\textsuperscript{588} the Stockholm Convention on Persistent Organic Pollutants requiring three-fourths majority vote to amend annexes and binding all States except (a) those who object within one year of adoption and (b) those States which, upon ratification, indicated they would only accept such amendments expressly;\textsuperscript{589} Kyoto Protocol requiring three-fourths majority vote to pass a proposed annex or amendment to an annex - other than Annex A or B - and making such annex or amendment to an annex binding on all States that do not object within six months of circulation of the amendment to all parties.\textsuperscript{590}


\textsuperscript{587} Article 30.

\textsuperscript{588} Article XV-XVI.

\textsuperscript{589} Articles 21-22.

\textsuperscript{590} Art. 20(4).
6. Simple Majority

Simple majority vote is even rarer as a requirement for lawmaking in I.E.L. There are, however, some instances of simple majority vote requirement. For instance, as early as the 1971 Convention on Wetlands of International Importance, Especially as Waterfowl Habitat ("Ramsar Convention")\(^{591}\) that aims to "stem the progressive encroachment on and loss of wetlands" and establishes a list of internationally important wetlands\(^{592}\) simple majority vote was invoked for important issues regarding the subject matter of the convention. The COP of the Ramsar Convention, that considers additions and changes to the list of protected wetland areas contained in the Convention, may make recommendations to the parties of the conservation, management and the wise use of wetlands and their flora and fauna by a simple majority of vote.\(^{593}\) Later on, the Commission on the Conservation of Antarctic Marine Living Resources ("CCAMLR Commission"), established in 1980 under Article VII of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR)\(^{594}\), its decisions on


\(^{592}\) Id. Preamble paragraph 4 and articles 2(1) and 4(1.)

\(^{593}\) Article 6.

matters of substance by consensus, while regarding the rest of the matter by simple majority vote. Further, the International Whaling Commission (IWC) which acts as the decision-making body of the International Convention for the Regulation of Whaling (ICRW) is responsible for amending the schedule, listing, and regulations on protected species, whaling seasons, whaling methods, catch quotas, and sanctuaries specified by the Whaling Convention. Article V(I) of the ICRW specifies that IWC is to adopt “regulations with respect to the conservation and utilization of whale resources”. The IWC takes decisions only with the simple majority of its members for most of the administrative and non-binding measures. This is also the case within the framework of many of the international organizations. Simple majority voting seems to be the rule for the adoption of administrative, procedural issues. For instance, within I.M.O. only simple majority is needed in the case of the elections of individuals to serve in any capacity. The case of the International Seabed Authority, which decides upon procedural issues by a simple majority.

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595 Article XII: “1. Decisions of the Commission on matters of substance shall be taken by consensus. The question of whether a matter is one of substance shall be treated as a matter of substance.”

596 Article XII paragraph 2.


598 ICRW, article 5.

599 Article 10 paragraph (b) indent (a) of the WMO Constitution.

B. *Quasi*-legislative Competences: The Opting-Out Procedure

Majority voting procedures are often combined with opting-out procedures bringing international lawmaking closer to the convention understanding of lawmaking under national law. What is an opting-out procedure? Under customary international law, an amendment to a multilateral instrument is binding only on those States that indicate their affirmative intent to accept the revised obligations, ordinarily through ratification or acceptance of the amendment. The use of the opting-out or in other words “contracting-
out”\textsuperscript{601} techniques does not directly lead to legislation, but to what is called “\textit{quasi}-
legislation.”\textsuperscript{602} “\textit{Quasi}-legislation” refers to the adoption of a regulation by the competent
organ of an institution, which becomes binding upon the States upon its approval by that
organ, without any need for further ratification, acceptance or approval by the States. If a
State does not agree to be bound by the new rule, there is always the option to “opt-out”
from the international regulation by notifying the organization within a certain time. The
new rule binds a State, if no opt-out statement is expressed by that State and usually, but
not always, provided that a minimum necessary percentage of the majority of the States
has not opted-out. As a result, in principle, no State is bound against their will. The
consent of the States is tacitly expressed by not objecting.\textsuperscript{603} The opting-out system that
originates in I.C.A.O. a functional reconciliation between the delegation of legislative
power to bodies of international arrangements and the principle of state sovereignty\textsuperscript{604}

One of the strategic objectives of the International Civil Association Organization
(I.C.A.O) is to minimize the adverse effect of the global civil aviation on the

\textsuperscript{601} See, e.g., \textsc{Henry}, supra note 495, p. 12, who uses the term, however expresses her reservations
regarding the use of the term: “the expression as here used is no doubt an inappropriate one since it
connotes that acts of international organizations are based on contractual principles. The unilateral nature of
acts of international organizations does distinguish them from treaties.” \textsc{Henry} comments further: “In fact,
there is no real consistency in the use of the expression “contracting-out. It has been employed to describe
situations where member States indicate their differences both before and after the entry into force of an
enactment, as well as instances where the rule contained in the enactment is facultative or imposes a
binding legal obligation.”

\textsuperscript{602} \textsc{Alexandrowicz, supra} note 287, at 11 and 40 et seq; \textsc{J. Ducrest}, Legislative and Quasi-
Legislative Functions of ICAO: Towards Improved Efficiency, 20 \textsc{Annals of Air and Space Law} 172
(1995); \textsc{Sommer, supra} note 35, at 635.

\textsuperscript{603} \textsc{Alexandrowicz, supra} note 287, at 152; \textsc{R. Wolfram}, Die Internationalisierung
staatsfreier Räume – Die Entwicklung einer internationalen Verwaltung für Antarktis,
Weltraum, Hohe See und Meeresboden 78 and 168 et seq (1984); \textsc{Sommer, supra} note 35, at 635.

\textsuperscript{604} \textsc{Bröllmann, supra} note 452, at 108.
Concerning environmental protection, I.C.A.O. adopts environmental standards on aircraft engine emissions and aircraft noise according to art. 37 (e) and (k) of the Chicago Convention. I.C.A.O. is also becoming more concerned with the effect of aircrafts on greenhouse emissions and ozone layer depletion and it is now in the process of coordinating a global treaty for the regulation of international aviation in order to mitigate climate change. I.C.A.O., as is typical of a “technocratic” body, that is to say responsive to particular agencies within governments, is dominated by a specific expertise. From an expert point of view, I.C.A.O. has competence to pose technical standards to the aircrafts aiming to environmental protection. The I.C.A.O. environmental standards on aircraft engine emissions and aircraft noise are based on its mandate to adopt international standards dealing, inter alia, with “airworthiness of aircraft” and “the safety, regularity and efficiency of air navigation.” According to Articles 54 para. 1 and 90 (a) of the Chicago Convention, the Council of the I.C.A.O., an organ of limited membership, has mandatory functions for the adoption of international Standards and Recommended Practices (S.A.R.Ps.) as annexes to the Chicago Convention, without

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608 Article 37(e) and (k) of the Convention on International Civil Aviation (Chicago Convention).

going through a formal treaty process or amending the constituent instrument of the organization. The Council is empowered to adopt international standards by a two-thirds majority vote and to designate them as annexes to the Chicago Convention, while the member States to the Organization may declare within three months or any longer period as determined by the Council that they are unable to comply with the standards. In this case, they have to give immediate notification of the differences between the standards and their own practice to the I.C.A.O. In this case, the body taking the decision is a body of limited membership. This fact automatically means that only some and not all of the member States participate in the process. This is an indirect application of the majority rule into the lawmaking process of an already limited in membership body, leading to the adoption of rules by a potentially small number of member States in relevance to the overall number of the Member States that participate in the organization. On the other way round, I.C.A.O.’s Member States merely undertake to “collaborate in securing the highest practicable degree of uniformity” with respect to such standards. This purposeful ambiguity has led to debates among I.C.A.O. scholars as to the binding nature of S.A.R.Ps. The I.C.A.O. Assembly, which is not given any express power to interpret the Chicago Convention, has weighed in on the side of a firm division between obligatory “standards”, which necessarily require “uniform application” and to which members “will conform”, unless they notify the Council otherwise, as opposed to “Recommendations”, with which members are only expected to “endeavor to

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Further, an annex will not become effective if within three months after its submission, a majority of State Parties register their disapproval with the Council (“prohibitive quorum”). Article 90, among others, provides:

“…An Annex or amendment to an Annex so adopted is to become effective three months after its submission to the Contracting States or at the end of such longer period as the Council prescribes, “unless in the meantime a majority of the Contracting States register their disapproval with the Council.”

Art. 90 attribute to these annexes, once adopted, immediate binding effect, unless they are explicitly rejected by the States.

Article 37 relates to the formulation and adoption of international standards and recommended practices:

“Each Contracting State undertakes to collaborate in securing the highest practicable degree of uniformity in regulations, standards, procedures and organization in relation to aircraft, personnel, airways and auxiliary services in all matters in which such uniformity will facilitate and improve air navigation. To this end, the International Civil Aviation Organization shall adopt from time to time, as may be necessary, international standards and recommended practices and procedures.”

However, Article 38 provides for the possibility of deviation from international standards and recommended practices and modifies Article 90:

“Any State which finds it impracticable to comply in all respects with any international standard or procedure, or bring its own regulations or practices into full accord with any international standard or procedure after amendment of the latter, or which deems it necessary to adopt regulations or practices differing in any particular respect from those established by an international standard, shall give immediate

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Kirgis, supra note 607, at 304.

Art. 90(a).
notification to the International Civil Aviation Organization of the differences between its own practice and that established by the international standards. In the case of amendments to international standards, any State which does not make the appropriate amendments to its own regulations or practices shall give notice to the Council within 60 days of the adoption of the amendment to the international standard, or indicate the action it proposes to take. In any such case, the Council shall make immediate notification to all other States of the difference which exists between one or more features of an international standard and the corresponding national practice of that State."

On the one hand, the Member States have a large margin of discretion, since they can deny compliance with the international standards in case they find them “impractical.” As Buergenthal notes, Member States of I.C.A.O. are under no obligation to comply with a duly promulgated Annex, unless they find it “practicable” to do so.613 According to Article 38, a State, by submitting a notification, can at any time depart from an international standard. On the other hand the Council may impose sanctions on them for not accepting the standards or the States might face objection to enter the air space of another Member State.

Most notably, the Chicago Convention vests I.C.A.O.’s Council with legislative powers relating to aviation rules over the high seas, namely areas out of the national jurisdiction of any state. Article 12 of the Convention States that: “over the high seas, the rules in force shall be those established under this Convention”, such as international standards that can be adopted by the Council by a two-thirds majority, if they are designed as annexes to the Convention.614


614 See SOMMER, supra note 35, at 654.
Further, the constitution of the World Health Organization (W.H.O.) that refers, among others, to the promotion and improvement of sanitation and other aspects of “environmental hygiene” as one of the objectives of the Organization\(^{615}\) had early set out the option of opting-out procedures.\(^{616,617}\) According to Article 21 in conjunction with Article 60 the Health Assembly has the authority to adopt regulations by majority vote concerning sanitary requirements and standards with respect to the purity of biological and other products. Regulations adopted under Article 21 include, for example, the Nomenclature Regulations\(^{618}\) adopted in 1948 and repeatedly revised. The Nomenclature Regulations come into force for all members except those members as may notify the Director-General of their rejection or reservations within a certain period according to Article 22 of the W.H.O. Constitution. Article 22 of the W.H.O. Constitution provides that:

“Regulations adopted pursuant to Article 21 shall come into force for all members after due notice has been given of their adoption by the Health Assembly except for such members as may notify the Director-General of their rejection or reservation within the period started in that notice.”

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\(^{615}\) Constitution of the World Health Organization article 2(i), 14 U.N.T.S. 185 (entered into force April 7, 1948) (a current version can be found at http://whqlibdoc.who.int/hist/official_records/constitution.pdf) [hereinafter W.H.O. Constitution].

\(^{616}\) W.H.O. Constitution, at art. 73.


\(^{618}\) W.H.O. Regulations No. 1.
In the case of the International Health Regulations, which are adopted through the above-described procedure, there is a slight modification of the procedure regarding reservations to the Regulations. According to Article 107 of the Regulations No. 2 reservations to these Regulations shall not be valid unless accepted by the Health Assembly. If the Health Assembly decides that the reservation expressed constitutes a substantial detraction from the character of the regulations, then the state has to withdraw the reservation. If the State does not withdraw the reservation, then the regulations shall not enter into force with respect to this state. Accordingly, no State is bound against its will and is free to either become bound or not, but it is not permitted to modify the content of the regulations through the reservations procedure. By simply opting-out, the Member States may unbind themselves from the regulations, but this might not come without consequences. The Assembly is given the power to sanction any modifications to a regulation which it has duly adopted. Thus, the Organization can be considered to have a wide degree of control over its decisions, since the right to opt-out is not automatic. 619

Further, the World Meteorological Organization (W.M.O.) is empowered to adopt both “general” and “technical” resolutions within its domain. 620 The World Meteorological Congress, which is the higher political organ of the W.M.O., has the

619 For a detailed analysis on the relations between reservations and the contracting-out process in the WHO, see HENRY, supra note 495, at 13-14.

power to determine general regulations “prescribing the constitutions and the functions of the various bodies of the Organization.”\textsuperscript{621} Members who find it impractical to give effect to technical resolutions adopted by the W.M.O. Congress need only inform the W.M.O. Secretary-General of this, indicating whether this inability is provisional or final and indicating the reasons.\textsuperscript{623} In W.M.O.’s technical regulations one could discern the main argument that connects science with the obligatory nature of rules: while W.M.O.’s Technical Regulations are all equally “binding”, they contain both detailed mandatory rules of conduct, when it comes to science, such as aeronautical meteorology, as well as long-term goals intended for flexible adoption in developing countries depending on available resources.\textsuperscript{624} The W.M.O. Congress takes its decisions by a two-thirds majority of the votes cast for and against, except from a few cases that are of highly political character and different voting procedures exist in those cases.\textsuperscript{625}

\textsuperscript{621} World Meteorological Congress, the supreme body of the Organization, assembles delegates of Members once every four years to determine general policies for the fulfillment of the purposes of the Organization; to consider membership of the Organization; to determine the General, Technical, Financial and Staff Regulations; to establish and coordinate the activities of constituent bodies of the Organization; to approve long-term plans and budget for the following financial period; to elect the President and Vice-Presidents of the Organization and members of the Executive Council and to appoint the Secretary-General.


\textsuperscript{623} Article 8 paragraph (b) of the WMO Constitution.


\textsuperscript{625} Article 10 paragraph (b) indent (b) of the WMO Convention excludes the application of the three-fourths majority requirement. The provisions of this paragraph, however, shall not apply to decisions taken in accordance with Articles 3 (on who may become a Member to the WMO), 10 (c) (on the vote by correspondence), 25 (on the relations of the WMO with the UN), 26 (on the relation of the WMO with other international organizations) and 28 (on the amendments procedure) of the Convention.
In addition, the Constitution of the Food and Agriculture Organization (F.A.O.) of the United Nations extends the mandate of F.A.O. to the promotion of the conservation of natural resources related with the agriculture, fisheries, marine products, and forestry.\textsuperscript{626,627} The Constitution of the organization provides for a two-thirds majority vote on all of the decisions of its bodies, ranging from decisions upon memberships of new Member States to the proposals to the Member States for new Conventions and Agreements relating to food and agriculture.\textsuperscript{628} F.A.O. is vested with the power to participate in the amendment procedure of some conventions that have been adopted under its auspices. For instance, F.A.O. has the power of initiative to propose supplementary agreements to the contracting governments under the International Plant Protection Convention.\textsuperscript{629} Noteworthy, any such agreement will come into force after acceptance in accordance with the provisions of the constitution of F.A.O. and its rules of procedure.\textsuperscript{630} As Sommer comments, “the automatic application of the rules of procedure originating from a foreign body is rare.”\textsuperscript{631} States either adopt their rules of procedures or modify those proposed. However, this case does not constitute lawmaking, but direct

\textsuperscript{626} Art. 1 para. 1 and para. 2 (c) of the FAO Constitution.

\textsuperscript{627} For a more detailed analysis on Art. XIV para. 1 and 2, see ASTON, supra note 432, at 141.

\textsuperscript{628} See Constitution of the Food and Agriculture Organization, CTS 1945/32; 40 AJIL Supp. 76 (1945), available at http://www.fao.org/docrep/010/k1713e/k1713e01.htm#P8_10. Articles II on membership, Article IV on functions, V on the FAO Council, XIV on proposal on Conventions and Agreements to States on questions relating to food and agriculture, Article XV on the agreements between the FAO and Member States, Article XVIII on budget and contribution, X on the amendments of the Constitution provide for a two-thirds majority vote.


\textsuperscript{630} Article III para. 1 and 2 of the International Plant Protection Convention.

\textsuperscript{631} SOMMER, supra note 35, at 643.
participation of F.A.O. to the treaty-making process. Further, F.A.O. has a vital role to play in the adoption and amendments of international treaties related with its subject matters. For instance, under the Agreement for the Establishment of a General Fisheries Council for the Mediterranean, the General Fisheries Council may amend the agreement by a two-thirds majority. Any amendment will become effective only after concurrence of the Council of F.A.O. or its Conference. In this case F.A.O. may also not make law on its own, it directly though participates in the treaty-making process.

The **World Trade Organization** (WTO) was established in 1995 to replace the General Agreement on Tariffs and Trade (GATT). The WTO’s objective is to facilitate global economic development by “reducing obstacles to international trade and ensuring a level playing field for all.” The Preamble to the WTO Agreement develops the organization’s basic objectives, stating that the WTO should guide global economics and trade:

“[w]the a view to raising standards of living,… allowing for the optimal use of the world’s resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing

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633 Article VIII of the Agreement for the Establishment of a General Fisheries Council for the Mediterranean, Rome. *Id.*


635 *Id.*
so in a manner consistent with their respective needs and concerns at different levels of economic development.  

The breadth of the WTO’s mandate coupled with the inherence of environmental issues arising within the WTO’s scope render it unsurprising that the WTO plays an active role in deciding certain environmental issues.  

The WTO is composed of three main administering bodies, as the WTO Agreement clearly indicates: the Ministerial Conference, the General Council, and the...

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637 See Marrakesh Agreement Establishing the World Trade Organization art. IV, Apr. 15, 1994, 1869 U.N.T.S. 299 [hereinafter Marrakesh Agreement], at art. VI (establishing the scope, role, and activities of the World Trade Organization); DAVID PALMETER & PETROS C. MAVROIDIS, *DISPUTE SETTLEMENT IN THE WORLD TRADE ORGANIZATION: PRACTICE AND PROCEDURE* 14 (2d ed. 2004) (establishing that the duties of the WTO Councils are to establish and govern trade agreements, negotiations, telecommunications, financial services, and goods and services agreements); see also PETER VAN DEN BOSSCHE, *THE LAW AND POLICY OF THE WORLD TRADE ORGANIZATION* 137-39 (2005) (citing that the objectives of the World Trade Organization include the increase of standards of living, the attainment of full employment, the growth of real income and effective demand and the expansion of production of, and trade in, goods and services).
Secretariat. First, the Ministerial Conference functions as the representative body. As the supreme and principal figure of the organization, it meets at a minimum of once every two years to review and evaluate its performance and establish new policies as needed; it is also open to all members of the WTO. The Ministerial Conference possesses the decision-making authority on all WTO matters, and within all multilateral WTO trade agreements. In addition to this broad power, the Ministerial Conference also has specialized powers, though such authority may be subject to particular procedures and majority requirements.

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638 See Marrakesh Agreement, supra note 634, at arts. IV-VI (establishing the organizational structure of the World Trade Organization as consisting of three administrative bodies); see also PETER-TOBIAS STOLL & FRANK SCHORKOPF, WTO: WORLD ECONOMIC ORDER, WORLD TRADE LAW 16 (2006) (reiterating the subdivided structure of the WTO into the Ministerial Conference, General Council and the Secretariat).

639 See Marrakesh Agreement, supra note 634, at art. IV (stating that the Ministerial Conference is to be made up of representatives from the members of the World Trade Organization, and will convene biennially); see also Mary Jane Alves, Reflections on the Current State of Play: Have U.S. Courts Finally Decided to Stop Using International Agreements and Reports of International Trade Panels in Adjudicating International Trade Cases?, 17 TUL. J. INT'L & COMP. L. 299, 323 (2009) (citing the World Trade Organization’s Ministerial Conference as one of two representative bodies).

640 See PALMETER & MAVROIDIS, supra note 634, at 13-15 (2d ed. 2004) (explaining that the Ministerial Conference meets once every two years in order to assess the World Trade Organization’s performance and establish and integrate its policies); see also STOLL & SCHORKOFF, supra note 635, at 16 (describing the Ministerial Conference as the principal organ of the WTO that meets every two years to make decisions relating to multilateral trade agreement).

641 See Marrakesh Agreement, supra note 634, at art. IV (establisging that the Ministerial Conference has primary authority over matters under the World Trade Organization’s multilateral trade agreements); see also VAN DEN BOSSCHE, supra note 634, at 123-24 (asserting that the Ministerial Conference is vested with decision-making powers over all issues dealing with the World Trade Organization’s multilateral agreements).

642 See STOLL & SCHORKOFF, supra note 635, at 16-17 (2006) (recognizing that some of the Ministerial Conference’s power is subject to special procedures and majority requirements); see also Jiaxiang Hu, The Role of International Law in the Development of WTO Law, 7 J. INT'L ECON. L. 143, 162-63 (2004) (discussing the majority required for certain Ministerial Conference decisions).
The voting practices of the WTO are somewhat unique in that they synthesize consensus and voting procedures. The WTO Agreement adopts its predecessor GATT procedure of deciding “general decision-making” by consensus.\footnote{Mitsuo Matsushita, Petros C. Mavroidis & Thomas J. Schoenbaum, The World Trade Organization: Law, Practice and Policy 12 (Oxford 2006).} However, in the event that the Members who are present at the meeting cannot reach a consensus, a vote is taken.\footnote{Id.} In the Ministerial Conference and the General Council, decisions are made by a majority vote, unless the specific WTO agreement States otherwise.\footnote{Id.}

Several treaty-management organizations have also adopted opting-out procedures, such as the COP of the Convention on Migratory Species (C.M.S.).\footnote{For more information about the Convention on Migratory Species, visit the official website of the Convention, \url{http://www.cms.int/} (last visited January 10, 2011).} The COP of the C.M.S. is empowered to adopt amendments – usually upon the recommendation of its Scientific Council - to Appendices I and II of the Convention by a two-thirds majority in regard with the lists of migratory species requiring special conservation.\footnote{Art. XI of the Convention on the Conservation of Migratory Species of Wild Animals, Bonn 1979, 19 I.L.M. 15 (1980).} The 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)\footnote{Convention on International Trade in Endangered Species of Wild Fauna and Flora, Washington 1973, 12 I.L.M. 1085 (1973).} allows the Conference of the Parties to meet every two years to adopt binding amendments to Appendices I and II. Art. XV of CITES, limiting
trade in listed species, to review progress made, and to make recommendations for improving the treaty’s efficiency.\textsuperscript{649} Article 30 in conjunction with Article 29 of the Convention on Biological Diversity (CBD)\textsuperscript{650} also provides for an opting-out procedure, in case that a party is unable to approve an additional annex or an amendment to an annex adopted by the COP, it has the option to so notify the depository within one year. If there is no such notification within a year, the amendment will enter into force for all contracting parties which have not submitted such a notification. According to the International Convention for the Regulation of Whaling\textsuperscript{651} the International Whaling Commission may amend the “Schedule” by adopting regulations fixing, \textit{inter alia}, protected and unprotected species and open or closed seasons. According to the text of the Convention, there are various criteria to be met for such amendments, such as the requirement that these amendments be “necessary” for the purposes of the convention and the requirement to consider scientific findings. Each amendment must be adopted by a three-fourths majority and shall become effective after ninety days, except when a government presents an objection within that period.\textsuperscript{652} The Southeast Atlantic Living Resources Convention and the Baltic Sea Fishing Convention contain opting-out procedures, regarding the regulation of technical matters, such as fishing gear and

\textsuperscript{649} By this procedure the signatory States to CITES succeeding in adopting important protection measures, such as a prohibition on trade in beluga caviar in 2006, in order to protect the endangered sturgeon for which the delicacy is taken. \textit{See, e.g.}, Conclusions of the International Sturgeon Enforcement Workshop to Combat Illegal Trade in Caviar, CITES, SC54 DOC. 30.2, Eighty-fourth Meeting of the Standing Committee, Geneva Switzerland, 2-6 October 2006.


\textsuperscript{652} Article III paragraph 2 and article V paragraph 3.
catching methods. The Convention on the Transboundary Effects of Industrial Accidents provides for the possibility of a State to opt-out, in case that a State does not wish to be bound by the decision taken by the COP regarding the amendment of Annex I. The time limit for exercising the opt-out option is quite large extending over a year. Plus, here is a case of a “positive quorum”, since the amendments will become effective only if there are at least sixteen parties not opting-out.

1. “Tacit acceptance” under the International Maritime Organization

Treaties under the framework of the International Maritime Organization (I.M.O.) provide for some interesting provisions regarding the lawmaking processes, especially the amendment processes. Article 1(a) of the constitution of the I.M.O. provides that

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654 The structure of the I.M.O. includes the Assembly, the Council and the Secretariat along with the Committees is described in Article 12 of the I.M.C.O. Convention. The Assembly is the highest governing body of the Organization (political organ.) It consists of representatives of all Members of the I.M.O. and is responsible for such functions as electing officers, determining the rules of procedure, reviewing expenditures and recommending regulatory measures concerning maritime safety. The Assembly meets every two years. In the period between the sessions of the Assembly, the Council exercises the functions of the Assembly in running the work of the I.M.O. According to Article 27, the Council, which is a political organ of the IMO, consists of forty Members elected by the Assembly and meets at least twice per year. See Resolution A. 450 (XI) (1975) by which the Assembly amended the structure of the Organization in view of its size, the important changes in its work and the methods necessary to discharge it. Among the amendments was the increase in the number of the members of the Council from 24 to 32. In the consequent years, the I.M.O. Convention was revised again and in consequence of concern expressed by several delegations to the Assembly during its seventeenth regular session in 1992, and following on the report of an Ad Hoc Working Group, the Council had adopted amendments to articles 16, 17 and 19 of the I.M.O. Convention regarding its composition. I.M.O. Resolution A.735(18) adopted on 4 November, 1993; HMSO, Miscellaneous Series No. 11 (1994), Com 2551. The Council is the executive organ of the
the adoption of the “highest practicable standards in matters concerning maritime safety […] and the prevention and control of marine pollution from ships” are among the most important purposes of the Organization. I.M.O. is one of the early and most important actors concerning the development of international legislation including environmental provisions.655

Upon its creation, I.M.O. was only granted the power to recommend regulations and lacked the power to impose them upon its Member States.656 The initial name of the organization as the “Inter-governmental Maritime Consultative Organization” (I.M.C.O.) was illustrative of its limited, consultative role.657 Article 2 of the I.M.C.O. Convention Organization and is responsible for supervising the work of the Organization and co-coordinating the work of the Committees. Between sessions of the Assembly the Council performs all of the functions of the Assembly, except that of making recommendations to Governments on maritime safety and pollution prevention issues which is reserved for the Assembly by Article 15(j) of the I.M.O. Convention. Other functions of the Council are the consideration of the draft work program and budget estimates of the Organization and their submission to the Assembly, the reception of the reports and proposals of the Committees and other bodies and their submission to the Assembly, and the conclusion of agreements or arrangements concerning the relationship of the Organization with other organizations, subject to the approval of the Assembly. See www.imo.org. The Secretariat is the administrative body of the I.M.O. It is composed of the Secretary-General, the Deputy Secretary-General and a number of international civil servants recruited on as wide geographic basis as possible. The technical work of the Organization is carried out not by the Secretariat though, but by a number of committees.


656 See art. 15 (j) which empowers the Assembly to “recommend to Members for adoption regulations and guidelines concerning maritime safety, the prevention and control of marine pollution from ships and other matters concerning the effect of shipping on the marine environment assigned to the Organization by or under international instruments, or amendments to such regulations and guidelines which have been referred to it”.

657 Until 1982, the Organization was known as the Inter-Governmental Maritime Consultative Organization (I.M.C.O.) The name of the Organization changed by an amendment to the I.M.C.O. Convention adopted by the Assembly of the Organization in 1975. See Resolution A.358 (IX) of 14 November 1975. See Convention of the International Maritime Organization, I.M.O. Doc. 023.82.08E.
stated: "the functions of the Organization shall be consultative and advisory." Noteworthy, in the following years, Article 2 was deleted from the I.M.C.O. Convention. The deletion of Article 2 indirectly signified the expansion of the functions of the Organization, which were not to be limited in the future to consultation and advice. In addition, Article 3(b) provided that in order to achieve the purposes set out in Article 1, I.M.O. had to "provide for the drafting of conventions, agreements, or other suitable instruments, and to recommend these to Governments and to intergovernmental organizations, and to convene such conferences as may be necessary." Article 3(c) clearly indicated that I.M.O. should "provide machinery for consultation among Members and the exchange of information among Governments."

Thus, the most important contribution I.M.O. made to lawmaking was through treaty-making, especially regarding the preparation of conventions. However, in the following years, I.M.O. developed functions related to lawmaking, other than consultation and advice. Primarily, I.M.O. began to develop technical standards concerning the safety in the sea and the protection of the oceanic environment. Meanwhile, I.M.O’s bodies, both political and expert, began to play a significant role concerning the formation and adoption of amendments to the original treaties. As stated also on its official website, today I.M.O. is regarded as one of the most efficient and

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658 Henry also comments that “it is possible to conclude that the deletion of Article 2 amounts to a recognition of I.M.O. as a regulatory body and not merely a consultative one.” p. 43.


660 I.M.C.O. Convention, art. 3.
successful of the specialized agencies of the UN.\textsuperscript{661} However, as the development of the I.M.O.’s lawmaking capabilities shows, this was not always the case.

According to an evaluation of the I.M.O., even the majority voting process was not speedy enough to catch up to technological advancements. In some cases, majority voting regarding the procedure for amendments led to total regulatory inaction by resulting in the non-adoption of the proposed amendments, such as the 1971 amendments to OILPOL. As narrated on the I.M.O. website:

“in early conventions, amendments came into force only after a percentage of Contracting States, usually two thirds, had accepted them. This normally meant that more acceptances were required to amend a convention than were originally required to bring it into force in the first place, especially where the number of States which are Parties to a convention is very large. This percentage requirement in practice led to long delays in bringing amendments into force.” The problem facing I.M.O. was that most of its Conventions could only be updated by means of the "classical", explicit amendment procedure. Amendments to the 1960 SOLAS Convention, for example, would enter into force "twelve months after the date on which the amendment is accepted by two-thirds of the Contracting Governments including two-thirds of the Governments represented on the Maritime Safety Committee. This did not seem to be a difficult target when the Convention was adopted, because in order to enter into force the Convention had to be accepted by only 15 countries, seven of which had fleets consisting of at least 1 million gross tons of merchant shipping. However, by the late 1960s the number of Parties to SOLAS had reached 80 and the total was rising all the time as new countries emerged and began to develop their shipping activities. As the number of Parties rose, so did the total required to amend the Convention. In addition, it seemed that governments took far longer to accept amendments than they did to ratify the parent Convention."\textsuperscript{662}

To remedy the situation, I.M.O. devised a new amendment procedure called the “tacit acceptance” procedure. Instead of requiring that an amendment receive two-thirds acceptance by the Parties in order to enter into force, the “tacit acceptance” procedure provides that an amendment shall enter into force at a particular time, unless a specified


\textsuperscript{662} www.imo.org.
number of parties object ("blocking" minority) prior to the entry into force date. The tacit acceptance procedure is a silent, "negative approach" that has been used by conventions such as the 1973 International Convention for the Prevention of Pollution from Ships and the 1974 International Convention for the Safety of Life at Sea.

In the case of the 1974 International Convention for the Safety of Life at Sea (the "SOLAS Convention"), the main objective of which is to specify minimum standards for the construction, equipment and operation of ships to promote safety, tacit acceptance is the procedure by which many of the annexes referring to technical aspects of the Convention are amended. These amendments are deemed to have been accepted two years after the change is communicated to the Contracting Governments, unless more than one-third of the Contracting Governments or Contracting Governments owning not less than fifty percent of the world's gross merchant tonnage object to the amendment. The period after which an amendment is considered adopted may vary according to the decision by the Maritime Safety Committee (M.S.C.), provided that the period lasts for at

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663 Mankabady notes: "The process of "tacit acceptance" is a fascinating phenomenon in its own right. In legal terms, it may be explained by saying that acceptance of the amendments occurs by mere silence. Alternatively, one can say that the State by ratifying a convention which provides for this type of procedure, waives its right to communicate its acceptance for future amendments. Against this view, it could be argued that where ratification is required for both the convention and the amendments, a State may be left in doubt and face constitutional difficulties. Again with the "tacit acceptance" procedure, one would imagine that a convention will continue for a long period since it could be amended all the time." Samir Mankabady, IMO: Structure, Relationship with Other organizations and Future Development, in THE INTERNATIONAL MARITIME ORGANIZATION, (Samir Mankabady ed., Croom Helm publ., London & Sydney 1984).

664 See HENRY, supra note 495, at 64.


least one year. Article VIII of the SOLAS Convention states that amendments can be made either after the I.M.O.’s consideration or by a conference. Amendments proposed by a Contracting Government are circulated at least six months before consideration by the M.S.C., which may refer discussions to one or more I.M.O. sub-committees. Amendments are adopted by a two-thirds majority of Contracting Governments present and voting in the M.S.C. according to Article VIII. Further, Article VIII (b)(vi)(2) provides for a blocking minority that consists of either one-third of the Contracting Governments or of the Contracting Governments whose combined merchant fleet totals not less than fifty percent of the gross tonnage of the world’s merchant fleet. If these States notify the Secretary General of the I.M.O. of their objection, they can prevent an amendment from coming into force.

According to the I.M.O.’s evaluation, the "tacit acceptance" procedure has greatly expedited the amendment process under the SOLAS Convention. Examining the number of amendments to the SOLAS strongly supports this conclusion. None of the amendments adopted by the 1960 SOLAS Convention between 1966 and 1973 received sufficient acceptances to satisfy the requirements for entry into force. By that time, I.M.O. had not adopted tacit acceptance. The 1981 amendments regarding construction, fire safety, machinery and electrical installations, entered into force on September 1984.\footnote{See w.ocimf.com/mf.ashx?ID=4b8735f2-a6ac-44f4-95fb-092069b37dcb.} In the following years, the May 1998 amendments to Regulation 14 on Construction and Initial Testing of Watertight Bulkheads in Passenger Ships and Cargo Ships entered into force in July 1, 2002. The May 1999 amendments to Chapter VII that made the International Code for the Safe Carriage of Package Irradiated Nuclear Fuel,

The 1973 International Convention for the Prevention of Pollution from Ships, as modified by the 1978 Protocol related thereto (the “MARPOL Convention”) is the main international convention of the I.M.O. MARPOL covers the prevention of pollution of the marine environment by ships from operational or accidental oil pollution and pollution by chemicals, goods in packaged form, sewage, garbage and air pollution. Apart from the 1978 Protocol annexed to the convention, MARPOL has been respectively updated by amendments through the years. It has been hailed as a complex of legal instruments which display a wide variety of innovative features. Some examples are the multi-annex system, the optional annexes, the “towing” provisions which maintained Annex II as mandatory but allowed for delay in its implementation, and the amalgamation of the Protocol with the parent MARPOL Convention. Amendments to the technical Annexes of the MARPOL Convention can be adopted using the "tacit acceptance" procedure. Parties can declare that either they do not accept the amendment or their express approval is necessary. Further, an amendment shall not be deemed to

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670 SIMMONDS, supra note 658, at 26, with reference to Mr. Y. Yasamura in 34 Years of IMO, 4 IMO NEWS 17, 19-20 (1993).

671 Art. 16 para. 2 (f) and (g) (ii) of MARPOL.
have been accepted if one-third of the Parties or those Parties who’s combined merchant fleets represent at least fifty percent of gross tonnage of the world’s merchant fleet have objected (“prohibitive quorum.”)\textsuperscript{672} Up to the end of 2010, there have been at least twenty amendments to MARPOL. The majority of the amendments entered into force within two years of their adoption. In only a few cases was the necessary time from the adoption of the amendments to their entry into force longer. One such case occurred in the amendment concerning Annex VI in the Prevention of Air Pollution from Ships that was adopted on September 1997 and entered into force on May 2005.\textsuperscript{673} Similarly, the amendment on the IBC Code Bulk Liquid Chemical Reclassification was adopted in 1990 and entered into force in February 2000.\textsuperscript{674}

Applying tacit acceptance as an amendment procedure contributed to I.M.O.’s success in promoting its aims. Especially in regard to cleaner oceans, the early years of tacit acceptance’s use show that there was a remarkable reduction in the amount of pollution caused by vessels.\textsuperscript{675} Tacit acceptance is now incorporated into most of I.M.O.’s

\textsuperscript{672} Consideration and Adoption of the Protocol of 1997 to Amend the International Convention for the Prevention of Pollution from Ships, 1973, Resolution MEPC.76 (40), adopted Sept. 25, 1997.


\textsuperscript{674} See, \textit{e.g.}, Understanding the Revisions to MARPOL Annex II and the IBC Code, American Bureau of Shipping, Houston, T.X., U.S.A., 2006.

\textsuperscript{675} For example, according to a study conducted by the United States National Academy of Sciences, the amount of marine oil pollution caused by vessels fell by approximately sixty percent during the 1980s. \textit{See IMO to Join the Internet}, 4 IMO NEWS 20-21 (1996).
technical Conventions. It facilitates the quick and simple modification of conventions to keep pace with the rapidly evolving technology in the shipping world. Without the application of tacit acceptance, it would have been impossible to keep conventions up to date, while the I.M.O.’s role as the international forum for technical issues involving shipping would have been placed in jeopardy. As Simmonds comments, the tacit acceptance procedure was used “to secure a more expeditious entry into force of instruments which, taken together, provide a flexible and enduring framework for the prevention, reduction and control of vessel-source pollution.”

Commentators state that the implementation of international regulations by the I.M.O. conventions greatly contributed to this reduction and that the success of the I.M.O. is due in part to the tacit acceptance procedure, which today is at the core of the I.M.O.’s legislative process.

Another institution related to the environmental protection of the oceans that has adopted the tacit acceptance procedure as part of its lawmaking processes is the International Seabed Authority (I.S.A.). Here, tacit acceptance has enhanced the legislative powers of the ISA’s Council. Specifically, under Article 162 paragraph 2 (o)(ii) of the LOS Convention, the Council may adopt and apply provisionally, pending approval of the Assembly, the rules, regulations and procedures relating to the prospecting, exploration and exploitation of the mineral resources in the Area. These regulatory acts are adopted by consensus, absent any formal objection. Further, in order

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676 Simmonds, supra note 658, at 26.

677 See, e.g., Lei Shi, Successful Use of the Tacit Acceptance Procedure to Effectuate Progress in International Maritime Law, 11 U.S.F. MAR. L.J. 299, 303. On the other way round, Simmonds says that the implementation and enforcement of the IMO-related treaties remain unacceptably slow.
to avoid delays and conflicts and achieve this silent consensus, the LOS Convention provides for a conciliation procedure.\footnote{Article 284 of the LOS Convention: “A State Party which is a party to a dispute concerning the interpretation or application of this Convention may invite the other party or parties to submit the dispute to conciliation in accordance with the procedure under Annex V, section 1, or another conciliation procedure. 2. If the invitation is accepted and if the parties agree upon the conciliation procedure to be applied, any party may submit the dispute to that procedure. 3. If the invitation is not accepted or the parties do not agree upon the procedure, the conciliation proceedings shall be deemed to be terminated. 4. Unless the parties otherwise agree, when a dispute has been submitted to conciliation, the proceedings may be terminated only in accordance with the agreed conciliation procedure”.}

2. International Legislation “Par Excellence”

Among the most interesting lawmaking processes are those that attribute to the bodies of the International Seabed Authority (I.S.A. or Authority) the competence to adopt laws by majority. The Assembly, that is the plenary and political body of the I.S.A., takes most of its decisions by majority, if no consensus can be achieved.\footnote{Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea (Implementation Agreement), Annex, Section 3, paragraphs 2 and 3, 33 I.L.M. 1309 (1994).} The LOS Convention, which is the founding instrument of the I.S.A., provides for a simple majority for questions of procedure and a two-thirds majority of the members present and voting, which must include the majority of the members participating in the session, for questions of substance. Substantive questions are defined as, “…rules, regulations and procedures relating to prospecting, exploration and exploitation in the Area.”\footnote{Article 160 paragraph 2(f)(ii) in conjunction with article 159 paragraph 8 of the LOS Convention.} The same stands true for the Council of I.S.A., an organ of limited participation, composed of
thirty-six members. The Council decides upon matters of substance by methods ranging from consensus to two-thirds majority.\footnote{Henry at p. 8 comments that even when consensus is requested, however, decisions maybe made by a minority of the membership of the Authority. In addition, at p. 30 Henry explains: “This is because the requirement for consensus in the Council means, at most, the consensus of the thirty-six members of the Council. If the membership of the Authority is to exceed 72 States, the consensus of the thirty-six members would amount to less than half the membership of the Organization. There is no specification as to whether what is required is the consensus of members of the Council in attendance or that of the total membership of the Council….”.}

Henry comments that “the legislative powers of the Authority appear undisputed.”\footnote{See \textit{Henry}, supra note 495, at 8.} By reference to Coalfish, Henry emphasizes on two distinct elements: (a) the rules that the bodies of the I.S.A. [the “Authority”] are binding on all member States of the Authority and (b) legislation directly binds individuals, supervening the state level. Direct application of these decisions attaches a supranational character to the I.S.A.\footnote{Noteworthy, the geographical region that the I.S.A. and its bodies exercise their competences does not fall within the national jurisdiction of any of the member States of the I.S.A. This fact might facilitate the progressive features of the lawmaking processes. This observation is reinforced by the fact that other international institutions that regulate the global commons have also more progressive laws, substantive or procedural. This is, for instance, the case of the regulation regarding the protection of the Whales or the Antarctica. For instance, this is already the case with the I.C.A.O.’s Standards and Recommended practices. As discussed above, out of all the different categories of the I.C.A.O.’s S.A.R.P.s, the rules of the air over the high seas are legally binding under the sense that the Member States of the organization have to fully comply with them and they have no way of deviating from these standards. Due to the fact that global commons do not fall within the jurisdiction of any of the States and the absence of state sovereignty concerns, the latter might be more open to accept secondary legislation promulgated by experts. Due to the fact that the public eye does not often lie on the global commons, especially when the latter are not visible, such as the Area of the Deep Seabed, or parts of the oceans, of the atmosphere, the poles.}
unilateral acts. Further, these enactments will be binding on all member States of the Authority. This is international legislation *par excellence.*\(^{684}\)

Direct application of I.E.L. upon individuals, to the extent that the international legislation binds a State, without the latter to take any additional step to implement it, is an important additional element that would make international environmental legislation even more effective. Taking into account the lengthy processes or the, intended or not, inaction of a State to implement international laws, the acknowledgement of the direct effect of international law upon individuals, under conditions, should be further explored and considered by international and domestic legislators and international law authors.

Recapitulating the basic arguments for the opting-out procedures, one could emphasize that opting-out procedures are speedy vehicles for legislative adjustments in the face of new environmental considerations and new scientific knowledge. First, through opting-out, it is not necessary that every state consents to a provision, so that these procedure to be enacted. By waiving the demand for case specific and expressed consent, the institutions employing these processes take advantage of the “lethargy” of the States that do not react in a timely manner to international legislation.\(^{685}\) The demand of a negative notification, as opposed to a positive action, functions in favor of the enactment of a provision. As Ambassador Lang points out, the opting-out technique is frequently used by negotiators, if they are unable to achieve full consensus, the legal effect being the same as if States had entered a reservation in respect to the relevant

\(^{684}\) **HENRY, supra** note 495, at 11. See Calfish L., *A New Type of Intergovernmental Organization: The International Seabed Authority to be published, in PHILIPPINES YEARBOOK OF INTERNATIONAL LAW.*

\(^{685}\) **SOMMER, supra** note 35, at 644.
provisions. In addition, the procedure discourages States from opting-out, because of the consequences of publicly rejecting an international standard, though e.g. the “mobilization of shame.” In principle, the choice of most States to maintain good public international relations tends to discourage States from opting-out. However, even the opting-out processes, to the extent that they require the passage of a specific amount of time, usually months, to enter into force, are not adequate in cases of environmental emergencies. In the face of an environmental emergency, international institutions should be able to respond immediately. To this end, new and additional lawmaking processes should be developed, also employing the international administration and the expert communities.

### 3. Lawmaking Processes in Cases of Urgency

It is very possible that environmental emergencies occur, such as human-made environmental accidents or natural disasters. An environmental emergency could be a sudden onset disaster or accident resulting from natural, technological or human-induced factors, or a combination of these, that cause or threaten to cause severe environmental damage as well as loss of human lives and property. There are cases when either the state

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within whose borders the emergency occurred is not fully capable to address it, or an emergency affects more than one countries making immediate trasnational or international cooperation necessary. International institutions need to devise new lawmaking techniques, in order to timely respond and either deter or mend situations around the world that may take the dimensions of environmental disasters. Since no relevant techniques arise under the framework of international institutions with direct environmental competence. In the following part, I explore the lawmaking competence of some international institutions whose objectives that are related to the environmental causes, such as the World Health Organization, the World Meteorological Organization and the Convention for the Conservation of Antarctic Marine Living Resources (CCAMLR.)

International institutions occasionally develop some different lawmaking procedures that allow them to instantly adopt laws with provisional effect or not, in order to effectively and expeditiously cope with emergencies. The development of different lawmaking processes to use in the face of exceptional circumstances of urgency is necessary since most of the bodies rarely convene. In general, the adoption of new

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688 The inability of a state to cope with environmental emergencies accelerates mostly in the cases of state failure. See, e.g., Chiara Giorgetti, Why Should International Law be Concerned about State Failure?, 16 ILSA J. INT’L & COMP. L. 496 (2010).

legislation on the international level may prove to be too lengthy. Usually, there is not enough time for the political organs to convene in order to address an environmental emergency. The same holds true for human health related issues as the World Health Organization exemplifies.

According to Article 28 (i) of the Constitution of the World Health Organization:

“to take emergency measures within the functions and financial resources of the Organization to deal with events requiring immediate action. In particular it may authorize the Director-General to take the necessary steps to combat epidemics, to participate in the organization of health relief to victims of a calamity and to undertake studies and research the urgency of which has been drawn to the attention of the Board by any Member or by the Director-General.”

In practice, the W.H.O. has rarely used its “legislative” powers to promulgate international health regulations (I.H.R.s). The I.H.R.s pose the framework for the health preparedness and specify what may happen in the case of a world communicable disease outbreak. In general, the W.H.O. authoritatively coordinates domestic legislation and action in cases of world health emergencies, but does not promulgate any legislation


on its own. Even the I.H.R.s are subject to the decisions of the World Health Assembly which is the political primary body of the W.H.O.

In 1948, the W.H.O. was established as a specialized agency of the U.N. to deal specifically with international health issues.\(^\text{692}\) In 1951, the W.H.O. adopted the International Sanitary Regulations (ISR) to provide “international standards for disease notification and for handling infected (travelers) and goods.”\(^\text{693}\) I.S.R. regulated six infectious diseases that were the most concerning at the time – smallpox, typhus, relapsing fever, yellow feven, choler and plague. Later on, in 1969, the I.S.R.s were renamed International Health Regulations (I.H.R.s)\(^\text{694}\) and were subsequently revised in order to regulate only three out of the initial six diseases, namely cholera, plague, and yellow fever.\(^\text{695}\) However, these limited in scope I.H.R.s proved to be ineffective due to the continuation of the widely spread, communicable diseases, especially Severe Acute Respiratory Syndrome (S.A.R.S.). Accordingly, the W.H.O. revised them and extended their mandate, as described below.
In the case of the global health emergency that the S.A.R.S. created, the W.H.O. responded successfully and quickly. Severe Acute Respiratory Syndrome (S.A.R.S.) is a communicable disease that first took place in 2002 in Foshan City, China, and soon in 2003, took global dimensions. The W.H.O. regained much of its strength by taking rapid action in order to eradicate S.A.R.S. disease and the revision of the I.H.R.s. The increasing frequency of global influenza pandemics, together with the S.A.R.S. outbreak, highlighted the need to improve international coordination, share information and


minimize the economic impact when such outbreaks occur.\textsuperscript{699} These concerns motivated the W.H.O. to issue guidelines on communicating with the public during pandemics in 2004 and the member States of the World Health Assembly to adopt substantial revisions to the International Health Regulations (IHR (2005)) in 2005.\textsuperscript{700} The IHR (2005) expanded disease coverage, notification requirements, and the sources of information that the W.H.O. can use regarding disease outbreaks. The IHR (2005) are broader in scope and “emphasize […] collective action to prevent, detect, and contain any type of public health event that might constitute a global threat.” To this end, they were tested with success during the outbreak of the H1N1 Influenza.\textsuperscript{701} They also set standards for public health responses to the international spread of disease, but leave States with considerable discretion regarding their implementation at the national level. The central obligation of countries is to report outbreaks of disease, broadly defined, to the W.H.O. Article 6 of the IHR (2005) requires States to notify the W.H.O. of all events, which may constitute a public health emergency of international concern within its territory, and any health measure that has been implemented in response to those events. In making its recommendations, Article 9 allows the W.H.O. to take into account reports from sources other than notifications or consultations from the affected State. In the afore-mentioned cases, the W.H.O. successfully faced the challenges that public health emergencies posed


upon it through coordination of national legislations, as well as coordination with the international legislation promulgated by other international organizations. Still, in case of a more difficult public health situation, that more intense and timely measures might be necessary, the W.H.O. might not have adequate legislative instruments to effectively cope with it. In comparison, the World Meteorological Organization provides for more flexible provisions.

The World Meteorological Organization (W.M.O.) provides for a – possibly – unique provision that attributes to the leadership of the Organization jointly with other regional, expert organizations the competence to adopt binding provisions on matters of urgency. Specifically, pursuant to Article 14(b) of the W.M.O. Constitution:

“... (b) to adopt resolutions arising out of recommendations of the Technical Commissions on matters of urgency affecting the technical regulations, provided that all Regional Associations concerned are given the opportunity to express their approval or disapproval before adoption by the Executive Committee.”

While Article 13 that refers to the composition of the Executive Committee clearly identifies the members of the Committee as members of the scientific community:

“... (a) The President and Vice-Presidents of the Organization;
(b) The Presidents of Regional Associations, or in the event that Presidents cannot attend, alternates as provided for in the general regulations;
(c) Directors or Meteorological Services of Members of the Organization or their alternates, equal in number to the number of Regions, provided that not more than one-

702 See, e.g., Belinda Bennett & Terry Carney, Trade, Travel and Disease: The Role of Law in Pandemic Preparedness, 5 ASIAN J. WTO & INT’L HEALTH L. & POL’Y 301 (2010).
third of the members of the Executive Committee, including the President and Vice-Presidents of the Organizations, shall come from one region.

Namely, a body of limited membership, that has a mixed status of both political and scientific nature and is mainly scientific, along with two groups of expert bodies, the Technical Commissions and the Regional Associations, cooperate in order the former body to issue binding resolutions upon the States in cases of urgency. In addition, under Article 5 of the W.M.O. Convention, the W.M.O. Congress is competent to adopt decisions, even by correspondences sent to its Member States, when urgent action is required between sessions of the Congress. The vote is then taken upon receipt of the Secretary-General of the request of the majority of the Members of the Organization or when it is so decided by the Council.

In most of the cases, though, the international institutions are facing matters of urgency not by using special lawmaking processes, but rather by using regulatory instruments, methods and practices that are specialized to cope with the urgent matters. For instance, the Commission on the Conservation of Antarctic Marine Living Resources (CCAMLR Commission) has the competence to adopt measures more quickly during matters of urgency, including monitoring, control and surveillance. In order to justify monitoring, control and surveillance measures that impose substantial limitations upon the practices of the nations in the Antarctica the Preamble of the CCAMLR refers and

703 In the case of the World Meteorological Organization, resolutions are not soft law, as usual, but hard law requiring execution by the Member States. See Article 14(a) of the W.M.O. Constitution.

704 For more information about the Commission, see Chapter III, at 342.

705 For more information, see http://www.ccamlr.org/pu/E/cc/mcs/intro.htm (last visited December 5, 2010).
justifies the adoption of the provisions of the treaty on the urgency surrounding the conservation of Antarctica. Later on, in the face of potential environmental emergencies States adopted Annex VI added to the 1991 Protocol of the 1958 Antarctic Treaty on June 17, 2005, to flesh out “Liability Arising from Environmental Emergencies.”\footnote{Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty - Liability Arising from Environmental Emergencies, June 17, 2005, 45 I.L.M. 5. For a discussion on Annex VI see Johan D. van der Vyver, \textit{The Environment: State Sovereignty, Human Rights, and Armed Conflict}, 23 EMORY INT’L L. REV. 85 (2009).} According to it, responsibility to prepare, deter and manage environmental emergencies in Antarctica remains with the State Parties, despite the fact that Antarctica belongs to the global commons. This stands as an additional indication that no international organization has acquired any different lawmaking processes to this end. International formations rather retain a coordinating role of the actions and legislation of States. It is the State parties that are required to “undertake reasonable preventative measures that are designed to reduce the risk of environmental emergencies and their potential adverse impact,”\footnote{Annex VI to the Protocol on Environmental Protection to the Antarctic Treaty - Liability Arising from Environmental Emergencies art. 3(1), June 17, 2005, 45 I.L.M. 5.} and must “establish contingency plans for responses to incidents with potential adverse impacts on the Antarctic environment or dependent and associated ecosystems.”\footnote{\textit{Id.} art. 4(1)(a).} They must furthermore “take prompt and effective response action to environmental emergencies arising from the activities of [their] operator” in the region.\footnote{\textit{Id.} art. 5(1).} Strict liability for non-compliance with these obligations vests in the state or non-state operator (not the state itself) who failed to take prompt and effective response action.
In other cases, urgency is used as an identical notion with the gravity of the issue or the need to take immediate response in the present, in order to avoid long term consequences in the future. This is the case with the world fisheries. At their June 2003 meeting, the members of the G8\textsuperscript{710} acknowledged the growing pressure on the marine environment and the impact of over-fishing and pollution on marine biodiversity.\textsuperscript{711} In response to the scale and urgency of the threat to marine fisheries, the G8 agreed to develop and implement a variety of approaches and tools, including the Ecosystem Approach discussed by the F.A.O. for instance, the group agreed to the urgent development and implementation of a plan by F.A.O.'s: In 2001 the Members of F.A.O. concluded, within the framework of the Code of Conduct for Responsible Fisheries, an International Plan of Action to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing (IPOA-IUU).\textsuperscript{712} It complements certain aspects of the 1993 F.A.O. Compliance Agreement and the 1995 UN Fish Stocks Agreement. In addition to fisheries issues, the G8 addressed the threat to marine environments represented by the world's fleet of single hulled tankers - exemplified by the sinking of the “Prestige” in late 2002 and the subsequent spilling of over 12,000 tons of oil into the Atlantic Ocean.\textsuperscript{713} As a first step, the group agreed to accelerate the phasing out of single hulled tankers and further

\textsuperscript{710} The member nations of the G8 are Germany, Canada, the United States, France, Italy, Japan, the United Kingdom, and Russia. The European Union participates with observer status. See generally, 2003 Evian Summit website, http://www.g8.fr/evian/english/navigation/the_g8/g8_members.html.


\textsuperscript{712} For more information, visit the official website of the IPOA/UN, http://www.fao.org/fishery/ipoa-iuu/2/en (last visited December 15, 2010).


The afore-mentioned cases of the CCAMLR or the fisheries management are serious environmental situations that require the taking of immediate measures, but do not reach the urgency of, e.g., an environmental disaster, or the need to take up measures in order to avoid its break out in the short run. Such environmental provisions rarely exist. In contrast with the international environmental regulations, the procedures for promulgating health regulations can substantially change in order to timely and effectively face a case of urgency. For instance, the 2001 Doha Declaration on TRIPS and Public Health has clarified the flexibility afforded by TRIPS to member countries in setting intellectual property protection with respect to pharmaceutical patents. \footnote{WTO Secretariat, \textit{Fact Sheet: TRIPS and Pharmaceutical Patents} (2006) \textit{[hereinafter WTO Fact Sheet]} archived at http://www.webcitation.org/5at3OJ5By, at 2.}

Countries that cannot produce pharmaceuticals themselves may import pharmaceuticals made under a compulsory license. \footnote{\textit{Id.} at 2. See generally Pedro Roffe, Christoph Spennemann & Johanna von Braun, \textit{From Paris to Doha: The WTO Doha Declaration on the TRIPS Agreement and Public Health, in NEGOTIATING HEALTH: INTELLECTUAL PROPERTY AND ACCESS TO MEDICINES} 9 (Pedro Roffe, Geoff Tansey & David Vivas-Eugui eds. 2006).}

Compulsory licensing occurs when a government uses, produces, or sells a patented product without consent of the patent owner, or permits a third party to do the same. \footnote{See WTO Fact Sheet, supra note 712, at 4.} The TRIPS Agreement does not explicitly
mention “compulsory licensing,” but Article 31 governs “other use without authorization of the right holder.” Article 31 provides several safeguards against compulsory licensing, including a requirement that governments or third parties first attempt to obtain a voluntary license from the patentee. However, in cases of “national emergencies” or “other circumstances of extreme urgency,” this requirement is waived. The Doha Declaration interpreted Article 31 to mean that each country has the right and discretion to grant compulsory licenses and the right to determine what constitutes a national emergency or other circumstances of extreme urgency. On August 30, 2003, the WTO members agreed to waive the Article 31(f) requirement that production under a compulsory license has to be for the domestic market of the country authorizing such use. Thus, “any member country can export generic pharmaceutical products made

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719 Article 31(b) of the TRIPS Agreement.

720 Id.


(b) Each Member has the right to grant compulsory licenses and the freedom to determine the grounds upon which such licenses are granted.

c) Each Member has the right to determine what constitutes a national emergency or other circumstances of extreme urgency, it being understood that public health crises, including those relating to HIV/AIDS, tuberculosis, malaria and other epidemics, can represent a national emergency or other circumstances of extreme urgency.

Id. (emphasis added).

under compulsory licenses to meet the needs of importing countries.”\textsuperscript{723} While the public discussion of compulsory licensing has primarily been associated with pharmaceuticals, it could apply in principle to patents in any field, such as environmental technologies or natural disaster management and relief related technologies.\textsuperscript{724}

It is maintained that responsibility of States for prevention, information exchange, notification, and assistance in mitigating damages is now firmly established as part of customary international law.\textsuperscript{725} The main legal instruments that refer to the issue are mainly soft law instruments, such as the Rio Declaration, which drafters responded directly to a number of problems that arose in the Sandoz disaster. Principle 18 of the Rio Declaration requires States to “immediately notify other States of any natural disasters or other emergencies that are likely to produce sudden harmful effects on the environment of those States.”\textsuperscript{726} Further, Principle 19 demands that “States shall provide prior and timely notification and relevant information to potentially affected States on activities that may have a significant adverse transboundary environmental effect and shall consult with those States at an early stage and in good faith.”\textsuperscript{727} Two regional, hard law instruments, the United Nations Economic Commission for Europe (UNECE) 1992 Convention on the Transboundary Effects of Industrial Accidents and the 2003 Protocol

\begin{footnotesize}
\begin{enumerate}
\item \textsuperscript{723} WTO Fact Sheet, supra note 712, at 6.
\item \textsuperscript{724} WTO Fact Sheet, supra note 712, at 4.
\item \textsuperscript{725} See e.g., Astrid Boos-Hersberger, Transboundary Water Pollution and State Responsibility: The Sandoz Spill, 4 ANN. SURV. INT’L & COMP. L. 103 (1997).
\item \textsuperscript{727} Id. art. 19.
\end{enumerate}
\end{footnotesize}
on Civil Liability for Damage and Compensation for Damage Caused by Transboundary Effects of Industrial Accidents on Transboundary Waters also refer to the obligations and cooperation among States rather than establishing or enhancing the role of an international institution or the adoption of any different lawmaking process in order to face emergency.\footnote{728}

3.1. The Urgency Procedure of Article 290 TFEU

It must be noted, that the Commission, in its Communication on the Implementation of Article 290 of the Treaty on the Functioning of the European Union provides for an “urgency procedure”. As a rule, when the Commission has adopted a delegated act, it must notify it simultaneously to the Parliament and the Council should the basic instrument be governed by the ordinary legislative procedure, in which case the right of opposition would be triggered and would act as a suspensive condition: the entry into force of the delegated act adopted by the Commission would be suspended for a specified period during which the legislator would have the right to lodge objections.\footnote{729} However, the Commission believes that there are cases where a delegated act subject to the right of opposition should be adopted and enter into force as a matter of urgency. It thus recommends that it should have the right to adopt and implement such delegated act


immediately with it nevertheless being subject to the right of opposition: “this act would
be notified immediately to the legislator and would apply provided no objection was
expressed by the Parliament or the Council during a period that might be fixed at six
weeks. I objections were expressed the delegated act would cease to apply.”730

Apart from the transnational coordination of domestic legislations and actions, or
the case of the European Community, which, however, is a supranational organization,
the international community lacks international institutions and the lawmaking
procedures that would enable it to effectively prepare and respond to environmental
emergencies. If there is any condition under which either international institutions or
expert bodies of international institutions can legitimately make law, then, this is the case
of an environmental emergency. This can be the case with the adoption of provisions that
are not permanently binding upon the States, but enjoy provisional effect.

4. Provisional Effect of Rules

Either in the face of an emergency or not, a mechanism for faster application of
international legislation is its enactment on a provisional basis followed by the later
approval of the full membership body.731 Due to the limited in time application of

730 Id. at 11.
731 Legal recognition of the practice that has variously been termed ‘provisional application’ or
‘provisional entry into force’ has arisen only relatively recently. The 1935 Harvard Research Draft
Convention on the Law of Treaties made no mention of the practice, and McNair, writing in 1961, referred
provisions to be provisionally enacted, States may easier accept provisions that would not otherwise accept, in case that those provisions were permanently binding upon them. For the same reasons, States may also easier accept the provisional application of legislation that derives not only by a full membership body, but also by a body of limited membership or by an expert body.

Despite its limited application a few decades ago, the practice of adopting provisionally legislation now appears well-established; it is recognized that “provisional application meets real needs in international relations”\(^{732}\), including not only the timely application of laws, but also the need for flexibility. Significantly, Article 25 of the Vienna Convention on the Law of Treaties refers to the various types of provisions with a provisional application, namely the full text of a treaty or a part of a treaty only, and to the legal bases for the validity of the provisional application that may exist among the

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provisions of the treaty itself or in an agreement of the States. It also leaves an option for termination under paragraph 2, in order to compromise with the reservations expressed by the domestic parliamentarians that do not share the same enthusiasm with the international administrators regarding the provisional application of the provisions. [733]

Article 25 provides:

1. A treaty or part of a treaty is applied provisionally pending its entry into force if:
   (a) the treaty itself so provides; or
   (b) the negotiating States have in some other manner so agreed.

2. Unless the treaty otherwise provides or the negotiating States have otherwise agreed, the provisional application of a treaty or a part of a treaty with respect to a State shall be terminated if that State notifies the other States between which the treaty is being applied provisionally of its intention not to become a party to the treaty.”

A well known example of an agreement with provisional application is the General Agreement on Tariffs and Trade (GATT). [734] GATT is the most comprehensive

[733] United States senators, for example, have expressed concern that the executive's use of provisional application may deprive the Senate of its constitutional role in the treaty-making process, and a House subcommittee report concerning ‘U.S. domestic requirements for entering into a provisional application arrangement’ stressed the need for congressional participation in such arrangements. CONGRESSIONAL RESEARCH SERVICE, LAW OF THE SEA TREATY: ALTERNATIVE APPROACHES TO PROVISIONAL APPLICATION, PREPARED FOR THE SUBCOMM. ON INT’L ORGS. & MOVEMENTS OF THE HOUSE COMM. ON FOREIGN AFFAIRS, 93D CONG., 2D SESS. (Comm. Print 1974). Despite the concerns of domestic politicians that the executive might use the provisional application procedure as a means of circumventing the ratification process, an examination of the relationship between the President and Congress concerning a number of the provisional agreements to which the United States has been a party makes clear that in practice adequate means have emerged through which Congress can communicate its views regarding such provisional arrangements and thereby provide them with some degree of domestic legitimacy prior to the treaty's ratification. In addition, although the United States constitutional law seems clearly to allow the President full authority on his own to enter into such binding provisional arrangements, in practice the chief executive has looked to Congress for its expression of approval and for the added domestic legitimacy this approval confers on the provisional agreement. The provisional application of treaties falls under the category of the executive agreements. Most executive agreements made by the President rest on the prior authorization or subsequent approval of Congress; others are made pursuant to duly ratified treaties. See, e.g., Agreement Regarding Facilities and Areas and the Status of United States Armed Forces in Korea, July 9, 1966, United States-Korea, 17 U.S.T. 1677, T.I.A.S. No. 6127; Agreement Regarding Facilities and Areas and the Status of United States Armed Forces in Japan, Jan. 19, 1960, United States-Japan, 11 U.S.T. 1652, T.I.A.S. No. 4510.

and far-reaching agreement of any of the international agreements to make use of the provisional application mechanism. The GATT’s provisional application has been a major factor allowing for the elasticity and creative evolution of the GATT. The drafters intended the General Agreement to be an interim arrangement pending negotiations establishing an International Trade Organization (ITO) - what is now the World Trade Organization (WTO) - and provided that when the charter of the ITO entered into force, corresponding portions of the Agreement would be suspended.735

There are two views regarding the nature of the obligation that a regime of provisional application imposes on the States. One view focuses on the temporal element and regards a treaty, or a part of the treaty, as actually in force and subject to the doctrine of *pacta sunt servanda* during the period in which it is provisionally applied. The other view regards the obligation that derives from a rule with provisional force as analogous to the obligation not to defeat the object and purpose of a signed but unratified treaty. For the purposes of the Thesis, the analysis takes into account the first view, namely the view that on the one hand it recognizes the actual entry into force of certain provisions and its binding character, and, on the other hand, it restates its temporary, provisional character (temporal element.) This concrete and definite aspect of the legislation can serve as a useful tool for the effectiveness of I.E.L.

An illustrative example of the capacity of an international organization to adopt provisional legislation is, for instance, the International Seabed Authority. Article 162 (2)

735 *Id.* art. XXIX.
(o) (ii) of the Law of the Sea Convention (LOS Convention)\textsuperscript{736} States that the Council of the Authority is qualified to “adopt and apply provisionally” provisions governing the conduct of activities in the Area and relating to the financial and internal administration of the Authority proposed by the Legal and Technical Commission pending approval by the Assembly.” In the same sub-paragraph, it is further stated that these enactments “shall remain in effect on a provisional basis until approved by the Assembly or until amended by the Council in the light of any views expressed by the Assembly.” There are two points deserving of attention. First, these regulations are in effect immediately after their adoption, even pending the approval by the Assembly and second, during the time between adoption and Assembly approval (or lack thereof), the rules have full legal effect. Stemming from the second point, States and other actors who have complied with the provisional regulations will have acted lawfully, even if the Assembly does not ultimately approve the rules.\textsuperscript{737} In cases that environmental circumstances require the immediate adoption of new legislation, but States are not willing to be bound on a long-term basis, the adoption of legislation with provisional effect seems to offer a satisfactory compromise.

\textsuperscript{736} “Article 162 – Power and Functions
1… 2. In addition, the Council shall: … ii. adopt and apply provisionally, pending approval by the Assembly, the rules, regulations and procedures of the Authority, and any amendments thereto, taking into account the recommendations of the Legal and Technical Commission or other subordinate organ concerned. These rules, regulations and procedures shall relate to prospecting, exploration and exploitation in the Area and the financial management and internal administration of the Authority. Priority shall be given to the adoption of rules, regulations and procedures for the exploration for and exploitation of polymetallic nodules. Rules, regulations and procedures for the exploration for and exploitation of any resource other than polymetallic nodules shall be adopted within three years from the date of a request to the Authority by any of its members to adopt such rules, regulations and procedures in respect of such resource. All rules, regulations and procedures shall remain in effect on a provisional basis until approved by the Assembly or until amended by the Council in the light of any views expressed by the Assembly;…”

\textsuperscript{737} For a detailed analysis of the topic, see HENRY, supra note 495, at 10.
C. Processes for the Generation of Soft Law Regarding Environmental Protection

On the international level, an important number of environment-related measures are adopted as soft law provisions. Soft law contains rules that are not binding upon the States, such as general guidelines and codes of conduct. The main value of soft law is that it provides the general directions toward which the behavior of the States and other recipients of international law could or should develop. It provides general principles upon which international courts and tribunals may invoke in order to judge a case. In addition, soft law may contribute to the development of law in general, even by becoming hard law over time. For instance, soft law provisions could provide a framework for a subsequent treaty. In other cases soft law may include detailed rules and technical standards required for implementation of some treaties, thus buttressing the obligation of


Further, private or public-private institutions generate an important percentage of environment-related soft law on the international level. This part of soft law also incorporates usable science, such as the scientific findings and tested management methods in the forestry sector. For instance, an important ensemble of transnational regulatory institutions has emerged in the forestry sector over the past decades, introducing “forest certification” programs. Forest certification programs set global standards for proper forest management and apply standards through institutionalized licensing and inspection programs. Developed largely by environmental N.G.O.s and

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740 Boyle, supra note 736.
industry associations rather than governments, forest certification programs are nominally voluntary, but are becoming increasingly mandatory in practice. On the international level the International Organization for Standardization (ISO) that is an international network of the national standards institutions of 146 countries with a Secretariat in Geneva, Switzerland, establishes standards applicable for use across all industry sectors. Among those standards the ISO 14001 Environmental Management System Standard is used by many forest industry companies to guide their environmental practices in the forest and the mill. On the domestic law level, they have become gradually linked to government regulatory and management programs in various ways. However, the certification programs promulgated by international authorities can conflict with other internationally authorized programs. In addition, these programs can also compete domestic regulations. Therefore, the overall regulatory system is highly dynamic, as the programs compete with each other for business and also with government regulatory programs for public acceptance.

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746 For more information, visit the official website of the ISO, http://www.iso.org/iso/home.html (last visited December 12, 2010).

747 See, e.g., the various certification systems in North America: The American Tree Farm System is a program for small, private, non-industrial landowners. The Canadian Standards Association is a national standard for sustainable forest management and tracking and labeling certified materials in Canada. The Forest Stewardship Council is an international system covering forest management practices and the tracking and labeling of certified products and paper products with recycled content. The Program for the endorsement of Forest Certification Schemes is a mutual recognition framework for national forest certification standards. The Sustainable Forestry Initiative Program is a sustainable forest management standard targeting large industrial operations in Canada and the United States. For more information, visit the official website of the Forest Certification Resource Center, http://www.metafore.org/?p=Introduction+to+Certification+Programs&s=167 (last visited December 13, 2010).

Although clear science regarding forestry exists and specific management tools could be codified as parts of international environmental legislation, not an adequately set of public international provisions that are binding upon States exist. In fact, from the Public International Law perspective, such an effort, namely to set generally accepted laws including standards and practices for sustainable forestry, was initiated by the United Nations Forum on Forests (UNFF) in October 2000. By Resolution 2000/35 the Economic and Social Council of the United Nations (ECOSOC) established the United Nations Forum on Forests (UNFF), a subsidiary body with the main objective to promote “… the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment to this end…” based on the Rio Declaration, the Forest Principles, Chapter 11 of Agenda 21 and the outcome of the IPF/IFF Processes and other key milestones of international forest policy. The Forum has universal membership, and is composed of all Member States of the United Nations and specialized agencies. Despite the initial hopes for the adoption of a legally binding instrument, negotiations failed and the UNFF repeated over the years negotiations concluded in a limited in scope and effectiveness “Non-Legally Binding Instrument on All Types of Forests” (NLBI).^{749}

As Alexadrovitz States, standards are only para-legally effective and not legally binding. There are ways through which intergovernmental organizations turn voluntary standards into obligatory regulations de facto by using these standards as eligibility

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criteria in order to provide their services to the States. This is the case of the World Bank, which imposes certain standards in order to provide funds for projects within a state. The World Bank might, for instance, require the borrower to respect its Operational Directive on Environmental Assessment. Another example is the application of the I.A.E.A. safety standards for the protection of the health and the minimization of danger to life and property to “the operations making use of materials, services, equipment, facilities and information made available to the Agency” and to operations under the control or supervision of the I.A.E.A. In these cases, beneficiaries of the services of I.A.E.A. are indirectly bound to the I.A.E.A. safety standards. However, absent the legal binding nature of these measures, as well as the private or public-private source of many of them, standards and other soft law provisions remain outside of the scope of the Thesis.

In an effort to evaluate contemporary voting processes and draw some interim conclusions, one could say that many various processes prevail in the framework of international institutions, some of them responding to the needs of the institutions, some of them not. State sovereignty might no longer be a definite factor for the delay of the development of I.E.L., since the requirement of unanimity has been bended. Nonetheless,


rules of either consensus or qualified majority that demands high percentages of participation, in combination with the infrequent meetings of the political bodies who hold the legislative power, contribute to a slow development of I.E.L. that is not always adequate in facing contemporary environmental issues. Majority voting rules on the one hand have the capacity to lead to more environmentally ambitious legislation. On the other hand, this assumption is not always infallible. Additional techniques are necessary to be employed in the majority of the lawmaking processes, such as the adoption of the opting-out and the tacit acceptance techniques. Through them, all of the States will be able at an early stage, by taking no further action, to first “commune” with the latest scientific and technical developments and then consciously decide whether they prefer to be bound by the new legislation or not and to also actively express their objection to the new rules.

The afore-mentioned ascertations were the analytical point of departure for the present chapter. The afore-mentioned flexible voting procedures help better integrate usable science and expertise in I.E.L., meaning that they facilitate the generation of new norms that can potentially include scientific findings and infuse new knowledge into old regimes. They also manage to supervene where some countries want to incorporate new science, but other countries do not. Therefore, the countries, if they constitute the necessary majority, have the opportunity to pass science-based law. Further, fewer than the total number of countries can adopt the suggestions made by expert bodies of the same organization, or other external expert bodies. The impact of the voting processes becomes more obvious if expert bodies follow these voting processes, too. These experts
may represent States or act under their own capacity and represent the international institution whose organ is the organ in which they participate. In the first case, majority vote and other progressive procedures of voting will help supervening objections by the States, mutatis mutandis in the case of the political bodies. In the second case, when there is disagreement between scientists, it is more likely that a decision will be adopted if unanimity is not required.

One consideration to be taken into consideration is actual implementation and enforcement by the minority States of those rules that have been adopted by majority vote or opting-out processes and in general does not enjoy the full acceptance of the minority States. There are some positive aspects and some negative aspects in expanding the use of the majority voting rule. On the one hand, the majority vote may give the opportunity to the leader States to go further in their implementation efforts than they would otherwise have done, as they may easily become “captured by the pressure game.” Plus, the minority States, which otherwise would not have chosen to adopt such ambitious legislation, may feel some kind of pressure to strive for a more ambitious goal (though it cannot be taken for granted that the majority is always on the “progressive” side.)753 On the other hand, on the state level, there are always some reservations to the implementation and effectiveness of rules adopted by majority vote, regarding the behavior of the minority States after the adoption of the norm. Minority States may be

753 As an additional argument for majority voting and relevant processes, Hagerhall points out that a majority decision-making system permits a clearer identification of countries “not willing to live up to the wish of the majority”, and gives NGOs better possibilities of exerting pressure at different levels. Bertil Hagerhall, The Evolving Role of NGOs, in INTERNATIONAL ENVIRONMENTAL NEGOTIATIONS: PROCESS, ISSUES AND CONTEXTS 75 (B. Hagerhall et al. ed., Stockholm: The Swedish Institute of International Affairs 1993).
“lukewarm implementers”\textsuperscript{754} of these norms. In addition, the more ambitious rules likely to be produced by majority voting may in practical terms be harder to implement, as well.

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\textbf{T H I R D \ A T T E M P T \ T O \ D E F I N E \ S C I E N C E - B A S E D \ L A W M A K I N G}

Institutions with competence on environmental issues should adopt decision-making processes and regulatory lawmaking procedures in ways similar to the so-called “technical” organizations. These procedures better allow I.E.L. to quickly adapt to new technological evolutions and facilitate speedy responses to environmental emergencies, because they minimize the slowness that political negotiations \textit{de novo} may cause.

The timely effectuation of S.B.LM. may require the adoption of majority voting processes, in cases that unanimity or consensus cannot be reached. The majority voting requirements in each case may vary. Different organizational frameworks or agreements may require different majority percentages. They may, for instance, require either qualified or simple majority. The more detailed the provisions to be adopted are, the lower the requirement of the minimum number of the States that are necessary in order to take a decision can be. The adoption of laws by qualified or simple majority vote for the substantial matters, and simple majority for administrative matters, leading to rules that are immediately valid and binding upon the States unless a state objects. In this case the provision should not bind the state that objected, but it shall still be binding upon the rest of the States.

The combination of the majority vote with other voting techniques, such as the opting-out or the tacit acceptance procedure, may lead to even speedier and more effective legislation. It is also useful that the legal instruments for the protection of the environment provide for the adoption of protocols or annexes or any other type of legal instruments that can offer ways for timely, effective and scientific-based updates (amendments or adjustments) of the I.E.L. The new, implementing provisions adopted by these new instruments could be

\textsuperscript{754} \textit{See Jorgen Wettestad, Designing Effective Environmental Regimes: The Key Conditions} 25, 26 (Edward Elgar Publishing 1999).
binding upon all of the States after the lapse of a certain, pre-specified space of time, irrespectively from whether a State has consented to the new rules or not. During the pre-specified space of time, a State would be able to express its objections to the new rules, and, in this way, avoid to be bound of any upcoming legal obligation, namely a procedure similar to tacit acceptance.

By virtue of primary legislation, in cases of urgency there should be the possibility for an international institution to adopt provisional legislation and request the implementation and enforcement of these provisional rules, unless the State that is related with the urgency can take effective and timely action. One option is that such lawmaking action could be undertaken by a body of limited membership – expert or political – under condition, such as the taking of the decision jointly with regional and representative expert bodies.

In order to speed up the lawmaking processes, a body of limited membership can also adopt provisional laws that have a limited lifetime or that maintain their binding character for a short period of time and, after the lapse of time they require ratification on behalf of the States in order to remain valid. Further, “smart” and practical changes in procedures, such as voting via correspondence – either by regular or electronic mail – in cases that time is pressing might be a good solution in order to speed up the adoption of legislation when necessary.

The advanced flexibility of the afore-mentioned processes does not guarantee the successful integration of science in I.E.L. Under these procedures the lawmaking power remains with the political bodies, while the expert bodies play a very limited role in lawmaking. The balance of powers that these processes guarantee does not offer adequate venues for the integration of science in I.E.L. It is rather illustrative of an era that Gustave Speth calls “GEOPolity” that is destined to fail if it does not change:

“people turn to government to focus the market on environmental and social ends, and they rely heavily on intergovernmental institutions and treaties. … Today’s GEOPolity approach is designed to fail. It can be redesigned for success by insisting on new procedures for setting international requirements and on new institutions. … There are many innovative ways that the decision-making process in GEOPolity could be improved:

- As has happened with the Montreal Protocol, the Conference of the Parties (COP) to a convention could be empowered to make certain types of regulatory decisions that would not need to be ratified as separate treaties.
- Procedures could be introduced whereby a supermajority, a double majority, or even a mere majority of the COP members could make decisions binding for all.
• The COP could delegate certain rule-making or standard-setting powers to an expert body. The COP would limit itself to providing the broad policy framework and providing a check against abuse of discretion, much as Congress and the federal courts supervise decision making in U.S. regulatory agencies.

• Under all of these arrangements, enforcement procedures could be introduced whereby the COP, the treaty secretariat, or an aggrieved party could take a government before a court of some adjudicatory body to compel action.755

The previous Chapters explored issues that are relevant to the first and the second proposals made by Speth. The following Chapter will discuss issues relevant to the third proposal, namely, questions on delegation from the political bodies of the international institutions of lawmaking powers to expert bodies, either the latter belong to the same international arrangements or remain outside the architecture of the institutional arrangement. The Chapter explores the competences of various expert bodies and attempts a classification of their competences with the ultimate goal of tracing elements of legislative activity within either the legal framework that guides their functions or the practice that these expert bodies follow.

755 SPETH, supra note 199, at 162 – 163.
CHAPTER III: NORMATIVE POWERS OF EXPERT BODIES AS VARIABLES FOR EFFECTIVE ENVIRONMENTAL GOVERNANCE

Questions:

Do expert bodies within the international institutions hold lawmaking powers? If yes, which is the range of those competences? How do the expert bodies participate in the lawmaking process and at which stage of the process do they participate? The ultimate question is whether they can issue binding laws upon States.

According to the previous Chapter, the lawmaking competence of international institutions remains with the political bodies that represent the interests of the Member
States. The stronger the science-base of the structure of these institutions is, the stronger the elements of a common will of the States could develop. In the previous Chapters the Thesis explored both traditional and progressive lawmaking techniques by various political bodies of international institutions with environmental expertise. The present Chapter explores whether expert bodies of international institutions may develop legislative competences, and if yes, to what extend. The scope of the Chapter does not exhaustively explore all of the expert bodies, but rather provides an overview of the competences of some of the representative international institutions and aims to discover any outstanding example of an expert body with lawmaking competences. The present Chapter explores the roles of the expert bodies in all of the steps of the lawmaking process, ranging from agenda-setting to review of implementation. It commences by presenting a classification of the expert bodies, depending on the type of the lawmaking-related competencies, and concludes with the evaluation of the lawmaking competences of expert bodies, if any. The main question of the Chapter is whether expert bodies hold any direct lawmaking competences, it namely explores the promulgation of binding legislation, while the assumption behind the question States that if scientific bodies were given a stronger role at the regulatory stages at large, including the post-regulatory/review stages of the I.E.L. enterprise, I.E.L. would integrate more advanced, detailed, science-based, salient environmental provisions. It would, thus, more effectively promote the protection of our global environment.

756 See above Chapter II regarding the description of the lawmaking processes.
From a comparative perspective, the two previous Chapters include a *prima facie* contradiction in their argumentation. While the first Chapter refers to a case that is illustrative of the deficient legislative process under the International Seabed Authority due to the non-binding input of scientific advice, the second Chapter refers to the International Seabed Authority that has adopted opting-out techniques and direct application of its laws upon individuals, namely one of the most progressive lawmaking procedures. Both statements are valid. The contradiction seems to rise out of the event that science is not authoritatively related to the lawmaking function. Indeed, the case illustrating the deficient legislative processes adopted by the International Seabed Authority regarding the influence of science in the final outcome of the legislative deliberations, helps formulate a number of working hypotheses on the relevant dimensions that influence the lawmaking procedures within the confines of international institutions with environmental competence. The range of competences that ISA’s bodies have, on the other hand, helps compare the state of the competences among international institutions.

One central hypothesis of the Thesis is that strict, science-based environmental laws do not prevail in the contemporary international system, because the traditional legislative patterns, which rely exclusively on the lawmaking competence of the political bodies, do not give adequate regulatory power to the expert bodies of the international institutions. According to this old-fashioned framework, political bodies comprised of

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state representatives are mainly responsible for environmental lawmaking, while expert bodies hold a mere consultative status. This structure gives preference to the interests of those States most influential in environmental lawmaking over genuine scientific advice that could lead to more effective global environmental governance. The decision whether to adopt expert recommendations or not is completely at the discretion of the political bodies. Political bodies are not even obligated to provide reasons for choosing not to follow the expert advice. This traditional allocation of powers in a decision-making system got mainly developed within a framework of institutions where sovereign States were prevailing. In addition, the governance structures of these institutions were developed on behalf of the sovereign States. As a result, most of these structures are devoid of the necessary checks and balances to ensure its scientific validity, and in some cases even its democratic basis. Therefore, the system itself opens up the door for the adoption of arbitrary regulatory choices. In addition, the unchecked legislative power bestowed exclusively on the signatory States to an M.E.A. or the Member States to IOs means that these States can unbind themselves from legislation to which they have

758 Because of the increasing tendency of States to free ride when acting outside of their territorial boarders, this hypothesis may receive stronger support in cases regarding the management of the global commons, such as the International Deep Seabed resources.


760 For example, the Contracting States to the Convention on Cooperation for the Protection and Sustainable Use of the Danube River are not bound to follow the recommendations of the International Commission for the Protection of the Danube River. See art. 18 para. 5 of the Convention on Cooperation for the Protection and Sustainable Use of the Danube River. This is the allocation of powers that usually applies to the Conference of the Parties, which is not bound to their choices by the recommendations that expert bodies will propose, as for example, in the framework of the Climate Change Convention (art. 7) or the Biological Diversity Convention (art. 23).
previously committed, and, thus, not respect their commitments. This option for a State is valid, even when such action contradicts expert scientific opinion.\footnote{This is, for instance, the case of the U.S. behavior regarding its commitment to ban methyl bromide. See the case of the methyl bromide below at page 359.}

A. Typology of Expert Bodies in International Institutions

Before proceeding in exploring the role of the various expert bodies in the lawmaking process, it seems useful to shortly discuss various types of expert bodies that are met on the international level. There are various categories of expert bodies that function within the framework of international institutions with environmental competence. The following presentation refers to bodies with the participation of more than one expert, most prominently to the permanent bodies of the main multilateral environmental agreements and some of the inter-governmental organizations with environmental competence. The degree of independence of such expert bodies’...
viewpoints often depends on the type of affiliation that these expert bodies have with the States. Especially in cases where a State employs the participants at the expert bodies, there is a high probability that these experts will directly represent the interests of the State by which they are employed, even if these interests contradict the purpose of the international institution or the common interests of the signatory States. Without any freedom to depart from the official positions of their States in case of disagreement, even by invoking scientific grounds, these experts are unable to provide independent guidance to regulators. This governance structure allows a close affiliation between States and participants in expert bodies. Therefore, although the experts have a deeper understanding of the scientific issues pertaining to environmental regulation, they primarily hold political-like positions. This is the case in the expert bodies represented by ad hoc committees that meet regularly, but have a limited time of existence, as it was, for example, initially the UN Forum on Forests (UNFF). The UNFF was initially established to decide upon the adoption of an international instrument for the management of global forests.\(^{762}\) The experts that participate in the Forum are high esteemed experts on forestry and other types of administrators appointed by their respective Governments. The Forum

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\(^{762}\) In October 2000, the Economic and Social Council of the United Nations (ECOSOC), in its Resolution 2000/35 established the United Nations Forum on Forests (UNFF), a subsidiary body with the main objective to promote “...the management, conservation and sustainable development of all types of forests and to strengthen long-term political commitment to this end...” based on the Rio Declaration, the Forest Principles, Chapter 11 of Agenda 21 and the outcome of the IPF/IFF Processes and other key milestones of international forest policy. The Forum has universal membership, and is composed of all Member States of the United Nations and specialized agencies. “Non-Legally Binding Instrument on All Types of Forests (NLBI): following intense negotiations, the Seventh Session of the Forum adopted the landmark Non-Legally Binding Instrument on All Types of Forests on 28 April 2007. The instrument is considered a milestone, as it is the first time Member States have agreed to an international instrument for sustainable forest management. The instrument is expected to have a major impact on international cooperation and national action to reduce deforestation, prevent forest degradation, promote sustainable livelihoods and reduce poverty for all forest-dependent peoples.” The NLBI was adopted by the UN General Assembly on 17 December 2007. However, there was a decision that the UNFF should continue its function. There has been now adopted a new program that extends up to 2015, available at http://www.un.org/esa/forests/multi-year-work.html.
is not a permanent body. On the contrary, the participating experts meet to negotiate at the UN headquarters once per year. Although the majority of the Forum is composed of forestry experts and other environmental management related experts, they are not allowed to act on their own capacity, but they are bound by and exclusively represent their governments’ positions.

Experts appointed by Governments to participate in international negotiations as state representatives are one more category of expert groups. These ad hoc appointed representatives are often members of the academia in their respective countries. Prior to international negotiations, these highly estimated experts are possibly in the position to shape domestic policies. On the international level, they are members of the national delegations. To this extent, either they agree with the official national positions or not, they have to represent and stand for policies that are consistent with the official positions of their governments. However, during the negotiations are usually given the opportunity to express their scientific opinion, as long as they do not come into direct opposition with the appointing government’s official position. On a hypothetical continuum that would depict the range from political bodies to expert bodies, this category of experts would stand somewhere in the middle, since it shares features of both the expert and political bodies.

In contradiction to the ad hoc appointed experts, there are experts working on a more permanent basis for international institutions and they have the chance to both shape and represent the official position of these institutions. These experts are administrators that are working for a certain period of time or permanently with the
organization. They usually get hired after participation in exams organized by the organization itself or after selection based on their qualifications and an interview. They solely serve as administrators of the international organization and they retain no professional liaison with the State to which they are nationals or with any other State. Accordingly, the independence afforded to these experts depends upon the degree of independence from state control enjoyed by the institution by which they are employed. Usually, they enjoy a significant degree of independence. Their capacity to influence the lawmaking process gets limited by the power balance within the institution by which they are employed. Of course, other factors as well, such as the limitations in the resources of the institution, e.g. the funds available for conducting research pose direct or indirect limitations on the work of the institution and the capacity of its administrators to influence the outcome of the lawmaking process that takes place by or under the auspices of the institution.

Similarly, the so-called “nationaux détachés” are experts who mainly work as administrators in their home country. They, however, interrupt their service at the domestic authorities and they transfer to an international organization in order to serve there, while they maintain the status of the administrator in their countries. This is the case, for instance, with many administrators working within the framework of Directorates General (DGs) of the European Union (EU), while their main occupation is at the domestic administration of the EU Member States. In principle, after they get hired by an international institution, they enjoy the same independence exercised by the institution’s permanent employees. However, the nationaux détachés may still be subject
to political coercion more often or easier than other employees, since their governments occasionally reach out to them for various political “favors”, an event that, although infrequent, may decrease their objectivity.

Sometimes experts that are appointed at an international institution may at the same time work in non-governmental settings, such as in academia or research organizations. International institutions often employ highly qualified experts on a long-term, but part-time basis, in order them to work on a specific issue. On the one hand, these experts enjoy the institutional independence of the international institution and may be placed on the “right end” of the continuum, namely at the expert groups. On the other hand, they get influenced by the rest of the settings under which they are employed. In addition, their stay most of the time in their home country, may make the experts susceptible to coercive pressures, i.e. public or corporate.

Some expert bodies do not belong to the structure of any of the international arrangements in question, but form independent, external expert groups that enjoy a certain liaison with international organizations. These groups might be official networks of experts with the participation of both independent experts and experts working for their governments, such as the International Council for the Exploration of the Sea (I.C.E.S.) for the marine environment763 and the Expert Committee for the transport of

763 “The International Council for the Exploration of the Sea (ICES) coordinates and promotes marine research on oceanography, the marine environment, the marine ecosystem, and living marine resources in the North Atlantic. Members of the ICES community now include all coastal States bordering the North Atlantic and the Baltic Sea, with affiliate members in the Mediterranean Sea and southern hemisphere. ICES is a network of more than 1600 scientists from 200 institutions that is authorized by an intergovernmental agreement (the ICES Convention) to enhance national research efforts. Scientists working through ICES gather information about the marine ecosystem. Besides filling gaps in existing
dangerous goods of the Economic and Social Council of the United Nations (ECOSOC). These external bodies usually issue reports that are the result of a large range of expert opinions and are, thus, to a great extent, independent. Since they are outside of the main governance structure of an international organization, they influence only indirectly the lawmaking process.

Further, there are experts that represent NGOs or non-institutionalized segments of the civil society. These expert groups express opinions that are independent from both the influence of the Member States and the international institutions. The expert committees of these groups are composed of individual experts acting in their individual capacity. As a result, these organizations are highly independent. This is, for instance, the case of the IUCN World Commission on Protected Areas, the International Council for Science (ICSU) and the Scientific Committee on Antarctic Research (SCAR). However, since these groups exercise external control, they are namely outside of the institutional architecture of the international institutions under discussion, they are, thus, not subject to the discussion presented in this Thesis. The same holds true for the expert groups that are composed of representatives of industry.

knowledge, this information is developed into unbiased, non-political advice. The twenty member countries that fund and support ICES use this advice to help them manage the North Atlantic Ocean and adjacent seas.” Abstract from the official website of ICES, http://www.ices.dk/aboutus/aboutus.asp (last visited May 3, 2009).

Established by ECOSOC Resolution 645/G(XXIII) of 26 April 1957, the Committee lays down recommended technical standards for air, sea and land regimes governing the international carriage of dangerous goods.

See www.iucn.org (last visited October 6, 2005).

For a detailed presentation of SCAR, see supra at…
B. Differentiated Roles of the Expert Bodies in the Lawmaking Process

As discussed in Chapter III at 311, the lawmaking process *lato sensu* commences at the preparatory stage, namely the agenda-setting stage which prioritizes the subject-
matters of future regulation, and extends to the review, implementation and compliance stages. The following analysis attempts to classify the diverse roles that the expert bodies play throughout the lawmaking process. Throughout the exploration of their various roles, the research focuses on whether any single expert body or any type of an expert body would assume lawmaking competences and promulgate binding legislation.

1. Participation of Expert Bodies in the Preparatory Stage of the International Environmental Law

Currently, many expert bodies act purely as consultants during the preparatory stages of I.E.L. The political bodies, by either following or not expert advice, set the agenda for what topics require regulatory action. In shaping the regulatory agenda, the expert bodies hold no formal right of initiation or proposal, namely the right to propose new regulation on their own initiative. In most of the international regimes, even if an expert body manages to place an item on the agenda, this result will be dependent upon the cooperation between an expert body and a State or a political body. As a rule, no expert body can initiate the procedure on its own. Furthermore, the political bodies may decide not to address the issue that the expert body proposes at all or, having had a preliminary discussion on the issue, conclude not to adopt any regulation affecting the international status quo, irrespectively from the severity of the issue or the scientific certainty that surrounds the issue. This is the case, for example, of the inaction to regulate the impacts of the international aviation on climate change.
Although scientists agree that international aviation is one of the most important contributors to GHG emissions, and I.C.A.O., as the competent international organization to regulate international aviation, has taken many initiatives and held many official meetings and conferences on this subject, its Member States consistently refuse to adopt new regulation concerning the impacts of international aviation on climate change. This holds true not only as far as I.C.A.O. is concerned, but also regarding UNFCCC-related bodies, which also have competence to take up the issue of international aviation and climate change. Presumably under the pressure of Member States and industry, international institutions keep excluding the impacts of international aviation on climate from their regulatory spectrum. It is noteworthy that the negative correlation between the emissions of international aviation and their impact on climate change has been specified with adequate certainty that leaves no doubt that laws and policies should be enacted in order to reduce the quantities of the GHGs emitted in the air.\textsuperscript{767}

The expert bodies play an important role when they help formulate scientific consensus or set research priorities on the international level and enjoy, at the same time, worldwide participation. This is, for instance, the case of the Intergovernmental Panel on Climate Change (I.P.C.C.), whose findings helped formulating consensus on the anthropogenic sources of climate change and sustained the negotiations and design for the international, regional and domestic regulatory instruments, as well as the design and initiations of international, regional and domestic laws and policies. However, the participation of many external expert bodies at the preparatory level of the lawmaking process is still unregulated as far as it concerns many of the international institutions. The degree of the influence of the expert bodies varies depending on the subject-matter of the negotiations and the nature of the international institutions within which the negotiations take place. Even without any concrete provision, the expert bodies of such institutions.

For more information on the IPCC, visit its official website, http://www.ipcc.ch/. “IPCC organization and mandate: The IPCC was established in 1988 by the World Meteorological Organization and UNEP to assess periodically the scientific, technical, and economic knowledge pertinent to the problem of global climate change. The IPCC has issued comprehensive Assessment Reports in 1990, 1996, 2001, and 2007. It has published a series of technical papers, as special reports on specific issues, since 1999, e.g. regional impacts, aviation and the global atmosphere, emissions scenarios, methodological and technical issues in technology transfer, and land use, land-use change and forestry. Currently, there are three working groups: (a) on the science of the climate system; (b) on impacts, vulnerability and adaptation, and (c) on mitigation, respectively. Each working group has two co-chairs, one from a developed country and one from a developing country. The substance of all IPCC reports is the full responsibility of interdisciplinary writing teams of experts from all parts of the world. The rules of the IPCC ensure a rigorous scientific peer-review process, including an extensive scientific review of drafts of the report by independent experts. But also, the intergovernmental nature of the IPCC is important at three stages of report development: (a) governments approve the terms of reference or main outline of the reports; (b) they participate in the review of the second draft of the report (in addition to scientific expert reviewers); and (c) finally approve the so-called “Summary for Policymakers” line by line. Any changes in the “Summary for Policy Makers” at the approval stage should be completely consistent with the underlying document, which is confirmed by the authors who are present at this stage. In this way, governments acquire ownership of the assessment reports, while the scientific integrity is maintained fully. The IPCC reports are important background documents in support of the negotiations in the context of the UNFCCC, notably for the Subsidiary Body of Scientific and Technological Advice. They may, directly or indirectly, have influenced important advances in the negotiations. The 1990 First Assessment Report (IPCC 1990) preceded the agreement of the UNFCCC, the 1996 Second Assessment Report (IPCC 1996a) the agreement of the Kyoto Protocol, and the Third Assessment Report (IPCC 2001a, b, c) the Marrakech Accords.” Abstract from: MOKHAN MUNASHINGHE & ROB SWART, PRIMER ON CLIMATE CHANGE AND SUSTAINABLE DEVELOPMENT, FACTS, POLICY ANALYSIS AND APPLICATIONS 4 (Cambridge University Press 2005).
including secretariats, can decisively influence the lawmaking process by proposing the inclusion of items in the regulatory agenda and the adoption of new legislation. Depending upon the nature of the international institution in question, the power of the expert bodies to propose legislation may vary. For example, the power to propose legislation and add new items on the agenda of the meetings held by the political bodies could be institutionalized. For instance, an expert body could have an official right to propose specific legislation according to the procedural rules of the organization. If no such explicit right of initiative exists, the only other way in which expert bodies can contribute to the agenda-setting is, perhaps, through a *de facto* informal initiative, without any previous written or otherwise expressed authorization.

The participation of expert bodies is influential when they actually draft the provisions of the negotiated instruments. By formulating the initial wording of the legal provisions, the expert bodies directly influence not the outcome, but actually the foundation, that is the initial negotiating instrument of the international negotiations. The 1997 Convention on the Law of the Non-Navigational Uses of International Watercourses illustrates the impact that both internal and external expert bodies can have upon drafting legislation, e.g. a secretariat or the International Law Commission (I.L.C.) respectively.\(^{769}\) The initial provisions of the Convention were completely drafted by the I.L.C. taking into account previous model laws that had already been formulated by other external expert groups.

\(^{769}\) *See supra* at…
After the initial drafting, expert bodies may further participate in the negotiation process regarding the adoption of the legislation. Expert bodies played a role at this stage regarding the regulation of the persistent organic pollutants, and in the UNFF’s process regarding the international regulation of forests. Whereas in the first case the negotiations resulted in the successful adoption of the Stockholm Convention for the Persistent Organic Pollutants including a strong science foundation as discussed above, in the second case, experts did not manage to get heard. Despite the fact that external expert bodies participated even on the UN level, their input was not very strong. The negotiations failed, because Member States have chosen to protect interests in illegal timbering. By blocking the I.E.L. generation process, these resistant States are permitted to reap financial gains from unsustainable activities.\footnote{Visit the official website of the UN Forum on Forests, \url{http://www.un.org/esa/forests/} (last visited May 9, 2009). \textit{See} especially the work of the ad hoc expert groups, comprised by expert delegates from the Member States, \url{http://www.un.org/esa/forests/adhoc.html} (last visited May 9, 2009).} After lengthy negotiations for a world instrument on forests, the UNFF’s efforts failed and no agreement on the adoption of a binding legal instrument become possible. The UN Member States decided to adopt an agreement, the content of which is vague and weak. Even in the face of clear science regarding the need and specific means and methods for forest conservation, the international system failed to act. Although there is an overall agreement that forestry should be exercised in a sustainable way, it was not possible that the international community agreed to put some few rules of sustainable forestry practices into binding law. This case indicates that the real obstacle into adopting effective environmental regulation on the international level is not always the lack of scientific certainty. Science or technology able to solve challenging environmental issues may exist. However, the
contemporary lawmaking processes or governance structures may promote other factors that influence more compellingly the substantive I.E.L. One should keep in mind that the process for adopting international environmental regulations is a multi-factoral process, involving, among others, financial interests of the private and public sectors of the States, considerations for impacts on industry, vested interests in the global market, social preferences etc. To the extent that these factors may create imbalances in the law-making process and result in the inability of the expert bodies to make themselves heard even in cases of scientific certainty, the corrective role of the designer of the global environmental architecture should employ new lawmaking procedures that would balance any “inequality of weapons” between expert advice and other non-environment-related interests.

Another way in which expert bodies can directly influence the content of both the agenda and the initial negotiating instruments used by the political bodies of an international institution is by actively participating in the drafting of the many first and subsequent drafts of the instrument. These multiple first drafts conclude in a “single negotiating text” (SNT) based on which the negotiation process develops. The single negotiating text and its subsequent revisions may decisively influence the outcome of the negotiations.\footnote{The following article illustrates the importance that a “single negotiating text” can play by influencing the final outcome of an instrument: see The Impact of a Biased Starting Position in a Single Negotiation Text Type Mediation, in 14 (4) GROUP DECISION AND NEGOTIATION 357 (P. Korhonen, N. Oretskin, J. Teich, J. Wallenius eds, Springer Publication, Business and Economics series.)} Based on these texts and through them, the expert committees can steer negotiations in one direction over another. In order to support this point, Barrett brings as an example the committees’ ability to decide the order in which proposed alternatives are
put to a vote. The order according to which the alternatives show can, in fact, alter a committee’s final choice. These mostly technical rather than scientific issues may also depend to a great extent on the secretariats of the international institutions. It is most probable, but not necessary, that international secretariats comprise personnel that are experts in the subject-matter of the international institution they serve. Consequently, taking into account both the central role in the administration of the international institutions that the secretariats play and the specialized education that in most of the cases the personnel of the secretariats enjoy, it is interesting to, even shortly, examine the role of the secretariats in this part of the Thesis.

1.1. Role of the Secretariats in the Context of the Multilateral Environmental Agreements

The first international secretariat dates back to 1905, when the foundation of the International Institute for Agriculture with headquarters in Rome, Italy, took place. The 'secretariat', as the term is currently used, originates from the League of Nations. Almost all of the environmental treaties negotiated since 1972, and a good many before

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that date, provide for the establishment of a permanent Secretariat. The success of these international institutions depends, to a certain extent, upon the quality and ability of the secretariats at their helm. International secretariats are *lato sensu* expert bodies to the extent that they satisfy objective and subjective criteria for their qualification as “experts”. Objectively, the purpose of these bodies may be to address a specific set of concerns. Subjectively, the high level personnel working at a secretariat are usually experts on the subject-matter in question. Often secretariats either have specific knowledge of the relevant issues or are in a position to incorporate such knowledge through the involvement of external experts and consultants. Such knowledge puts secretariats and expert committees in a position to shape a general global understanding of the issues at hand, even on the global level. Secretariats hold various roles and functions. They, however, do not enjoy any lawmaking competences whatsoever. Their contribution to lawmaking is important, even though it remains indirect.

More specifically, the role of a secretariat is largely limited to serving the needs of other bodies within the international arrangements and facilitating the smooth functioning of the institution they serve. Secretariats mainly deal with the logistics of the

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international institution they serve, the data collection, the information sharing, and the review of the implementation of and compliance with international legal instruments. There are instances, however, when the competencies afforded to the international secretariats may have a direct impact on the ultimate product of the international negotiations. This is especially true with respect to issuing or drafting standards, codes of conducts and other soft law provisions. The discretion afforded to the IO secretariats in connection with producing “technocratic” standards and codes of conducts varies depending upon the framework of the international arrangements. For example, the Secretariat of the World Health Organization (W.H.O.) is relatively active in revising the W.H.O. Health Regulations. Alternatively, the competences of some of the secretariats are limited to a more supervisory role, such as the role of the Secretariat of the Food and Agriculture Organization (F.A.O.) which oversees the work of the Codex Alimentarius committees.

In general, the international secretariats are also considered with successfully supporting their complementary roles. However, as mentioned above, they have no lawmaker powers. One could mention the Secretariat of the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES Secretariat) as an example of a successful secretariat. The CITES Secretariat, located in Geneva, Switzerland, is administered by UNEP, and has a pivotal and fundamental role to the CITES structure.


The Secretariat’s functions are laid out in Article XII of the text of the Convention and include the submission of recommendations regarding the implementation of the Convention, preparing annual reports to the Parties on its own work, and reporting upon the implementation of the Convention. Further, Article 20 of the Stockholm Convention of Persistent Organic Pollutants defines the United Nations Environment Program (UNEP) as the Secretariat for this Convention, unless the COP changes this by a three-fourths majority vote. The UNEP section in Geneva remains the Secretariat of the Convention.\textsuperscript{777} The Secretariat has only an administrative and coordination role, while its contribution to the implementation of the Convention is limited to the preparation of reports based on information gathered by expert bodies.\textsuperscript{778} In general, the assignment of the secretariat functions to UNEP by several M.E.A.s. is considered to be successful, since UNEP has the resources to administer an M.E.A.

The Secretariat of the 1979 Convention on the Conservation of Migratory Species of Wild Animals plays, as it is the rule with most of the secretariats, a supportive, administrative role. In addition, it establishes and keeps under review the financial regulations of the Convention, adopts the budget for each financial period and reviews the implementation of the Convention.\textsuperscript{779} In particular, it may review and assess the


\textsuperscript{778} Art. 20 para. 2 (d). In order to strengthen cooperation and increase coordination in the field of chemical safety the Inter-Organization Programme for the Sound Management of Chemicals (IOMC) was established in 1995. See relevant information available on the IOMC website, http://www.who.int/iomc/en/ (last visited May 10, 2009).

\textsuperscript{779} See Art. IX about the functions of the Secretariat under the 1979 Convention on the Conservation of Migratory Species of Wild Animals.
conservation status of migratory species and the progress made towards their conservation. It also provides guidance, receives reports by the signatory Parties and makes recommendations back to them. This set of competences is common in many secretariats of M.E.A.s.

In other cases, such as the case of the UN Convention to Combat Desertification (U.N.C.C.D.), some of the key tasks of the Secretariat include the compilation and transmission of reports submitted to the COP of the U.N.C.C.D. and the facilitation of the communication between experts and the political bodies. For the optimization of a science-based lawmaking process, secretariats should be qualified and equipped with the necessary means in their hands in order to gather and disseminate all of the necessary scientific and technological information that is relevant to the subject-matter under regulation. They should create the appropriate venues of communication between the expert bodies and the political bodies of the institution, allow for adequate scientific input on behalf of external expert bodies, develop the necessary capacity in order to inform and assist States and other actors in the implementation and enforcement of the I.E.L. and, last but not least, review the performance of the signatory States in the implementation and enforcement of the M.E.A.

780 See Art. VI para. 3 about the range States and the role of the Secretariat in gathering information and reviewing the implementation of the convention.

2. Expert Bodies with Competencies for Information and Advice

Apart from the secretariats that may play an advisory and information-gathering and dissemination role in the formation of laws and policies on behalf of the international institutions, there are further specialized bodies that are specifically established to serve this purpose. In practice, it seems that most of the expert bodies are established in order to provide advice and consultation to the political bodies. There are at least two type of bodies that serve this purpose; first bodies that function under the governance structure and secondly bodies that stand outside of it. The influence of the expert bodies in the lawmaking process at this preparatory stage depends on the degree that the political bodies are bound, if at all, by the advice of the expert bodies. The relationship between the expert and the political bodies may vary from a very loose connection, under which the political body is able, but not obligated, to ask for advice from the expert body up to the case in which the political body should “take due account of” the advice of the expert body.782

2.1. Expert Bodies within the Framework of an M.E.A.

782 See, supra at…
A series of M.E.A.s include in their governance structure expert bodies in order, mainly, to receive information and advice on the management of their subject-matter. Some of the M.E.A.s include, among others, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), the Convention on Migratory Species of Wild Animals, the Protocol on Environmental Protection to the Antarctic Treaty, the UN Convention to Combat Desertification, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the UN Framework Convention on Climate Change, the Convention on the Conservation of Antarctic Marine Living Resources, and the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter.

The 1973 Convention on International Trade in Endangered Species of Wild Fauna and Flora (“CITES”)\(^\text{783}\) regulates the international trade of wild animals and plants listed in its three Appendices.\(^\text{784}\) The governance structure of the CITES includes mainly a COP with decision-making competences, a Secretariat with an assisting, administrative role,\(^\text{785}\) and the advisory Committees for Animals, Plants, and Nomenclature.\(^\text{786}\) Further,

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\(^{783}\) See, supra at FN…


\(^{785}\) See, supra at…..
additional external expert bodies are involved in CITES’ law and policy processes. CITES provides that the Conference of the Parties should meet every two years, in order to adopt binding amendments to its appendices, limit trade in listed species, review progress, and make recommendations for improving the treaty’s efficiency. The Animal, Plant and Nomenclature committees of experts were established at the sixth meeting of the Conference of the Parties in Ottawa in 1987 to fill gaps in biological and other specialized knowledge regarding species of animals and plants that are (or might become) subject to CITES trade controls. The role of these committees is to provide technical support to decision-making bodies. These two Committees have similar terms of reference, which include, *inter alia*, the undertaking of periodic reviews of species in order to ensure appropriate categorization in the CITES Appendices, and advising when certain species are subject to unsustainable trade. In addition, the Committees may recommend remedial action through a process known as the “Review of Significant Trade.” The Animals and Plants Committees meet twice between the COP’s meetings. The Committees report to the COP and, if requested, provide advice to the Standing Committee between such meetings. Regarding their composition the members of the Animals and Plants Committees are individuals from the six major geographical regions;

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787 Their terms of reference are detailed in Resolution Conf. 11.1 (Rev. CoP14), Annex 2.

788 The Review of Significant Trade process is the CITES mechanism for remedial action, when there is reason to believe that certain listed species (in Appendix II) are being traded at significant levels without adequate implementation of CITES provisions. If implemented correctly, the process acts as a safety net for the Convention by ensuring that species are managed sustainably. The Animals and Plants Committees implement the mandate for this process. For more information, see, http://www.unep.org/dec/onlinemanual/Compliance/NegotiatingMEAs/ComplianceMechanismsafterMEAsinEffect/Resource/tabid/655/Default.aspx (last visited March 26, 2011).
Africa, Asia, Europe, North America, Central and South America and the Caribbean, and Oceania. In addition, one specialist on nomenclature sits on each of the two Committees. The Committee members are elected at the Conference of the Parties’ meetings and the number of regional representatives is weighted according to the number of Parties within each region and according to the regional distribution of biodiversity. In addition to the participation of its own committees, CITES is also open to the participation of external expert bodies in its processes, in order to guarantee the acquisition and timely flow of scientific information. External expert bodies, both inter-governmental and private, such as the United Nations Environmental Program (UNEP) and UNEP-WCMC, and TRAFFIC, assist and review the effective implementation of and compliance with CITES and verifies the Committee’s information about biodiversity conservation.

Further, the 1979 Convention on Migratory Species of Wild Animals (“C.M.S.” or “Bonn Convention”) aims to protect migratory species by granting special protection

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789 UNEP World Conservation Monitoring Center (UNEP-WCMC) is collaboration between UNEP, and WCMC 2000, a UK-based charity. Its mission is to evaluate and highlight the many values of biodiversity and put authoritative knowledge at the centre of decision-making. The Centre has a mandate from the UNEP Governing Council to provide a range of biodiversity-related services to UNEP, the biodiversity-related conventions and their constituent party-States and other bodies in the non-governmental and private sectors (Decision GC 22/1/III). For more information, visit the official website, http://www.unep-wcmc.org/aboutWCMC/ (last visited May 10, 2009).

790 See, supra at 148

791 TRAFFIC is a wildlife trade monitoring network, that aims to ensure that trade in wild plants and animals is not a threat to the conservation of nature.

792 The official site of the Convention is http://www.cms.int/ (last visited October 11, 2010).
to species that are endangered and listed in Appendix I. Its COP is assisted by a Secretariat, a Standing Committee and a Scientific Council that advises the COP on scientific matters. Article VIII of the Convention offered the legal base for the establishment of the Scientific Council, in order to provide advice on scientific matters. Each State Party is entitled to appoint a qualified expert, called a “Scientific Councilor,” as a member of the Scientific Council. The State Parties may also nominate an alternate Scientific Councilor, who is entitled to participate in meetings of the Council when the regular Councilor cannot attend. In addition to the members appointed by the individual Parties, the Conference of the Parties can appoint other experts to the Scientific Council to cover fields of particular interest to the Convention. The Council makes recommendations to the Conference of the Parties on research on migratory species, conservation and management measures, the inclusion of migratory species in the Appendices and designation of species for concerted or cooperative Actions under the Convention. It also gives advice on projects' eligibility for funding. The Scientific Council holds purely advisory competencies. The M.E.A. does not provide for any

793 Id. arts. III-IV.

794 CMS, supra note 646, art. VII.

795 The Standing Committee was established by Resolution 1.1 of the Conference of the Parties. Its functions are to provide policy and administrative guidance between regular meetings of the Conference of the Parties. The Standing Committee is a political body, because it consists of representatives from every global region, representatives of the Depository and, where applicable, of the country which plans to host the next meeting of the COP.

796 Id. arts. VIII, IX.

797 The Scientific Council was established pursuant to Article VIII of the C.M.S.

798 See P. van Heinsbergen, INTERNATIONAL LEGAL PROTECTION OF WILD FAUNA AND FLORA 175 (IOS Press, Amsterdam, 1997).
specific requirement that the political body should take due account of the advice given by the expert body.

In the Protocol on Environmental Protection to the Antarctic Treaty (Madrid Protocol) the Parties committed themselves to the comprehensive protection of the Antarctic environment. The Parties to the Antarctic Treaty designated Antarctica as a natural reserve and adopted management principles that incorporate environmental protection considerations into the planning and conduct of all activities in the Antarctic. Such activities include conducting sufficient scientific research to ascertain the impact of certain activities on the Antarctic and thus design informed regulatory measures.

Madrid Protocol's decision-making body is the Antarctic Treaty Consultative Meeting (“ATCM” or “Consultative Committee”). The science-oriented meetings consist of

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801 Madrid Protocol, supra note 799, at art. 2, 3.

802 Id. Articles 3(2)(a)-(c).

803 The Consultative Committee is composed of the original Parties to the Treaty, as well as fourteen new States that have become Consultative Parties by acceding to the Treaty and demonstrating interest in Antarctica. This interest is evidenced by these new States’ substantial scientific activities in the region. The Consultative Committee holds the competence to adopt recommendations. Measures, Decisions and Resolutions, which are adopted at the Consultative Committee by consensus, give effect to the principles of the Antarctic Treaty and the Madrid Protocol, as well as provide regulations and guidelines for the
various representatives including the Consultative Parties, non-Consultative Parties, Observers, the Scientific Committee on Antarctic Research (S.C.A.R.), the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), the Council of Managers of National Antarctic Programs (COMNAP), and invited experts. The expert bodies and the individual experts invited to the meetings may only contribute to the discussions, while the Consultative Parties are those who actually can take part in the decision-making and lawmaking processes. Regarding specifically the aspect of the environmental protection, the Madrid Protocol established the Committee for Environmental Protection (CEP).

The Committee for Environmental Protection (CEP) holds an advisory role vis-à-vis the Consultative Committee. Article 11 of the Protocol provides that each Party can be a member of the Committee and may appoint a representative who may be accompanied by experts and other advisers. The CEP must report to the Antarctic Treaty Consultative Meeting on each of its sessions. This report is the CEP’s main and final product and must cover all matters considered and opinions expressed at the session. The CEP has to circulate the report to the Parties and the observers and must publicize it.

management of the Antarctic Treaty area and the work of the Consultative Committee. Decisions, which address internal organizational matters of the Consultative Committee, and Resolutions, which are hortatory texts, are not legally binding on the Contracting Parties. In contrast, Measures are legally binding on the Consultative Parties once they have been approved by all Consultative Parties.

Such as the Antarctic and Southern Ocean Coalition (ASOC) and the International Association of Antarctica Tour Operators (IAATO). Relevant information available at the official websites, http://www.asoc.org/ and http://www.iaato.org/ respectively.

The Protocol entered into force on 14 January 1998 following ratification by all Antarctic Treaty Consultative Parties, and the first CEP meeting was held in Tromso, Norway, in May of that year.

Id. arts. 10, 11.
Other than that, the CEP has no other functions, and by no means has any decision-making or lawmaking power. On the contrary, pursuant to Article 11 the Consultative Committee must even approve the CEP’s procedural rules. This is an uncommon provision regarding Internal Institutional Law in general. In other M.E.A.s, committees may adopt their own procedural guidelines. Further, Article 12 empowers the CEP to advise and formulate recommendations to the Parties for consideration at Antarctic Treaty Consultative Meetings. These recommendations must address the implementation of the Madrid Protocol, including the operation of its Annexes. Last, the Madrid Protocol provides for the possibility that the CEP can perform other functions as may be referred to it by the Antarctic Treaty Consultative Meetings.\(^{807}\)

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\(^{807}\) Art. 12 para. 1: “Functions of the Committee

1. The functions of the Committee shall be to provide advice and formulate recommendations to the Parties in connection with the implementation of this Protocol, including the operation of its Annexes, for consideration at Antarctic Treaty Consultative Meetings, and to perform such other functions as may be referred to it by the Antarctic Treaty Consultative Meetings. In particular, it shall provide advice on:

(a) the effectiveness of measures taken pursuant to this Protocol;
(b) the need to update, strengthen or otherwise improve such measures;
(c) the need for additional measures, including the need for additional Annexes, where appropriate;
(d) the application and implementation of the environmental impact assessment procedures set out in Article 8 and Annex I;
(e) means of minimizing or mitigating environmental impacts of activities in the Antarctic Treaty area;
(f) procedures for situations requiring urgent action, including response action in environmental emergencies;
(g) the operation and further elaboration of the Antarctic Protected Area system;
(h) inspection procedures, including formats for inspection reports and checklists for the conduct of inspections;
(i) the collection, archiving, exchange and evaluation of information related to environmental protection;
(j) the state of the Antarctic environment; and
(k) the need for scientific research, including environmental monitoring, related to the implementation of this Protocol.”
Following a similar approach, the United Nations Convention to Combat Desertification (C.C.D.)\textsuperscript{808} that addresses the perils of desertification and seeks to mitigate its effects on drought,\textsuperscript{809} includes a decision-making COP, a Secretariat offering administrative support,\textsuperscript{810} and an advisory Committee on Science and Technology (C.S.T.)\textsuperscript{811} The Committee on Science and Technology, which is open to all of the Parties, furnishes the Conference with advice on scientific and technological matters.\textsuperscript{812} It is a multi-disciplinary committee composed of government representatives competent in the fields of expertise relevant to combat desertification and mitigate the effects of drought. It meets along with the sessions of the COP. The work of the C.S.T. is occasionally assisted by \textit{ad hoc panels} appointed by the COP. The \textit{ad hoc} panels have the mandate to provide information and advice on specific issues regarding the state of the art in fields of science and technology relevant to combat desertification and mitigating the effects of drought. Each \textit{ad hoc} panels appointed by the COP is composed of experts whose names are taken from the roster of independent experts.

\textsuperscript{808} Convention to Combat Desertification (C.C.D.), June 17, 1994, 33 I.L.M. 1332.


\textsuperscript{810} About the functions of the Secretariat, visit the official website of the Convention, specifically at the Secretariat’s page, \url{http://www.unccd.int/secretariat/menu.php} (last visited May 9, 2009).

\textsuperscript{811} CCD, supra note 19, arts. 22-24.

\textsuperscript{812} CCD, supra note 19, pt. IV, art. 24, p. 2.
In the same direction, the Basel Convention\textsuperscript{813} comprises a decision-making COP, which is responsible for reviewing and evaluating the Convention's implementation and a Secretariat, which assists the COP and its Parties to carry out their duties.\textsuperscript{814} A *Technical Working Group* was added later to its architectural structure, established according to Resolution 8 of the Basel Convention's Final Act. The Technical Working Group is a particularly important subsidiary body, since it prepares guidelines for the environmental management of hazardous waste guidelines that the signatory States should follow.\textsuperscript{815} After the Technical Working Group drafts the guidelines, the Group submits the guidelines to the COP and the COP decides whether to the technical guidelines. The Technical Working Group of the Basel Convention has launched pioneering work defining the constitutive elements of managing hazardous waste in an environmentally sound manner.\textsuperscript{816} The experts participating in the work of the Technical Working Group of the Basel Convention come from all regions of the world, including representatives from Contracting Parties and non-Contracting Parties.


\textsuperscript{814} Basel Convention, arts. 15, 16.


A more recent agreement that has to cope with a more complex scientific subject-matter, the 1992 United Nations Framework Convention on Climate Change (“UNFCCC”) and its subsequent instruments, outline the global legal framework for combating and adapting to the climate change challenge. The UNFCCC establishes a COP, a Secretariat, a Subsidiary Body for Scientific and Technical Advice ("SBSTA"), a Subsidiary Body for Implementation ("SBI") and an ad hoc Working Group for Further Commitments (“AWG”) by Annex I Parties under the Kyoto Protocol. The COP is the supreme body of the Convention. It holds the decision-making powers and regularly reviews the implementation of the Convention. In 1995, the UNFCCC’s first Conference of the Parties established SBSTA to provide the COP and other subsidiary bodies with timely information and advice on scientific and technological matters relating to the Convention.

SBSTA is established as a multidisciplinary body that is comprised of government representatives competent in the relevant fields of expertise. Since, the

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817 For more information, visit the official website of the UNFCCC Convention, http://unfccc.int/essential_background/convention/convention_bodies/items/2629.php (last visited January 12, 2011). According to the information provided on the website: “there are three constituted bodies under the Convention; the Consultative Group of Experts on National Communications from Non-Annex I Parties (CGE) set up to help improve the process of preparing national communications from non-Annex I Parties under the Convention. It comprises five experts from each of the developing country UN regions (Africa, Asia, and Latin America and the Caribbean), six experts from Annex I Parties, and three experts from organizations with relevant experience; the Expert Group on Technology Transfer (EGTT), established to provide scientific and technical advice to advance the development and transfer of environmentally friendly technologies under the Convention. The Group comprises 20 experts, including three developing country members each from Africa, Asia and the Pacific, and Latin America and the Caribbean, one member from the small island developing States, seven from Annex I Parties and three from relevant international organizations; and the Least Developed Countries Expert Group (LEG), established to provide advice to LDCs on the preparation and implementation of national adaptation programmes of action. It is composed of 12 experts, including five from African LDC Parties, two from Asian LDC Parties, two from small island LDC Parties, and three from Annex II Parties.” All relevant information is available at http://unfccc.int/essential_background/convention/convention_bodies/constituted_bodies/items/2657.php (last visited January 12, 2011).
members of SBSTA are State representatives, SBSTA serves in a way as a smaller formation of the COP itself. 818 SBSTA serves as a link to provide the COP with scientific information and assessments, such as the International Panel on Climate Change (“I.P.C.C.”) and cooperates with inter-governmental organization in order to keep an open platform of communication between the organizations and the COP. Some of the issues the SBSTA is currently dealing with are mitigation; land use, land-use change and forestry (LULUCF); bunker fuels; and research and systematic observation. 819 Differently from the afore-mentioned expert bodies that function under the framework of the other M.E.As., SBSTA is required to provide the “best available scientific information” on mitigation, particularly by communicating the work by the Intergovernmental Panel on Climate Change. 820 With or without this requirement, SBSTA has little power to influence the legislative process regarding climate change law, since SBSTA does not enjoy any type of legislative competence, and consequently climate change law moves forward by a lower rhythm than what scientific information requires. As discussed above and is widely known after the collapse of the UNFCCC Conference in Cancun last December (COP 16/CMP 6), 821 the decision-making bodies of the UNFCCC do not timely and effectively respond to the information provided by SBSTA. The notable


821 For more information on the conference, see http://unfccc.int/2860.php (last visited January 12, 2011).
divergence between the percentages that scientists say that it is necessary to lower down the GHG emissions and the percentages by which States are willing to actually reduce GHG emissions is illustrative.\textsuperscript{822} Scientific uncertainty and the multi-factoral nature of climate change certainly play a prohibitive role to this end.

Even in those sectors that the need to take action, the causation and the means to achieve the objectives of mitigation and/or adaptation are clear and concrete, SBSTA’s influence in the initiation or shaping regulatory action is limited. For instance, SBSTA produced several short or more extensive reports on various issues regarding the impact of the emissions from fuel used for international aviation and maritime transportation on climate change.\textsuperscript{823} These reports are mainly based on previous reports submitted to SBSTA by I.M.O. and I.C.A.O. Although the reports recognize the gravity of the issue and the need to take international regulatory action, no such action has been undertaken thus far.\textsuperscript{824} Taking into account competition among airlines and the subsequent conflicting views and interests between the EU and the U.S., that are among the most important players in international aviation, it becomes clear that the expert bodies of international institutions, enjoying very limited competences will not have the power to successfully initiate or successfully run and conclude negotiations leading to a global agreement on the issue. The power still remains with the States and the political bodies.

\textsuperscript{822} See, supra at p….

\textsuperscript{823} For a description of the process of exchange of information between I.M.O. and I.C.A.O and SBSTA, and of the developments on the issue, see the official website of the UNFCCC and specifically information available at http://unfccc.int/methods_and_science/emissions_from_intl_transport/items/1057.php (last visited January 12, 2011).

\textsuperscript{824} For a discussion about the impact of international aviation on climate change, see, supra at…
Even M.E.As. that regulate simpler issues than climate change, such as the marine biodiversity in a specific area, have adopted expert bodies with mostly advisory and informative competences. The Convention on the Conservation of Antarctic Marine Living Resources (“CCAMLR”) establishes the CCAMLR Commission, which is a political body, the Scientific Committee, which is a specific body that assists the Commission by providing scientific advice, and a Secretariat that provides administrative assistance and manages the annual budget. Neither the Scientific Committee nor the Secretariat holds any lawmaking powers. It is the Commission that determines - based mainly on advice from the Scientific Committee – the regulatory policies, such as catch levels for harvested species and minimizing the potential impact that fishing activities may exert on non-target species. The Scientific Committee provides a forum for consultation and co-operation concerning the collection, study and exchange of information. The voice of the Scientific Committee is, at least theoretically, more seriously taken into account in relevance to other advisory bodies, since the statute of the CCAMLR has taken special care for that. Specifically, the CCAMLR includes a provision regarding the degree of the integration of the scientific advice to the new

825 Article XIV. For more information about the Scientific Committee, visit http://www.ccamlr.org/pu/e/sc/intro.htm (last visited March 26, 2011).
827 Art. XV para. 1 of the CCAMLR Convention.
legislation that the CCAMLR Commission shall adopt: the Commission, which is the
decision-making body:

“must take full account [emphasis added by the author] of the recommendations
and advice of the Scientific Committee regarding the development of measures to
implement the principles of conservation embodied in the Convention.” 828

This type of language is very rare among the international environmental legal
instruments. 829 However, the obligation of the Commission to take full account of the
recommendations and advice of the Scientific Committee is a lex imperfecta. The
provision does not provide for any consequences that will follow in the event that the
Commission departs from the recommendations and advice. Neither is there any official
written testament of a conflict or even an exchange of arguments regarding the
appropriate or not implementation of this provision, so that an analyst could make some
safe conclusions about the width of the meaning of this obligation. Research on the
documentation provided by its official website and other online sources was fruitless. It
needs to be completed with additional research in situ and interviews with the
administrators and experts working with the treaty-specific organs of these two
conventions.

Another case in which the signatory States to an agreement are obliged to ask for
and follow the advice of an expert body is the 1972 Convention on the Prevention of

828 Art. IX.4 of the CCAMLR Convention (emphasis added).

829 In literature, the only reference to this provision found is at: SIR ARTHOUR WATTS,
INTERNATIONAL LAW AND THE ANTARCTIC TREATY SYSTEM 220 (Hersch Lauterpacht Memorial Lectures,
Marine Pollution by Dumping of Wastes and Other Matter (the “London Dumping Convention” – “LDC”.)\textsuperscript{330} Differently from the case of the CCAMLR, in the case of the London Dumping Convention the expert body to give the advice is not a body established by or functioning under its auspices; rather it is an independent inter-governmental organization, namely the International Atomic Energy Agency (I.A.E.A.) Under the London Dumping Convention, the I.A.E.A.’s responsibilities are twofold: first, it has to define high-level radioactive waste that is prohibited from being dumped, and second to make recommendations for the dumping of other radioactive waste.

The London Dumping Convention defines dumping as the deliberate disposal of waste from ships and aircraft (art. III (1).) The different types of “waste” are divided into three different categories. The first category consists of substances listed in Annex I: the “black list”. These include organophalogen compounds, mercury, cadmium, oil, plastics and high-level radioactive wastes defined by the I.A.E.A. as unsuitable for dumping. The dumping of black listed substances is prohibited under all circumstances (art. IV(1)). The second category of waste is listed in Annex II: the “grey list”. It comprises less noxious substances including arsenic, lead, copper, zinc, organosilicon compounds, cyanides, fluorides, and pesticides, scrap metal and radioactive matter not included in Annex I. The dumping of such substances is permitted only if the dumping entity obtains a special permit prior to dumping from the national authorities of a Contracting Party whose

\textsuperscript{330} See supra at…
waters would be affected. In issuing a permit for the dumping of radioactive waste, the Parties must take full account of the recommendations of the I.A.E.A.

The I.A.E.A. had set up a series of scientific meetings and also had requested the scientific group G.E.S.A.M.P. (Joint Group of Experts on the Scientific Aspects of Marine Pollution) to advise it on suitable models for calculating concentrations of radionuclides above which sea-dumping would be prohibited. In general the I.A.E.A. used models for calculation and other data provided by the G.E.S.A.M.P., and made a considerable effort to improve the sound scientific basis of the definitions and recommendations. The recommendations provide, among others, for detailed ecological and environmental assessments prior to dumping, and they set forth requirements for selection of dumping sites, for conditioning and packaging wastes, and for the ships themselves. The definitions and recommendations that the I.A.E.A. is going to send out have first to be approved by the agency’s Board of Governors. Thus, there is some kind of political supervision upon the work of the agency by its political body in this case, too.

831 Article IV (1).
In the process of the categorization of the various types of wastes in one category or another, the I.A.E.A. plays the decisive role and, in this way, directly affects legislation. Although there is no provision imposing any sanction in case that the bodies of the London Convention do not follow the proposals of the I.A.E.A., disputes between the expert international organization and the COP of the London Dumping Convention could not be easily raised. This is because the bodies of the London Dumping Convention have no competence whatsoever to decide about the categorization of the waste in the different listings. The competence remains exclusively with the I.A.E.A. Thus, in essence, there is no actual “proposal-acceptance” game that requires a dialogue between the expert and the political bodies of the two institutions. Rather, the decisive competences of each have been delineated by the Convention; the I.A.E.A. has the binding competence to decide upon the category under which each type of waste falls and the political body of the London Dumping Convention cannot abstain from it. This is a clear-cut approach that enables the direct infusion of advice by an expert international organization to laws. 834

In comparison with the CCAMLR, the London Dumping Convention definitely provides for a stronger connection between an expert opinion emanating from an expert body and the policies and laws promulgated and applied by its political body. In general, similar provisions that require the obligatory consideration of expert advice and meaningful exchange of opinions between scientists, other type of experts, policy-makers and lawmakers could be part of the provisions of other M.E.A.s or any environment

834 The author of the Thesis is completely against dumping of radioactive waste into the sea.
related inter-governmental organization, in case that the drafters of the constituent instruments were to decide for a stronger science-base of international environmental laws. Such a provision should not, however, remain as a *lex imperfecta*, namely without any adverse consequences in case that the political body does not follow the expert advice without any justification.

2.2. Expert Bodies that are Part of an Inter-governmental Organization

The I.A.E.A. plays the role of an external expert *vis-à-vis* the institutional architecture of the London Dumping Convention. In general, however, external bodies are not competent to provide legally binding recommendation and information, even if they belong to an inter-governmental organization. This is for instance the case of an important expert body that offers expert advice and contributes to the projects by numerous other M.E.A.s and inter-governmental organizations, namely the Scientific and Technical Advisory Panel (STAP) of the Global Environment Facility (GEF).\(^{835}\) STAP comprises six expert advisers supported by a Secretariat, in order to connect GEF “to the most up to date, authoritative, and globally representative science.”\(^{836}\) It serves as an advisory body to the GEF regarding its policies, programs and projects. The six advisers are highly qualified experts in their respective fields covering main global environmental


issues.\footnote{837} In addition to the six permanent experts, STAP has created a database of institutions, networks and individual scientists to provide the necessary expertise and advice for the GEF. In addition, it interacts in a complementary manner with other scientific and technical bodies, particularly with the subsidiary bodies of the Convention on Biological Diversity, the UN Framework Convention on Climate Change, the Convention to Combat Desertification and the Stockholm Convention on Persistent Organic Pollutants, since GEF is affiliated with these M.E.A.s. STAP is also related to and exchanges information with a wide range of inter-governmental organizations that deal with international development, including the United Nations Development Program (UNDP), the European Bank on Reconstruction and Development (EBRD),\footnote{838} the Food and Agriculture Organization (FAO), the World Bank, the Inter-American Development Bank (IADB),\footnote{839} the Asian Development Bank (ADB),\footnote{840} the International Fund for Agricultural Development (IFAD),\footnote{841} the African Development Bank (AFDB),\footnote{842} and the United Nations Industrial Development Organization (UNIDO).\footnote{843}

\footnote{837} For their CV, visit the official website, http://www.unep.org/stap/AboutSTAP/PanelMembers/tabid/2902/Default.aspx (last visited January 6, 2011).


\footnote{840} Visit the official website of the ADB, www.abd.org (last visited January 7, 2011).

\footnote{841} Visit the official website of IFAD, http://www.ifad.org/ (last visited January 7, 2011).


STAP is working on mending, at least partially, two of the main drawbacks of the global environmental governance, mainly the lack of adequate coordination among scientists on environmental issues worldwide, and, further, the lack of coherence among the objectives and the means to achieve the objectives of certain M.E.A.s, as well as the development of synergies among the bodies of these objectives. The philosophy of scientific cooperation and policy coordination upon which STAP bases its actions is important for the development of the I.E.L. However, STAP offers scientific and technological advice in relevance to rather new policies and projects that the related institutions and M.E.A.s develop and not to legislation. Most importantly, STAP’s work is very limited in scope in comparison to the range of the issues that the I.E.L. has to face and cannot by any means substitute an authoritative body with the mandate to issue science-based law.

The main programme of the United Nations for the environment, that is, UNEP could satisfy more than others the search for an all-inclusive scientific body that can - at least to a certain extend - gather information or offer advice *vis-à-vis* legislative developments in the main environmental issues. Apart from STAP, UNEP is affiliated with additional scientific advisory groups, including the Ecosystem Conservation Group (ECG),\(^{844}\) the Intergovernmental Panel on Climate Change (IPCC), and the Joint Group of Experts on the Scientific Aspects of Marine Environment Protection (GESAMP.) Still, these bodies are sectoral, without enjoying adequate links of sharing and processes of

information. The main mechanism that UNEP has in order to receive information and data regarding most of the issues is the UNEP Division on Technology, Industry and Economics (UNEP-DTIE).\textsuperscript{845} According to its mission statement, UNEP-DTIE involves in environmental monitoring, assessment, information and research including early warning; enhanced coordination of environmental conventions and development of environment policy instruments; freshwater; technology transfer and industry; and support to Africa. It has established some additional branches with special focuses; the Sustainable Consumption and Production Branch, Chemicals Branch, Energy Branch, OzonAction Branch, Economics and Trade Branch, and the International Environmental Technology Centre (IETC). In liaison with other UNEP divisions, UNEP-DTIE has developed its approach and focused its activities to respond to these priorities. It also assists in the implementation of international policies, strategies and practices by the States. In addition, it promotes informed decision-making through partnerships with other international organizations, as well as governmental authorities, business and industry. Occasionally, it assists them in implementing international environmental legislation on the domestic level. Mainstreaming of information and creating platforms of cooperation, the two main set of activities of UNEP-DTIE, contribute to the creation of a valuable science base for lawmaking by providing information upon which lawmakers can use in order to shape the contents of laws. However, this is a completely voluntary process that has no binding effect on law. No international or domestic lawmaker is bound to use the information provided by UNEP-DTIE. Further, this department is neither obligated nor equipped to gather all available information in every environment-related field. Since the

UN governance system does not have any single authoritative body for the gathering of environment-related scientific information that could influence the lawmaking process, the research in this Chapter proceeds in investigating also the role of other, external expert bodies.

2.3. Recommendation and Advice from External Expert Bodies

In addition to the treaty-based bodies that are part of the institutional architecture of either an M.E.A. or an inter-governmental organization, there are numerous other external expert groups and networks that, although they function outside the institutional framework of an M.E.A., they are permitted to provide recommendations and advice to the decision-making bodies of the M.E.A.s. They are also competent to assist in reviewing the M.E.A.s and offer general supplementary services. Since these bodies function outside the institutional framework, they do not participate at any other point in the institution’s decision-making and law-making processes. Due to this loose relationship, the decision-making bodies of the international institutions have no obligation to follow the advice and recommendations of these external expert bodies. For example, the Scientific Commission on Antarctic Research (SCAR) is another institution established in order to provide scientific advice to the Antarctic Treaty regime.846

846 For more information about SCAR see supra at…
SCAR is the direct descendant of the Special Committee on Antarctic Research, which was established by the International Council of Scientific Unions (I.C.S.U.) to coordinate Antarctic research. Although SCAR is a non-governmental body which does not enjoy a formal relationship with the Antarctic Treaty, it has developed a close relationship with the A.T.C.P.s by providing objective, independent scientific advice through its Standing Scientific Groups. SCAR has three Standing Scientific Groups, including a Standing Scientific Group on GeoSciences, a Standing Scientific Group on Life Sciences and a Standing Scientific Group on Physical Sciences. SCAR’s Standing Scientific Groups cover a wide range of issues, including sharing of information; identifying research areas or fields where current research is lacking; coordinating proposals for future research by national Antarctic programs; establishing Scientific Programme Planning Groups to develop formal proposals to the Executive Committee and Action and Expert Groups to address specific research topics within the discipline.

Nevertheless, there are cases in which the collective scientific expertise of an expert group may vest it with additional, countervailing authority. This is the case, for instance, of a body that has worldwide participation of scientists, representing every country and including independent scientists, too. In this case, the lawmaking processes of the institution should ensure that any recommendation furthering the purpose and objectives of the international institution would be taken into due account by its

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lawmaking bodies. Otherwise, the COP or any other lawmaking body should be required to provide justification, namely to give specific reasons and arguments, in the event that the latter chooses not to follow the experts’ advice. Up to present, such formal requirement does not exist in the majority of the M.E.A.s or the constituent instruments of the international organizations with environmental competence. International Environmental Law does not impose any checks upon the decisions and laws issued by the political bodies, even if they go against a fully justified recommendation suggested by a highly authoritative body. For instance, countries continue resisting taking into due account the findings of a body that has widespread collective and countervailing expertise, namely the International Panel of Climate Change (I.P.C.C.)

The International Panel of Climate Change (I.P.C.C.) is an intergovernmental body which is open to all Member States of the World Meteorological Organization (W.M.O.) and the United Nations Environment Program (UNEP) established to provide internationally objective information regarding climate change. The I.P.C.C. does not conduct any original research. Its role is rather to assess on a comprehensive, objective, open and transparent basis the latest scientific, technical and socio-economic literature produced worldwide. The literature is relevant to the risks of human-induced climate change, its observed and projected impacts, and options for adaptation and mitigation in order to compile the plethora of relevant data into authoritative scientific reports. The composition of the I.P.C.C. is diverse both numerically and qualitatively, because its members include thousands of scientists with climate change related expertise from around the globe. The I.P.C.C. experts produce reports rising to high scientific and
technical standards and reflecting a broad range of views. The scientific content produced by the experts is comprehensive, because it draws upon expert opinions from all regions of the world and encompasses all relevant disciplines. The reports include worldwide data, the latest scientific findings and literature, industry literature, and traditional practices. Before their release, the reports go through a two-stage review process, performed by experts and governments.

Despite the scientific uncertainty that prevails in regard to climate change related issues, there are several points upon which there is scientific certainty and upon which the I.P.C.C. experts agree. These points of convergence become obvious from the reports and are exemplified by cases, such as the anthropogenic character of the climate disruption or the short- and medium-term impacts of the climate change phenomenon on specific regions of the Earth. However, it took a long time for some of the signatory States to the UNFCCC to accept even the basic findings of this authoritative scientific body. For instance, until very recently, that is by the end of the George W. Bush Administration, the United States officially rejected the anthropogenic contribution to climate change. After Barrack W. Obama’s raise into power, there was a worldwide hope that more States will move forward to promote societal goals, including protecting humanity from climate change. However, three years later it has become obvious that States will not be bound by the scientific findings of the I.P.C.C. Even easier, States disregard leading voices of independent scientists that present estimations for the need of an accelerated response to climate change. For instance, James E. Hansen clarified the concept of dangerous anthropogenic interference in a 2007 paper. Hansen and coauthors
found that further warming of 1 °C would be highly disruptive to humans. An alternative scenario would keep the warming to below this if climate sensitivity were below 3 °C for doubled CO₂. The conclusion is that CO₂ levels above 450 ppm are considered dangerous, but that reduction in non-CO₂ greenhouse gases can provide temporary relief from drastic CO₂ cuts. Further, they find that arctic climate change has been forced by non-CO₂ constituents as much as CO₂. They caution that prompt action is needed to slow CO₂ growth and prevent a dangerous anthropogenic interference. At the time being, the preparatory negotiations for the upcoming “post-Kyoto” protocol among the signatory States of the UNFCCC show that no binding protocol will follow the Kyoto Protocol. States, irrespectively from the countervailing scientific evidence on the interference of anthropogenic activities to climate change, prefer to try to mitigate climate change effects by policies that will decide on their own, rather than be bound by any international instrument that will impose on them binding GHGs reduction targets. Accordingly, the combat against climate change remains at the discretion of the States around the world.

The I.P.C.C. has received some, albeit limited criticism on the accuracy of its findings that led the I.P.C.C. scientists to correct them. Further, it has received some,

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but less criticism due to the close affiliation of many of its Members with the governments. Its main features, however, including universal participation of scientists,
multi-disciplinary work, modeling construction on a global scale, comprehensive assessments and composition of previous information from all over the world, and valuable summaries for policy-makers have made the contribution of the I.P.C.C. in combating and adapting to climate change invaluable. As mentioned in the first Part of the Thesis, these global-scale, inter-disciplinary, cooperative assessments, models and advice by scientists from all over the world is necessary to not only complete, but even better precede any attempt to regulate environmental issues on the international level. Enjoying all of these features, scientific and expert advice will create a strong science base for the promulgation of I.E.L. It is noteworthy that according to the successful I.P.C.C. paradigm, another global expert body was later created to study the status of biological diversity on our planet and offer recommendations to policy-makers and lawmakers. At the 65th Session of the UN, on December 21, 2010, the UNGA decided to establish a new scientific body on biodiversity as a further step forward in the global battle to stop the loss of animal and plant species and restore ecosystems, named as the “Intergovernmental Platform on Biodiversity and Ecosystem Services” (I.P.B.E.S.) The new body, which has been called as the “IPCC-for Nature,” has to bridge the gulf between the wealth of scientific knowledge on the accelerating decline and degradation of the natural world, with knowledge on effective solutions and decisive government action required to reverse these damaging trends. I.P.B.E.S. will, *inter alia*, include carrying out peer reviews of the related science emerging from research institutes across the globe, issuing reports that will cover the state and trends of biodiversity ecosystems,

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850 See the press release issued by UNEP on December 21, 2010 on the adoption of the UNGA Resolution.
and outline transformational policy choices and responses to bring out real options for the amelioration of the status of the biodiversity on the world.\textsuperscript{851}

I.P.B.E.S. is the type of networks that international community should establish in order to gather and process all available information in the environment field. It would enhance the science base of the lawmaking process through all of its stages, from the agenda-setting to the review of implementation and compliance. The existence of such a worldwide body with broad participation of scientists would perhaps help international legislators and policy-makers follow scientific advice. Up to present, there is a gap between the recommendations by the scientists and the decisions by the lawmakers regarding the protection of biodiversity. For example, there is a significant divergence between on the one hand the percentage of the oceans waters that scientists have recommended that should be placed under a network of special protected areas for biodiversity and on the other hand the percentage of the oceans waters that the States actually decided to protect. By adopting the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from the Utilization to the Convention on Biological Diversity\textsuperscript{852} the States decided to place under the special

\textsuperscript{851} For a summary of milestones in the IPBES process, see a note issued by the IUCN – World Conservation Union, http://cmsdata.iucn.org/downloads/status_on_ipbes_negotiations.pdf (last visited April 2, 2011).

\textsuperscript{852} The Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity is an international agreement which aims at sharing the benefits arising from the utilization of genetic resources in a fair and equitable way, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and to technologies, and by appropriate funding, thereby contributing to the conservation of biological diversity and the sustainable use of its components. It was adopted by the Conference of the Parties to the Convention on Biological Diversity at its tenth meeting on 29 October 2010 in Nagoya, Japan. The Nagoya Protocol will create greater legal certainty and transparency for both providers and users of genetic resources by establishing more predictable conditions for access to genetic resources; helping to ensure benefit-sharing when genetic
protection regime only ten percent of the oceans, that is only fifty percent of the suggested percentage by the scientists.\footnote{See estimation by the WWF, http://www.wwf.gr/index.php?view=article&catid=73%3A2008-09-16-12-11-40&id=724%3A2010-11-02-08-46-40&option=com_content&Itemid=97 (in Greek) (last visited April 3, 2011).}

2.4. Additional Subsidiary Institutional Frameworks for the Protection of the Environment

There is another category of expert bodies that functions outside the framework of the international institutions. However, this category is created to address some of institution’s needs relating to scientific questions and the need for additional expertise. These subsidiary entities may be vested with lawmaking powers, if their constituent instrument or any other legal basis allows for such delegation by the parent organization. In any case, the lawmaking powers of such subsidiary bodies are limited depending on the initial lawmaking powers of their parent organizations. The initial lawmaking powers of the parent organization place the basic limitations for the lawmaking powers of the subsidiary body or organization, since, as it is widely accepted, nobody can vest anybody else with powers that (s)he does not hold. In most of the cases, however, the subsidiary bodies do not hold any lawmaking powers on their own; they rather assist in the

preparation of laws to be issued by the parent organizations and have a subsidiary role in the stage of implementation of and compliance with M.E.A.s

In order to enhance inter-institutional cooperation, various international organizations have established additional, subsidiary institutional frameworks for the protection of the environment. The establishment of such joint bodies can – to a certain extent - address the fragmentation of global environmental governance. Such examples are the Codex Alimentarius Commission established by the F.A.O. and the W.H.O. and the Inter-Organization Coordinating Committee (I.O.C.C.) established by an MoU between F.A.O., I.L.O., O.E.C.D., UNEP, UNIDO and W.H.O.\footnote{Memorandum of Understanding Concerning Establishment of the Inter-Organization Programme for the Sound Management of Chemicals between FAO-ILO-OECD-UNEP-UNIDO-WHO, March 13, 1995, 34 I.L.M. 1311 (1995).} The I.O.C.C.,\textit{ inter alia,} provides consultation and serves for the identification of gaps, recommends common policies, supports the exchange of information, and performs review of some of the actions taken by its parent organizations. In comparison to the I.O.C.C. that plays an administrative role, the Codex Alimentarius Commission goes a step further in issuing standards and legislative texts which States can opt for.\footnote{Visit the official website, \url{www.codexalimentarius.net/} (last visited November 22, 2010).}

The Codex Alimentarius Commission is an international organization instituted in 1962 by way of a joint decision by the F.A.O. and W.H.O. Later on, Member States of the F.A.O. and W.H.O. became members of the Commission by simply notifying the
general directors of their respective organizations. Today the Commission is composed of 172 States. The Commission was established in order to provide a coherent basis between these two organizations on issues of common interest. Its objective is to institute international maximum limits on pesticide, to issue standards on food hygiene and food additives, even labeling and in general harmonize food standards. For the drafting of rules of standards, the Codex has subsidiary committees, composed of a mix of national delegations - usually from the agriculture ministries of States - representatives of the industry, and other government representatives to address health or consumer aspects. Some other committees are much more independent from governments. They rely upon and establish independent epistemic communities based on a common technocratic expertise and a particular agenda related to the fields of safety and health. The Codex committee that is charged with the toxicological effects of additives, for example, consists of scientists acting in their provisional capacity. The first “Statement of Principle Concerning the Role of Science in the Codex Decision-Making Process and the Extent to Which Other Factors are Taken into Account” says: “The food standards, guidelines and other recommendations of the Codex Alimentarius shall be based on the principle of sound scientific analysis...” In 1995, the Commission adopted four “Statements of Principle Concerning the Role of Science in the Codex Decision-Making Process and the


It is not only the Codex Alimentarius Commission that offers scientific advice to F.A.O. and W.H.O., but also F.A.O. and W.H.O. provide in turn expert scientific advice on many aspects of food quality, safety and nutrition relevant to the work of the Codex Alimentarius Commission. While not officially part of the institutional architecture of the Codex Alimentarius Commission, the FAO/WHO Expert Consultations provide independent scientific expert advice to the Commission and its specialist Committees and Task Forces. The Codex Alimentarius has stimulated activity in the fields of food chemistry, food technology, food microbiology, mycology, and pesticide and veterinary drug residues. Much work is carried out in the form of collaborative studies among individual scientists, laboratories, institutes and universities and joint FAO/WHO expert committees and consultations. There is, thus, a bidirectional exchange of information and

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scientific data between these organizations. The connection between these international bodies creates a solid scientific base for standard-setting.

Although the Commission is an inter-governmental organization and its administration comprises state delegates, it nevertheless adopts its decisions based on procedures that are common among traditional technical international administrations. On the one hand, the Secretary of the Commission has the power of the initiative and proposal. 862 On the other hand, officials from national administrations in the respective fields participate in the meetings of the numerous committees hosted by the Member States. These committees have the task of examining and amending the proposals regarding new rules that have already received the support by the Secretary, before they are submitted to the Commission for final approval as a Codex Alimentarius standard. Once approved, the standards get published and distributed to the Commission’s Member States.

States are invited to notify the Secretary of the Commission as to their “acceptance” of the standards. 863 They can opt for a “full acceptance” or for an “acceptance with specified deviations”. In the first case, a state guarantees the free distribution within its territory of the products that comply with the standards, as well a


prohibition on the sale of products that do not comply. In the second case, the guarantee refers to products that conform to the international standard, as modified by the derogations and exceptions set forth in detail and justified in the declaration of acceptance. The state that has accepted the standards is responsible for their uniform and impartial applications with respect to all home-produced or imported products distributed within its territory. States that do not intend to accept the standards must instead (a) indicate whether products that are in compliance can nevertheless be distributed freely within their territory, and (b) indicate in what respects national regulation of the subject-matter differs from the international standard and the reasons for such discrepancies. 864 This is not an opting-out process, since the Codex Alimentarius standards remain voluntary, until a State decides to adopt them. Even if a State adopts a standard, it is free to withdraw its acceptance at any time merely by informing the Commission’s secretariat.

What is interesting in the case of the Codex Alimentarius Commission is that in case of withdrawal from a previously accepted standard, the State is urged to give reasons if possible and to provide advance notice. 865

The legislative framework regarding the Codex has, however, changed since 1995, due to the creation of the World Trade Organization (“WTO”). Member States of


the WTO, that is 153 members on 23 July 2008, may be forced to comply with the Codex regime if they wish to engage in international trade in the food product covered by a Codex Standard. In particular, the rules contained in the Agreement on the Application of Sanitary and Phytosanitary Measures (herein after “SPS Agreement”) affect the efficiency of the norms approved by the Codex Alimentarius Commission. As it is understood, the goal of the SPS Agreement is to balance the liberalization of commercial exchanges with the protection of consumer health. Protection of consumers’ health can also be attained by means that also protect the environment, such as limiting the use of pesticides. It aims at preventing signatory States from introducing sanitary measures that in reality have protectionist economic objectives. To this end, the agreement refers to the rules of the Codex Alimentarius. It provides, in particular, that national rules, if in conformity with Codex Alimentarius standards, are presumed to be actually “necessary” to protect health and therefore are considered compatible with WTO Law. In a different respect, national rules that do not align themselves with such standards and that set forth higher levels of sanitary protection are not characterized by such a presumption. In this case, the rule is admitted, but on the following conditions: a) there exists a scientific justification for it; b) the measure was adopted based on appropriate risk assessment procedures conducted according to the techniques developed

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866 Information on the membership to the WTO is available at http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm (last visited April 4, 2011).
868 Agreement on the Application of Sanitary and Phytosanitary Measures, Apr. 15, 1994, WTO Agreement.
869 Article 5.1 of the SPS Agreement.
by international organizations, above all, the Codex Commission; c) the measure was
devised taking into account the interest in protecting commercial exchanges and constitutes the least possibly restrictive burden on international commerce; and d) the rule was approved with due consideration of the interests of exporting States, allowing these to request and obtain a reasoned explanation regarding the choice made. In this way, the Codex Alimentarius Commission even influences the lawmaking process of both the national and international legislation. An analogy stands true for the application of the standards established by following the process of the Agreement on Technical Barriers to Trade (TBT Agreement). Alvarez’ comments on the Codex Alimentarius Standards are yet very important:

“We yet except in contexts like that described above with respect to the WTO’s TBT Agreement where another treaty makes the question relevant, it does not appear to be terribly important to determine whether governments have formally “accepted” Codex standards as they would a treaty obligation. Even though many States have not filed their acceptances and the Codex is formally only a “recommendation” in such cases, there is abundant evidence that its terms are widely accepted by those engaged in the food trade as well as governments, and that the pressures of the market (as well as those imposed by the WTO as described above) render its standards binding in practice, irrespective of whether governments have formally consented to them.”

870 Article 5.4 of the SPS Agreement.
871 Agreement on Technical Barriers to Trade, Apr. 15, 1994, Agreement Establishing the World Trade Organization, Annex 1A, reprinted in Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, 33 I.L.M. 1125 (1994). The TBT Agreement refers to technical regulations and product standards that could be used by the signatory States in order to potentially be used as an excuse for protectionism. The TBT Treaty aims to ensure that regulations, standards, testing and certification procedures do not create unnecessary obstacles, including regulations, standards, testing and certification procedures that aim to protect the environment and public health. For more information about the TBT Agreement, see http://www.wto.org/english/tratop_e/tbt_e/tbt_e.htm (last visited April 5, 2011).
872 See ALVAREZ, supra note 44, at 222 – 223.
This type of indirect “legislation” could be called as “legislation by reference” and is subject of analysis below.873

3. Expert Bodies with Competence for Review, Assessment and Updating

Due to the rapid development of science and technology, I.E.L. cannot remain standstill for long time. On the contrary, it deems necessary that mechanisms be developed in order to guarantee the timely and effective infusion of science into law and maintain an updated science base of I.E.L. Unless otherwise stated, it is usually the COP or some other type of a political body that holds the primary and exclusive competence for reviewing the state of international environmental provisions and introduce new elements, scientific or not, in order to keep the international environmental legislation updated. The political bodies also review and assess the effectiveness of the provisions. The questions are to what extent not only political bodies, but also expert bodies may assist in the post-legislative stage that follows the enactment of an international provision and to what extent their participation influences the outcome of the new laws that international institutions issue on a second phase in order to better implement the already existing legislation.874 In order to answer these questions, the Thesis explores some of the

873 See, below at Chapter…

most notable examples of the expert bodies within international institutions, including the Technology and Economic Assessment Panel of the Montreal Protocol on Substances that Deplete the Ozone Layer, the Chemical Review Committee of the Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, the Persistent Organic Pollutant Review Committee of the Stockholm Convention of Persistent Organic Pollutants, the Subsidiary Body on Scientific, Technical, and Technological Advice of the Convention of Biological Diversity, the Committee on Aviation Environmental Protection of I.C.A.O., and the Marine Environment Protection Committee (M.E.P.C.) of I.M.O.

Initially, the first version of the Montreal Protocol, as it was initially adopted in 1987, included provisions establishing four assessment panels: an Atmospheric Science Panel, an Effects Panel, an Economics Panel and a Technology Panel. However, in response to the difficulties reported by the Economics Panel in 1989, this Panel was merged with the Technology Panel to form the Technology and Economic Assessment Panel. The Technology and Economic Assessment Panel (“TEAP”) of the Montreal Protocol on Substances that Deplete the Ozone Layer (“Montreal Protocol”) was

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875 See PARSON, supra note 313, at 209.

founded by the second revision to the Montreal Protocol in 1992. TEAP is composed by top experts, including highly placed actors in key positions in the industry, government, academia and citizen organizations around the world. TEAP is divided into six subsidiary bodies: the Chemicals Technical Options Committee (CTOC), the Foams Technical Options Committee (FTOC), the Halons Technical Options Committee (HTOC), the Medical Technical Options Committee (MTOC), the Methyl Bromide Technical Options Committee (MBTOC) and the Refrigeration, Air Conditioning and Heat Pumps Technical Options Committee (RTOC). TEAP provides technical judgments and advice of feasible reductions and supports the dissemination of knowledge about emerging reduction options. Due to its expertise, TEAP has exercised substantial influence on Parties’ decisions. It is noteworthy that the reports promulgated by the TEAP are peer-reviewed three to five times and the experts working for the groups of the TEAP are independent, acting in their individual capacities. Canan and Reichman exemplify the expert autonomy as the most important feature of TEAP that has significantly contributed to its success:

“We cannot overemphasize the importance of the autonomy granted to the TEAP. Acting only under instructions from the parties to the Protocol, the experts did not negotiate their opinions with “outside” employers or governments. This independence


878 See the official website of the Ozone Secretariat referring specifically to the subsidiary bodies, http://ozone.unep.org/Assessment_Panels/TEAP/subsidiary_bodies.shtml (last visited May 10, 2009).

879 Id.

promoted their sense of responsibility and authenticity. It also resulted in the parties receiving the most credible and objective expert advice possible.\textsuperscript{881}

TEAP’s influence is, however, limited to the extent that TEAP holds only review powers regarding new science and technology, the feasibility or not of the adoption of new technological solutions and the evaluation of the implementation of the Vienna Convention and the Montreal Protocol by the signatory States. The judgments, recommendations and advice provided by TEAP are not obligatory; both the political bodies and a signatory State have the liberty to decide to act differently than what TEAP advices. The Parties can disregard TEAP’s scientific advice or change their position based on many factors that are not necessarily bound to scientific reasons.

Not only is a signatory State not obliged to act accordingly to TEAP’s advice in order to act or regulate in a specific way, but it is also not obliged to remain bounded by its previously undertaken obligations under the Convention and the Protocol. In order to understand the insignificance of science in state behavior under the voluntary, international treaty regime, one could study the degree of the obligation that a State has to keep being bound by the provisions of the Convention or the Protocol in the future. Provided that a State remains as a party to the Convention and the Protocol, is it then permanently bounded by the pre-existing undertaken obligations or can it easily discharge them? Under this treaty regime, as it is the case in many other M.E.A.s as well, a State Party can be released by its previous obligations by invoking other, general reasons lying outside the text of the M.E.A., such as \textit{force majeure}, or even existing

\textsuperscript{881} \textsc{Penelope Canan & Nancy Reichman}, \textit{Ozone Connections: Expert Networks in Global Environmental Governance} 186 (Greenleaf Publ. 2002).
clauses in the agreements permitting specifically this withdrawal. Both sets of reasons can be irrelevant to science. For instance, disregarding the scientific advice regarding the risk of the use of a chemical upon which a signatory State decided to be bounded at the first place, it can withdraw from its previously undertaken obligations, without any change in science to justify its new position. This is the case of the U.S. regarding the restrictions of the use of methyl bromide.

**The Methyl Bromide Case**

The lawmaking process takes place not only at the stage of the adoption of the legislation, but even later at the stage of the implementation of the legislation. It is essential that even at that stage, there should be some effective checks-and-balances imposed by science on law. Otherwise, subsequent state behavior might even annul the implementation of the environmental policy. The Methyl Bromide Case is illustrative of this possibility.

“There are many ways that a signatory State might not comply with previously undertaken international obligations. In some cases, signatory States may try to unlawfully unbind themselves from obligations they have previously undertaken. In other cases, they might exercise their discretionary powers given by the MEA in ways contrary to the spirit and the purpose of the MEA or use an “escape clause” to unbind themselves from previously undertaken obligations. In these cases, the signatory States may comply with the letter of the law, but not with the spirit. This type of “disguised” non-implementation or, in other cases, non-compliance is difficult to detect and cope with. Until recently, the decision on how to act in such cases remained under the sole control of the signatory States or the political bodies of the regimes established by the MEAs, namely bodies comprised of representatives of the States that could decide on the non-implementation or the non-compliance issue based on, among others factors, political criteria that were not necessarily relevant to the objective and purpose of the agreement, but to other type of considerations.

In recent years, the participation of administrative and expert bodies in the evaluation process for implementation and compliance in cases where States retreat from previously accepted obligations within the framework of some of the MEAs has, to a certain extent, limited the abuse of discretion and the invocation of the escape clauses contrary to the spirit and purpose of the agreement. Still, however, the States hold the...
uppermost decision-making power. International administrative and expert bodies enjoy only advisory powers, and cannot take any obligatory decision or action against the non-complying party. There are cases in the history of the MEAs that make one wonder whether there would be more effective protection of the environmental goods, should the administrative and expert bodies were given additional powers to review implementation of and compliance with the MEAs.

Such is the case under the Montreal Protocol for Substances that Deplete the Ozone Layer, which contains an escape clause for countries to unbind themselves from previously adopted obligations, e.g. the ban of the use of ozone-depleting substances. According to the escape clause, the States may not enforce the ban, if the use of the substance is critical and may result in a “significant market disruption” and “there are no technically and economically feasible alternatives or substitutes.” While the evaluation of the use of methyl bromide as critical could have been under the discretion of the signatory state or under the political body (i.e. the Meeting of the Parties), the Technology and Economic Assessment Panel (“TEAP”) is now charged as an expert body with the power to intervene in the decision-making procedure and to give its own feedback. For example, the United States employed the critical use exemption by submitting an application to unbind itself from the obligation to ban methyl bromide because the U.S. purported such a ban would financially encumber the production of tomatoes and strawberries, especially in the State of California.

Methyl bromide (“MeBr”) has been used worldwide since the 1930s as a pre-plant soil fumigant to control insects, pathogens, and weeds. It has also been used for quarantine and pre-shipment application. Because of its effectiveness, methyl bromide is one of the very few chemicals that were approved for broad-spectrum use in agriculture and pest control globally. In 1992, the Parties to the Montreal Protocol recognized methyl bromide as an important contributor to the depletion of the ozone layer. Indeed, MeBr is a potent ozone-depleting chemical, with a potential “atom-for-atom” ration because it destroys 60 times more stratospheric ozone than chlorine from CFCS. It is also highly toxic to humans.

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884 Decision IX/6.

885 Regarding the health effects of the use of MeBr in agriculture, brief exposure to high concentrations and prolonged inhalation of lower concentrations is problematic and this is known since several decades now. See GEOFFREY D. MUIR, HAZARDS IN THE CHEMICAL LABORATORY (G.D. Muir ed., Royal Institute of Chemistry, London 1971). Exposure levels leading to death vary from 1,600 to 60,000 ppm, depending on the duration of exposure. Respiratory, kidney, and neurological effects are of the greatest concern. Scientists are investigating whether methyl bromide exposure may be linked to the death of four New Zealand port workers. The workers died of neuro-degenerative motor neurone disease between 2002 and 2004. See http://tvnz.co.nz/national-news/gas-link-death-port-workers-investigated-3341350 (last visited July 17, 2010). Severe effects on the nervous system from long-term exposure to low levels have been noted, but studies in rabbits and monkeys have shown moderate to severe injury. Further, expression of toxicity following exposure may involve a latent period of several hours, followed by signs such as nausea, abdominal pain, weakness, confusion, pulmonary edema and seizures. Individuals who survive the acute phase often require a prolonged convalescence. Persistent neurological deficits, such as asthenia, cognitive impairment, optical atrophy and paresthesia are frequently present after moderate to severe poisoning. Blood or urine concentrations of inorganic bromide, a methyl bromide metabolite, are useful to confirm a diagnosis of poisoning in hospitalized patients or to assist in the forensic investigation of a case of fatal overdosage.
Accordingly, the Parties agreed to freeze the production and importation of the substance in industrialized countries in 1995 at the 1991 levels.\(^{886}\) In 1997, the Parties to the Protocol agreed to a complete elimination of methyl bromide in industrialized countries by 2005, with interim reductions and with some exemptions for quarantine and pre-shipment uses.\(^{887}\)

In the U.S., MeBr is regulated as a pesticide under the Federal Insecticide, Fungicide, and Rodenticide Act,\(^{888}\) is listed as a hazardous substance under the Resource Conservation and Recovery Act,\(^{889}\) and is subject to reporting requirements under the Emergency Planning and Community Right-to-Know Act (EPCRA; 42 U.S.C. 11001 et seq.). In 1998, the U.S. amended the Clean Air Act (CAA) to adopt the phase-out date established under the Montreal Protocol and thus comply with its international obligation.\(^{890}\) However, in 2003 the U.S. changed its policy and asked for an exemption from the ban on methyl bromide. The U.S. held that the use of MeBr was “critical for their economy.” The tomato and strawberry farmers in California could not replace methyl bromide with any other substance in a cost-effective manner. According to the U.S.’s argument in requesting the exemption, banning MeBr could result in a financial crisis. At the beginning of 2005, the U.S. utilized the “critical use clause” in applying for an extension not to ban the use of methyl bromide for some uses until 2007. The United States’ invocation of the “critical use clause” succeeded and it was permitted to extend its delay on the ban of methyl bromide to 2007. In 2005, the U.S. reapplied for and was awarded a renewal of the 2007 extension. Until today, MeBr remains in use in the U.S. Ironically enough it was the U.S. delegation that first pushed for a phase-out of the MeBr, citing the science panel’s conclusion that such phase-out would bring the largest environmental benefit of any measures considered.\(^{891}\)

The substitution of methyl bromide is technically possible.\(^{892}\) Despite this technical possibility, if a signatory State performs a cost-benefit analysis about the

\(^{886}\) Art. 2H (1) of the Protocol.

\(^{887}\) Art. 2H (5) of the Protocol.

\(^{888}\) FIFRA; 7 U.S.C. 136 et seq.

\(^{889}\) RCRA; 42 U.S.C. 6901 et seq.

\(^{890}\) CAA; 42 U.S.C. 7401 et seq., P.L. 105-178, Title VI.

\(^{891}\) PARSON, supra note 313, at 230.

\(^{892}\) About possible alternatives to the use of methyl bromide, see, e.g., NICOLA GRECO, ALTERNATIVES TO METHYL BROMIDE TO CONTROL PLANT PARASTIC NEMATODES IN GREENHOUSES, Istituto di Nematologia Agraria, C.N.R., 70126, Bari, Italy; Substitute for methyl bromide gas to be used in the disinsectisation of heritage collections, available at http://www.cicrp.fr/methyl-bromide-substitute.html (last visited July 17, 2010), according to which since 1 January 2007, pursuant to Commission Directive 2006/140/EC of 20 December 2006, methyl bromide has been definitively abandoned as a biocidal fumigant in favour of sulphuryl fluoride as an active substance. Two other substitute gases may eventually be considered: hydrogen phosphide (P.H.3) and dimethyl disulphide (D.M.D.S.) See also N. Ioannou, Soil solarization as a substitute for methyl bromide fumigation in greenhouse tomato production in Cyprus (research paper in Plant Pathology and Biotechnology Section) (Agricultural Research Institute) (Ministry of Agriculture, Natural Resources and Environment, 1516 Nicosia, Cyprus, Volume 28, Number 3 / September, 2000, 5 November 2008) According to the abstract of
prohibition of a substance that comes out to be negative, it may choose not ban the substance, even if the country has previously agreed to the ban. In this legitimate non-compliance case, the expert bodies of the Ozone Regime have a say. The Methyl Bromide Technical Options Committee (“MBTOC”), which is the basic committee of the TEAP dealing with the MeBr cases, makes recommendations that have leverage on the decisions of the Meeting of the Parties. However, irrespective of the recommendations of the expert bodies, the Meeting of the Parties (MOP) always has the last say; the outcome of the application process depends on its decision. This procedure allows for decisions potentially grounded only on political criteria. The example illustrates that even one of the most successful compliance regimes, like the Ozone regime, allows for non-compliance opportunities. Since the last say always remains with the signatory States, they States have a “security valve,” when they decide to enter stringent legal regimes.”

the article, preplant soil fumigation with methyl bromide (MB) is presently standard practice in greenhouse tomato production. Since this compound is scheduled to be phased out by 2005, the possibility of using solarization as an alternative soil disinfection method was examined in four greenhouse tomato trials. Solarization was applied for 8 weeks in July-August, using transparent polyethylene sheets for soil mulching, and compared with MB fumigation applied in September, before planting, at 80 g/m². Solarization raised the maximum soil temperature by 9°C and reduced the population density of Fusarium spp. in soil by 91–98%. Similar reductions of soil inoculum (95–99%) were obtained with MB fumigation. Both methods provided effective control of Fusarium wilt, Verticillium wilt and corky root rot on tomato plants. MB fumigation was in addition highly effective against root-knot nematodes, whereas nematode control with solarization did not exceed 50%. Both treatments resulted in similar fruit yield increases, ranging within 90–140% compared with plants grown in untreated soil. During the second cropping season following soil treatment, solarization exhibited two times higher residual effectiveness against vascular wilt diseases compared with MB fumigation. The latter treatment, however, was superior to solarization in its residual effectiveness against root-knot nematodes and to a lesser extent against corky root rot. Fruit yields from solarized and MB-fumigated soil during the second cropping season were higher than those obtained from untreated soil by approximately 35% and 60%, respectively. In Cyprus, solarization appears to be an effective alternative to MB fumigation in greenhouse tomato production, especially if integrated with other approaches enabling more effective nematode control. Brent Hueth, Bruce McWilliams, David Sunding & David Zilberman, Analysis of an Emerging Market: Can Methyl Iodide Substitute for Methyl Bromide?, 22 (1) REVIEW OF AGRICULTURAL ECONOMICS 43–54 (2009).


Noteworthy, since there is no obvious non-compliance, the Implementation Committee, which is the competent organ of the Montreal Protocol to judge non-compliance issues, could not be involved in the case.
This example raises questions as to whether implementation and compliance would be easier achieved if some scientific checks and balances were imposed for the qualification of the use of a chemical as “critical,” the analysis of the cost-effectiveness, and the technical feasibility of alternative substances without ozone-depleting effects. Giving such evaluation responsibilities and decision-making powers to the expert bodies could curb States’ efforts to avoid implementation of and compliance with their environmental obligations. The issue of implementation and compliance is, however, under analysis below.

Regarding review of the state of the science, the Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam Convention) offers another interesting example. The Convention requires that States of export ensure that States of import receive notice and consent before shipment of listed banned or severely restricted chemical commerce. The Rotterdam Convention does not ban trade in hazardous chemicals, but rather it seeks to ensure that international trade of listed chemicals is subject to the prior informed consent procedure and labeling requirements. The Convention applies to banned or severely hazardous pesticide formulations. The list of banned or severely hazardous pesticide formulations is not a closed list. Any developing country Party that is experiencing problems caused by severely hazardous pesticides in its territory may propose to the Secretariat that those

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pesticides be listed in the Annex III for the PIC procedure. In order for the actual listing to take place, a review by the Convention’s expert body, the Chemical Review Committee, and a decision of the Conference of the Parties is necessary. The Chemical Review Committee was founded by Article 18, paragraph 6, of the Rotterdam Convention as a subsidiary body. According to Article 5, paragraph 6, the Chemical Review Committee reviews the information provided in notifications by the signatory States, in accordance with the criteria set out in Annex II and makes recommendations to the COP whether the chemical in question should be made subject to the Prior Informed Consent procedure and be listed in Annex III of the Convention. The role of the Chemicals Review Committee, thus, reviews the existing science and technology and makes simple recommendations to the COP. The COP is not obliged to follow the Committee’s advice.

The control that the COP exercises over the Chemical Review Committee is so substantial that the COP even decides on institutional issues, including terms of reference, organization and operation of the Committee. Membership of the Committee is composed of experts appointed by the COP, and more specifically, of “a limited number of government-designated experts in chemicals management.” This Committee does not enjoy the full representation of experts from all of the signatory States, nor the independency of the experts affiliated with academia or other external sources in relevance to the domestic administration of the signatory States, as it is the case with the

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897 Article 18 paragraph 6(b) of the Rotterdam Convention.
898 Article 18 paragraph 6(a) of the Rotterdam Convention.
POP Review Committee. They are, however, appointed on the basis of equal geographical distribution, in an effort to ensure a balance between developed and developing countries.\textsuperscript{899} Further, the Committee is not obliged to follow the rule of unanimity when it takes a decision. It should rather make an effort to adopt its recommendations by consensus. If no consensus can be reached, then any recommendations by the Committee shall, “as a last resort”, be adopted by a two-thirds majority vote of the members present and voting.

As it is the case in other international institutions, listing of additional chemicals is likely to be slow given a rather tedious procedure which requires a Party to submit a proposal, a review by the Chemicals Review Committee, a risk profile, a risk management evaluation and finally a decision by the COP. The review of science and technology, the risk profile and a risk management evaluation are necessary steps that need be taken. By empowering the human capital of the Committee, these stages could be shorter in time. However, the contribution of the Parties regarding the initiation of the process, that is a politically triggered input, and the final decision-making stage by the COP is what makes the procedure tedious. The Parties may take long to propose regulation or action regarding such a substance on the international level. Even if a Party decides to initiate negotiations on issues relevant to a new substance, they have to wait until a meeting of the COP takes place in order to have the chance to officially make such proposal. However, the meetings of the COP do not occur very often. Usually, months, even years, may pass between two meetings. In the case of the Rotterdam Convention,

\textsuperscript{899} Article 18 paragraph 6(a) of the Rotterdam Convention.
the regular meetings of the COP tend to occur in irregular periods of time. The lapse of time between two meetings may reach three years. This mechanism does not allow for timely input of science in the lawmaking process of the Rotterdam Convention and needs to be revised. If the Chemical Review Committee would share the power of initiative to propose new legislation or contribute more authoritatively to the update and implementation of the existing legislation, then making international environmental laws that respond to the state of the art regarding environmental protection would be a much easier enterprise.

The Persistent Organic Pollutant Review Committee (POPs Review Committee or POPRC), established by the Stockholm Convention of Persistent Organic Pollutants, goes some steps beyond the Chemical Review Committee and stands as an interesting example of an experts committee that holds quasi-legislative competencies. The central role of the POPs Review Committee in the lawmaking process under the Stockholm Convention is based on two factors: the scientific character of the subject-matter of the Convention and the fact that the drafters of the Convention acknowledged the necessity to incorporate

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900 Article 18 paragraph 1 of the Rotterdam Convention states that the COP will convene in regular meetings. The time of the meetings should be arranged by the COP. Although in the first three years the meetings occurred every year, namely COP 1 convened in 2004, COP 2 convened in 2005, COP 3 convened in 2006, the next meeting, COP 4, convened two years later, in 2008, while the COP decided to convene its upcoming meeting in 2011, namely three years later that the last meeting.

scientific advice in the Convention early in the process. Even before the adoption of the
Stockholm Convention, the States negotiating the Convention decided to establish an
expert body with a preparatory role vis-à-vis the scientific content of the provisions of the
Convention. Specifically, while drafting the legal instrument that would regulate the issue
of the Persistent Organic Pollutants, the Intergovernmental Negotiating Committee for an
International Legally Binding Instrument for Implementing International Action on
Certain Persistent Organic Pollutants (INC) provided for a “Criteria Expert Group” to
develop the procedures and criteria to add new chemicals to the final text.\(^{902}\) The INC
considered the establishment of the Criteria Expert Group to be necessary due to the
complexity of the subject-matter and the degree of expertise required. The expert group
had to develop criteria on a sound scientific basis and was required to apply the
precautionary principle in the procedure for identifying and controlling POPs.\(^{903}\) This
process, namely the establishment of an international expert body to create the scientific
basis of the Convention, even partially, satisfies some of the requirements toward a
science-based lawmaking process.

The Criteria Expert Group was not formed by independent experts, but rather by
experts appointed by governments representing all of the regions of the world. Scientists
participating in the Criteria Expert Group currently participate also in the POPs Review

\(^{902}\) Report, The Intergovernmental Negotiating Committee for an International Legally Binding
Instrument for Implementing International Action on Certain Persistent Organic Pollutants, 1st Sess., UN

Committee. The POPs Review Committee was established by the COP as a subsidiary body to the Convention according to Article 19 of the Convention. Article 19, paragraph 6, of the Convention States that the members of the POPs Review Committee shall be appointed by the Conference of the Parties. Membership of the Committee shall consist of government-designated experts in chemical assessment or management. The members of the Committee shall be appointed on the basis of equitable geographical distribution. Currently, the POPs Review Committee is composed of experts from thirty-one countries across the globe. Designated by governments for two or four year terms, these scientists are drawn from the civil service, academia and non-governmental organizations. Accordingly, even if the respective governments make the appointments, some of the experts, especially those working with academia or NGOs, retain a degree of professional independence. This fact reinforces the expert character of the Committee, vis-à-vis its political origin, since, in this way, the absolute mandate of the States through their appointees does not always prevail. In addition to that, the POPs Review Committee does not function under the strict rule of unanimity mandated by the state sovereignty, but takes its decisions by either consensus or majority. Specifically, in cases where the experts disagree over identifying additional persistent organic pollutants, the POPs Review Committee is able to make a proposal to the COP to decide upon the inclusion of a new chemical to the Convention’s lists, provided that either a consensus or at least a two-thirds majority vote of the members present and voting is achieved.\footnote{Article 19 paragraph 6(c) of the Stockholm Convention.}
Regarding the initiation of the procedure to add a new substance on the POP list, according to Article 8, any Party may nominate a new substance for listing by submitting relevant information to the Secretariat. The Secretariat will then submit this information to the POPs Review Committee. The POPs Review Committee will further review the information by applying the screening criteria specified in Annex D. The screening criteria are based on the chemical features of the substances and especially proof of persistence, bioaccumulation, potential for long-range environment transportation, and adverse effects for human health and the environment. The POP Review Committee will then prepare a risk profile and risk management plan, according to which it will decide whether to recommend to the COP that the chemical be listed and regulated under the Convention. After the screening is over, the POPs Review Committee has to decide whether the proposed substance satisfies the screening criteria posed by Annex D. In both cases and despite the recommendation of the POPs Review Committee, the final decision about the inclusion of a chemical in one of the annexes of the Conventions remains with the COP.

If the POPs Review Committee decides that the screening criteria have been fulfilled, it communicates its evaluation to all Parties and observers, and invites them to submit further information on the risk profile of the chemicals according to Annex E. Based on this additional information, the POPs Review Committee conducts a risk profile. In analyzing the risk profile, it prepares a “risk management evaluation” including “an analysis of possible control measures for the chemical.” If the POPs Review Committee decides that “the chemical is likely as a result of its long-range
environmental transport to lead to significant adverse human health and/or environmental effects such that global action is warranted,” then it submits a proposal to the Conference of the Parties for the inclusion of the chemical to the list of POPs regulated by the Convention.905 In the end, the COP will by “taking due account of the recommendations of the Committee, including any scientific uncertainty, decide, in a precautionary manner, whether to list the chemical, and specify its related control measures, in Annexes A, B and/or C.”906

If the POPs Review Committee decides that the proposal for the listing of a chemical does not satisfy the screening criteria, it then informs all of the Parties and observers, makes the proposal and the evaluation available to all Parties, and sets the proposal aside.907 In this way, the POPs Review Committee directly influences the process of lawmaking. The initial rejection of the proposal by the POPs Review Committee is not necessarily final. Any Party may resubmit the proposal even without offering any additional elements. If the POPs Review Committee again sets the proposal aside, the Party may challenge the decision of the Committee. The COP will then consider the matter at its next session and may decide, based on the screening criteria in Annex D and taking into account the evaluation of the Committee and any additional information provided by any Party or observer, that the proposal should proceed.908 This

905 Article 8 paragraph 7 (a) of the Stockholm Convention.

906 Art. 8 para. 9 of the Stockholm Convention.

907 Art. 8 para. 4 (b) of the Stockholm Convention.

908 Art. 8 para. 5 of the Stockholm Convention.
decision-making and lawmaking process is an interesting process of debate between political and expert bodies and openness to the third expert parties that enhances the scientific and democratic character of the Convention. In practice, the States have followed the proposals made by the POPs Review Committee.

The margin of independence of the POPs Review Committee becomes clearer in the case of Article 8. It is noteworthy that Article 8 process for adding new substances is its approach to scientific uncertainty (the precaution issue.) The screening criteria on persistence and bioaccumulation build in an element of expert judgment, and they are not exclusively numerical or quantitative. The screening criteria in Annex D on persistence and bioaccumulation are expressed in numerical terms, but also allow for a determination that the evidence is otherwise sufficient for a positive finding. This approach provides both a scientific grounding and a measure of flexibility at the initial stage of the review process. Article 8(7)(a) also States that the “lack of full scientific uncertainty shall not prevent the proposal from proceeding.” Moreover Article 8(9) regarding the final decision by the COP whether or not to list a new substance – specifically directs that the COP “taking due account of the recommendations of the Committee, including any scientific uncertainty, shall decide, in a precautionary manner, whether to list the chemical, and specify its related control measures.” As Lalas comments:

“this resolution of the precaution issue marks an important new development in the continuing international dialogue on precautionary measures. After much debate, negotiators in the POPs process found common ground based on views that both highlighted the importance of precautionary action and did so in a manner consistent with
the use of the science-based approach developed to review the addition of new substances under the Convention.\footnote{Peter L. Lallas, \textit{The Stockholm Convention on Persistent Organic Pollutants}, 95 Am. J. Int’l L. 692, 705 (2001).}

Many of the expert bodies that have the competence to review new updates in science and technology and propose or adopt new legislation or amendments to this new legislation, have also the competence to review implementation of the convention, either by the international institution itself, when it is necessary to update the convention in order to ensure implementation under contemporary terms, or by the States, in order to ensure that the latter correctly and timely implement the international provisions.

Further, the Convention of the Biological Diversity (C.B.D.)\footnote{Convention on Biological Diversity, art. 1, June 5, 1992, 31 I.L.M. 818 [hereinafter CBD]. See Michael Bowman, \textit{The Nature, Development and Philosophical Foundations of the Biodiversity Concept in International Law}, in \textit{International Law and the Conservation of Biological Diversity} 5 (Michael Bowman & Chatherine Regwell eds. 1996).} sets forth measures relating to the conservation and sustainable use of biodiversity, technology transfer, and benefit sharing in order to fulfill these objectives.\footnote{Articles 2-6 of the C.B.D.} In order to better develop these measures, the C.B.D. provides for a COP, a Secretariat, and a Subsidiary Body on Scientific, Technical, and Technological Advice (“SBSTTA”).\footnote{Articles 23-25 of the C.B.D.} What is very important is that, according to Article 25 of the C.B.D., the SBSTTA is composed of independent experts nominated by the signatory States to the C.B.D., as well as other
intergovernmental organizations.\textsuperscript{913} The timely provision of information to the decision-makers is essential and this is one of the purposes of the SBSTTA.\textsuperscript{914} According to Article 25, SBSTTA should also submit reports to the COP at regular time intervals. SBSTTA should issue evaluations on the status of biodiversity and the assessments on biodiversity of the measures taken by the signatory States for the biodiversity provision. One of the most important functions of the SBSTTA is its duty to conduct research on “innovative, efficient and state-of-the-art technologies” and to provide relevant information to the COP, updating the information on which the COP bases its decisions.\textsuperscript{915} This is an important feature of this expert subsidiary body, because it is rare to find a reassessment responsibility endowed to a subsidiary body in the body of an

\textsuperscript{913} Article 25 of the C.B.D. notes:
“Subsidiary Body on Scientific, Technical and Technological Advice
1. A subsidiary body for the provision of scientific, technical and technological advice is hereby established to provide the Conference of the Parties and, as appropriate, its other subsidiary bodies with timely advice relating to the implementation of this Convention. This body shall be open to participation by all Parties and shall be multidisciplinary. It shall comprise government representatives competent in the relevant field of expertise. It shall report regularly to the Conference of the Parties on all aspects of its work.

2. Under the authority of and in accordance with guidelines laid down by the Conference of the Parties, and upon its request, this body shall:
(a) Provide scientific and technical assessments of the status of biological diversity; (b) Prepare scientific and technical assessments of the effects of types of measures taken in accordance with the provisions of this Convention;
(c) Identify innovative, efficient and state-of-the-art technologies and know-how relating to the conservation and sustainable use of biological diversity and advise on the ways and means of promoting development and/or transferring such technologies;
(d) Provide advice on scientific programmes and international cooperation in research and development related to conservation and sustainable use of biological diversity; and
(e) Respond to scientific, technical, technological and methodological questions that the Conference of the Parties and its subsidiary bodies may put to the body.

3. The functions, terms of reference, organization and operation of this body may be further elaborated by the Conference of the Parties.”

\textsuperscript{914} Art. 25 para. 1.

\textsuperscript{915} “Ad hoc technical expert groups: terms of reference, and roster of experts and proposal on a uniform methodology for their use” - SBSTTA Recommendation V/14, “Proposed terms of reference and duration of work for the ad hoc technical expert groups on marine and coastal protected areas” - Annex I, C indent (d) – ad hoc technical expert group on forest biological diversity, available at http://www.cbd.int/recommendation/sbstta/?id=7031 (last visited December 24, 2010).
M.E.A. This feature should be one of the common features of at least one of the expert bodies of each M.E.A. It is also linked with not only the appropriate assessment and infusion of science and technology into the M.E.A., but also the appropriate implementation of the M.E.A. In this spirit, Lohan States:

“Based upon the literature and its validation by the treaties examined, a key task of the decision-making body should be to periodically reassess the treaty's commitments in light of new scientific information and to make changes to existing obligations accordingly. As seen above, the functions of lawmaking and overseeing treaty implementation are linked given that progressive implementation may necessitate the adoption of additional obligations. In terms of optimizing the input of scientific information into the decision-making process, it is important that implementation be reviewed to allow for the adoption of new obligations. A window, therefore, is opened for science to enter the decision-making process.”

Expert bodies with similar functions also exist within the framework of the inter-governmental organizations. In contradiction to expert bodies functioning under the M.E.A.s, some of the expert bodies of the technical international organizations have a more decisive role in the lawmaking process. For instance, the Marine Environment Protection Committee (M.E.P.C.) is I.M.O.’s senior technical body on marine pollution related matters, established in 1973. M.E.P.C. is aided in its work by nine specialized and technical sub-committees, including the Bulk Liquids and Gases (BLG), the Carriage of Dangerous Goods, Solid Cargoes and Containers (DSC), the Fire Protection (FP), the


Radio-communications and Search and Rescue (COMSAR), the Safety of Navigation (NAV), the Ship Design and Equipment (DE), the Stability and Load Lines and Fishing Vessels Safety (SLF), the Standards of Training and Watchkeeping (STW), and the Flag State Implementation (FSI).\(^\text{918}\) These technical sub-committees consist of independent experts that serve on their personal capacity. The technical sub-committees assist the work of the M.E.P.C. by providing technical advice and draft regulations. For example, in 1998, the M.E.P.C. instructed a working group to draft regulations to phase out and eventually prohibit toxic anti-fouling paints that contain organotins.\(^\text{919}\)

The M.E.P.C. is competent of adopting amendments to the Conventions signed under the auspices of I.M.O. and guidelines. The M.E.P.C. has no explicit lawmaking powers. However, in practice, the M.E.P.C. can indirectly propose and at the same time adopt the amendments, since the amendments enter into effect after some time by the tacit acceptance procedure, unless a number of States objects.\(^\text{920}\) For instance, an instrument recently issued by the M.E.P.C. exemplifies the indirect, quasi-legislative competence of this expert body, based on a combination of Article 38(a) of the I.M.O.’s constitution article 4 of the 1997 Protocol to the MARPOL.\(^\text{921}\) Under this process, the M.E.P.C. has adopted several amendments to the annexes of MARPOL and OILPOL.\(^\text{922}\)

\(^{918}\) See relevant information at http://www.imo.org/About/Pages/Structure.aspx#7.


\(^{920}\) See the detailed description of the procedure in Chapter…

\(^{921}\) The document is available at: http://www.imo.org/KnowledgeCentre/HowAndWhereToFindIMOInformation/IndexOfIMOResolutions/Pages/Marine-Environment-Protection-Committee-(MEPC).aspx.

For example, at its 53rd session, 18-22 July 2005, the M.E.P.C. adopted amendments to the I.M.O. regulations on the prevention of air pollution to establish a new special emissions control area for the North Sea, as well as amendments to the Regulations for the Prevention of Air Pollution from Ships in MARPOL Annex VI, including one on the new North Sea SOx Emission Control Area (SECA). M.E.P.C. also adopted amendments to update the NOx Technical Code. M.E.P.C. approved Interim Guidelines for Voluntary Ship CO2 Emission Indexing for Use in Trials. The Committee agreed on the need to undertake a review of Annex VI and the NOx Technical Code with a view to revising the regulations to take account of current technology and the need to further reduce emissions from ships. M.E.P.C. instructed the Sub-Committee on Bulk Liquids and Gases (B.L.G.) to carry out the review by 2007. The M.E.P.C. also adopts soft law, such as guidelines, that are not binding upon the Member States of the I.M.O. However, they are indicative of the direction that domestic law within the jurisdictions of the Member States should take.

Have the Member States of I.M.O. allowed a technical committee to legislate on their behalf? On the contrary. The I.M.O. structure maintains a balance that is similar to the structures of the M.E.A.s regarding the –unequal - relationship between their political and the expert bodies. Similarly to an M.E.A. under which the expert body advises and

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923 For instance, the M.E.P.C. adopted the Guidelines for uniform implementation of the International Convention for the Control and Management of Ships’ Ballast Water and Sediments (BWM Convention) in February 2004; Guidelines on on-board exhaust gas-SOx cleaning systems; survey Guidelines under the Harmonized System for Survey and Certification for MARPOL Annex VI; Unified interpretations of MARPOL Annex VI; and Guidelines for Port State Control under MARPOL Annex VI.
the political body decides, under the IMO structure the sub-committees of the M.E.P.C. advice and the M.E.P.C. decides. The M.E.P.C. is not, however, the typical expert body, since the M.E.P.C. consists of the representatives of all of the Member States, namely from representatives that are appointed by the national governments of the Member State. These representatives are not permanently appointed at the IMO. They are employed at a post on the national level and they they meet occasionally under the auspices of I.M.O. Most of the times these representatives are experts, including scientists working for the government, academic institutions or the industry. Sometimes, they hold different qualifications, depending on the different subject-matter at each meeting. They do not act on their personal capacity. Rather, they stand for the position of the State that appointed them. Under this sense, and based on the distinction followed in this Thesis between the expert and the political bodies, the M.E.P.C. has a mixed nature, of both an expert and a political body.

The establishment of an expert committee as part of the institutional structure of a technical organization is largely common. This stands true at least in all of the intergovernmental organizations with environmental competence. A further example is I.C.A.O. I.C.A.O.'s current environmental activities are largely undertaken through the Committee on Aviation Environmental Protection (C.A.E.P.), which was established by the Council in 1983 superseding the Committee on Aircraft Noise (C.A.N.) and the Committee on Aircraft Engine Emissions (C.A.E.E.). C.A.E.P. assists the Council in formulating new policies and adopting new standards on aircraft noise and aircraft engine emissions. C.A.E.P.'s Terms of Reference and Work Program are established by the
Council. The current structure of the C.A.E.P. includes five working groups and one support group. Two of the working groups deal with the technical and operational aspects of noise reduction and mitigation. The other three working groups deal with technical and operational aspects of aircraft emissions and the study of market-based measures to limit or reduce emissions, such as emissions trading, emissions-related charges and voluntary measures. The support group provides information on the economic costs and environmental benefits of the noise and emissions options considered by C.A.E.P. About once a year, C.A.E.P. meets as a Steering Group to review and provide guidance on the progress of the activities of the working groups. Each formal C.A.E.P. meeting produces a report with specific recommendations for the consideration of the I.C.A.O. Council.

The formal meetings of I.C.A.O. are not very often. Since 1986, there have occurred only eight meetings. At these meetings there are experts representatives of the Member States that participate. It is not, thus, C.A.E.P. that is the purely expert body of the I.C.A.O., but rather its subsidiary committees. The work of the committees gets, however, publicized by the work of C.A.E.P. The Council acts on recommendations from C.A.E.P. in the light of any comments received from the Air Navigation Commission and, if there are economic aspects, from the Air Transport Committee. C.A.E.P. retains only consultative powers. There are no lawmaking powers to enjoy. The same stands true for the Air Navigation Commission and the Air Transport Committee. Even in the case of recommendations to introduce or amend Standards and Recommended Practices, there

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are established procedures for consulting States, after which the final decision rests with the Council. The Council has no obligation to follow the recommendations of the I.C.A.O. technical bodies.

One of the interim conclusions regarding the lawmaking competences of the expert bodies in the international arrangements is that expert bodies within international institutions – even very rarely - may exercise quasi-legislation to promote the purpose of the international institution, while they contribute to legislative developments or review the implementation and compliance. Most often though one could acknowledge quasi-legislative powers to technical international institutions that as expert bodies, if closely affiliated with other international institutions, for the furthering of the purposes of the latter.

As explained above in the above Chapters, quasi-legislation is the process by which a body adopts new legislation that comes in effect automatically after a specific period of time and is binding upon all of the States that have not objected to the new laws (opting-out process) or have silently accepted the new laws (tacit acceptance.) In the afore-mentioned COPs or other political bodies within the framework of international institutions often render to quasi-legislation for the enactment of new legislation or the amendments of previous legislation. However, after having explored the range of quasi-legislative powers endowed to expert bodies, the former are considerably limited. Purely expert bodies do not exercise any type of quasi-legislation. Thus far such competence has
been recognized to bodies that enjoy both an expert and a political element. Even where conditions, such as expertise and scientific consensus are operative, the expert bodies of international institutions cannot independently adopt a new piece of secondary regulation. Their competences are circumvented. The question is whether the same holds true also in cases of urgency.

3.1. Lawmaking by Experts in Cases of Urgency

The lawmaking structures on the international level follow a slow pace. States do not seem to be willing to accelerate this pace accordingly to environmental needs or the new scientific developments. The question is how far the devotion of the international community to the traditional lawmaking structures would go. What would happen, for instance, in cases of urgency? Urgency is one of the rare instances where a body of limited membership or an expert body is able to adopt binding decisions without waiting for the competent political body to officially meet.

An example of such exceptional lawmaking structure is the lawmaking process entrusted upon the Bureau of the Executive Body of the 1979 Convention on Long-Range Transboundary Air Pollution.926 The Bureau consists of the Chair of the Executive Body and seven Vice-Chairs, including the Chairs of the four main subsidiary bodies of the

Executive Body. The Bureau is elected annually by the Executive Body and acts as an inter-sectional forum for strategic action and operational coordination. Therefore, the Bureau is a hybrid group comprising a political element as represented in the Executive Body and the expert bodies of the Convention. The main tasks of the Bureau are to prepare policy-oriented proposals for submission to the Executive Body and promote interdisciplinary cooperation and integration. In addition, the Bureau may take binding decisions on urgent matters based on input from the Bureaux of the subsidiary bodies. In these rare cases of urgency, the Bureau is given legislative powers. However, such decisions are meant to be considered and confirmed by the Executive Body itself, as soon as time permits. This is a rare provision in the constellation of the M.E.A.s or the international institutions with environmental competence. Provided that environmental emergencies may occur, a similar provision could be repeated in many other M.E.A.s. Accelerating the pace by which the international community adopts laws in the face of environmental emergencies might be necessary in order to ensure a timely response.

927 For a clear reference to this rare competence of the Bureau of the Executive Body, see http://www.unece.org/env/lrtap/ExecutiveBody/EB%20Bureau%20home.html (last visited May 10, 2009).

928 Currently, environmental emergencies are usually dealt jointly with the humanitarian emergencies, since a natural disaster or any other type of a disaster that has impacts on the natural environment has usually, but not always, impacts on the human population, as well. There is broad framework of cooperation among international institutions that cooperate on humanitarian and environmental affairs. In order to coordinate their actions, the UN has established the Office for the Coordination of Humanitarian Assistance (OCHA), that coordinates international, regional and national actors. It holds thirty-five offices around the world, since there is a need to address emergencies as locally as possible. For information about the institutional structure of OCHA, visit the official website of OCHA, http://ochanet.unocha.org/p/Documents/Organigram-2011.pdf (last visited April 10, 2011). UNEP works with OCHA, in order to develop together policies for preparedness and response to natural disasters. They have also developed an international advisory group of experts: the Advisory Group on Environmental Emergencies (AGEE.) OCHA and UNEP consider AGEE as their most important cooperation and support mechanism for the response to environmental disasters. The AGEE is an international forum that brings together environmental experts from around the world to share information, expertise and lessons learned for improved response to environmental emergencies worldwide, and in particular in developing countries. The Joint UNEP/OCHA Environment Unit serves as the secretariat to this group. The Advisory Group meets once every two years to share experiences and new approaches in the field of response to environmental disasters, as well as to review the work of the Joint Unit, and to provide advice and guidance.
Review of new scientific and technological developments, assessments, and the updating of legal instruments in many cases occur through not only the adoption of new laws, but also the implementation of already existing laws. Many expert bodies, to which knowledge of new scientific and technological developments is amply available, exercise multiple functions of review of various stages of the lawmaking process. One of their main functions of the expert groups is the assistance offered in the implementation phase of the I.E.L., making the lines that distinguish among different expert groups blurred.

4. Expert Bodies with Competences Regarding the Review of Implementation

The provisions of M.E.A.s often require further elaboration and specification by subsequent international laws (“progressive implementation”). In most of the cases they also require application by domestic legislation. Implementing international environmental provisions may include the enactment of new, relevant laws, policies, and other measures and initiatives that will facilitate the contracting parties to meet their obligations. It is said that implementation is “the process of putting... commitments into
In many cases implementation of International Environmental Law requires regulatory activity. Regulatory activity in relation of the implementation of legislation is the core process that qualifies provisions as part of the “secondary legislation.” The pre-existence of laws makes any law that is really based on the pre-existing laws to become “secondary” in character. The question that rises in this Thesis is which bodies of the international environmental regimes hold the regulatory competence to enact secondary legislation. On the other hand, one of the assumptions of the Thesis is that expert bodies should enjoy such competence. In contemporary international lawmaking practice, this is not, however, the case. Although secretariats, expert bodies and political bodies contribute to the enactment of the secondary legislation, even at the implementation stage, only the political bodies seem to enjoy the lawmaking competence. As it is, however, said “the devil lies in the details...” A more careful insight in the participation of the expert bodies in the implementation phase of I.E.L. may reveal a different point of view.

Before exploring the traditionally expert bodies, it is important to shortly refer to the role of the secretariats in implementation. Secretariats play a meaningful role in the implementation of the M.E.A. for which they serve by providing technical information and advice to the signatory States on how to effectively implement the provisions of the

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930 See definition and information on the notion of “secondary” provisions in JURI DANIEJ ASTON, SEKUNDÄRGESETZGEBUNG INTERNATIONALER ORGANISATIONEN ZWISCHEN MITGLIEDSTAATLICHER SOVEREIGNITÄT UND GEMEINSCHAFTSDISZIPLIN (Duncker & Humblot, Berlin 2005). Aston comments (at p. 46) that the creation of the notion of “secondary” norms in Public International Law was a “loan” from the framework of European Community Law.
M.E.A. Secretariats also receive the reports submitted by signatory States regarding implementation ("self-reporting") and keep records of the reports submitted by the States. They also analyze and interpret the data of the reports, and inform the participants in the regime about the contents of the reports and their own findings. The secretariats can also publish its findings or the actual reports and, depending upon the results, they may revert to the “name and shame” technique for the States that have not implemented or complied with the provisions of the M.E.A.s to which they have accented. However, secretariats are usually not sufficiently equipped to effectively perform the necessary activities regarding the review of implementation, with which they are endowed. This stands especially true, because the subject-matters of the M.E.A.s are scientifically complex. In order to share this challenge, the Parties find various ways to allocate some of the competences to expert bodies within or out of the framework of the M.E.A.s. They either cooperate with other international institutions or agencies that enjoy the necessary human resources and the equipment to provide additional services regarding the review of implementation. This is the case, for instance, of the bodies of the Rotterdam Convention which cooperate with UNEP and F.A.O. in order to oversee implementation of the interim Prior Informed Consent (PIC) procedure.931

In order not to have to entrust external bodies, some of the M.E.A.s have also established implementation committees (ICs). Implementation committees are mainly expert bodies entrusted with the task of assisting the COP or other political bodies of the M.E.A.s in the review of the implementation of an M.E.A. Similar structures may also

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exist within the framework of intergovernmental organizations with environmental competence. The range of the competences of the implementation committees varies accordingly to the ways and means by which they perform this task. Relevant examples of various types of implementation committees follow.

An early but progressive instance of the delegation of competencies to expert bodies in regional arrangements is the treaty regime for the protection of the Mediterranean Sea. Hass has shown that the institutional arrangement for the protection of the Mediterranean according to the Mediterranean Action Plan (MAP/UNEP), which provides for important input by scientific bodies for the management of the Mediterranean, was innovative - at the time of its establishment - and successful. His work has given us the opportunity to identify several variables including the extensive role played by experts in the implementation phase of the relevant legal regime and the ways in which the experts’ roles had positive effects upon the environmental governance.\(^{932}\)

Back in the 1960s, the Mediterranean countries confronted evidence of pollution.\(^{933}\) The coastal area and harbors of the Mediterranean had always been polluted by industrial growth, but the increasing tanker use of the sea in the 1960s greatly


exacerbated the problems of the semi-closed Mediterranean basin. At this point, tactile tar balls had developed on many Mediterranean beaches. Lacking any comprehensive and trustworthy information about the extent of the pollution, the Mediterranean States requested UNEP to develop a program for evaluating the extent of the problem, determining its sources, and controlling them. In 1975, sixteen Mediterranean governments approved the Mediterranean Action Plan ("Med Plan" or "UNEP/MAP"). In the following years, a greatly expanded program was in place "to take all appropriate measures... to prevent, abate, and combat pollution... and to protect and enhance the marine environment."*934

Nowadays, the Med Plan consists of an interconnected set of four components: regional treaties, coordinated research and monitoring, integrated planning, and administrative and budgetary support. A coordinating headquarters unit was established in Athens, Greece, with a Mediterranean staff supported by annual contributions from all of the Mediterranean countries.935 In addition, regional centers were established to coordinate oil spill management actions, the preservation of species, and integrated development planning. Governments meet biannually to review the program. The MAP Coordination Unit ensures the role of the Secretariat of the Mediterranean Commission on Sustainable Development (MCSD) and coordinates the different working groups on a

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*934 Convention for the Protection of the Mediterranean against Pollution, article 4, paragraph 1.

permanent basis. The MAP Regional Activity Centers and specialized programs provide technical and organizational support according to their respective domains of responsibility.

The value of the input of the scientific advice regarding the provisions of the Barcelona Treaty and the development of the UNEP/MAP was proved at the first stages of the formulation of the regime. These experts contributed greatly to evaluating the degree of severity and extent of the problems, the prioritization of the environmental protection of the Mediterranean Sea over other policies, such as the transportation and fisheries policies as the main objective of the Barcelona Treaty, and the development of the cooperation scheme. Under the spectrum of the analysis of the present Thesis, the most important feature in the institutional architecture of the MAP/UNEP is the active involvement of the ecological epistemic community. As Haas describes:

“Members of this community staffed UNEP and served in the administration of several Mediterranean countries. They shared common beliefs about the causes of pollution which informed their policy advice and action in the issue area. They also shared common political objectives in reorganizing and creating new governmental and intergovernmental institutions that would be responsible for more comprehensive forms of environmental protection… Allied with the ecological epistemic community and UNEP, they advised their governments to pursue congruent and more comprehensive pollution control. The epistemic community whipsawed governments. At the international level, it promoted a comprehensive set of arrangements which exceeded the initial interest of any of the regional parties, and encouraged delegates to consider taking broader measures for pollution control. Nationally, through its members and its scientific allies, it successfully pressed for support of the Med Plan and for enforcement of its Protocols.”

The Med Plan, developed under the auspices of UNEP has been widely acclaimed as the most successful example of international environmental collaboration, and serves as a model for arrangement for nine other regional seas\(^{937}\) in which over 130 States, sixteen United Nations agencies and forty other international organizations take part. It is noteworthy that the Med Plan adopts a two-stage scientific cooperation approach. The Barcelona Convention provided for cooperation among the parties in monitoring and in scientific and technological work, again without imposing any substantive limits on the activity of the members. This phase of the agreement was carried out as a coordinated research and monitoring within the Med Plan. The Med Plan - related expert bodies, however, have no lawmaking competences.

A series of other M.E.A.s have also enriched their institutional architecture with implementation committees. The review of the implementation is not always or exclusively the task of an expert body. It can be the task of a political body or of a body of mixed character. For instance, CITES also has a *Standing Committee* that provides policy guidance to the Secretariat concerning the implementation of the Convention and oversees the management of the budget by the Secretariat. Beyond these key roles, when required, it coordinates and oversees the work of other committees and working groups, carries out tasks given to it by the COP, and drafts resolutions for consideration by the COP.\(^{938}\) The members of the Standing Committee are also parties representing each of

\(^{937}\) The other regions are the Gulf of Kuwait (or Persian Gulf), the Wider Caribbean, West and Central Africa, Eastern Africa, the East Asian Seas, the Red Sea and Gulf of Aden, the South Pacific, and the South Asian Seas.

\(^{938}\) See Resolution Conf. 11.1 (Rev. COP14) Annex 1.
the six major geographical regions, with the number of representatives weighted according to the number of parties within the region.\textsuperscript{939} This committee that reviews the implementation of CITES has mainly a political identity, rather than an expert identity and, thus, falls mainly outside the scope of our research.

On the contrary, the Ramsar Convention employs expert bodies to review its implementation process, along with the political bodies. Actually, the Ramsar Convention preceded the wave of M.E.A.s and was probably the first of the new kind of agreements equipped with standing bodies. At the beginning, it provided that its COP, called the Conference on the Conservation of Wetlands and Waterfowl, would meet, as necessary, to review implementation.\textsuperscript{940} Nowadays, the institutional regime of the Ramsar Convention includes, in addition to the COP and the Secretariat, a Scientific and Technical Review Panel (STPR), a Standing Committee and a Management Working Group. All of these groups share the competence to review the implementation of the Ramsar Convention. First among them stands the STPR that holds environmental expertise.

The Scientific and Technical Review Panel of the Ramsar Convention was established in 1993 by Resolution 5.5 as a subsidiary body of the Convention to provide scientific and technical guidance to the Conference of the Parties, the Standing

\textsuperscript{939} \textit{Id.}

Committee, and the Ramsar secretariat. Individual members are elected by the Standing Committee, based upon nominations from the Parties, on the same regionally proportionate basis that is used for electing the Standing Committee itself, but they serve in their own capacity as experts in the scientific areas required by the STRP's Work Plan and not as representatives of their countries. What is most interesting regarding the composition of STRP is that, in addition to the twelve individual STRP members, delegates from the five international, non-governmental Organization Partners, namely BirdLife International, International Water Management Institute (IWMI), IUCN-The World Conservation Union, Wetlands International, and WWF International, represent their organizations as full members of the Panel. In addition, numerous experts working under other M.E.A.s’ regimes also are invited to participate in the work of the STRP, but only as observers. The STRP has also developed a large network of scientists using its focal points and electronic communications with other external expert groups in order to exchange information. In comparison to the Standing Committee of the CITES, the STRP is a purely expert body. The STRP, despite its expertise, its autonomy and its expanded network of external expert groups that support its work, does not enjoy any lawmaking competence. It does not even enjoy the right of initiative to propose legislation. Its mandate is very restricted in comparison to what STRP could practically contribute to the development of International Environmental Law. Event its Work Plan for each

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941 See about the Fifth Meeting of the Conference of the Contracting Parties, June 9-16, 1993, Resolution 5.5 on the Establishment of a Scientific and Technical Review Panel, at the official site of the Ramsar Convention, [http://www.ramsar.org/res/key_res_5.5.htm](http://www.ramsar.org/res/key_res_5.5.htm), (last visited May 10, 2009). See also the texts of Resolution VII.2, Resolution VIII.28 and Resolution X.9 that have shaped the modus operandi of the STRP, available at [http://www.ramsar.org/res/key_res_vii.02e.htm](http://www.ramsar.org/res/key_res_vii.02e.htm), [http://www.ramsar.org/res/key_res_viii_28_e.htm](http://www.ramsar.org/res/key_res_viii_28_e.htm), and [http://www.ramsar.org/strp/key_strp_index.htm](http://www.ramsar.org/strp/key_strp_index.htm) (which offers the text of Resolution X.9 in a pdf format) respectively (last visited on May 10, 2009).

942 Id. Resolution X.9.
triennium is built around the priority tasks determined by the Standing Committee and based upon requests from the Conference of the Parties by means of its Strategic Plan and COP Resolutions and Recommendations. Once again, the integration of science in law is based on the political dynamics

Another expert body which does not hold the Subsidiary Body for Implementation (SBI) of the UNFCCC with the mandate to consider “the information communicated to assess the overall aggregated effects of the steps taken by the Parties in the light of the latest scientific assessment concerning climate change,” to make recommendations on policy to the COP and, if requested, to other bodies, and to review information regarding the implementation of the UNFCCC. Membership to both SBSTA and SBI is open to all of the Signatory States. As the case with SBSTA is, the SBI also comprises state representatives who are experts on matters related to climate change. SBI’s contribution to lawmaking under the convention remains limited, since its role is purely advisory. Its composition by experts who are, however, state representatives attributes it a semi-political/semi-technocratic character. Its partial categorization as a political body does not, however, help maximize its influence on the lawmaking process.

943 Article 10 para. ii (a) of the UNFCCC.

944 For further information on the work of the SBI, visit the official website of the Clean Development Mechanism (“CDM”) of the Kyoto Protocol, http://cdmrulebook.org/PageId/73 (last visited May 10, 2009).

945 See art. 10 para. 1 of the UNFCCC.
Under the UNFCCC and the Kyoto Protocol, several other expert groups promote the implementation of and compliance with the climate change regime. Those groups include, among others, a Consultative Group of Experts (CGE) on National Communications for "non-Annex I Parties." This CGE helps developing countries prepare national reports on climate change issues. The activities of the CGE include the examination of national communications of non-Annex I Parties, the conduct of regional hands-on training workshops on greenhouse gas inventories, vulnerability, adaptation, and mitigation assessments regarding the preparation of national communications, and preparation of technical reports to the Subsidiary Body for Implementation (“SBI”), such as ways to improve access to financial and technical support for the preparation of national communications. The CGE is composed of twenty-four members representing the regions of the world and other important intergovernmental arrangements, whose work is relevant to climate change. There are five non-Annex I members: one from Africa, Asia, the Pacific, Latin America, and the Caribbean. There are six Annex I members, as well as one member from the IPCC/GHG Inventory Task Force, one member from the National Communications Support Programme (“NCSP/GEF/UNDP/UNEP”) and one member from the UNEP.  


947 For more information on the CGE, visit its page on the official website of the UNFCCC, http://unfccc.int/national_reports/non-annex_i_natcom/cge/items/2608.php (last visited May 10, 2009).
Further, there is a Least Developed Country Expert Group (“LEG”) that advises qualifying nations on establishing programs for adapting to climate change. The objective of the LEG is to provide advice to Least Developed Countries (“LDCs”) on the preparation and implementation of national adaptation programs of action. It is composed of twelve experts, including five from African LDC Parties, two from Asian LDC Parties, two from small island LDC Parties and three from Annex II Parties.948 None of the aforementioned bodies holds any lawmaking competence.

Further, the Convention on Environmental Impact Assessment in a Transboundary Context is a UNECE convention, signed in Espoo, Finland, in 1991, and entered into force in 1997, (Espoo EIA Convention)949 that has also set out implementation mechanisms. The Convention sets out the obligations of Parties to carry out environmental impact assessments (EIA) of certain activities at an early stage of planning. It also lays down the general obligation of States to notify and consult each other on all major projects that are under consideration and are likely to have a significant adverse environmental impact across boundaries. Article 11 of the Convention foresees the establishment of the Implementation Committee and calls upon the Meeting of the Parties to “keep under continuous review the implementation of this Convention.”950 Pursuant to this Article, the Espoo Implementation Committee was established by the

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949 For more information, visit the official website of the Convention, http://www.unece.org/env/eia/ (last visited May 10, 2009).

950 Espoo EIA Convention, supra note 946, art. 11(2).
Meeting of the Parties in February 2001 under decision II/4 of the second Meeting of the Parties. Decision II/4 provides the Implementation Committee’s structure, functions, and procedures for compliance review. The Implementation Committee is comprised of eight members that are nominated by the Parties and elected by the Meeting of the Parties. The Espoo Implementation Committee has no lawmaking powers. The objectives of the Implementation Committee are, thus, despite its name, dual; it reviews both Parties’ implementation of and compliance with their obligations under the Convention in order to assist the Parties in fully meeting their commitments.

By the text and the spirit of the law, implementation committees do not hold any lawmaking powers. However, as said above, the task of implementation requires the enactment of secondary laws by either the international institutions or the Member States. From an analysis of the constituent instruments of the international institutions or the institutional laws that govern the function of the implementation bodies one cannot infer any lawmaking competence. In practice, however, it might be possible that these bodies proceed in lawmaking on the international level or compulsively impose specific laws on the national level. In order to fully analyze whether the bodies that deal with implementation issues exercise in practice any lawmaking powers is a much more

detailed and lengthy enterprise though that due to constrains of time and access to the internal documentation between the implementation bodies and the Member States remains outside of the scope of the present analysis. It should, nonetheless, be subject of study of a subsequent paper.

The close connection between implementation and compliance, as well as the fact that legislation might influence and be influenced by compliance make appropriate a short reference to the competence of expert bodies to review compliance, as well.

5. Expert Bodies with Competence in Review of Compliance

According to an agreed definition, compliance means the fulfillment by the contracting parties of their international obligations that they undertake under multilateral environmental agreements, other arrangements and any amendments to the multilateral environmental agreements. In addition, compliance can be defined as “a state of conformity or identity between an actor’s behavior and a specific rule” regardless of the motives, circumstances, or causes that lead to that conformity. The definition indicates that theories on compliance have focused on the performance of States, disregarding the

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953 Namely, a state of conformity or identity between an actor’s behavior and a specific rule.
role of other actors, such as international institutions. While, the traditional framework for approaching compliance is hierarchical and focuses on States, the more recent literature speaks of alternative compliance strategies, such as sunshine techniques, incentives and sanctions that can be administered also by international institutions. Despite the enhanced compliance that the international community has lately achieved by using these techniques, on many occasions States still do not perform well. This Chapter discusses the role of expert bodies in an alternative “managerial model” relying primarily on a cooperative, problem-solving approach instead of an old-fashioned coercive approach.954

In addition, especially in the field of International Environmental Law, commentators may understand compliance as a multi-level issue; as M.E.A.s have evolved over time,955 they lately tend to include many non-state actors, such as international institutions, private networks, or regions, among the recipients of the obligations. International institutions are compliance monitoring bodies, compliance facilitation bodies and participants in the obligations imposed by environmental regimes to which they must themselves comply. This new view of international organizations’ roles begets the question what the structure of the international institutions and the respective review processes should be in order for the expert bodies to be able to enhance the science base of both the international environmental provisions and the means of compliance of these procedures.

954 See CHAYES & CHAYES who comments on a shift from coercive to cooperative strategies, p. 3.

955 Supra, at 1.
While exploring the role of the expert bodies in compliance, the analysis could not disregard the role that the international secretariats play. Secretariats are the first and foremost actors that support compliance with M.E.A.s. However, when necessary, expert bodies can assist secretariats and provide States with valuable information on how to better comply with their obligations. This is especially true in M.E.A.s in comparison to compliance processes in other international treaties, because compliance with M.E.A.s’ provisions requires more scientific and technical expertise than compliance with many other types of international treaties. For example, scientific bodies working in the framework of the Mediterranean Action Plan (UNEP/MAP) offer technical assistance to the signatory States so that the States can comply with the requirements of the UNEP/MAP.\footnote{P.M. Haas, 1990 Saving the Mediterranean: the Politics of International Environmental Cooperation (Columbia University Press, Haas, P. M., R. O. Keohane, and M. A. Levy. 1993. Institutions for the Earth: Sources of Effective Environmental Protection: The MIT Press, Haas, P. M. Science Policy for Multilateral Environmental Governance, International Environmental Governance, Gaps and Weaknesses, Proposals for Reform: United Nations University.} In many instances, guidance on the ways that signatory States could comply with their obligations is required. This is the case, when no clear explanation exists regarding the steps a state needs to take in order to comply with its obligations under the agreement. Apart from the secretariats, many M.E.A.s provide for specialized, expert bodies that could assist the rest of the treaty-based bodies with their task to review compliance. There are instances where these bodies have a mixed task to review both implementation and compliance.
The Implementation Committee of the Protocols of the 1979 ECE Convention on Long-Range Transboundary Air Pollution was established by the Executive Body of the Convention in 1997 to review compliance by Parties with their obligations under the protocols of the Convention by force of Decision 1997/2 concerning the Implementation Committee, its structure and functions and its procedures for review of compliance as amended.\textsuperscript{957} The name of this Committee is another example of the confusion between the notions of “implementation” and “compliance.” The Committee mainly has the capacity to review the compliance of the signatory States to the Convention. The Committee's work focuses on three main areas: it periodically reviews compliance with Parties' reporting obligations, considers any submission or referral of possible non-compliance by an individual Party with any of its obligations under a given protocol, and carries out in-depth reviews of specified obligations in an individual protocol at the request of the Executive Body.\textsuperscript{958} It meets twice a year and reports annually to the Executive Body which makes decisions upon recommendations by the Committee. The Committee consists of nine Parties to the Convention, each elected for a term of two years.\textsuperscript{959} The Executive Body has no obligation to follow the Committee’s recommendations and respectively, the Committee has no direct role to play in any lawmaker activity taking place in order for the Executive Body to cope with any issue that might have occurred due to non-compliance.

\textsuperscript{957} For more information on Decision 1997/2 visit the official website of the United Nations Economic Commission for Europe (UNECE), \texttt{http://www.unece.org/env/lrtap/ic/welcome.htm} (last visited December 10, 2010).

\textsuperscript{958} \textit{Supra} notes 953 and 954.

\textsuperscript{959} Visit \texttt{http://www.unece.org/env/lrtap/ic/welcome.htm} (last visited November 23, 2008).
Article 15, paragraph 5(e) of the Basel Convention has adopted a “mechanism” by which a Committee is entrusted with certain responsibilities in order to promote the implementation of and compliance with the Basel Convention’s obligations. The Committee is comprised of 15 members: three from each of the five regional groups of the United Nations, namely the African group, the Asian group, the Central and Eastern European group, the Latin America and Caribbean group, and the Western Europe and Others group. Although the members are nominated by Governments, they serve objectively and in the best interest of the Basel Convention. The members have expertise relating to the Basel Convention in areas including scientific, technical, socio-economic and/or legal fields.

The Mechanism was established as a subsidiary body of the COP by Decision VI/12 of the Conference of the Parties adopted in 2002. The Mechanism includes two alternative approaches: (1) the so-called “specific submission” and (2) the General Review. The Commission initiates its work by the “specific submissions’ procedure after request by (a) a Party regarding its own compliance difficulty (“self-submission’), (b) a Party regarding another Party’s failure to comply with the obligations under the


962 See UNEP/CHW/OEWG/2/12, annex V.
Convention (“party-to-party submission”), and (c) the Secretariat regarding a Party’s reporting obligations under the Convention (“Secretariat submission”).963 Consistent with all of the Basel Convention provisions, the Convention urges that decisions be reached on substantive matters by consensus, otherwise by a two-thirds majority of the voting members present or by eight members present and voting. Decisions will only be adopted if there are at least ten members of the Committee present. The General Review process can be initiated by a decision of the COP. The Committee reports its findings to the COP, which produces non-binding, voluntary recommendations and suggestions for future work. In this case, neither the expert body nor the political body produces any laws directly related with the non-compliance of a signatory State.

Further, the Convention on Biological Diversity (CDB) has three main objectives: to conserve biological diversity, to use biological diversity in a sustainable fashion, and to share the benefits of biological diversity fairly and equitably.964 On January 29, 2000, the Conference of the Parties to the Convention on Biological Diversity adopted a supplementary agreement to the Convention known as the Cartagena Protocol on Biosafety. The Protocol seeks to protect biological diversity from the potential risks posed by modern biotechnology such as living modified organisms. It establishes an advance informed agreement (AIA) procedure to ensure that countries are provided with the information necessary to make informed decisions before agreeing to the import of living modified organisms.

963 See articles 13 and 16 of the Basel Convention.

such organisms into their territory. In accordance with Article 34 of the Protocol, the Conference of the Parties, who serve as the Meeting of the Parties to the Protocol (COP-MOP), adopted compliance procedures and mechanisms and established a Compliance Committee to promote compliance, which addresses cases of non-compliance, and provides advice or assistance.\footnote{See the official website on the Cartagena Protocol of Biosafety in regard with the Compliance Committee, http://www.cbd.int/biosafety/issues/compliance.shtml (last visited May 10, 2009).}

The Compliance Committee is composed of fifteen members who are nominated by Parties and elected by the COP-MOP. Three members must come from each of the five regional groups of the United Nations. The members of the Committee serve objectively and in their personal capacities. The Committee receives reports regarding compliance either by the signatory State itself or by a State Party against another State Party. The Secretariat receives the compliance submissions. When the Committee confirms that the compliance party has failed to comply with the provisions of the Convention, the Committee may: (a) provide advice or assistance to the Party concerned; (b) make recommendations to the COP-MOP to provide financial and technical assistance, technology transfer, training and other capacity building measures to the Party concerned, (c) request that the Party concerned develop a compliance action plan, or assist the Party in developing the action plan, which sets forth a timeframe for compliance that is agreed upon by the Committee and the Party. COP-MOP may, upon the recommendations of the Compliance Committee, decide upon one or more of the following measures: (a) provide financial and technical assistance; (b) issue a caution to the concerned Party; (c) request the Executive Secretary to publish cases of non-
compliance in the Biosafety Clearing-House; and (d) in cases of repeated non-compliance, take such measures as may be decided by the COP-MOP. The Compliance Committee has a decisive role to the extent that its recommendations on issues of non-compliance are necessary in order the COP-MOP to take any relevant action. The latter though is not bound to follow the recommendations of the former and it can abstain from the recommendations without necessitating any further procedural steps.

In a more decisive manner, the Kyoto Protocol compliance mechanism is designed to strengthen the Protocol’s environmental integrity, support the carbon market’s credibility, and ensure transparency among the signatory Parties. Its objective is to facilitate, promote and enforce compliance with the commitments under the Protocol. Its mechanism is built on the so-called “Kyoto Compliance Committee.” The Kyoto Compliance Committee consists of two branches: a facilitative branch and an enforcement branch. The facilitative branch of the Kyoto Compliance Committee

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968 In the case of the enforcement branch, each type of non-compliance requires a specific course of action. For instance, where the enforcement branch has determined that the emissions of a Party have exceeded its assigned amount, it must declare that that Party is in non-compliance and require the Party to make up the difference between its emissions and its assigned amount during the second commitment period, plus an additional deduction of 30%. In addition, it shall require the Party to submit a compliance action plan and suspend the eligibility of the Party to make transfers under emissions trading until the Party is reinstated.

“Any Party not complying with reporting requirements must develop a compliance action plan, as well, and Parties that are found not to meet the criteria for participating in the mechanisms
facilitates many efforts. The Compliance Committee’s activities include building confidence in the treaty regime, ensuring that all Parties have the institutional, technical, and financial capacity to fulfill their obligations, reinforcing the Parties’ sense of collective action and obligation, demonstrating that obligations are reasonable and attainable, and encouraging greater participation in the regime, while lowering resistance to the adoption of additional binding commitments.\textsuperscript{969} The facilitative branch of the Committee started its operation on May 2006 with a case brought to it by South Africa, on behalf of the Group of 77 and China, entitled “Compliance with Article 3.1 of the Kyoto Protocol.”\textsuperscript{970} The case was brought against Canada and fourteen other countries, alleging that the countries had failed to submit various kinds of information required by the procedures under the Protocol.\textsuperscript{971} The facilitative branch found itself will have their eligibility withdrawn. In all cases, the enforcement branch will make a public declaration that the Party is in non-compliance and will also make public the consequences to be applied. If a Party’s eligibility is withdrawn or suspended, it may request, either through an expert review team or directly to the enforcement branch, to have its eligibility restored if it believes it has rectified the problem and is again meeting the relevant criteria. In the case of compliance with emission targets, Annex I Parties have 100 days after the expert review of their final annual emissions inventory has finished to make up any shortfall in compliance (e.g. by acquiring AAUs, CERs, ERUs or RMUs through emissions trading). If, at the end of this period, a Party’s emissions are still greater than its assigned amount, the enforcement branch will declare the Party to be in non-compliance and apply the consequences outlined above. As a general rule, decisions taken by the two branches of the Committee cannot be appealed. The exception is a decision of the enforcement branch relating to emissions targets. Even then, a Party can only appeal if it believes it has been denied due process.”

For more information on the enforcement branch, see its page at the official website of the UNFCCC, \url{http://unfccc.int/kyoto_protocol/compliance/enforcement_branch/items/3785.php} (last visited May 10, 2009).

\textsuperscript{969} DONALD M. GOLDBERG ET AL., CTR. FOR INT’L ENVTL. LAW & EURONATURA, BUILDING A COMPLIANCE REGIME UNDER THE KYOTO PROTOCOL 2 (1998), available at \url{http://www.ciel.org/Publications/buildingacomplianceregimeunderKP.pdf}.


\textsuperscript{971} Id.
paralyzed, however, and could not take action.\textsuperscript{972} The facilitative branch had prepared two draft decisions: one to proceed and one not to proceed. The draft decision to proceed would have stated that the Parties had failed their information obligations and that the branch should take “necessary actions to provide advice, facilitation and promotion to each Party concerned.”\textsuperscript{973} However, this proposal failed by a vote of 4-4, with two abstentions.\textsuperscript{974} In the decision \textit{not} to proceed, the branch had proposed a finding that included several procedural obstacles. This proposal failed by a vote of 5-5.\textsuperscript{975} This example illustrates, among others, the fact that the three-fourths majority might be better than the request for unanimity. Still, it is not an easy majority to be reached, and it might be necessary that the expert bodies revise their rules of voting, in order to decide upon a lower percentage, such as a two-third majority vote, or even a simple majority vote. To the extend that compliance with the Kyoto Protocol would require adoption of laws, then the Compliance Committee might have been able to legislate, under the meaning that it would be able to take decisions by majority that would bound the signatory State at stake without necessarily its consent. However, no such case occurred thus far. Since we are heading towards the expiration of the Kyoto Protocol at the end of 2011, without any prospect of its renewal, it seems unlikely that such case will occur until the time of the expiration.

\textsuperscript{972} \textit{Id.} at 4.

\textsuperscript{973} \textit{Id.}

\textsuperscript{974} \textit{Id.} at 4.

\textsuperscript{975} ?? \textit{Id.} at 5.
A further compliance mechanism, the mechanism of the Aarhus Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention)\(^{976}\) includes several significant features that enhance its science base, including: (1) the ability of non-governmental organizations to nominate experts for possible election as members to the Compliance Committee, (2) the requirement that all Committee members be independent experts rather than representatives of state Parties to the Convention, and (3) the right of any member of the public and any non-governmental organization to file a “communication” with the Committee alleging a Party’s non-compliance.\(^{977,978}\) The most important feature of the Committee’s make-up is the appointment of eight independent experts who serve in their personal capacities rather than as representatives of the signatory States.\(^{979}\) The Committee is “composed of nationals of the Parties and Signatories to the Convention, who shall be persons of high moral character and recognized competence in the fields to


which the Convention relates, including persons having legal experience.” By contrast, the compliance mechanisms for most M.E.A.s do not provide for independent experts.

Consistent with information gathering procedures practiced by other conventions, the Aarhus Convention allows the Compliance Committee to accept submissions from Parties and referrals from the Secretariat about non-compliance with the Convention. Notably, however, the Aarhus Convention also allows the Compliance Committee to accept communications from the public. Article 15 of the Convention provides:

“The Meeting of the Parties shall establish, on a consensus basis, optional arrangements of a non-confrontational, non-judicial and consultative nature for reviewing compliance with the provisions of this Convention. These arrangements shall allow for appropriate public involvement and may include the option of considering communications from members of the public on matters related to this Convention.”

The openness to public participation by civil society has already produced remarkable results in the Committee’s functioning.

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980 See Aarhus Compliance Procedure, supra at...; see also the “Procedure for Provisional Nomination of Candidates for Election to the Compliance Committee of the PRTR Protocol” as agreed by the Bureau at its twenty-third meeting (Geneva, 20 November 2009), available at http://www.docstoc.com/docs/27278162/PROCEDURE-FOR-PROVISIONAL-NOMINATION-OF-CANDIDATES-FOR-ELECTION-TO (last visited April 13, 2011).

981 Aarhus Convention, at art. 1.


983 The idea of accepting communications from the public has a strong history in human rights instruments. For example, the European Convention on Human Rights guarantees the right of “any person, non-governmental organization or group of individuals claiming to be the victim” of a violation of rights to submit a “petition” to the European Court of Human Rights. (European Convention for the Protection of Human Rights and Fundamental Freedoms art. 25 para. 1, Nov. 4, 1950, 213 U.N.T.S. 221). Similarly, the
In just two years of considering cases, the Aarhus compliance mechanism has already dealt with several significant issues arising in the covered subject-matter. On those occasions, the Compliance Committee and the Meeting of the Parties have ruled that governments may not insist that people asking for environmental information provide reasons for seeking the information. The Compliance Committee and Meeting of the Parties have also held that governments must provide clear guidance to public authorities on providing information to the public. Regarding public participation, the decisions require States to provide adequate public notice, adequate procedures for written or oral comments, and careful consideration of comments that the public or NGOs may make. Complaints about lack of access to justice have also been resolved in decisions where Parties have been found in non-compliance with the Aarhus Convention, because of failure to provide legal standing to NGOs and slow judicial review procedures. In this way, the bodies of the Aarhus Convention decisively influence the lawmaking process at the national level.

The independence, transparency, and NGO involvement in the Convention’s novel compliance mechanism represent an ambitious effort to bring democracy and participation to the very heart of compliance and lead the way for better balancing between expert management and democratic governance in I.E.L. The issue of balancing expert management and democratic governance is a crucial aspect that needs to be

First Optional Protocol to the International Covenant on Civil and Political Rights States that “individuals who claim that any of their rights enumerated in the Covenant have been violated ... may submit a written communication to the Committee for consideration.” (Optional Protocol to the International Covenant on Civil and Political Rights art. 2, Dec. 16, 1966, 999 U.N.T.S. 302).
addressed in order to legitimize the assumption of more enhanced competences on behalf of the expert bodies. This topic is going to be addressed at the last Chapter of the Thesis.

6. Expert Bodies in Dispute Settlement and Institutional Interpretation

Executive or institutional interpretation is the type of interpretation that is generated by the bodies of the international institutions in the course of the exercise of their competencies. The constituent treaty of an IO, an international agreement, secondary norms issued by international institutions or even a treaty made under the auspices of an Organization can be subject to executive or institutional interpretation. The result of the interpretation may be both explicit, e.g., an interpretative statement or decision, and implicit, e.g., deduced from the practice followed by the bodies of an international institution in the course of the application of their constituent treaty.

The constituent treaty of an international institution may explicitly attribute to a body of the same institution the competence to interpret provisions of the treaty and other subsequent legal instruments. Otherwise, such power can be implicitly conferred upon the bodies, in cases where interpretation and institutional development is necessary for an
institution to continue performing its functions and, in general, to enjoy all of the necessary competences in order to promote its purposes. Interpretation by the plenary body, the secretariat or a designated interpretative organ, e.g., an expert body, is authoritative.

Regarding the interpretation of the United Nations Charter, for instance, it has been emphasized that “in the practice of the United Nations… it has been admitted that this interpretation is binding if it is “generally acceptable” by the member States.” The 1969 Vienna Convention on the Law of the Treaties that refers to interpretative acts as a means of interpretation according to Article 31 para 3 of the Convention relates an agreement on interpretation with the unanimity rule. In case that the organ issuing the interpretative act has the competence to decide following the majority rule, then the interpretative act has at least a slight “legislative effect”, since it binds the dissenting States against their will. According to other scholars, interpretation by a COP can be legally binding. This holds true whether the COP adopts the interpretation either by unanimity or by majority. Some regimes contain specific reference to how the treaties should be interpreted. For instance, the WTO – unlike many of the environmental regimes with which this Thesis interacts – comprehensively specifies the ways in which the WTO Agreements will be interpreted. In fact, the WTO Agreement requires that

985  CARLOS FERNANDEZ DE CASADEVANTE Y ROMANI, SOVEREIGNTY AND INTERPRETATION OF INTERNATIONAL NORMS 72 (Springer Verlag, Berlin, Heidelberg 2007), at n. 79.
986  SOMMER, supra note 35, at 637.
987  DiMENTO, supra note 126, at 37.
988  MITSUO MATSUMITSU, PETROS C. MAVROIDIS & THOMAS J. SCHEINHAUER, supra note 640.
the Ministerial Conference and the General Council are the only bodies with the WTO with the competence to adopt interpretations of the agreements.989

As a general rule, the competence of interpretation remains with the primary political organs of the international institutions, unless any provision or practice indicates otherwise. If the latter occurs, executive or institutional interpretation has the potential to develop into a useful tool for expert bodies to issue legislative acts. To which degree only political bodies or also expert bodies are able to perform executive or institutional interpretation and the effect of that interpretation remains to be seen.

One type of interpretation that usually takes place is the interpretation of the terms-of-art that are included in legal instruments and require further explanations, specifications or even updating based on new science. Political and expert bodies of international institutions may issue interpretative acts, such as guidelines, circular letters and resolutions, that elaborate terms-of-art used in various international provisions. Some of these instruments are usually explanatory and non-binding and, thus, they do not constitute stricto sensu legislation.990 Some other instruments consist of soft law provisions that might not be compulsory for the States in the present, but may shape the development of law in the future. Most interestingly though, by creative executive or

989 Marrakesh Agreement art. XI(2).

990 For instance, the COP of CITES may approve guidelines setting out criteria for the assessment of the degree of danger to species, defining the notion of “threat of extinction” as mentioned in the CITES, article XV. Another example of an interpretative act is the circular letter issued by IMO Secretariat interpreted the terms “force majeure” and “emergencies” as used in the London Dumping Convention and adopted by the Fourteenth Consultative Meeting. See IMO: Activities against Marine Pollution, EPL 25 (1995), 87.
institutional interpretation of the *terms-of-art*, the bodies of the agreement could perform legislative activity by introducing new elements to these terms-of-art, or by interpreting the provisions larger or stricter than usual.\textsuperscript{991} The degree of the freedom to creatively interpret depends on the institutional framework within which the interpretation takes place. In some cases, the expert bodies are allowed to proceed even to the so-called legislative fact-finding that opens up the way for creative interpretation.

6.1. Legislative Fact-Finding or Factual Findings

Another form of interpretation is the so-called legislative fact-finding. Agencies with technical expertise or expert bodies within international institutions are frequently called to elaborate definitions of terms used in legal provisions. The elaboration of these terms is not restricted to the provision of information about the meaning of the *terms-of-art*, but includes substantial introduction of new scientific information and data into the legal constellation of the institution that requested the elaboration of the terms of the provisions. Sommer provides the example of I.A.E.A.’s task under the Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (the London Dumping Convention)\textsuperscript{992} to define categories of radioactive wastes that are unsuitable for dumping. By defining these categories, the I.A.E.A., a technical agency, influences the

\textsuperscript{991} See FERNANDEZ, supra note 982, at 46.

\textsuperscript{992} Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, annex II (D) and article VI paragraph 1(a), London 1972, 11 I.L.M. 1294 (1972).
subject matter of the Convention, and accordingly the obligations of signatory States under the Convention. Although recommendations by I.A.E.A. are not mandatory, the London Dumping Convention provides that the signatory States “should take full account of the recommendation of the competent international body”, namely, in this case, the I.A.E.A. This means that it would be difficult for the signatory States to decide differently from the recommendations of the I.A.E.A. without invoking an important reason.993

The nature of the legislative fact-finding as a genuine lawmaking process is contested. Some scholars argue that expert bodies promulgate legislation through this legislative fact-finding process.994 Other scholars hold that acts of this type may not be genuine lawmaking to the extent that they do not create general norms, but rather implement norms through elaborating a description of their content. They acknowledge, however, that as long as such acts are applicable without further enactment by States to be necessary, they are an integral part of the lawmaking process.995 In addition, the mere fact that the fact-finding facilitates the implementation of pre-existing provisions does not deprive it of its legislative nature. On the contrary, it is not unusual that implementation of laws takes places by adoption of further, secondary laws. Implementation by legislation is a very common practice. Secondary legislation, to which the Thesis mainly refers, implements pre-existing primary legislation to a great extent.

993 For more details, see also above at Chapter…
994 Kirgis, supra note 607, at 154.
995 SOMMER, supra note 35, at 635.
The question that remains open is how far interpretation can go. Can an expert body by exercising legislative fact finding, for instance, add new chemical substances to a list of an annex of a convention, so as to automatically restrict or prohibit the use of the substances by the signatory States of the convention? A positive response to this question would mean that the expert body exercises legislative action. There is, however, not a single answer that applies to all of the expert bodies or international institutions. The answer depends on the legal instruments governing the functions and powers of the bodies of the international institution and the range of the competences and actions that they permit. For instance, the 1961 UN Single Convention on Narcotic Drugs\(^996\) instructs the UN Commission on Narcotic Drugs not to include or remove a narcotic substance under the Convention’s control or change the level of control over it except “in accordance with the recommendation of the World Health Organization.”\(^997\) This provision elevates the W.H.O., a technical international organization, to lawmaker status, since any decision to be taken by the signatory States of the Convention should follow the recommendation of the W.H.O., and not just take full account of it. In the same light, the 1971 Convention on Psychotropic Substances\(^998\) relies on both the UN Commission on Narcotic Drugs (CND)\(^999\) and the W.H.O. The UN Commission on Narcotic Drugs is


\(^{997}\) ALVAREZ, supra note 44, at 219; Kirgis, supra note 607, at 80.


\(^{999}\) For more information on the work of the UN Commission on Narcotic Drugs, visit the official site of the Commission, http://www.unodc.org/unodc/en/commissions/CND/index.html (last visited November 19, 2010).
charged with adding or removing substances to and from the Convention’s various schedules identifying drugs that ought to be subject to various degrees of state control. In doing so, the UN Commission must rely on the W.H.O.’s assessments as to whether a psychotropic substance has the capacity to produce dependence and is likely to be abused. The W.H.O. is, therefore, charged with making determinative factual findings that include, for example, scientific assessments of likely effects. Should it decide that a substance ought not to be restricted for public health purposes its inclusion in the Convention’s schedule would be ‘incompatible’ with its ability to make determinative findings for this purpose.

Many disputes involve issues of interpretation. Institutional interpretation may occur on the occasion that a body of an international institution has the role of settling a dispute between States that participate in the institution, or between States and the institution itself. For instance, the I.M.O. Convention gives its Assembly a role in settling questions or disputes concerning the interpretation or application of the Convention and anticipates that any question not so resolved can be submitted by the organization to the I.C.J. for an advisory opinion. The I.M.O. Assembly has not adopted detailed procedural rules to handle such disputes. On the few occasions when the I.M.O. Assembly has been asked to exercise this power, it tended to refer the question to other

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1000 Article 69 of the IMO Convention states: “Any question or dispute concerning the interpretation or application of the Convention shall be referred to the Assembly for settlement, or shall be settled in such other matter as the parties to the dispute may agree. Nothing in this Article shall preclude any organ of the organization from settling any such question or dispute that may arise during the exercise of its functions.” Article 70 provides that any questions not settled under article 69 or 74, “shall be referred by the Organization to the International Court of Justice for an advisory opinion in accordance with Article 96 of the Charter of the United Nations.” Convention on the International Maritime Organization, March 6, 1948, 289 U.N.T.S. 48 (entered into force, March 17, 1958). For a current version, visit the official IMO website, http://www.imo.org/home.html (last visited November 20, 2010).
standing bodies, such as its legal Committee or the organizations’ Legal Adviser. At least
one commentator reports that while interpretative questions have come up with some
frequency within the organization, most often these have been resolved through its
Maritime Safety Committee (MSC) and Marine Environment Protection Committee
(MEPC). These committees resolve such disputes by circulating draft interpretations
among committee members and adopt these interpretations or modifications of former
interpretations by consensus. 1001

Another case of institutional interpretation that takes place by the expert bodies
and the international administration, in combination with the political organs of an
international institution, is the case of the W.H.O. The officials of the W.H.O. have been
active in settling disputes concerning the interpretation of rules promulgated under their
organization’s respective auspices. The W.H.O.’s Health Regulations establish a detailed
procedure whereby disputes between members can, at the request of one of the parties, be
formally considered by the W.H.O. Communicable Diseases Committee, an expert body
charged with issuing nonbinding findings and recommendations, and, ultimately, if no
solution has been achieved, by the I.C.J. 1002 This formal procedure was used only
between 1951 and 1973. 1003 Instead, that organization has resorted to the W.H.O.
Secretariat’s exercise of “good offices” to resolve hundreds of interpretative questions
and disputes. Significant interpretations arising from the W.H.O. Secretariat’s attempts to

1001 ALVAREZ, supra note 44, at 450.
1002 2 DAVID M. LEIVE, INTERNATIONAL REGULATORY REGIMES 578 (Lexington, MA: Lexington
1003 LEIVE, supra note 999, at 479.
apply the Health Regulations or in response to member’s disputes are potentially authoritative, since these are included in the Director-General’s report to the W.H.O. Committee on Communicable Diseases, an expert body, and if these interpretations are approved by that body, they are included in the report to the W.H.O.’s plenary body.

Both institutional or executive interpretation and legislative fact-finding are appropriate venues for expert bodies to infuse their knowledge and expertise into I.E.L. Commentators acknowledge the meaningful effects of these venues, by e.g., stating that “the interpretation carried out by International Organizations can on occasion have a creative effect as can the jurisdictional interpretation.”

7. Participation of Expert Bodies of International Institutions in Dispute Settlement and Judicial Interpretation

Dispute settlement is not one of the stages of the lawmaking process and thus it does not belong to the scope of the Thesis. Accordingly, the Chapter will not thoroughly discuss this type of interpretation, jurisdictional generation of new norms and dispute settlement cases. Since, however, dispute settlement is relevant to the lawmaking process to the extent that it provides the fora for the generation of laws via judicial or jurisdictional interpretation and case law, a few notes are necessary, in order for the reader to have an overview of all of the possibilities that expert bodies enjoy in order to create new I.E.L. Alvarez very illustratively comments, “[I]nstitutionalized adjudicators

1004 Id. at 26.
are as much promulgators of law, both treaty-based and customary, as they are settlers of disputes. The question that arises is the role that expert bodies play, in parallel with the political bodies, under both functions.

Judicial or jurisdictional interpretation is another form of creative interpretation that can generate new I.E.L., since the international courts and tribunals function based on a model that is similar to the case-law system, Anglo-Saxon legal system that many domestic jurisdictions follow. Courts and tribunals create new international environmental norms and principles and help fill the gaps that exist in the field of I.E.L. due to the fragmentation of the legal system. Especially at the beginning of the field of environmental law, some of its basic principles had their origin in the jurisprudence of both domestic and international courts and tribunals.

Jurisdictional interpretation constitutes an effective mechanism for legislati

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1005 ALVAREZ, supra note 44, at 592.

1006 On fragmentation, see above, at Chapter 2.

1007 See, e.g., the Corfu Channel case at which the I.C.J. referred to the existence of international responsibility of a State in case that explosion of mines occur in territorial waters of another State and the duty to keep the other state’s territory safe, Corfu Channel (U.K. v. Alb.), 1949 I.C.J. 4, 22 (Apr. 9.)

contribute in treaty development, if the treaty does not have enough clarity or if the terms are so vague that it makes the treaty difficult to implement without any further specification. This is the case also with well developed-treaty regimes, such as the WTO system of agreements, that despite the continuous elaboration by the WTO, it still remains an “incomplete contract.”1009 For instance, the SPS Agreement lacks clarity on several key questions such as the meaning of a “risk assessment” and how to conduct such assessment in order to satisfy the demand of the SPS Agreement that a national measure should be “based on a risk assessment, as appropriate to circumstances” or when a measure is maintained “without sufficient scientific evidence.”1010 The TBT Agreement also lacks clarity, when, for example, it refers to measures leading to verification and assurance of conformity without the TBT Agreement to provide any guidance on what the appropriate standard of conformity actually is.1011 International courts and tribunals also can help interpreting and reconciling conflicting provisions among the various legal instruments regulating different aspects of the same environmental issue, such as in the case of conflict between the Montreal Protocol and the UNFCCC,1012 or the complex regimes governing biodiversity.1013


1010 Article 5 of the SPS Agreement.

1011 Annex I.3 of the TBT Agreement.

1012 See supra at Chapter…

1013 See Raustiala supra note 491 and 925.
Creative jurisdictional interpretation in connection with the rising autonomy of
the international institutions has led to such a self-determinative level that on occasion
reaches the level of constitutional interpretation. This is, for instance, the case of the DSU
that occasionally create new laws via constitutional interpretation. In this enterprise of
the generation of International Environmental Law through jurisprudence environmental
experts and scientists play a limited role.

As seen in the afore-mentioned paragraphs, expert bodies or even individual
experts do not play a concrete and institutionalized role in dispute settlement. This holds
true whether they perform interpretation functions or not. Rather, their roles depend on
the different settings in which they are called to participate. Since their roles vary, first, it
is useful to distinguish between obligatory and non-obligatory dispute settlement means.
Expert bodies and international administration in general can play a meaningful role by
participating in alternative dispute resolution, ranging from legislative developments,
implementation and compliance with the M.E.A.s. This is the case especially regarding
the so-called ‘soft means’ of dispute settlement, including negotiations, good offices, and
conciliation. Most M.E.A.s arm the administration to exercise these means of dispute
settlement. In general, international administrations facilitate soft means of dispute
settlement and some administrators and experts employed at the secretariats or expert
bodies act as the actual negotiators. When they act in this negotiating role, the experts
bring their environmental expertise to the dispute settlement table. However, these
dispute settlement tactics leave too many open issues to be decided and enforced upon at

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the discretion of the signatory States. Further, they do not create case law. They only have effect upon the parties involved in the dispute and they develop no legislative effect upon third parties for the future.

Furthermore, the obligatory means of settlement, namely arbitration and adjudication, create case law and rules affecting not only the parties involved in the dispute, but also third parties. In the case of the international environmental disputes, experts and administrators still play a very limited role.\textsuperscript{1015} In the international environmental cases, it is usually the international administration (mainly secretariats) that might facilitate those courts and arbitral tribunals. Disputes are settled either in external courts and tribunals or by ad hoc tribunals administered by the political bodies of the international institutions. On the one hand, no specialized court on international environmental disputes exists, despite numerous relevant requests on behalf of the civil society.\textsuperscript{1016} On the other hand, the expert bodies of the M.E.A.s or inter-governmental organizations are in principle not able to participate in the procedures on the general in scope international courts and tribunals. Expert bodies may simply provide information, when and if asked. Thus, in the realm of I.E.L., expert bodies may play an advisory and subsidiary role in dispute settlement, while they have no other influence on the final

\textsuperscript{1015} Agreement on Technical Barriers to Trade, Apr. 15, 1994, Agreement Establishing the World Trade Organization, Annex 1A, reprinted in Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, 33 I.L.M. 1125 (1994). According to Annex II of the TBT Agreement, there are procedures for the Technical Expert Groups set up under Article 14 in order them to assist with dispute settlement.

outcome of the settlement procedures. This is the case, for instance, in the disputes arising under the Agreement on Technical Barriers to Trade (TBT Agreement).\footnote{Agreement on Technical Barriers to Trade, Apr. 15, 1994; Agreement Establishing the World Trade Organization, Annex 1A, reprinted in Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, 33 I.L.M. 1125 (1994).}

According to Annex II of the TBT Agreement, there are procedures set up under Article 14 for the Technical Expert Groups to assist with dispute settlement. Even under the World Trade Organization Dispute Settlement Understanding (WTO DSU), which is among the most developed dispute settlement fora, the role of the experts when judging environmental related international trade disputes varies from case to case. The WTO has been given authority to adjudicate international trade disputes that in many instances have scientific and environmental dimensions.\footnote{See, e.g., DAVID PALMETER & PETROS C. MAVRODIS, DISPUTE SETTLEMENT IN THE WORLD TRADE ORGANIZATION: PRACTICE AND PROCEDURE (2d ed., Cambridge University Press 2004). For a discussion on trade and the environment in the WTO framework, see, e.g., Steve Charnovitz, Free Trade, Fair Trade, Green Trade: Defogging the Debate, 27 CORNELL INT’L ENVTL. L. J. 459 (1994); Steve Charnovitz, A Taxonomy of Environmental Trade Measures, 6 GEO. INT’L ENVTL. L. REV. 1 (1993); TRADE AND THE ENVIRONMENT: LAW, ECONOMICS AND POLICY (D. Zaelke, et al. ed. 1993); DANIEL C. ESTY, THE GREENING OF THE GATT (1994); MITSUO MATSUSHITA, THOMAS J. SCOENBAUM & PETROS C. MAVRODIS, THE WORLD TRADE ORGANIZATION, LAW, PRACTICE AND POLICY 439-520 (Oxford University Press 2003).}

Palmeter and Mavroidis describe very illustratively the discretion of arbitrators whether to seek or not expert advice in the dispute settlement process.

\begin{quote}
“In addition to authorizing panels to seek information from “any relevant source” Article 13.2 also authorizes them “to consult experts to obtain their opinion on certain aspects of the matter.” This authority is discretionary, and panels are not required to seek expert advice.\footnote{Appellate Body Report, Argentina – Measures Affecting Imports of Footwear, Textiles, Apparel and Other Items, WT/DS56/AB/R and Corr.1, adopted 22 April 1998, DSR 1998:III, 1003, paragraph 84.} Appendix 4 to the DSU sets forth rules for establishing expert review groups and the procedures they should follow.“
\end{quote}

Article 13.2 contemplates a written report from an expert review group, and the rules of Appendix 4 reflect this. However, in the first instance of the use of experts in a WTO proceeding, the panel elected to proceed in a different fashion. In EC-Hormones, the Panel chose not to receive a consensus report of the experts as a group, but rather, to obtain the opinions of the experts individually. This practice was affirmed by the Appellate Body.

None of the parties requested the appointment of experts in U.S. – Shrimp, but all of them submitted studies by experts and quoted from the same scientific documents to support opposite views. Accordingly, the Panel, on its own initiative, sought expert advice pursuant to Articles 13.1 and 13.2 of the DSU. The Panel asked the parties to suggest experts and also obtained curricula vitae of experts from the Secretariat. Five were selected and were asked to serve in their individual capacities. The parties were given time by the Panel to comment in writing on the replies of the experts to the questions of the Panel.

Similarly, in Australia - Salmon, neither party requested that the Panel seek expert advice, but neither objected when the Panel chose to do so. Four experts were chosen from names of individuals submitted by the parties and from the Office International des Epizooties. The Parties were given the opportunity to comment on the list of potential experts on the basis of their curricula vitae, and to state “any compelling objections” they might have to particular individuals. In consultation with the parties, the Panel prepared specific questions, which were submitted to each expert individually. The experts were requested to provide written responses to the questions they felt qualified to address. The written submissions of the parties, including the written versions of their oral presentations, were provided to each expert. The written responses of the experts were given to the parties, who in turn were given the opportunity to comment on these responses. Finally, the experts...

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1023 Id. paragraphs 5.5 – 5.7.

1024 Id. paragraphs 7.10.


1026 Id. paragraph 6.2.

1027 Id. paragraph 6.3.

1028 Id. paragraph 6.4.
met with the Panel and the parties to discuss their responses to the questions. In the Article 21.5 review of *Australia – Salmon*, the Panel stated that panels are not barred from considering expert advice until after the complaining party has established a prima facie case.

In EC-Asbestos, the Panel decided to consult with experts after its initial meeting with the parties. The consultations were with the experts individually, not as a group. The Panel acted pursuant to Article 13.1’s authorization to “seek information and technical advice from any individual or body which it deems appropriate,” rather than Article 13.2’s authorization to “seek an advisory report in writing from an expert review group.” EC-Asbestos was the first case under the Agreement on Technical Barriers to Trade and, in that regard, the Panel noted there was no conflict between Article 13 of the DSU and Article 13.2, as complementary to DSU Article 13.1.

The Appellate Body has stated that a panel is not duty bound to consult with particular experts; and, just as panels have discretion to determine how to seek expert advice, so also do they have discretion to determine whether to seek expert advice at all.

The discretion of the Appellate Body not to seek any advice even in cases that regard complex scientific issues, alerts us to the scientific basis of the jurisprudence produced by the WTO DSU, as well as other international courts and tribunals that even today base their judgment on the sole knowledge of legally trained persons without specialized knowledge on I.E.L. The DSU of the WTO is quite comprehensive.

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1029 Id. paragraph 6.5.
1031 Supra at…, paragraph 8.10.
1032 Id.
1033 Id.
1034 Id.
1036 Theofanis Christoforou, after reviewing the dispute settlement mechanism of one of the most well organized intergovernmental organizations, the World Trade Organization (WTO) concludes that the transfer of authority to WTO to adjudicate science-based international trade disputes was accomplished with little planning or reflection and proposes the establishment of expert review groups. Theofanis Christoforou, *Settlement of Science-Based Trade Disputes in the WTO: A Critical Review of the Developing Case Law in the Face of Scientific Uncertainty*, 8 N.Y.U. ENVT'L. L.J. 622 (2000). In general, the absence
especially in comparison to dispute settlement mechanisms of other international institutions. In parallel with the efforts of the Member States of the WTO to improve the substantive rules regarding the relationship of trade with the protection of health or the environment, there is a further need to lay down clear procedural rules to adjudicate science-based disputes. The WTO law needs to develop essential procedural safeguards, including the establishment of a standardized procedure in order expert opinion to be part of the dispute settlement process.1037

For a comprehensive overview of the functions of the afore-mentioned expert bodies, see Appendix No. 4 containing a table with the research results of the Thesis on this particular issue.

CHAPTER IV: ADDITIONAL THEORETICAL LEGAL BASES FOR THE INTEGRATION OF SCIENCE IN INTERNATIONAL ENVIRONMENTAL LAW WITHOUT ANY CONSTITUTIONAL OR PROCEDURAL AMENDMENT

Questions:
Is there any way that the international institutions can proceed in reinforcing the science-base of International Environmental Law without any procedural or substantive amendment to be necessary?

1037 Id.
There are some theoretical legal bases that could enable expert bodies to strengthen their input in I.E.L. and promote science-based lawmaking without any constitutional or procedural amendment. For example, within the framework of intergovernmental organizations, the “implied powers” of an organization could possibly serve as an additional basis for an expert body to establish lawmaking competences, if it does not hold any such competence based on explicit provisions. Respectively, the repetitive phrase in multilateral agreements that the treaty-based bodies could take an “action required to achieve the purpose of the agreement” even if such action is not explicitly described in the provisions of the agreement, could serve as an additional basis for expert bodies to issue new rules that would implement the agreement.

Both the “implied powers” and the “action required to achieve the purpose of the agreement” approaches are based upon the teleological method of interpretation, namely the intent - based interpretation. Based on the teleological interpretation both approaches can be invoked in order to extend the competences of the expert bodies in comparison to the expressed competences at three different stages: (1) the “original intent” of the framers of a charter as such intent has been expressed in the travaux; (2) the “intent” of the membership at the time a dispute arises; and (3) the “presumed” intent of a charter gleaned from all the sources of treaty interpretation, including text and context.

Since the second type of intent tends to merge with discussions about the relevance of the institutional practice, the teleological interpretation would be more useful at the first and third stages.

The following question remains to be asked in every different setting that these theoretical bases will be invoked. First, what is the degree of acceptance of the validity of these theoretical bases within each different international framework is, since the answer may vary in each case, and it would take at least a systemic interpretation of the legal system to understand whether it is legal to invoke such approaches in order to attribute lawmaking powers to expert bodies in that specific framework. Namely, it deserves special attention to explore what their field of application is and whether the lawmaking competence of expert bodies of international institutions without any prior formal delegation of such competence would fall within the field of application of these principles and, what if any regulatory act, based upon these principles, would be considered intra or ultra vires.

A. Implied Powers

The implied powers of an international institution or the bodies of an international institution are justified by the inherent authority contained in the constituent instrument.

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1039 About institutional practice, see Chapter …, p. …

of the international institution. While some constituent instruments expressly authorize bodies to assume implied powers, the doctrine has been applied even with respect to organizations whose charters contain no such reference. As applied by both the I.C.J. and the E.C.J. the doctrine results from the “principle of effectiveness.” E.C.J. stated in *Fedechar* that implied powers result from the application of a “rule of interpretation generally accepted in both international and national law, according to which the rules laid down by an international treaty or a law presupposes the rules without which that treaty or law would have no meaning or could not be reasonably and usefully applied.”

Institutional bodies have similarly justified such powers as ancillary to powers explicitly authorized or needed to assure the “effectiveness” of authorized action. This interpretation might be justified by the terms of Article 31, paragraph 1, of the 1969 Vienna Convention on the Law of Treaties, which codifies the general rules of interpretation and among others States that: “a treaty shall be interpreted… in the light of its object and purpose.” A similar provision exists in the 1986 Vienna Convention on the Law of Treaties between States and International Organizations and Between International Organizations (IO Convention). Further, according to the International Law Commission: “[w]hen a treaty is open to two interpretations one of which does and

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the other does not enable the treaty to have appropriate effects, good faith and the objects and purposes of the treaty demand that the former interpretation should be adopted.”

Would these international agreements, case law and statements of international law scholars though justify attribution of regulatory powers to bodies of international institutions, when international legal instruments have not explicitly conferred such powers upon them? No clear or definite answer can be offered, since the scope of the implied powers within the various international settings remains controversial. A substantial degree of divergence among opinions exists in theory and case law by international courts and tribunals. For example, Justice Hackworth stated in his dissenting opinion that: “Powers not expressed cannot freely be implied. Implied powers flow from a grant of expressed powers, and are limited to those that are “necessary” to the exercise of powers expressly granted.” However, as presented above, though usually premised on “functional necessity”, implied powers are sometimes applied to justify powers deemed “essential” for carrying out not merely explicitly conferred powers, but also to permit achievement of expansive charter “purposes.” Reaching the limits, in his dissenting opinion Justice Krylow supported that the doctrine may permit an organization to undertake action, that is to say not strictly speaking, “essential” or “necessary”, but is


1045 I.C.J. Reports (1949), at 198.
merely desirable or consistent with charter powers or aims.\textsuperscript{1046} In either opinion, no direct reference to regulatory powers took place.

Further, the International Court of Justice applied the doctrine of implied powers in interpreting the United Nations Charter in the \textit{Reparations} case.\textsuperscript{1047, 1048} The I.C.J. observed in its Advisory Opinion that “the rights and duties of an entity such as the Organization must depend upon its purpose and functions as specified or implied in its constituent documents and developed in practice.” Furthermore, the I.C.J. linking the doctrine to a concept of institutional effectiveness\textsuperscript{1049} noted: “Under international law, the Organization must be deemed to have those powers which, though not expressly provided in the Charter, are conferred upon it by necessary implication as being essential to the performance of its duties.”\textsuperscript{1050} Even in this case the controversy over the scope of the implied powers doctrine persists. A majority of the Court applied the doctrine expansively; to justify the UN’s capacity not only to bring a claim of damages against members for injury suffered by the Organization, but also to enable the UN to claim

\textsuperscript{1046} \textit{Competence of the General Assembly for the Admission of a State to the UN}, (\textit{Competence} case), 1950 ICJ Rep. 4 (KRYLOW, J., dissenting).


\textsuperscript{1048} About the Reparations Case, \textit{see RAHMATULLAH KHAN, IMPLIED POWERS OF THE U.N.} 41 (Vikas, New Delhi 1970).


damages as against non-members, including for injury suffered by individuals and not just the UN itself. On the other hand, a dissenting judge argued that while the power to bring claims against members for damages suffered to the Organization itself might arguably be “essential” , the other powers which the court majority accorded the Organization in that case were hardly “necessary” to fulfill UN purposes.\textsuperscript{1051} As Alvarez comments, the \textit{Reparation} case suggests that a finding of “implied powers” has ripple effects on the balance of powers between bodies.\textsuperscript{1052} Indeed, as a result of that case, the Secretary-General seized the power to pursue, present and settle part or all of such claims, thereby incidentally expanding the UN Secretariat’s powers and discretionary authority. In addition, in 1995, the ICTY judges took an expansive view of the implied powers of the Security Council, affirming the Council’s powers to impose criminal liability through establishment of a war crimes tribunal. In the course of doing so, those judges also applied, expansively, the Tribunal’s own powers to determine its “\textit{competence de la competence}” or “Competenz Competenz”, namely the acceptance that it held the ultimate competence, thereby seizing an implied power to review, \textit{de facto}, actions by the Security Council.\textsuperscript{1053}

The implementation of the implied powers doctrine within the framework of International arrangements is also divergent. For instance, in the framework of the Basel

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  \item \textsuperscript{1051} Judge Hackworth, dissenting, \textit{Reparation} case, at 198.
  \item \textsuperscript{1052} \textsc{Alvarez, supra} note 44, at 93.
  \item \textsuperscript{1053} \textit{Dusko Tadic}, Case No. IT-94-1-AR72, Oct. 2, 1995, [hereinafter \textit{Dusko Tadic case}], at para. 19.
\end{itemize}
Convention the decision of the COP\textsuperscript{1054} to prohibit the transboundary movement of hazardous waste from OECD to non-OECD member States received objections by the States that it was not legally binding and accordingly they denied lawmaking powers to the COP based on this legal basis. However, the case was different with the decision of the MOP of the Montreal Protocol for the establishment of the Interim Multilateral Fund. This decision was accepted as legally binding by the parties to the Protocol. If accepted that lawmaking powers are included, then this approach seems to be a legal basis for the promulgation of direct legislation by experts, despite the dubious limits of this power. Respectively, in the framework of the inter-governmental organizations with environmental competence the existence of implied powers of the organization seems to have long been accepted, since relevant language is present in their constituent instruments, or in their institutional law instruments that specify the powers of the bodies of the international organizations. For instance, the W.H.O. Health Assembly has the power to “take any other appropriate action to further the objective of the organization.”\textsuperscript{1055} In addition, the W.M.O.’s Congress is also authorized to “take any other appropriate action to further the purposes of the Organization.”\textsuperscript{1056, 1057}

\begin{footnotesize}
\begin{enumerate}
  \item Decision II/2.
  \item See art. 18 (m).
  \item See art. 7 (l).
  \item Respectively, article 308 (ex article 235 EC) of the Treaty for the European Community includes a similar provision giving to the European Community a general and explicit legal basis to justify its powers:

  “If action by the Community should prove necessary to attain, in the course of the operation of the common market, one of the objectives of the Community and this treaty has not provided the necessary powers, the Council shall, acting unanimously on a proposal from the Commission and after consulting the European Parliament, take the appropriate measures.”
\end{enumerate}
\end{footnotesize}
In general, implied powers of an international institution could potentially justify the exercise of lawmaking powers by experts. In each particular case of each single international institution, though, there are specific limitations and conditions that delineate the extent of those powers, such as, first and foremost the expressed Article 308 by explicitly providing for the undertaking by the Community (now Union) of actions necessary to attain the objectives of the Community goes one step beyond the implied powers approach, since implied powers exist when nothing has been explicitly provided for. This article codifies and explicitly expresses the spirit of the implied powers approach. See Robert Schütze, Organized Change Towards an “Ever Closer Union”: Article 308 EC and the Limits to the Community’s Legislative Competence, 22 Y.B. EUR. L. 79-115, (2003); P. Ferraiuolo, Le Pouvoir normative de la Communauté Européenne en Vertu de l’article 235: Possibilités et Limites (1999); M. Bungenberg, Artikel 235 nach Maastricht-Die Auswirkungen der Einheitlichen Europäischen Akte und des Vertrages über die Europäische Union auf die Handlungsbefugnis des Art. 235 EGV (1999).

Article 235, along with article 236 of the EEC Treaty, included the implied powers doctrine that was aiming to ensure a continuous process of constitutional adaptation. Later, Art. 308 became one of the most frequent legal bases in the Community’s system of competences. Since 1958 more than eight hundred (800) regulatory acts have been issued based on this article. Among them the vast majority was regarding environmental policy cases, even during an era when the environmental protection had not yet been one of the Community’s objectives. For the use of Article 235 for environmental protection despite the existence of any provision in the EEC Treaty, see, e.g., J.A. Usher, The Gradual Widening of European Community Policy on the Basis of Articles 100 and 235 of the EEC Treaty, in STRUCTURE AND DIMENSIONS OF EUROPEAN COMMUNITY POLICY 25-36 (J. Schwarze & H.G. Schermers eds., 1988).

According to European commentators, Article 308 has been characterized as an implied power doctrine at large, namely a step beyond the implied powers doctrine in the sense that it encompasses all “necessary powers” and not only the “indispensable” powers for the fulfillment of the objectives of the particular measure. Thus, Article 308 ended up furnishing the legislator with an additional legislative instrument, something that the doctrine of implied powers is not able to do. Robert Schütze, at 86 with reference to: G. Nicolaysen, Zur Theorie von den Implied Powers in den Europäischen Gemeinschaften, 1 EUROPÄISCHER RECHT 129-42 (1966). Article 308 is, indeed, much more explicit regarding its potential to support regulatory powers than any simple reference to the implied powers doctrine in international texts, or even more no reference at all. However, the distinction between “indispensable” and “necessary” action does not find adequate support in the realm of Public International Law, since, as it is obvious from the above references, in relevance to the implied powers doctrine, the word “necessary” and not only the word “indispensable” is being used. Thus, one could interpret Article 308 as an additional manifestation of the scope of the implied powers doctrine allowing for bodies to exercise regulatory power, when such power has not been explicitly conferred to them. On the other hand, admittedly the sui generis institutional nature of the European Union would not allow for a secure analogy, either for or against attribution of regulatory powers, in the realm of Public International Law. That is to say, the European Union is not a traditional international organization, but an organization aiming to integration among its Member States. The drafters of the European Union treaties were aiming at close integration of the EC Member States and one of the most powerful means for the achievement of such integration has been legislation by the EC.
constitutional limitations of the charter itself. Alvarez sees as an important and most common limitation, provisions that prohibit organizational action that “interferes” with Member States’ “domestic jurisdiction”, or their “domaine réservé”. Such restrictive provisions are, for instance, Article 2(7) of the United Nations Charter, Article 1, paragraph 2, of the Charter of the Organization of American States (O.A.S.), Article 15.8 of the League of Nations Covenant and Article 1.3 of the UNESCO Constitution.\textsuperscript{1058}

Further, the States that are not willing to bind themselves with the new provisions that expert bodies might have adopted by invoking the implied powers can always use the so-called “safeguard clauses” that serve as additional “buffer zones” within the framework of several international organizations and multilateral agreements. For instance, in international economic organizations, it is usual to have “safeguard clauses” permitting members to escape from substantive obligations, such as the GATT’s article XII that refers to the balance of payments restrictions, article XIX that allows for emergency action to protect domestic producers against competitive imports or the I.C.A.O.’s Chicago Convention’s Article 89 that permits freedom of action during “national emergencies.”

\textsuperscript{1058}ÁLVAREZ, supra note 44, at 94-95.
B. “Action Required to Achieve the Purpose of the Agreement”

While the invocation of the implied powers is most common within the framework of international organizations, there is a respective approach that is most applicable within the framework of the M.E.A.s called the theory of the “action required to achieve the purpose of the agreement.” The “action required to achieve the purpose of the agreement” approach is less widely accepted than the implied powers doctrine. However, this approach could also, under certain conditions, justify the exercise of lawmaking powers.

The exact wording of the phrase and the context may vary allowing in each separate case for a different interpretation of the spectrum of application of the phrase. There is such a provision in Article 19 of the Stockholm Convention on the Persistent Organic Pollutants which safeguards for the Conference of the Parties, namely a political body, the power to take further action than the action explicitly described in the Convention. According to Article 19, para. 5:

“...Consider and undertake any additional action that may be required for the achievement of the objectives of the Convention.”

Further, under a similar spirit, Article V of the International Convention for the Regulation of Whaling provides that the International Whaling Commission, a political body, may adopt amendments to the Schedule based on substantive criteria, among
which, the requirement that amendments are necessary to further the purposes of the Convention. These two cases are the only cases that the research showed that the phrase in question is used. It would not, however, be a mistake if somebody suggested that this phrase has, in practice, a more extended application than the two afore-mentioned cases, since the will of the signatory States to achieve its purpose and the mandate given to the treaty-based organs to act towards this direction are inherent in every treaty.

Apart from the M.E.A.s, reference to the action that is necessary to achieve the purpose of the organization exists also in the constituent instruments of the IOs. This is the case of the Constitution of the World Health Organization. In Chapter II referring to the Functions of the organization, Article 2 (v) includes among its competences the competence “generally to take all necessary action to attain the objective of the Organization.” Similarly, the World Meteorological Organization’s Congress is also authorized to “take any other appropriate action to further the purposes of the Organization.”

At this moment, it might be useful to remind the more skeptical readers of the Thesis of a more popular analysis of the competence of the international organizations that supports a wider application of the afore-mentioned approaches. Articles referring to the capacities and the legal personality of the organization to be established, convey to the international organization itself such expanded legal personality as to be able to perform its functions and achieve the purposes of its constituent instrument. For example,

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1059 Article 7 paragraph 1 of the WMO Convention.
Article VIII of the Convention on the Conservation of Antarctic Marine Living Resources

States:

“The Commission [for the Conservation of Antarctic Marine Living Resources]… shall have legal personality and shall enjoy in the territory of each of the States Parties such legal capacity as may be necessary to perform its function and achieve the purposes of this Convention…”

This type of provision expands the legal personality of an organization to the extent that it is necessary, in order for the organization to effectively perform its tasks. The spectrum of the acts that an organization can perform is vague, and it expands from a simple transaction of payment of salaries to its administrative staff and the signature of the rent of its premises up to the signature of international agreements. These acts may include regulatory acts, but those are rather restricted by competences of the organization itself, as agreed by the member States. The mere fact that the international organization enjoys legal personality does not equip it with additional powers to bind its member States.

Further, one should distinguish the cases where such discretion for additional actions required for the achievement of the purposes of an agreement or an organization is attributed to the political organ, because the Meeting of the Parties traditionally enjoy the regulatory powers.\textsuperscript{1060} In addition, when a prior decision by the political body is necessary in order for the extension of the competence of the technical body or the

\textsuperscript{1060} See, e.g., such as the Meeting of the Parties under the Montreal Protocol in art. 11 para. 4 (j).
administrative body to occur, the case is different from the theory presented here. For instance, Article 12 of the Montreal Protocol that provides:

“For the purposes of this Protocol, the Secretariat shall: ...(g) perform such other functions for the achievement of the purposes of this Protocol as may be assigned to it by the Parties.”

In this case, the Secretariat does not function on its own capacity, but rather it needs a prior decision for the extension of the powers of the Secretariat to be adopted by the political body (MOP).  

Both the implied powers doctrine and the “action required to achieve the purpose of the agreement” approach, even if placed under a “necessity test”, leave a degree of legislative or administrative discretion. Without careful analysis and application, they may turn to elusive legal terms introducing ambiguity in I.E.L.

1061 In both cases, the case is different if the political body is able to decide with majority voting for this extension of powers or not. In the first case, the decision-making process is closer to lawmaking, but certainly this category belongs to the above chapters, about majority decision-making, and not in this one.
C. Indirect Legislation by Reference

Another way that international institutions make law is by reference or referral of non-binding texts into binding texts. Standards and other soft law rules that have been adopted by expert bodies can become binding, if later they become incorporated in binding instruments by reference. In this way, the expert bodies become, even indirectly, legislators. Namely, while various international bodies issue legal instruments, such as standards, that are not binding law, by reference they very same instruments may become binding sometime in the future, through other – binding – legal instruments that will have referred to them, in order that the latter that are leges imperfectae to fill their gaps. For instance, Article 211 paragraph 2 and Article 207 paragraph 1 of the Law of the Sea Convention, which is a legally binding instrument, both refer to “generally accepted international rules and standards established through the competent international organization…” and to “internationally agreed rules, standards and recommended practices…” Via this reference, the standards turn binding instruments, for those countries that are bound by the LOS Convention. A further indirect reference that the LOS Convention entails is Article 211 that requires from the flag States not to adopt

1062 See ASTON, supra note 432, at 175.
domestic legislation for vessel pollution control with at least the same effect as the generally accepted international rules and standards. As mentioned above, this is also the case of the standards and other rules issued by the Codex Alimentarius Commission that become binding after the WTO-related legal instruments refer to them.  

D. Interpretation under the Lenses of Intertemporal Law

Accordingly to the general rule or principle of contemporariness the terms of a treaty are to be interpreted in conformity with their sense and scope at the time of the conclusion of the treaty. This I.C.J. has applied this rule with regard, for instance, to the notion of “dispute” in the treaties concluded in the VII Century between Morocco and France and in the XVIII and XIX Centuries between Morocco and Great Britain and with regard to the historical concept of “terra nullius” in the Western Sahara case. Nonetheless, this rule has an exception; insofar as it is proven that the Parties have had the intention of using the terms with an evolutionary character. This was, for example, the case of the Aegean Sea Continental Shelf and the South West Africa (Preliminary Objections) case, with regard to the notion of “mandate.” In addition, the I.C.J. applied the same exception with regard to the concepts of “the strenuous conditions of the

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1063 See, supra at …


1066 See, I.C.J., Reports 1978, p. 33 et seq.

modern world” and “the well-being and development” embodied in Article 22 of the Covenant of the League of Nations, in the case concerning the Legal Consequences for States of the Continued Presence of South Africa in Namibia (South West Africa) notwithstanding Security Council Resolution 276 (1970),\textsuperscript{1068} and in the case of the Aegean sea Continental Shelf with regard to the notion of “territorial status.”\textsuperscript{1069, 1070}

This type of interpretation could also apply in cases of older instruments that were adopted in an “environmentally innocent” era, without necessarily any environmental scope. In this way, contemporary institutions could apply older legal instruments in a whole different way, in order to help effectively cope with the “strenuous conditions of the modern world” that contemporary environmental degradation phenomena have created. This type of interpretation can be useful in further integrating science in law. Namely, expert bodies can potentially invoke the principle of inter-temporariness and infuse science-based provisions in the text of the treaty, in the event that some new and fundamentally innovative science has occurred since the adoption of the treaty. Accordingly, the treaty can and should now be understood differently, in order to respond to new circumstances.

\textsuperscript{1068} Reports 1971, p. 31.

\textsuperscript{1069} Cf. I.C.J., Reports 1978, p. 33 et seq.

\textsuperscript{1070} For a comprehensive reference on the application of cases of intertemporal law, see FERNANDEZ, supra note 982, at 153.
E. Customary Institutional Law

The role of the expert bodies in the decision-making and lawmaking processes of the international institutions can also be elevated through repetitive practice with the opinion that they act in a lawful way that leads to the generation of new customary constitutional law. The constituent instruments or constitutions of either an intergovernmental organization or an M.E.A. contain most of the rules that determine the existence, the functions, and the competences of the expert bodies under the institutional framework. They mainly shape authoritatively the institutional law and practice. However, “[O]nce constitutions are established, they become living instruments, through a combination of practice, interpretation (by political and legal bodies) and by amendment.” That means the initial rules of the constitution regarding the actors in lawmaking can change through various ways; through interpretation or amendments as discussed above or the practice followed within the institution. The administration of the institution, namely its secretariat and the bodies, which are mainly expert bodies that

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1071 Cf. the similar concepts of usages, customary law, and general principles in the internal practice of international institutions to which ALEXANDROWICZ refers, supra note 287, at 11.

1072 P. Craig, Constitutions, Constitutionalism, and the European Union, 7 ELJ, 125, 125 (2001).
function under the framework of the institution may alter the lawmaking processes by continuing practice, especially if they function under a “strong” constitution that equips them with a high degree of autonomy. The stronger the constitution, the greater the separate will of the organization, and the most likely the practice of the organization to create new customary institutional law. This customary constitutional law, in the absence of the objection of the States, can gradually fill in the legal framework created by the constitutive document, and to the extent possible, advance the role of the expert bodies in the lawmaking process of the institution. For example, if an expert organ repetitively takes the initiative to propose new legislation or amendments to existing legislation, despite the fact that neither the constituent instrument or another legal instrument attributes such right to it, and provided that nor other state or body objects, then its practice will create new, customary institutional law that that allows for expert bodies to enjoy the right of initiative.
FORTH ATTEMPT TO DEFINE SCIENCE-BASED LAWMAKING

For the optimization of a science-based lawmaking process, expert bodies should assume a more distinctive role in all of the stages of the law-making process, including the post-legislative stages.

Not only should the *stricto sensu* expert bodies be reinforced regarding their capacities, but also secretariats. Secretariats should be qualified with all of the necessary means in order to gather and disseminate the necessary scientific and technological information that is relevant to the subject-matter under regulation and create the appropriate venues of communication between the expert bodies and the political bodies of the institution. They should facilitate the adequate scientific input on behalf of external expert bodies, and develop the necessary capacity in order to inform and assist States and other actors in the implementation and enforcement of the I.E.L.

A prerequisite for the recognition of enhanced competences is that expert bodies have some guarantees of quality and independence. Experts should be adequately qualified in their respective field and employed on a permanent basis at the administration of the international institutions, so as to promote the agenda of the international institution depending on its mandate, rather than the agendas of other external actors.

In addition, due to the bulk and the interdisciplinary character of environmental information and related sciences, it is important that the international institutions and its permanent expert bodies create liaisons with independent, external expert groups, in order to enhance their capacity to gather and process scientific information. Expert bodies with worldwide participation are better equipped to this end. Further, informed decision-making through partnerships with other international institutions, governmental authorities, business and industry is important.

In shaping the regulatory agenda, it is necessary and absolutely justified that the expert bodies should hold a right of initiative to propose new legislation. Expert bodies should also contribute more authoritatively to the update and progressive implementation, and compliance of the existing legislation. Scientific checks and balances could be imposed in many aspects of the work of the institution, such as on the analysis of the cost-effectiveness or the technical feasibility of alternatives to dangerous substances or new mechanisms etc.
The political bodies should be obliged to take full account of the recommendations and advice of the expert bodies. In case of disagreement, the political bodies should give reasons why the deviate from the expert advice. Going a step further, expert bodies could assume legislative powers with results that last temporarily, in order to timely respond to environmental emergencies. An expert body may take binding decisions on urgent matters based on input that it itself holds, from its scientific network and other subsidiary bodies of the organization. In these rare cases of urgency, the expert organization could temporarily be given legislative powers. However, such decisions are meant to be considered and confirmed by the political body of the institution itself, as soon as time permits.

Expert bodies can also contribute to various types of interpretation, either executive or institutional interpretation, legislative fact-finding and judicial interpretation. Expert bodies could contribute with their recommendation in the various interpretative enterprises, while should follow recommendations, and the political bodies should be obliged to justify their decisions in case they decide differently than the recommendations of the expert bodies.
PART III: DEMOCRATIC GOVERNANCE AND PUBLIC ACCOUNTABILITY AS LIMITATIONS TO THE SCIENCE-BASED LAWMAKING MODEL

Questions

Are there any limitations against the delegation of such powers to experts? Would such delegation contradict the requirements for democracy and accountability? If yes, what would the counter-arguments be that would bring balance in the global environmental governance system and justify such delegation?

CHAPTER I: THE INHERENT LIMITS OF THE SCIENCE-BASED LAWMAKING MODEL

The science-based lawmaking model is an optimized model aiming at advanced environmental protection. However, this has its own inherent limits. On grounds of popular demand based on ethics or other factors that shape public choice, the political bodies or individual States may require the adoption of higher environmental standards than the standards that experts may recommend by strictly following scientific criteria. There are cases in which States and other international actors are willing to adopt more protective measures for the natural environment than the measures that experts advocate as necessary to effectively protect the environment based on science. The Thesis acknowledges this fact, explores some representative cases, but still advocates the
adoption of processes that tend to further integrate science into law, rather than the traditional processes that are solely based on politics.

The main assumption of the Thesis is driven by cases, when, due to political, financial or other kinds of pressures, the lawmaking bodies of the international institutions tend to adopt a lower standard of environmental legislation than the higher standard that can be achieved by the employment of existing science and technology. If science and technology could influence more decisively the lawmaking processes of I.E.L., then the performance of the I.E.L. would be higher and the international community would more easily, quickly and effectively cope with contemporary environmental challenges. This stands true especially for International Law in comparison to domestic legislation. On the domestic level, the case that the national administration decides to adopt stricter measures of environmental protection than what scientists advocate, is not rare since national administrations are closer to the public and are put under its scrutiny. As time goes by, there is an increasing environmental awareness that develops among the lay public within the States, which influences the choices of the administrations toward a more environmentally-friendly stance. In some developed countries, such as in the United States of America and the European Union, some of the parties that won the elections in recent years were invoking, as a main part of their campaign, pro-environmental manifestos.1073 Irrespective of whether the new Administrations actually implemented their ‘Green’ political manifestos or not, the fact

that they assumed power due to, among other factors, their use of pro-environmental language, is a strong indication of the increasing pro-environmental ethical stance of the peoples in their own countries. The increasing proliferation of the environmental NGOs, as well as the density with which the mass media are dealing with environmental cases, more now than ever before, are all indications of the increasing environmental concerns among lay people. The increasing pro-environmental movement also influences the international law and policy development, albeit to a lesser extent. For a variety of reasons, including issues of economic competition among States, looser and fragmented governance structures and a weaker civil society on the international level, national administrations are less influenced by domestic environmental movements and decide using different criteria, when acting on the international level. The I.E.L., in comparison with national environmental legislations within States, is, thus, less protective vis-à-vis environmental causes. Facing the weakness of the I.E.L. to offer adequate protection to the natural environment, the need to render to the support of science in order to raise the protection standards, seems to be vital.

Secondly, there is always the chance that fallible science leads to the adoption of wrong provisions and measures of environmental protection. Factors that may undermine the validity of science are many, such as, especially, but not exclusively, scientific uncertainty. It is not rare that the information available to experts concerning recently emerging environmental issues is incomplete, uncertain or equivocal. Different expert groups issue conflicting judgments; their deliberations are inconclusive. Science-based decisionist processes are not able to reach closure without relying on arbitrary
assumptions, and are, accordingly, arbitrary. In other cases, solid science that could build scientific certainty may exist, but wrong scientific opinions may maliciously interfere and distort the lawmaking process. Alternatively, through malicious intent or not, only the stakeholders on one side, for instance industry vs. civil society, may be able to effectively defend its positions and convince lawmakers to take action. The other side, for instance a non-governmental organization that has fewer “weapons” than industry, might not to be able to scientifically defend its position and convince the lawmakers of the validity of its opinion, even if the non-governmental organization is on the right side. Issues of uncertainty, malicious subjectivity, and inequality of weapons are factors that undeniably can influence the lawmaking process, sometimes with dramatic results for the protection of the natural environment and public health.

In other cases, there might be scientific constrains, such as constrains regarding the design and the implementation of experiments. The scale of the experiments conducted in laboratories or even outside in the open air can only be essentially smaller in scale than the actual global scale under which many environmental phenomena develop.\footnote{1074} Thus, experiments that are of smaller-scale than what is necessary might not always successfully imitate the global natural environment and their results might be inaccurate. Similarly, there exist inaccurate data, statistics, and environmental indicators from around the world which can lead to wrong expert opinion, and consequently wrong design of environmental policies and laws. The Thesis acknowledges that several reasons might exist that could lead to fallible science and, consequently, fallible laws, if the latter are based solely upon the former. Definitely, there are a few cases where the reality-test

\footnote{1074} These are the cases, \textit{e.g.}, of global climate change and ocean acidification.
of the Thesis can be difficult. The more science and technology develop though, the fewer are the possibilities that science, upon which laws are based, is wrong. In any case, this is mainly a scientific issue and not a legal issue. In general, in order to cope with similar issues, it is useful that laws are based on science that is commonly accepted and thus secure. This is why the Thesis primarily applies in cases where usable science exists.

The validity of science varies in each and every case and environmental problem. It would also be very difficult to develop a Thesis that is based on many variables. In order to develop a lawmaking model within a social sciences and law framework that has necessarily more variables in comparison to natural sciences, it is necessary that some factors remain constant. For the purposes of the Thesis, one of these factors is the validity of science. For this reason and, in order for the Thesis to be applicable in real life situations as much as possible and not just as a theoretical piece with academic value only, first, the Thesis refers mainly to cases where scientific certainty prevails. Secondly, the lawmaking model itself proposes some corrective measures, such as a variety in the composition of the expert bodies and the development of liaisons with other external expert bodies. In addition, the model could also use some accountability mechanisms in order to minimize the influence of these factors.1075 Third, science can go both ways and be used to support not only pro-environmental, but also anti-environmental arguments. It is not rare that by invoking the authoritative canons of scientific reasoning and method, public authorities and others having a stake in technical issues seek to demonstrate the

1075 Regarding the accountability mechanisms, see below at Chapter…
rationality of their position and thereby gain political support and acceptance. In this role, science can be used to either support advocated positions in environmental conflicts or prevent policy and law being made around a rival scientific conclusion. Opponents of a proposal might attempt to prevent a decision by either presenting alternative scientific data or analyses or questioning the assumptions or interpretations of scientific reports that support the proposal. In nearly any environmental conflict today, participants routinely raise questions about the assumptions, data, and models used in analysis that support opposing viewpoints. One well-known example of this type of strategic use of science in regulatory decision-making is the tobacco industry’s effort to stall restrictions on cigarette smoking by attempting to discredit studies linking cigarette smoking to lung cancer.

The 2003 Framework Convention on Tobacco Control stands as an illustrative example that prevailing industry interests and international institutional weaknesses is one of the main factors resulting in weak international regulations in the field of public health and the environment. For decades, industry denied the devastating

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1077 DAVID COLLINGRIDGE & COLIN REEVE, SCIENCE SPEAKS TO POWER (New York, St Martin’s Press 1986).
consequences on health from tobacco consumption. Only recently has industry started accepting this undeniable truth in the view of countervailing scientific evidence. All these years there was a *bras de fer* between the tobacco industry and the World Health Organization (W.H.O.) going on. W.H.O. was for years unable to convince its member States to adopt international tobacco control legislation. Despite evidence at hand, for almost forty years W.H.O. was able to promote the adoption of only domestic legislation in many jurisdictions through its Health Programme. Efforts for a relevant international legislation were initiated only as late as 1995.\textsuperscript{1080} 1081 In May 1999, the World Health Assembly of the W.H.O., in the organization’s first venture into treaty-making on the issue, passed a resolution calling for a multi-year effort to secure a Framework Convention on Tobacco Control.\textsuperscript{1082} That Framework Convention was adopted by the World Health Assembly on May 21, 2003 by means of a resolution.\textsuperscript{1083}

\textsuperscript{1080} In May 1995, the World Health Assembly (WHA), the legislative organ of WHO, in resolution WHA48.11, requested the Director-General of WHO to report on the “feasibility of developing an international instrument such as guidelines, a declaration, or an International Convention on Tobacco Control: *An International Strategy for Tobacco Control*, WHA Res. 48.11, 48th Ass., 12th plen. mtg., Annex 1, Agenda Item 19, WHO Doc. A48/VR/12 (1995)”.


\textsuperscript{1082} WHO, Resolution WHA52.18.

\textsuperscript{1083} WHO Framework Convention on Tobacco Control, WHA56.1, May 21, 2003 (Health Assembly Resolution and Annex) [hereinafter Tobacco Framework Convention], available at www.who.int/tobacco/areas/framework/en (last visited on March 8, 2007).
A. Ethos and Deep Environmentalism Countervail Science

There are, indeed, a few cases where the political bodies of the international institutions or individual States decided to provide a higher level of protection to the natural environment than the level of protection that expert bodies and other scientists advocated. This is, for example, the case of the international management of the population of whales, where ethics override science. In general, the ethics of the animal rights movement or deep environmentalism raises the standards for the protection of animals or other elements of the environment on an immensely higher standard than the standards imposed by the conservation movement and mediocre environmentalism. While, on the other hand, conservationists and mediocre environmentalists would also invoke science to reinforce their argumentation.\textsuperscript{1084} Apart from the two aforementioned

\textsuperscript{1084} The conservation movement, also known as nature conservation, is a political, environmental and a social movement that seeks to protect natural resources including plant and animal species as well as their habitat for the future. The early conservation movement included fisheries and wildlife management, water, soil conservation and sustainable forestry. The contemporary conservation movement has broadened from the early movement’s emphasis on use of sustainable yield of natural resources and preservation of wilderness areas to include preservation of biodiversity. Some say the conservation movement is part of the broader and more far-reaching environmental movement, while others argue that they differ both in ideology and practice. Chiefly in the United States, conservation is seen as differing from environmentalism in that it aims to preserve natural resources expressly for their continued sustainable use by humans. \textit{See, e.g., John C. Gifford, Living by the Land, Coral Gables (Florida: Glade House 1945); Samuel P. Hays, Conservation and the Gospel of Efficiency: The Progressive Conservation Movement 1890-1920 (1959); Eric L. Jones, \textit{The History of Natural Resource Exploitation in the Western World}, 6 \textit{Research in Economic History} 235-52 (1991); McNeill, John R., \textit{Something New Under the Sun: An Environmental History of the Twentieth Century} (2000).}
movements, in many other issues, the public or the political bodies of international institutions may raise the bar higher than the experts.

The Case of Commercial Whaling

1972 was the year of the first conference on our global environment and especially in the Western part of the globe, the year of political sensitivity and social awareness about environmental issues and the state of the natural resources. Amidst this favorable political framework the 1972 United Nations Conference on the Human Environment (UNCHE) took place, prompted by the strength of two resolutions issued by the United Nations Economic and Social Council and the General Assembly in 1968. During the Conference, the States took the decision to establish two Committees. One of the Committees, Committee Two on “The Environmental Aspects of Natural Resource Management”, considered the state of the whale stocks and recommended a ten-year moratorium on commercial whaling to permit the whales’ recovery. There seemed to be, however, at first glance, a conflict within the scientific communities around the world. The UNCHE Report recorded that Japan opposed the proposal for the ban before the Committee, holding that their scientists had advised that such dramatic and emotional gestures were unjustified. The Netherlands, however, stated that their scientists had advised that such measures were necessary. The resolution was carried in Committee by a vote of fifty two in favor and three against; when presented to the Plenary Session, the Resolution was again carried by a vote of fifty three in favor and none against, but there were twelve abstentions. Japan abstained stating this time that “while it was favorable to a moratorium on commercial whaling, it had abstained in the vote because the whole question was to be considered by the International Whaling Commission on the basis of available scientific information.” The Stockholm Conference also issued Recommendation 33, which suggested “that Governments agree to strengthen the International Whaling Commission, to increase international research efforts, and as a matter of urgency to call for an international agreement, under the auspices of the International Whaling Commission and involving all Governments concerned, for a 10-year moratorium on commercial whaling.”

The International Whaling Commission (I.W.C.), a political organ for the purposes of the Thesis, first considered a whaling moratorium in 1973, when the United States proposed a ten-year moratorium before I.W.C.’s Technical Committee. At that meeting, the Technical Committee rejected the proposal for the moratorium, partly because of an opinion from

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I.W.C.’s Scientific Committee, which supported the position “that a blanket moratorium on whaling could not be justified scientifically, since prudent management required regulation of the stocks.” The debate over the necessity of a moratorium on commercial whaling continued within I.W.C., particularly within two of its more important bodies, the Scientific Committee and the Technical Committee. Admittedly, part of the debate rested on the issues of scientific uncertainty regarding both lack of data and lack of knowledge on how to effectively solve the problem:

“The ICRW required the I.W.C. to fix quotas and make regulations based on ‘scientific findings’. The [Scientific Committee] was beginning to discover that it could not make such findings in view of the lack of data on many stocks and sub-stocks and of new theories of population dynamics.”

By 1979, I.W.C. membership had expanded from its original twelve to twenty-three members. During the 1970s, “the tide began to turn in favor of whale conservation, when political attitudes toward whales began to change and a new concern for global ecology began to take root.” In 1979, both the United States and Australia introduced proposals for some type of ban on whaling, with the United States’ proposal urging a worldwide ban on commercial whaling. Both countries indicated that their proposals were motivated by a concern for the survival of certain species of the “great whales.”

Neither proposal was fully accepted by I.W.C., but a certain “momentum” had been established, in part because pelagic whaling, namely the hunting of whales by factory ships, had been prohibited at the 1979 meeting. Despite uncertainty regarding species’ abundance, President Reagan addressed this issue in a letter to I.W.C. in which he indicated “the concern of the U.S. government regarding the insufficient data on whale stocks.” Finally, in an action that could only occur due to its expansion in membership, I.W.C. passed a resolution in 1982, establishing an indefinite global moratorium on all commercial whaling.

A closer look at the organizational structure of the Whaling Convention is necessary, in order to decide whether any special features existed that played a dramatically important role to the presentation of a result that opposes the main assumption of the Thesis, if this is, indeed, the case. According to the International

1089 IWC, Twenty-Fourth Meeting, supra note 1088, p. 24.
1090 Id. at 24.
1091 Id. at 485.
1093 See D’ Amato & Chopra, supra note 1183, at 42 and n. 139.
1094 SCHIFFMAN, supra note 1089, at 318 and n. 69, citing President’s Message to the International Whaling Commission, 1981 PUB. PAPERS 634 (July 17, 1981).
Convention for the Regulation of Whaling (I.C.R.W.)\textsuperscript{1096} and its implementing instruments, an International Whaling Commission, a Scientific Committee, and a Secretariat\textsuperscript{1097} are the components of its organizational structure. The Whaling Convention was adopted to protect whales from over-exploitation with the goal of enabling the orderly development of the whaling industry. Article 3 establishes the International Whaling Commission (I.W.C.), which acts as the treaty’s decision-making body and is responsible for amending the schedule, listing, and regulations on protected species, whaling seasons, whaling methods, catch quotas, and sanctuaries specified by the Whaling Convention.\textsuperscript{1098} Article V(I) of the I.C.R.W. specifies that I.W.C. is to adopt “regulations with respect to the conservation and utilization of whale resources”. Over the years, the I.W.C. has remained the primary international body for the management and conservation of whales, while the legal systems of the global oceans management have evolved. Members of the I.W.C. are representatives of the signatory States that are mainly career diplomats, but can also be experts working for the government or independent experts that cooperate with a State in order to present it. The States assign them as representatives for a period of time that varies significantly, commencing from a couple of years reaching up to several decades.\textsuperscript{1099} Regarding the substantive evolution of the policy- and law choices of the I.W.C., the I.W.C. has adapted to reflect modern approached principles of oceans management and key principles of the I.E.L., such as the


\textsuperscript{1097} The Secretariat was established with Article 3(3) of the Convention.

\textsuperscript{1098} ICRW, Article 5.

\textsuperscript{1099} For the current composition of the I.W.C., visit the official site of the I.W.C., http://iwcoffice.org/commission/members.htm (last visited November 22, 2010).
precautionary approach, intergenerational equity, the integrated approach, and the ecosystem-based management principle.

Further, the I.W.C. takes decisions only by simple majority of its members for the most of the procedural and non-binding measures. However, key binding decisions that require amendments to the Schedule regarding the management of the whaling stocks, such as the moratorium on commercial whaling and whale sanctuaries, are made by a three-fourths majority of the voting members. On the one hand, the enhanced majority vote requirement ensures that a binding decision reflects the view of an important number of the contracting governments. On the other hand, it offers such flexibility to the Convention, so as to keep the Schedule relevant in the context of emerging international legal norms and practice.

The 1983 moratorium on commercial whaling adopted by the I.W.C., the whale sanctuaries and the conservation work of the I.W.C. have all contributed to I.W.C. success. At its first meeting, the I.W.C. established a Scientific Committee which was mandated to advise the I.W.C. on a range of scientific issues. While in the past a ban on commercial whaling seemed to be necessary, in recent years, the findings of the Scientific Committee showed that the whaling of some species could have been safely resumed. Despite the findings, the I.W.C. refused to lift the moratorium. The refusal was not univocal; it created a reaction by Iceland, which formally withdrew from the I.W.C., and by Norway, which announced a unilateral resumption of commercial whaling. Still,
at the 44th annual meeting in 1992, the I.W.C. upheld the moratorium. Since the
establishment of the I.W.C., the whale oil industry has disappeared, whale watching has
become a significant economic activity, and whale research no longer requires lethal
means. Some whale populations are returning from the brink of extinction.

After a careful analysis of the case, it is important to emphasize that this case does
not countervail, but rather justifies one of the basic assumptions of the Thesis; namely
that flexible ways of voting, such as majority voting, facilitate the adoption of
environmentally friendly measures and should be preferred as part of the lawmaking
process. Whether invoking scientific arguments or not, there is often the case that a State
objecting to a regulation has special interests to do so. In this case, the rest of the
countries should be able to take the decision without the need of the positive vote of that
State. Otherwise, there will always be a standstill in I.E.L. regarding important issues.
This becomes especially obvious if one takes a look at the interests that the scientists
opposing the ban presented. Those scientists originated from and were working in
countries such as Japan, that had commercial interests out of whale products. Without the
application of the majority vote instead of the rule of unanimity or even consensus, the
I.W.C. would not have been able to protect the whales. This acknowledgment justifies
Part II, Chapter A, of the Thesis that presented the flexible voting mechanisms as
important mechanisms supporting the further integration of science in law.

Certainly, mere procedures were not enough. In this case, ethics of deep
environmentalism and animal rights considerations prevailed. As Chayes comments:

1100 EPL 22 (1992), 332.
“The issue [of the moratorium] now coming to a head in the I.W.C. can be seen as essentially an issue of legitimacy. The supporters of the moratorium on whale hunting argue that the ban is essential to the preservation of endangered whale species. But there is little doubt that, for some, it reflects a new conception of the purpose of the organization, a purpose that is itself the product of a new “deep environmentalism” approach that regards commercial whale hunting as morally unacceptable. The whaling States believe that the new majority is seeking to impose its moral position on them and end whaling altogether, rather than to manage whale stocks on a sustained-yield for commercial exploitation, in accord with the original intention of the International Convention for the Regulation of Whaling. Neither insistence on majority rule nor a continuing holdout by the minority will sustain the legitimacy of the organization.”

The ethical approach followed by the I.W.C. altered the mandate of the I.C.R.W. Only in governance systems that environmentalism has prevailed, can political bodies offer stronger support to nature than expert bodies. Other factors, such as the role of non-governmental organizations in shaping public opinion, were also important.

1101 About minority rights, see CHAYES & CHAYES, supra note …, at 130.
1102 Such an ethical approach is necessary in order for political bodies to take an environmental stance in a series of important challenges, such as the case of the use of nuclear power for peaceful purposes. Since the scientific community was seen to support the nuclear industry, disenchantment with nuclear power precipitated disillusionment with scientific progress. Ian Lowe & Jouni Paavola, Environmental Values in a Globalized World, in ENVIRONMENTAL VALUES IN A GLOBALIZED WORLD – NATURE, JUSTICE AND GOVERNANCE 7 (Jouni Paavola & Ian Lowe eds., Routledge Taylor & Francis Group, London and New York 2005). Several benefits and drawbacks are associated with the peaceful uses of nuclear energy. It is important, though, to keep in mind that the question of the use of nuclear energy is not associated with scientific uncertainty; thus, the issue is not a choice between the invocation of the precautionary principle, but the principle of prevention, that is a widely acknowledged principle in I.E.L. There are no doubts on the risks associated with a nuclear accident. The existence of a risk that a nuclear accident could create with unwanted consequences on the environment, life and public health is certain. The incompetence of existing science and technology to safely manage the nuclear waste also is a fact. The risk associated with the uncontrolled release of the nuclear waste to the environment is also existent. The divergence of scientific opinions lays on the degree of risk that scientists evaluate that may occur, as well as the degree up to which people are willing to take this risk or not. Up to the present, public opinion, influenced also by the work of many non-governmental organizations, has led to a negative stance for the use of nuclear energy within countries. However, there are recently States, such as Bulgaria and Germany that have shifted positions in favor of the peaceful use of nuclear energy. Arguments that the use of nuclear energy is an affordable, alternative solution to the lack of adequate and cheap energy sources or that it contributes to the combat against climate change, have found supporters among financial analysts and politicians around the globe. When billions of dollars are at stake, science remains silent. At this moment, only pro-environmental ethics can give a negative answer to the nuclear challenge. It is, however, debatable, whether such ethics will prevail in politics. The statement of the President of the European Union is illustrative of the bewilderment that leading politicians currently face. When the debate became pretty serious under the auspices of the European Union, with the Member States debating some of them for and some of them against the expansion of installations for the peaceful uses of the nuclear power in the EU territory, the President of the European Union took no specific stance and declared that he remained “agnostic” to this question.
In cases of public health, many States choose to adopt preventive and precautionary policies instead of closely following scientific advice. For instance, a case that States preferred to be rather “safe than sorry” is the case of the cosmetics regulation within the European Union.\textsuperscript{1103} The EU preferred to adopt far more stringent measures than those that scientists advocated as necessary, in order to protect consumers’ health. In this regard, the EU regulator prohibited the use of several additives and adopted strict standards for the use of other substances that could have potentially hurt the consumer.

Furthermore, political bodies tend to adopt higher standards of protection than what scientists may advocate in food safety regulation. Precaution is even higher when the regulation relates to the nutrition of children.\textsuperscript{1104} However, these cases seem to be cases on the domestic level. On the international level, free trade considerations usually

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\textsuperscript{1103} The main regulatory instrument of the EU regulation on cosmetics is the Council Directive 76/768 of 27 July 1976 on the approximation of the laws of the Member States relating to cosmetic products ("Cosmetics Directive"). The Cosmetics Directive adopted in 1976 in order to ensure the free circulation of cosmetic products in the internal market and to ensure the safety of cosmetic products placed on it. Since its adoption, the Cosmetics Directive has been amended seven times in order to reflect new trends and challenges concerning cosmetic products. For example, the "sixth amendment" led to the adoption of the inventory of ingredients used in cosmetic products and introduced the principle of marketing ban in relation to tests on animals. The seventh amendment provided, \textit{inter alia}, for more detailed provisions on the phasing out of animal testing. Apart from these so-called 'amendments', the Commission has adopted more than fifty 'adaptations' in order to adapt to technical progress. See, the provisions in the annexes to the Cosmetics Directive that refer to technical progress.. In order to provide guidance to Member State authorities, industry, and other stakeholders on the interpretation of various provisions of the Cosmetics Directive, a number of guidance documents, for example on borderline-products, have been adopted in close cooperation with the Member State authorities. The Cosmetics Directive has been recasted into a Regulation.
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\textsuperscript{1104} See, e.g., standards related to nutrition imposed by the US Food and Drug Administration (US FDA). Visit the official website, \url{http://www.fda.gov/} (last visited April 16, 2011).
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prevail over public health and environmental considerations, at least until strong countervailing evidence makes the adoption of preventive and trade restrictive measures obligatory. This is, for instance, the EC Hormones case under the W.T.O.

The EC Hormones Case

The EU imposed a ban on the use of hormones in domestic production and imports of beef from hormone treated cattle in 1981. The ban on the use of growth hormones for cows was the response to a scandal arising from an incident at a convent school in Italy. Teachers and students at this school were exposed to high levels of growth hormone residues, to the extent that boys between the ages of three and thirteen began to develop breasts, because a farmer had improperly administered hormones to his cattle.8105 The EU eventually prohibited the use of hormones in domestic production and prohibited imports of beef from hormone treated cattle. The EC regulation was intended to protect public health from risk of cancer due to the consumption of meat or meat products that were treated by these hormones. Overnight, US exports to the EU fell from $100 million annually to nothing.1106

In 1996, the United States requested consultations with the European Communities claiming that measures taken by the EC under the Council Directive Prohibiting the Use in Livestock Farming of Certain Substances Having a Hormonal Action1107 restrict or prohibit imports of meat and meat products from the United States on the grounds that were inconsistent with Articles III or XI of GATT, Articles 2, 3 and 5 of the SPS Agreement, Article 2 of the TBT Agreement, and Article 4 of the Agreement on Agriculture. Canada decided to follow the same course of action as the United States. Later in the year, the United States and Canada respectively requested the establishment of a panel. The EC invoked the precautionary principle, as well as the "principle of reasonable difference", in order not to bind itself with the international standards and the low protection offered to the Codex Alimentarius through the constellation of the W.T.O. related agreements. Both Panels, composed by the very same arbitrators, found that the EC ban on imports of meat and meat products from cattle treated

with any of six specific hormones for growth promotion purposes was inconsistent with Articles 3.1, 5.1 and 5.5 of the SPS Agreement.\(^{1108}\) The EC had to accept the conclusions of the few scientists the panel itself selected, and drop the protective measures. The EC, however, appealed both the decisions of the panels with success.

In 1998, the Appellate Body (AB) reversed the Panel’s finding and allowed EC to impose the prohibitions that the EC considered necessary in order to protect public health.\(^{1109}\) The AB took into account the opinion of scientists that none of the scientific evidence referred to by the European Communities which addressed the safety of the hormones in dispute used for growth promotion, indicated that an identifiable risk would arise for human health from such use of these hormones if good practice is followed. On the contrary, all of the scientific studies came to the conclusion that the use of the hormones at issue - all but one - was safe.\(^{1110}\) However, it was not sure that good practice will be exercised at all times that hormones were used, and, if not, then risks for human health may occur.\(^{1111}\)

However, in the *EC - Approval and Marketing of Biotech Products* the EU was not able to win the case against the U.S., Canada, and Argentina before the WTO DSU.\(^{1112}\) Science, which is mostly generated after research efforts supported with funds from the pro-GMO industry, does not emphasize enough the risks that the use of GMOs imposes upon the natural environment, the balance of biodiversity and public health.\(^{1113}\)

Despite the “inequality of weapons” between industry and civil society regarding the funding for research, the European civil society and the public at large seem to share a common environmental ethics against the use of agricultural products produced by


\(^{1110}\) Paragraph 179 of the Report of the AB.

\(^{1111}\) See also Reinhard Quick & Andreas Blüthner, *Has the Appellate Body Erred? An Appraisal and Criticism of the Ruling of the WTO Hormones Case*, 2 JIEL 603 (1999).


\(^{1113}\) Extensive scientific and legal literature on GMO products remains on file with the author, after the conclusion of a three-year work program on comparative research on the legislation of sixteen countries under the auspices of the Center for Environment and Land Use Law of the New York University School of Law. Visit the official website of the Center, [http://www.law.nyu.edu/centers/elc/index.htm](http://www.law.nyu.edu/centers/elc/index.htm) (last visited April 22, 2011).
biotechnology (GMO products). Neither science not politics helped them to uphold their anti-GMO position.

Since October 1998, the EC and some of its Member States had adopted measures affecting imports of agricultural products and food that contained GMOs imported from the United States. In 2003, the United States requested consultations with the EC concerning those measures. Regarding EC-level measures, the United States asserted that they equaled to a moratorium on imports. The claimants argued that the EC violated provisions of the SPS Agreement, because of the undue delay in approval, the lack of transparency in the procedure and the lack of sufficient scientific evidence to justify the delay in approval. Another issue was raised because of temporary safeguards that were applied by six EC Member States (Austria, France, Germany, Greece, Italy and Luxemburg), by which these countries prohibited marketing of GMO products in their territories. On this issue, the EC argued that the temporary safeguards are justified by Article 5.7 of the SPS which permits temporary measures based on the precautionary principle.

The Panel decision was circulated to the Members on September 2006. In short, the Panel found that the delay of approval of GMO products by the EC, violated both provisions and the Annex of the SPS Agreement. The Panel also found that safeguard measures taken by the EC Members did not satisfy the requirement of temporary safeguards as provided for in Article 5.7 of the SPS Agreement. More specifically, the Panel found that the EC applied a general de facto moratorium on the approval of biotech
products between June 1999 and August 2003, which is when the panel was established. By applying this moratorium, the EC had acted inconsistently with its obligations under Annex C (1)(a), first clause, and Article 8 of the SPS Agreement, because the de facto moratorium led to undue delays in the completion of EC approval procedures. The Panel also found that the EC acted inconsistently with its obligations under Articles 5.1 and 2.2 of the SPS Agreement with regard to all of the safeguard measures at issue, because these measures were not based on risk assessments satisfying the definition of the SPS Agreement and, hence, could be presumed to be maintained without sufficient scientific evidence. At its meeting on November 21, 2006, the DSB adopted the Panel Report. The Panel Report was very informative on a series of issues, ranging from the relationship between the SPS Agreement and general principles of International Law, including I.E.L. and the WTO Law, up to interpretation issues of the meaning of several notions and issues related to the burden of proof in relevance to scientific questions.1114

It is noteworthy, though, that before the Biotech Case was brought before the WTO DSB, Howse and Mavroidis wrote an article on a hypothetical conflict regarding the legality of a ban on behalf of the EU imposed upon GMO products under the WTO/SPS regime. By following a strictly legal and objective analysis of the relevant provisions, the two authors concluded in a different evaluation about the legality of the EC measures, and fully justified them.1115 The authors of the Panel Report were,

1114 For literature commenting on the Biotech Panel Report, see, e.g., Mitsuo Matsushita, Human Health Issues in Major WTO Dispute Cases, 4 ASIAN J. WTO & INT’L HEALTH L. & POL’Y 1, 1.

however, able to detour the relevant WTO/SPS regime, but invoking various standards for the application of science *via*, e.g., the risk assessments. The differences between the legal analysis followed in the Panel Report and the legal analysis proposed in the Howse – Mavroidis’ article raise questions about the use of science in dispute settlement. An analysis of the Biotech Products case is not possible in this Thesis, since science surrounding GMOs is still uncertain and the Thesis comments mainly topics of usable science. This is, however, a very illustrative case, for the reader to start contemplating that, when legal texts are not clear on the scientific requirements they impose, then science can be used in all directions and produce less protective results for the environment and public health than those initially aimed by the drafters.\(^{1116}\)

The aforementioned examples in which rendering to public choice is more protective for the environment and public health than entrusting science, pose the question whether the existence of those examples overturn one of the main assumptions of the Thesis, namely that experts should have a decisive role to play in the lawmaking processes regarding secondary legislation in order for the international community to

\(^{1116}\) Other important cases on trade and environment include the *Salmon* case and the Retreated Tires case. The measure at issue in *Salmon* was a regulation adopted by Australia which required imported salmon to be heat-treated to kill possible disease agents. Thus, “fresh, chilled or frozen” salmon was prohibited. On appeal, the Appellate Body agreed with the Panel - though on slightly different grounds - that the measure was inconsistent with the SPS, because it was not based on a proper risk assessment.” The 1996 Report purporting to justify the measure contained “general and vague statements of mere possibility of adverse events occurring.” Moreover, the 1996 Report did not properly link the measure taken to the risks identified. The AB went even further, and held that Australia was in breach of SPS Article 5.5 in that, by selectively targeting salmon but not other seafood species, and by applying the ban externally but not internally, the measure constituted a “disguised restriction on international trade.” See Daniel Kalderimis, *Problems of WTO Harmonization and the Virtues of Shields over Swords*, 13 MINN. J. GLOBAL TRADE 305 (2004). About the pro-environment Retreated Tires case, see, e.g., Jonathan Skinner, *A Green Road to Development: Environmental Regulations and Developing Countries in the WTO*, 20 DUKE ENVTL. L. & POL’Y F. 245 (2010); Mark S. Blodgett & Richard J. Hunter, *The Environment and Trade Agreements: Should the WTO Become More Actively Involved?*, 3 HASTINGS INT’L & COMP. L. REV. 1 (2010).
enjoy advanced environmental protection. The answer to this question is negative, for a series of reasons. First of all, much of the legislation which the public follows leads to a more preventive and precautious approach than the approach that scientists and other experts may advocate, which usually refers to primary law. It is a question of primary law and not of secondary law, whether States should ban or not commercial whaling, use or not nuclear weapons for peaceful purposes and allow or not the free trade, consumption or cultivation of GMOs. According to the scope of the Thesis, the delegation of lawmaking powers from political bodies to expert bodies is limited to rules that fall within the category of the secondary legislation. Expert bodies would namely be able to assume lawmaking powers only at a stage when the major primary decisions have already been taken by the actors that are entrusted with the political power and the democratic representation of the peoples. On the level of primary law, when the political will is missing, scientists can and should pave the way for an advanced environmental protection regime, when it is necessary, by wisely and effectively advising the peoples. This does not definitely mean the assumption of any kind of legislative powers on behalf of expert bodies against the will of the people.

In the following part, the Thesis will discuss the democratic governance considerations and the accountability demands that the common international political civilization imposes upon a science-based lawmaking model. It will also explore public perceptions that may restrain the effort to strengthen the scientific basis of international environmental laws. In addition, it will present some more radical perceptions of democracy, deriving mainly from the ecological political philosophy, that indicate that
there are some other aspects of reality that would open up the possibility that the inclusion of expert groups among the lawmakers does not necessarily hinder, but, on the contrary, promotes “democracy.”
CHAPTER II: CRITICISM AGAINST THE DELEGATION OF LAWMAKING POWERS TO EXPERTS BASED UPON DEMOCRATIC CONSIDERATIONS

The previous chapters of the Thesis presented argumentation for the usefulness of a science-based lawmaking model within the framework of international institutions. Democratic governance considerations, though, raise limits to the SBLM model, and specifically to the delegation of the legislative competences to expert bodies that the SBLM model requires. In this chapter, the Thesis discusses some of the limits imposed upon the SBLM model, mostly by the requirement for democratic governance. Although democracy is not a recognized principle on the international level, it stands, however, as the governing principle of the political systems in a big percentage of the States around the world today.\footnote{According to The Economist, about 82 countries (out of some 200 worldwide) can be considered democratic. However, an interesting study that is indirectly also a counterargument against the emphasis that is given to the democratic requirement on the international level is the study by Gregory H. Fox & Brad R. Roth, Democracy and International Law, REV. INT'L STUDIES 27, 327-352 (2001). As Fox and Roth comment: The voluminous literature on recent transitions to democracy has generally lacked an analysis from the perspective of international law. This article explores four aspects of efforts to promote a normative ‘democratic entitlement’. First, it reviews the ways in which notions of democratic legitimacy have infiltrated virtually every aspect of international legal discourse. Second, it explores how a normative legitimacy standard may alter foundational doctrines of international law, such as non-intervention and the recognition of States and governments. Third, it reviews arguments against the emergence of ‘democratic entitlement’. These arguments both take issue with the sources of law relied upon by the entitlement's proponents, and ask whether the substantive and procedural aspects of democracy implicit in the democratic entitlement thesis are conceptually coherent. Finally, the article explores the ways in which a legal analysis of democratization confronts questions not addressed by the methodologies of other disciplines.} People that have been raised up within democratic regimes have also learnt to require the same quality in the international level of governance The S.B.L.M. model would, thus, instinctively attract criticism for fostering the existing democratic
Delegating legislative competences to experts could exacerbate the democratic deficit on the international level. However, if properly structured, such delegation could help address the democratic deficit and mitigate it. After summarizing the criticism on grounds of democratic legitimacy, the Thesis reverses the democratic legitimacy argument in favor of the S.B.L.M. model, and justifies the delegation of lawmaking powers to expert bodies. The chapters that follow also build on additional concepts of legitimacy.

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A. Experts are not Elected Representatives of the People

The delegation of lawmaking powers to experts on the international level raises issues of democratic representation and accountability on behalf of the international institutions vis-à-vis their Member States and the constituencies of the Member States. This is because expert bodies, mainly the expert bodies that are not affiliated with a Member State, and who work for other, private entities or within international institutions, are not elected by the people and are not directly accountable to the people.\textsuperscript{1119} This is why proposals for reforms supporting the further integration of science and expertise into the lawmaking procedures confront the common assumption that democratic institutions should govern all realms of international governance. These considerations are based on a political approach of the democratic governance requirement. It is noteworthy that from a legal point of view, due delegation of powers from States to international institutions and their experts does not create any legal issues, since such delegation, if decided, is based on the principle of consent, namely the consent of the States to such delegation, in the same way that an elected Government may legally delegate legislative competences to departments of the Executive Administration of the country.

B. Dependency of Experts as Further Counterargument to Delegation of Lawmaking Competences

Despite the wording of the provisions in various multilateral environmental agreements, such as the Montreal Protocol on Substances that Deplete the Ozone Layer, expert bodies very often consist of scientists working either in industry or in the national administrations of their Member States, and not by independent scientists.¹¹²⁰ This is usually the case regarding the composition of expert bodies, established under M.E.A.s. Most importantly, as seen above, those experts do not work permanently at the institutional structure of an M.E.A. On the contrary, experts only used to meet regularly in order to settle various issues. In addition to the various experts appointed at an international institution (*nationaux détachées*) by the national governments in order to assist the work of an IO, it is more commonplace for an international institution to employ a combination of scientists that are affiliated with a variety of other public and private institutions.

The degree of dependency of the experts from domestic governments or from industry may influence the content and the integrity of the information provided. On the very same scientific questions, scientists with different affiliations may express different opinions solely by being influenced by their affiliations. The different stance of the

various groups of scientists regarding the safety or not of the exploration and exploitation of the deep seabed minerals during negotiations at the International Seabed Authority discussed above, serves as an illustrative example.\textsuperscript{1121} The divergent opinions of scientists regarding the necessity of a ban on the commercial hunting of whales serve as a further example. Moreover, the scientists working in the industry may face additional constrains regarding the free expression of their opinion, first and foremost due to the intellectual property rules that keep them silent regarding the data they use and the results of their work.

As stated above, a science-based lawmaking model that requires delegation of legislative powers to expert bodies of international institutions also requires the establishment of bodies to which independency of the opinion of experts is guaranteed. As restated, the permanent employment of experts at international institutions is a way to solve the problem. Once again, it is a matter of appropriate institutional structure and procedures to guarantee the independency of expert opinion. As Alvarez emphasizes: “...it matters who appoints the experts, what they are charged to do, and to whom they are ultimately responsible.”\textsuperscript{1122} For instance, as David Leive points out, the W.H.O. Committee on International Surveillance of Communicable Diseases, which is composed of members appointed by the W.H.O.’s Director-General and is responsible for proposing revisions to the W.H.O.’s various regulatory instruments, including its Health Regulations, needs to abide by a W.H.O. regulation that affirms that its experts serve the

\textsuperscript{1121} See supra at...

\textsuperscript{1122} ALVAREZ, supra note 44, at 246.
W.H.O. exclusively and may not request or receive instructions from any government.\textsuperscript{1123} That body is likely to act differently from, for example, various technical commissions in the W.M.O., since the latter is composed of experts that are employed within their governments’ respective meteorological services. Conclusively, there is a need to build such institutions, networks, and processes that promote and guarantee independent expert advice, when it reaches the States \textit{via} either a M.E.A. or an IO and \textit{vice-versa}. It is necessary to have either independent experts, functioning under their professional capacity, or experts working for IOs. Otherwise, a justified or not mistrust will exist among States and experts on the grounds that the latter might have hidden incentives that unethically shape their advice.

The mistrust among governments and experts is being very illustratively emphasized by the following example employed by Haas, when describing the function of UNEP/MAP several years ago. In this example, national governments seriously doubted experts that were strongly advocating for a ban to be imposed upon substances that were extraordinarily harmful for the natural environment and public health and presented countervailing evidence to this end. The representatives of the governments had to be convinced by their own scientists and by further documentation offered by UNEP, before they decide to adopt the ban.

“A Brazilian delegate to the UNCHE identified a number of true marine pollutants facing developing countries as well as developed ones: phosphates, mercury, lead, oil, persistent organochlorines, and radionuclides.\textsuperscript{1124} All of these are now covered by the Med Plan Protocols.

\textsuperscript{1123} LEIVE, \textit{supra} note 621, at 551.

LDC delegates were consistently suspicious about the substances listed in the annexes to the Land-Based Sources Protocol; they lacked detailed information about the extent to which banning or controlling emissions of the substances included in the black and grey lists would affect their economies. However, very few objected to specific substances. Rather, their strategy was to drag their heels until they were convinced of the overall necessity of banning such substances. Only after being convinced by their own scientists and by materials provided by UNEP did they agree to the inclusion in the protocol of the full list of banned substances... when uncertain they demanded advice from domestic scientists, and effectively delayed negotiations until they were firmly convinced of the need to control industrial pollution.1125

C. Arguments for Science-Based Lawmaking in Parallel with Democratic Lawmaking

1. Participation of Scientists at the International Lawmaking Processes

Enhances the Democratic Rule

An additional argument for the science-based lawmaking model is that the integration of science in the lawmaking processes may enhance the democratic rule. Scientists and other experts are not only employees in industry or the national administration, but they may also belong to the civil society. First, they may express an opinion as individuals, without representing any other interest. Secondly, they may participate in an NGO or they might have founded an NGO themselves. Civil society and individuals represent a part of the global “demos”. In this way, the development of a science-based lawmaking procedure would give a direct voice to the civil society at the international level. Third, they may form epistemic or knowledge communities.1126

Indeed, participation of scientists in the international governance systems could not only be understood within the traditional institutional venues, but also within the broader

1125 HAAS, supra note 46, at 209.
1126 Peter M. Haas, Epistemic Communities and International Policy Coordination, 46 INT’L ORG. 1,1; ROGER A. PAYNE & NAYEF H. SAMHAT, DEMOCRATIZING GLOBAL POLITICS 1, 27 (1994) (referring to global-scale knowledge communities).
participation of the NGOs in global environmental governance.\textsuperscript{1127} The participation of the NGOs in international negotiations, decision-making processes, and dispute settlement procedures, enhances the legitimacy of the international governance and serves as an informal partial substitute to the limited direct participation of the individual at the international level.\textsuperscript{1128} There are currently many Non-Governmental Organizations that have been founded by scientists and, by their contributions, promote the scientific basis of laws, such as the Union of the Concerned Scientists.\textsuperscript{1129}

There are many ways that civil society could further participate in the S.B.L.M. model. For example, there could be institutionalized consultation procedures between the international institutions and the civil society before the adoption of a new regulation. For instance, the European Commission has established a similar consultation procedure with the civil society before the enactment of legislation. There are also ways that an NGO could enjoy a more formal right to participate as an observer to the international procedures. According to Article 11 of CITES, NGOs, once admitted as qualified expert organizations in due regard with the subject-matter of the convention, have the right to

\textsuperscript{1127} For this issue, see Kal Raustiala, \textit{The “Participatory Revolution” in International Environmental Law}, 21 HARV. ENVTL. L. REV. 537.
\textsuperscript{1128} See MATTHEW J. HOFFMAN, OZONE DEPLETION AND CLIMATE CHANGE – CONSTRUCTING A GLOBAL RESPONSE (State University of New York Press 2005), who presents a full analysis of the handling of these two global environmental issues under the global participation requirement. He finds that whereas the global participation requirement has been satisfied in the ozone depletion case, this is not the case with the climate change and strongly advises for further venues to enhance participation as an indispensable requirement for successful and sustained solutions to global environmental problems.
\textsuperscript{1129} According to the vision statement of the Union of the Concerned Scientists: “Political interference in federal government science is weakening our nation’s ability to respond to the complex challenges we face. Because policy makers depend on impartial research to make informed decisions, we are mobilizing scientists and citizens alike to push for reforms that will enable our leaders to fully protect our health, safety, and environment.” See the website of the organization, http://www.ucsusa.org/scientific_integrity/.
participate in the COP meetings as observers. The participation of NGOs as observers is an augmenting practice among international institutions. UNEP places special emphasis not only on facilitating access to environmental information, but also on incorporating civil society into the deliberations of the UNEP Governing council and the annual Global Ministerial Environment Forum. The currently ongoing process of deliberations toward the 2012 UN Conference on Sustainable Development is another application of this concept. The NGO participation is worthy of further consideration, since NGOs hold knowledge and expertise that would complement the knowledge and expertise held by the States, epistemic communities and international institutions.

Supporting direct participation of civil society and individual citizens in the procedures that shape I.E.L. will substantially serve, in addition to the goal of the integration of additional knowledge and experience in I.E.L., the goal of the greater acceptance of the outcome of the procedures. For instance, direct participation of citizens in the lawmaking processes, either in their individual capacity or through participation in civil society organizations that offer a venue for further input of knowledge, i.e.,

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1130 Convention on International Trade in Endangered Species (CITES), Mar. 3, 1973, 27 U.S.T. 1087, 993 U.N.T.S. 243 (entered into force July 1, 1975). Article XI of the CITES states: “7. Any body or agency technically qualified in protection, conservation or management of wild fauna and flora, in the following categories, which has informed the Secretariat of its desire to be represented at meetings of the Conference by observers, shall be admitted unless at least one-third of the Parties present object:

(a) international agencies or bodies, either governmental or non-governmental, and national governmental agencies and bodies; and

(b) national non-governmental agencies or bodies which have been approved for this purpose by the State in which they are located. Once admitted, these observers shall have the right to participate but not to vote.”

1131 However, reasons for denial of NGO accreditation were given for the first time in UN history at the UN Conference on Women (in Beijing). See Julia Preston, 'Gender' a Fighting Word To UN Female Delegates, WASH. POST (Apr. 8, 1995), at A23.

1132 Visit the official website of UNEP, www.unep.org (last visited April 19, 2011).

indigenous knowledge, and make use of the so-called “collective intelligence” of the people concerning environmental-related incidents, changes and factors, can only promote, and not hinder, participatory democracy.\textsuperscript{1134} Participatory democracy requires flow of information from and to the constituency, if it is to function properly. It is important, thus, to secure uninterrupted flow of environmental information toward the decision-making and law-making systems that relies on the enterprise of International Environmental Law.

At this point, it is useful to remember some additional definitions to democracy. According to Dahl’s definition, democracy is “a political system in which the opportunity to participate in decisions is widely shared among all adult citizens.”\textsuperscript{1135} The more significant and comprehensive these opportunities are, the greater is the level of democracy attached to a political system. Further participation of the epistemic communities and other formations of the civil society contributes to the “widening” or “deepening” of democratic decision-making and, consequently, to the democratic law-making model.\textsuperscript{1136} According to Levi, the basis of a government’s democratic legitimacy resides partly in the expectation of citizens that a democratic government will fairly represent and consider all relevant interests.\textsuperscript{1137} On the international governance system, there is presently both an incomplete representation of environmental interests and a lack of accountability of the States, the private sector and the international institutions

\textsuperscript{1134} See, e.g., \textsc{Stephen Breyer}, \textit{Active Liberty: Interpreting Our Democratic Constitution} 3 (2005).
\textsuperscript{1136} \textsc{Michael Mason}, \textit{Environmental Democracy} 47.
\textsuperscript{1137} \textsc{Levi}, \textit{Consent, Dissent, and Patriotism} 204 (Cambridge, Cambridge University Press 1997).
themselves, regarding their environmental behavior. Further participation of civil society and experts would address these drawbacks. The more specialized knowledge civil society holds on the issues at stake, the more effective its intervention and control over the behavior of the international actors can be.

Under a conventional approach, “political democracy” is a system of political governance, the defining feature of which in modern times is that all legislators, as well as the heads of the executive branch of the government, are popularly elected for a limited term. Dewey introduces a new concept, the concept of the “epistemic democracy.”” Epistemic democracy is based on the idea that the best forms of inquiry and decision-making in general, and not just political inquiry and decision-making, are democratic in character and open up the inquiry of knowledge from both experts and lay people. In addition, scientific and other inquiry for Dewey, is oriented toward the cooperative acquisition of useful knowledge by whatever tools lie at hand, including imagination, common sense, know-how and intuition.1138 Posner comments on Dewey that:

“Dewey’s epistemic approach is “democratic” in the loose sense of emphasizing the community (the many) over the handful of exceptional individuals (the few.) Knowledge is not produced by expert investigators all trained in the same way. It is produced by the tug of communal demands, the struggle between doubt and habit, the strivings of individuals of diverse background, aptitude, training and experience, and the application of methods of inquiry, such as imagination and intuition that owe little to expert training. No elite has a monopoly of truth. In fact, truth is always just out of reach, is at most a regulatory, an orienting idea. If this is the case with scientific truth, it is all the more likely to be the case with moral and political truths as well. To Dewey, the proposal in Plato’s Republic of rule by an elite of individuals who are to have “a

comprehensive rational understanding in eternal reality and truth, to be nurtured by a rigorous and extended higher education in all the mathematical sciences from arithmetic to astronomy, was quixotic.”

The debate is taking, thus, a different dimension. It is no longer a case of whether science and, in general, expertise should be further integrated into law - this is a “must” under the epistemic democracy terms, - but rather on who holds the type of knowledge that should be integrated into law. “From Plato to Aristotle,” says one critic of contemporary pragmatism “philosophy begins in wonder and ends in the rapt, silent, yet active contemplation of truths – regardless of whether they pay.” To this, Dewey responds: “What truths?” According to him, what society should follow is a pragmatist’s approach versus the quixotic approach that Plato introduced thousands of years ago, giving the prevalence of knowledge to some elite holding expert knowledge.

A few elite, even if they comprise experts in environmental sciences, cannot hold the one, faultless truth. On the contrary, the collective intelligence of the people might be necessary in order to better regulate issues of both social and environmental character. Even in environmental cases, knowledge of indigenous people or of the average farmer that is closer to nature than the scientist working on research topics related to agriculture, or even a mother that is closer to the public and is able to observe her children from closer up and longer her than a doctor paying a single visit to their home, people can hold amounts of invaluable information on the causes, occurrences, and adverse effects upon the natural environment and public health and they may also hold the secret to the way to

1139 POSNER, LAW, PRAGMATISM AND DEMOCRACY 103, with reference to: Malcome Schofield, Approaching the Republic, in THE CAMBRIDGE HISTORY OF GREEK AND ROMAN POLITICAL THOUGHT 190, 224 (Christopher Rowe and Malcolm Schofield eds. 2000).
1140 DAVID LUBAN, LEGAL MODERNISM – LAW, MEANING, AND VIOLENCE 126 (Michigan 1997).
1141 See supra Part I, Chapter I, at 43.
address them. For this reason, Dewey’s epistemic democracy can be seen as an interesting concept that supports a more open and flexible science-based lawmaking model, which, in order to reach the scientific truth and better regulate social and environmental affairs, needs to take into due account the knowledge of the many, of the lay people, as well. Indeed, the S.B.L.M. model should include clauses and institutional mechanisms that will ensure the effective participation of the civil society and the infusion of knowledge into law.

Regarding environmental issues, however, it is important that the lawmaking procedures are developed so as to keep the right balance between expert knowledge and general knowledge offered by the lay people. However, it is one approach to open up the lawmaking process for a meaningful integration of the knowledge offered by the lay public, and it is a completely different approach to give prevalence to the opinion of the lay public over the expert opinion in technical and other issues that require expertise. Public choice is not always the right guide in these cases.

2. Risk Perception, Public Choice and Defects of Democracy in Environmental Lawmaking
Living in a democratic society of increasing technological complexity can create an important degree of divergence between scientific and lay risk perceptions. The arguments of public choice theorists on various defects of the democratic government at the national level can also be relevant on the international level. Especially on environmental issues, the risk perception theory clearly demonstrates the irrationality of policy choices that governments could make by pursuing a policy based on the perceptions of their citizens about environmental risks at both the national and international level. For example, studies of risk perception have pointed out that the public is often more concerned about the social and cultural dimensions of risk than about the actual or predicted numerical impacts. Thus, irrespectively from the severity of the problem or the frequency of the occurrence of side-effects, people will tolerate a higher probability of death or injury from activities that they feel they can meaningfully control, such as smoking, eating, automobile driving, than from activities that heighten their sense of powerlessness or distrust, such as nuclear power, pesticide use, and air transportation.

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1145 JasanoFF, supra note 94, at 13.
In addition, the public would not be easily mobilized against risk they cannot perceive with their senses, despite the high risk that the source of the danger may impose. This is especially important to keep in mind in the case of environmental degradation, because, as Haas comments:

“Environmental changes themselves are not immediately apparent, beyond the superficial appearance of some contaminants. Their implications for action depend, in part, upon the cognitive frameworks of those who are held responsible for formulating national policies to identify and respond to such problems. For instance, the identification of pollutants requires faith in scientists and techniques. Heavy metals are invisible; policy makers must accept scientists’ assertions that equipment readings accurately represent heavy metal concentrations and that they truly threaten public health.”\(^{1146}\)

Risk perception by the public may – at the extreme – pose difficulties into protecting the environment and public health, even in cases where the “usual suspects” of deregulation and avoidance of regulation, industry and governments influenced by industry, follow the scientific advice and decide to promote protective regulation. An example is the case where more than half of the British citizens rejected the ban of beef on the bone that was advocated by experts on grounds of public health protection. The ban was introduced in December 1997 and lifted again two years later.\(^{1147}\) On another account:

“People may be more averse to involuntary hazards than to voluntary ones because they get to choose the hazards to which they are exposed voluntarily. No one makes you take part in relatively dangerous sports like skiing; you have to decide to show up and buy a lift ticket. Voluntariness implies knowledge and choice. Involuntariness implies ignorance or coercion or both. The freedom associated with markets is freedom of choice, and the widespread popularity of free markets should make it unsurprising that people like to choose their health- and life-threatening risks, just as they like to choose their clothes and furniture.

Indeed, the more voluntary a risk appears to be, the less likely it is to be a target of regulation. Cigarette smoking provides a good example. For decades, cigarette smoking was the quintessential voluntary risk in both the public imagination and the legal

\(^{1146}\) PETER HAAS, supra note 46, at 53.

\(^{1147}\) See, e.g., http://news.bbc.co.uk/2/hi/uk_news/politics/568728.stm (last visited April 20, 2011).
world… this began to change when the secret manipulation of nicotine levels in cigarettes and the health effects of secondhand smoke emerged in the public consciousness. Then the risk perception of consumers started changing and the way to regulation of smoking opened up.”

One can conclusively say that the controllability of a risk influences citizen’s risk perceptions. The uncontrollability of a risk often spurs regulation whereas the apparent controllability of a risk often discourages regulation. This criterion is, however, non-scientific. Most importantly, the controllability only refers to the behavior and the activities that will touch off the mechanism that will create the adverse effects on public health and the environment, and unfortunately, not on the adverse effects themselves. Only rarely can the lay public control these effects or deter a risk from be realized or hinder an accident from occurring.

2.1. Reframing Old Topics as New Topics to Avoid “Issue Fatigue”

A further factor that affects public choice is how “fashionable” an issue at a certain point of time is and whether the public is tired of the topic. For instance, while a few years ago Al Gore, IPCC and the Alliance for Climate Protection had brought global climate change to the attention of the public and had made discussion about climate change “in fashion”, while their efforts were awarded by a Nobel Peace Prize in 2008, recently the public has started losing interest in the topic and presented the first elements

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1148 FRANK ACKERMAN & LISA HEINZERLING, supra note 890, at 138.
of fatigue. From recent studies on how much interested the public is to climate change, there are indications that communication about climate change could benefit from reframing it as a public health issue. A health perspective could make climate change more relevant and understandable to the public, whilst information about the health benefits of mitigation policy could provide a positive vision for the future.

“The study investigated the reaction of 70 American adults to an essay on climate change that was framed within a public health perspective. The results can be interpreted as providing partial support for framing information about climate change in a way that considers human health. This could provide a new way to engage with climate change and address the increasing problem of 'issue fatigue' around climate change. It could add personal relevance by making connections to familiar problems, such as asthma, allergies and infectious diseases, and also provide a more positive message in terms of the health benefits derived from mitigation policies.”

In conclusion, it becomes obvious that there are many factors, whether they are important or not, that influence public choice, especially regarding risk perception. Decisions and laws for environmental management and protection cannot solely be built upon public choice.

2.2. Social Constructivism and the Sociology of Scientific Knowledge

Many times, it is not always lay people that are being influenced in their perception and evaluation by societal factors. Non-scientific factors influence the perception and the evaluation of experts, including natural scientists. The sociology of scientific knowledge (SSK) raises, through relativism, the issue of claims-making as a

force of discourse and, even more, social understanding of scientific problems, depriving the strict scientific framework. SSK provides, among others, two general assumptions which are relevant to this study, the first being that knowledge about nature is socially constructed and culturally contingent. Here, authoritative scientific knowledge is a product of negation between scientists and policy makers, as they have exemplified in case studies about BSE or climate change. They point out that sociologists should challenge the technical and natural sciences by disclosing the social and cultural assumptions upon which they rely. Social construction of scientific problems may amount to their negation. However, there is a lot of criticism against this statement of SSK.\footnote{For a discussion on SSK, see K. Burgingham & G. Cooper, \textit{Being Constructive: Social Constructionism and the Environment}, 33 \textit{Sociology} 279 - 316 (1999) (supporters of relativism), NacNaghten & Urry, 1998; S. Yearley, \textit{Sociology, Environmentalism, Globalization: Reinventing the Globe} (Sage Publications, London 1996); J. Hannigan, \textit{Environmental Sociology – A Social Constructionist Perspective} (Routledge Publ. London 1995), and B. Wynne, \textit{SSK Identity Parade: Signing-up, off-and-on}, 26 \textit{Social Studies of Science} 357-91 (1996) (supporters of constructivism).}

As Wynne acknowledges, the sociology of scientific knowledge has generally been simplistic in conceptualizing political process. It has adopted a model of public issues as constituted by interaction and competition only between actively chosen stances that reflect real interests; thus the issues themselves are not problematized beyond identifying the “hidden” interests of the protagonists. Taking the example of climate change science, Wynne admits that such sociological observations about scientific knowledge could contribute to a deconstruction of the intellectual case for the environmental threat, without accepting, however, that such deconstruction should be the
conclusion of the acknowledgment of the stage of the social deliberation of scientific findings.

Accepting this stance, Hannigan goes one step further making it most clear that a constructivist position needs in no way to undermine a concern for the environment. He suggests that environmental problems need to be analyzed via claims making activities. All claims are embedded in social action. The chances for reception of such claims depend upon a variety of conditions:

1. Availability of scientific data and scientific authority;
2. Existence of advocates who bridge environmentalism and science;
3. Media attention: the problem is seen as novel and important;
4. Dramatization by symbolic and visual means;
5. Economic incentives and
6. Institutional sponsor who lends legitimacy.

Ungar completes this chain by adding a seventh factor, “audience receptiveness.” He remarks: “Recognition in public arenas, which is the sine qua non of successful social problems, cannot be reduced to claims-making activities, but depends on a conjunction of these and audience receptiveness. Claims-making, after all, can fall on deaf ears or meet bad timing.” As it is obvious, the chain that begins from the lab of a scientist until the houses of policymakers and lay people is long and embeds several filters and layers that shape the final shape and content of the public claims. This long, multi-factor chain from
the laboratories up to the audience receptiveness could not be trusted in order to put issues on the policy-making and lawmaking agenda any more.

Out of the aforementioned list, the **influence of the media** is a factor that cannot be ignored. Media are highly influential within society, when it comes to shaping the opinion of the public at the agenda-setting stage for the lawmaking process. The public can definitely shape legislative priorities at both levels, national and international. In cases where dominance of the public is great in regulatory policy, an increased media attention on scientific and technical controversies leads to risk adverse reaction from the public, no matter what bias the coverage maintains. Lay people seem to take the mere fact of media attention on risk topics as indicative of a serious problem – a position that seems to have a certain rationality, but does not guarantee whatsoever that the most important environmental and public health problems will be on the media-public agenda.\footnote{A. Mazur, *The Dynamics of Technical Controversy* (Communications Press, Washington, D.C. 1981).} In addition, the main sources of education of adults on environmental issues seem to be the mass media and the Internet.

2.3. *Environmental Education as a Key Solution*
The key solution to the divergence between expert opinion and public choice is the education of the public on environmental issues. Education can be understood as not only individual, but also social education. It is to social forms of learning to shape the way by which, acting together, the global citizenry should manage our common environment within the context of a sustainable future. Social learning is central to the processes of the adaptive management, which might be necessary to employ in order to reduce both uncertainties regarding matters of fact and disagreements about goals, objectives and values that can all affect management decisions with respect to the search for sustainability. The concept of adoptive learning:

“The capacity to adapt and shape change is an important component of resilience in social-ecological system. In a social-ecological system with high adaptability the actors have the capacity to reorganize the system with desired States in response to changing conditions and disturbance events. This includes social sources of resilience for dealing with uncertainty and change and a focus on adaptive capacity, learning and innovation in social-ecological systems and even the capacity to transform into improved pathways or trajectories. Because of cross-scale interplay, positive feedbacks causing non-linear dynamics and possible shifts between alternate States in interdependent social-ecological systems, new approaches to governance will be required for guiding management and policy of ecosystem services towards sustainability.”

Based on several case studies Folke et al. identify four critical factors for social-ecological systems that interact across temporal and spatial scales that seem to be

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required for dealing with ecosystems’ dynamics during periods of rapid change and reorganization:

1. learning to live with change and uncertainty;

2. combining different types of knowledge for learning;

3. creating opportunity for self-organization toward social-ecological resilience;

4. and nurturing sources of resilience for renewal and reorganization.

Adaptivity and resilience require learning. In the contemporary interconnected world, to all these complexities of democracy on environmental governance issues, both at the domestic and the international level, as Callicott says “the remedy is universal ecological education.” Toward this goal, scientists should fulfill their social responsibility to provide public education on matters of scientific complexity, so that people can make sense of “the complex issues that confront us.” In addition, national governments and international institutions should enhance citizens’ participation via old and new mechanisms, such as e.g., volunteer Environmental Monitoring projects.

1156 Callicott, supra note 401, at 102.
1157 HAY, supra note 384, at 121.
1158 “Volunteer environmental monitoring” offers the possibility to involve citizens more directly in environmental decision-making, especially in economically advances countries with highly rationalized systems of environmental management. Within the context of management systems based on exert control, the public expresses high levels of concern about the environment, but has relatively few avenues for making meaningful inputs into environmental management decisions. Thus, an important consideration in this chapter is the potential contribution of volunteer monitoring to the democratization of environmental decision-making.

Volunteer environmental monitoring offers the potential to help bridge the chasm between science- and technology-based environmental management and public involvement in environmental decision-making. Volunteer monitoring may also reinforce public confidence in science-based decision-making by allowing members of the public to be directly involved in the generation of data used in environmental management. As a result, environmental decision-making may also become more
Further, the more democratic approach involves elements of public consultation, alternative dispute resolution, policy dialogue, public engagement, etc., and local participation. All these means of participation require knowledge. This is just a short account of the alternative, existing approaches to meaningful involvement of the civil society and humanity as a whole to global environmental governance and lawmaking, specifically. This Thesis does not have as an end to thoroughly discuss the means for the promotion of democratic decision-making. This chapter just focuses on demonstrating that there are alternative approaches to balance the democratic gap.

2.4. Environmentalism in a Risk Society

Only with appropriate environmental education can the public meaningfully participate in the environmental and public health governance structures without putting at risk the protection of the natural environment and their health. Much like the type of society that preceded it, then, industrial society is characterized by a deficit in democracy. This deficit is currently being eliminated in risk society though “the principle of division...
of power” and “the liberation of doubt.” Environmentalism is part of both processes. Argyrou citing Beck says that Environmentalism constitutes an “ecological enlightenment” precisely because, much like the Enlightenment at the beginning of modernity, it questions and doubts the truths handed down by the traditional authorities – “the scientific religion of controlling and proclaiming truth” and strives for the redistribution of power in decision making.” Environmentalism that is based on both ethics and a strong background in environmental education can lead to conscious pro-environmental choices at both the national and the international levels that will contribute to shaping the policy-agenda and the consequent laws with an appropriate hierarchy of topics.

3. Empowering Civil Society and Addressing the Inequality of Weapons

Giving a stronger say to independent experts in the lawmaking procedures may address, to a certain extent, the issue of inequality of weapons that are available to civil society regarding environmental issues in general. Inequality of weapons exists at the international level in the sense that expert groups and other civil society representatives may not be in the position to prove that their assumptions hold true due to the lack of resources, infrastructure, political influence, access to media, access to judicial protection at the international level and, in some cases, at the national and regional level as well.

Pro-environmental coalitions may not have adequate resources to sustain major research programs as corporations have.\textsuperscript{1162}

In general, international cooperation and international control measures for the protection of the environment is influenced by the options of different national governments. International negotiations are shaped by the domestic policy game of the participating countries (two-level game theory).\textsuperscript{1163} Different political systems provide different institutional opportunity structures for diffuse interests. In corporatist countries, it is much more difficult for diffuse interests to go on the agenda than well-organized interests, unless green parties are in parliament or green pressure groups mobilize public opinion.\textsuperscript{1164}

An example is the German stance to the regulation of substances that depleted the ozone layer prior to 1986. In Germany, anti-regulation interests prevailed, because pro-regulatory interests lacked advocate scientists and a forum in which to publicize

\textsuperscript{1163} Two-level game theory is a political model of international conflict resolution between liberal democracies derived from game theory and originally introduced in 1988 by Robert Putnam. The model views international negotiations between liberal democracies as consisting of simultaneous negotiations at both the intra-national level (e.g. domestic) and the international level (e.g. between governments). Over domestic negotiations, the executive absorbs the concern of societal actors and builds coalitions with them; at the international level, the executive tries to implement these concerns without committing to anything that will have deleterious effects at home. Win-sets occur when the concerns of actors at both levels overlap, a condition under which an international agreement is likely. Robert D. Putnam. Diplomacy and Domestic Politics: The Logic of Two-Level Games, 42 INT'L ORG. 427-60 (Summer 1988).
precautionary arguments. In the U.S., Rowland, one of the primary scientists dealing with the ozone problem as early as 1974, argued that evidence had been sufficient to justify steep CFC reductions since the 1970s. It took many years until the arguments of the pro-environmental groups in Germany and scientific advice could reach the decision-making centers and open up the way for the adoption of an international agreement that would help regulate the issue with success. As it is known, the Vienna Convention for the Protection of the Ozone Layer was ratified in 2001, many years later.

4. Revision of the Notion of Law as a Purely Social Enterprise: Nature as an Indispensable Actor in International Environmental Law

What comes again and again as the main, bold argument for the SBLM model is the one single truth that any environmental law model should a priori encompass the truths of the Earth. These truths can be interpreted by scientific means. Scientific issues cannot be framed differently than what they are by following democratic means. Erik Millstone illustrates the same argument by using the following example:

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See, e.g., the German stance to the regulation of substances that deplete the ozone layer before 1986, where anti-regulation interests prevailed, because pro-regulatory interests lacked advocate scientists and a forum in which to publicize precautionary arguments. Judith A. Layzer, Science, Politics and International Environmental Law, 2 (3) GLOBAL ENVIRONMENTAL POLITICS 118 (2000). On the other hand, Germany, along with the Netherlands and Denmark, was among the countries to exercise pressure on the European Community to adopt ozone-protective regulations. The efforts undertaken by the three countries did not reach any substantial results, since the Commission was funding and promulgating reports holding that much scientific uncertainty existed and thus the Commission decided to proceed only to limited quantitative reductions of the ozone-destructive chemicals and to ask from the industry to adopt voluntary practices that were so gentle that they had essentially no effect. See EDWARD A. PARSON, PROTECTING THE OZONE LAYER, SCIENCE AND STRATEGY 110 (Oxford University Press 2003).

PARSON, supra note 1162, at 134.
“Even if all citizens of particular countries agreed that the Earth is stationary at the Center of the Universe, and that the sun, the planets and the stars, all rotate around the center of the Earth, that does not make that cosmological theory true.”

According to traditional definitions, the law is understood to be a clearly social phenomenon; “law is through and through a social phenomenon; social in origin, in purpose or end, and in application” says John Dewey.1168 “The law is the command of the sovereign backed by a sanction” complements the nineteenth century jurist John Austin.1169 These traditional approaches hold, indeed, true in regard with the vast majority of the regulatory fields. Since the days of Dewey and Austin, though, much time has lapsed and new subject-matters of legislation have risen. A more sophisticated approach to what the “nature’ of law is leaves open the possibility, that apart from social preoccupations, other factors, such as scientific data could decisively shape the content of laws, that there is a set of topics, including first and foremost, environmental issues, that scientific - and not only social rules - regulate their outcomes. When, the sovereign seeks to legislative actions that affect or are affected by nature, then the sovereign should also take into account what Francis Bacon said: “Nature, to be commanded, must be obeyed.”1170 [emphasis added by the author.] However, contemporary environmental

1167 MILLSTONE, supra note 53, at 3.
1170 Bacon, in Aphorisms contained in “Book One” of Bacon’s work: “Novum Organum” comments: “III. Human knowledge and human power meet in one; for where the cause is not known the effect cannot be produced. Nature to be commanded must be obeyed; and that which in contemplation is as the cause is in operation as the rule.” The text of the book is available at http://www.constitution.org/bacon/nov_org.htm (in English), while the original text of the “Novum Organum” is available at http://www.thelatinlibrary.com/bacon.html (in Latin) (last visited April 16, 2011).
governance at all levels does not seem to have fully understood Bacon’s wisdom to this end.

Several contemporary fields of law, such as environment, natural resources, energy, forestry, agriculture – one could say all fields involved with the concept of environmental sustainable development - on both the domestic and the international level, are so fundamentally affected by several parameters based on the features and the capacities of natural ecosystems within which the social activities they regulate take place, that in these fields law cannot disregard either their existence, or the natural laws that govern them. With this meaning, several contemporary fields of law can no longer be understood as a purely social enterprise. Societies cannot successfully regulate these fields by solely following social rules developed within their political systems, no matter what kind of political systems these are, democratic or otherwise. The legislator needs to reconsider the set and origin of factors that (s)he takes into account and open up the lawmaking process and integrate these factors better. The behavior of the Earth’s ecosystems, their carrying capacity, and their fragile interconnectedness cannot obey any socially, democratically or not, created rules that oppose their realities.1171

See also Rees, Graham and Maria Wakely, The Instauratio Magna, Part II: Novum Organum and Associated Texts (Claredon, Oxford 2004).

1171 As explained above, this statement has a purely different basis and it is not to be compared with the expressed point of view within the framework of most-modern philosophy, which views all ideas as social construction, and especially the theory of the “social construction of nature”, see, e.g., Klaus Eder, Social Construction of Nature: A Sociology of Enlightenment, (London – Thousand Oaks, Calif. Sage Publications 1996); Elizabeth Ann R. Bird, The Social Construction of Nature: Theoretical Approaches to the History of Environmental Problems, ENVTL. REV. 255 (Winter 1987); Dan Tarlock, Slouching Toward Eden: The Eco-pragmatic Challenges of Ecosystem Revival, 87 MINN. L. REV. 1173 (2003).
The degree that a rule depends upon both a social and an environmental foundation may in each case vary. In a hypothetical *continuum*, one could start from exclusively socially determined rules and reach rules that are completely technical. The more toward the right end of the *continuum* one goes, the more socially determined rules fail. The usual example that shows why those rules are “out of the reach of the democratic principle,” is the example of the aviation regulations created by the International Civil Aviation Organization (I.C.A.O.) These regulations are made exclusively by experts. No matter what representatives that are democratically elected by the people or civil society or authoritarian governors might say, there are specific technical and environmental parameters, as well as designs that could make an airplane fly, and any error to these could prove to be fatal. Under the same concept, no matter what society might decide, the effects of an unwise regulation will remain the same; for example, the quantity of a toxic substance in a river that can be lethal, will remain the same, no matter what regulators might say. If the concentration of the quantity of the toxic substance within the water supervenes the threshold under which it is safe for life and health, then the water will no longer be drinkable. There are, thus, cases in legislation that nature stands as a decisive factor – or better placed as an “actor” - in the legislative process, and needs to be respected in parallel with the democratic procedures. Understanding the necessity for the scientific validity of environmental laws is essential for the success of the regulation. Science-based laws do not oppose democracy. On the contrary, as seen above, the processes under which nature will be included in the lawmaking process can both serve and be served by several versions of democracy, both traditional and progressive.
4. Distortion of Science and the Corrective Rule for the Support of Democracy

The flaw of information on environmental issues is not always undisturbed. Although society lives in the information age, the actual information provided can be incomplete, distorted or hidden. The distortion of science has been subject to analysis in the first chapter of the Thesis. In this part, however, it is important to emphasize how distortion of science affects democracy. Al Gore comments that:

“…there has been a dramatic change in the nature of what philosopher Jürgen Habermas has described as “the structure of the public forum.”…the public sphere is no longer as open to the vigorous and free exchange of ideas from individuals as it was when America was founded.”

There are so many reasons, why democracy is not in good standing nowadays. The provision of partial information to the people is one of these reasons. The changes of the lawmaking model that the Thesis proposes have also the potential to empower democracy, rather than undermine it. Definitely, distortion of science is a factor undermining democracy to the extent that one could validly hold that many contemporary political, and even democratic institutions have been demoralized. Al Gore, comments on the quality of democracy as it is today:

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1172 See supra at ..
“Our democracy is in danger of being hollowed out. The opinions of the voters are sometimes, in effect, purchased – just as demand for new products is artificially created. Decades ago, American journalist and political commentator Walter Lippmann wrote: “The manufacture of consent… was supposed to have died out with the appearance of democracy… but it has not died out. It has, in fact, improved enormously in technique… under the impact of propaganda, it is no longer plausible to believe in the original dogma of democracy. … We Americans must… stop tolerating the rejection and distortion of science. We must insist on an end to the cynical use of pseudostudies known to be false for the purpose of intentionally clouding the public’s ability to discern the truth… The climate crisis, in particular, should cause us to reject and transcend ideologically based distortions of the best available scientific evidence.”

In a following chapter, Gore testifies:

“All recent occupants of the White House – including the administration in which I served – have paid attention to the information, that is to say, released by the government and have been tempted to try to manage the impressions formed in the minds of Americans. Unfortunately, during the present administration, this temptation has led to a sharp increase in the use of secrecy, a determined assault on the integrity of scientific research findings that might undercut the administration’s effort to intimidate and silence the bearers on any information that might be used to challenge the decisions this White House has made.”

The S.B.L.M. model, functioning on the international level, has the capacity and should be structured in a way so as to gather and disseminate all of the existing environmental information to the public around the world in order to create informed citizens. Only information and education create a citizen that is able to fully participate in democratic institutions. A science-based lawmaking model should include a pre-legislative stage where its expert bodies would exchange information back and forth with the civil society and also have access to the mass media and popular website sources in order to bring the lay public closer to the necessary scientific information and educational programs.

1174 Id. at 10.
1175 Id. at 103.
5. A Science-Based Lawmaking Model Supported by Radical Democratic Concepts

Taking the aforementioned criticism into consideration, one could see the promulgation of legislation by international institutions and the participation of expert bodies, NGOs and other structures representing Nature in lawmaking as implementation of partially new concepts of democracy, where the concept of “demos” is enlarged, also including non-humans. For Dryzek, ecological democracy could be exercised with the participation of both humans and non-humans, the latter through an agent. Democratic decision-making, and consequently lawmaking, should pay attention to feedback signals emanating from natural systems.1176 A human process informed by signals from nature, Dryzek’s ecological democracy can be viewed as a “regulative ideal.” Ulrich Beck also embraces the ideal of “ecological democracy”.1177 His work, however, emphasizes the socially constructed nature of knowledge and fosters a new political skepticism of the inherent value of technological “progress” and a distrust of scientific experts. Daniel


Faber links movements of environmental justice with the notion of ecological democracy and gives to the latter a different interpretation, claiming that the latter would help, remedying ecological racism and class-based environmental inequities. Ecological democracy raises the claim that those communities of people suffering ecological injustices must be afforded greater participation in the decision-making processes of capitalist industry and in the state at all levels. Under both versions of ecological democracy, experts could potentially represent class or non-human groups.

There is also the use of some vaguer terms or terms with several, narrow definitions, such as the term “environmental democracy”, defined as “public participation in environmental decision-making” in *Doors to Democracy* or as “a participatory and ecological rational form of collective decision-making: it prioritizes judgments based on long-term general interests, facilitated by communicative political procedures and a radicalization of existing liberal rights.” This type of interpretation to democracy signifies that, first, contemporary decision-making and lawmaking models are not satisfactory models at least for a percentage of the civil society, both international and domestic. Firstly, the traditional lawmaking models do not always result from adequately representative, and, thus, democratic governance systems. Secondly, there is a rising demand among the civil society for deliberative procedures of decision-making.

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Under this framework, more active participation of epistemic communities, that is, communities that fall within the notion of the civil society, is required.

Other concepts of democracy also include, directly or indirectly, a paradigm similar to the ecological democracy paradigm. This is, for example, the concept of the “inclusive democracy.” Inclusive democracy (“ID”) perceives the world to be in a multidimensional crisis, caused by the concentration of power in the hands of various elites, as a result of the establishment of the system of the market economy and economic growth, representative democracy and the related forms of hierarchical structures. Inclusive democracy includes direct political democracy, a type of economic democracy that goes beyond the confines of the market economy and state planning, as well as democracy in the social realm and ecological democracy. In short, inclusive democracy is a form of social organization which re-integrates society with economy, polity and nature. Inclusive democracy scholars distinguish between the two main societal realms, the public and the private, to which they add an "ecological realm", defined as the sphere of the relations between the natural and the social worlds.\(^{1181}\)

Although in the relevant literature there is no prior connection between the lawmaking procedures and participation of experts and other structures representing non-human elements, the inclusion of ecological democracy and the definition of the ecological realm added to the private and public realms, indicate that participation of experts in the lawmaking processes would fulfil part of the mandate of inclusive democracy.

democracy. This assumption most definitely countervails the traditional view of democracy as a discursive practice in which other species, let alone types of non-living entities, are not able to participate.\footnote{Albert Weale, The Limits of Ecocentrism, 2 ENVIRONMENTAL POLITICS 342 (1993).} This stance depicts the countervailing, traditional, anthropocentric view of democracy, as it opposes an eco-centric point of view of democracy that these approaches introduce.\footnote{John Barry, The Limits of the Shallow and the Deep: Green Politics, Philosophy and Praxis, 3 ENVIRONMENTAL POLITICS 369, 371 (1994).} In an eco-centric view of democracy, the “new environmental constituency” includes all species and unborn humans. Experts may undertake the role of the guardians of the non-human living beings and then their participation in lawmaking becomes indispensable for the fulfillment of the notion of democracy.

The Thesis referred to the radical democratic theories to emphasize that there are more than one understandings to what kind of conditions of participation and procedures could actually satisfy the demands for democracy and that the traditional structures of democracy do not necessarily incorporate all of the legitimate interests. New political ethics should be developed and new institutions should become part of the traditional concepts of democracy that are adoptive to ecological ends, but much needs to change…\footnote{R. Ekersley, Greening Liberal Democracy: The Rights Discourse Revisited, in DEMOCRACY AND GREEN POLITICAL THOUGHT: SUSTAINABILITY, RIGHTS AND CITIZENSHIP 212, 214 (B. Doherty & M. de Geus eds., Routledge, London 1996).}
FIFTH ATTEMPT TO DEFINE SCIENCE-BASED LAWMAKING

Proceeding from the assumption that science-based lawmaking would increase the effectiveness of environmental laws, and upon the foundational understanding of S.B.L.M as a substrata of science-based policy making, it is critical to conceptualize S.B.L.M. in its historical context and as a via media between politically-dominated I.E.L.—bereft of scientific validity—and technocracy.

Science-based lawmaking acknowledges and furthers historical developments in the relationships between authority, governance and science. However, the Thesis’ advocacy for science-based lawmaking in the development of I.E.L. is not an endorsement of technocratic principles, which have historically excluded democratic processes.

In direct contrast to technocratic regimes, which give scientists monopolies over lawmaking, S.B.L.M encourages and strengthens the democratic process by advocating debate and compromises among scientists, experts and politicians. The very essence of S.B.L.M in the international environmental arena pursues democratic ideals by optimizing environmental protection, the beneficiaries of which will inevitably be the people comprising the international community.

Further, the anti-technocracy scares with respect to environmental law, as embodied in warnings regarding eco-technocracy have proven to be baseless. This is evidenced by the international community’s continuous calls for a higher degree of scientific integration in I.E.L. The contemporaneity of the issue regarding how to best infuse scientific expertise into I.E.L. is best embodied in the upcoming UN Conference on Sustainable Development in 2012 and identifies a more effective integration of science into international environmental lawmaking procedures as one of its preeminent goals.
PART IV: “TO UNITE THE POLITICAL POWER WITH THE WISDOM…”

Question:

Why should States obey laws issued by expert bodies without their consent? Would science and expertise legitimize experts to promulgate laws? Is there any lawmaking model that would combine the expertise-based legitimacy and other types of legitimacy upon which current International Law is based?

CHAPTER I: WHY WOULD STATES OBEY RULES ISSUED BY EXPERT BODIES?

A. Reasons for State Obedience to International Law

Taking into account that an S.B.L.M. model transfers the center of the lawmaking activity that regards the secondary provisions of I.E.L. from political bodies to expert bodies, the question that almost instinctively rises is why States should ever agree, to first of all adopt such procedures and, secondly, then be bound by legislation promulgated by expert bodies irrespectively from their will? It is noteworthy, that, at present, not only science-based lawmaking processes, but also political, and progressive lawmaking processes faced and – to a certain extent – keep facing reservations and objections by the States. For instance, States objected to the proliferation of the majority voting procedures. IOs and treaty-based bodies operating on the basis of majority voting are perceived as a

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threat to state sovereignty, especially when they have competence to promulgate legally binding acts over the objection of a dissenting state.\textsuperscript{1186}

In order to answer the question of whether States would obey science-based International Environmental Law, it might be useful to consider why States obey International Law in the first place. One of the reasons is that States usually abide by International Law. D’Amato comments:

“Can international law be enforced against a state? Against a superpower? Various current theories answer in the negative: dualism, consent, domestication, soft law, the New Haven school, and exceptionalism. But this Article claims that international law is enforced all the time by unilateral or multilateral reprisals. The stability of international law over time is a function of the successful working of the reprisal system. In sum, international law is a coercive order.”\textsuperscript{1187}

Stanley Michalak observes that: “most of the time States do obey international law; most of the time they do get along with their neighbors; and most of the time, they do cooperate on countless issues and problems.” Even realist Hans Morgenthau acknowledges that: “During the four hundred years of its existence international law has, in most instances, been scrupulously observed.”\textsuperscript{1188} All the reasons that stand for the general obedience to international law also stand for the obedience to the secondary rules that would be promulgated by expert bodies.

\textsuperscript{1186} ALVAREZ, supra note 44, at 10.
Scholars have long considered the question of why States obey International Law. Contemporary contributions to this inquiry include schools of thought that link the transnational legal process on state socialization, the impact of acculturation on state behavior, the way of a state's desire to be held in esteem by other international actors, and the influence of a given state's belief in the rule of law. Common to each of these approaches is the notion that external norms have some effect on state action. The need for meaningful involvement in international life on behalf of the States makes States to be more flexible to their stance vis-à-vis international institutions and other States. Thus, one of the reasons why States would obey science-based rules is the same as to why States, in general, participate in multilateral relations; States obey science-based rules for the same reason that they participate in multilateral relations: States participate in International Law out of necessity. Even the largest and most powerful States cannot achieve their principal purposes – e.g., national security or economic well-being that also depends on international trade – without the help and cooperation of many other participants in the system, including not only other States, but also international institutions.


See, e.g., Anne-Marie Slaughter, A New World Order (2004).

Chayes & Chayes, supra note 1189, at 26-27.
justify the acquisition of lawmaking powers of the expert bodies of those organizations, in case that expertise is necessary, such as in the body of secondary I.E.L. In the 1960s, authors had already perceived the raising lawmaking capacities of the UN and its specialized organizations.\textsuperscript{1195} From that time until the time that the United Nations Security Council (UNSC) issued Resolution 1373 and Resolution 1540 on grounds of combat against terrorism, international institutions have made many steps forward.\textsuperscript{1196} The unprecedented legislative powers acquired by the United Nations Security Council were justified on grounds of necessity of the Security Council to undertake these actions. Tomuschat emphasizes necessity as the reason that would justify the acquisition of lawmaking powers by international institutions:

“At the universal level, rule-making powers of international organizations are still exceptional. It is here that the needs for a rapid and effective rule-making mechanism are growing almost every day.”\textsuperscript{1197}

Regarding environmental protection in particular, increased levels of global ecological interdependence and the transboundary nature\textsuperscript{1198} of many environmental problems,
decisively and permanently undermine the principle of state sovereignty and oblige States to participate in multilateral schemes of the international environmental governance.\textsuperscript{1199} As Chayes and Chayes comment:

\begin{quote}
“in today’s setting, the only way most States can realize and express their sovereignty is through participation in the various regimes that regulate and order the international system …for all but a few self-isolated nations, sovereignty no longer consists in the freedom of States to act independently, in their perceived self-interest, but in membership in reasonably good standing in the regimes that make up the substance of international life.”\textsuperscript{1201}
\end{quote}

Within a rational choice framework, Guzman’s efforts to describe more completely the reputational aspects of International Law are also noteworthy.\textsuperscript{1202} States would cooperate within the framework of international institutions and follow obligations undertaken \textit{via} science-based lawmaking procedures, in order to avoid the so-called “reputational sanction.” This phrase refers to the costs imposed on a state, when its reputation is damaged.\textsuperscript{1203} For instance, a State will receive negative publicity, when all other States, except this specific State, prohibit a behavior that deteriorates the natural environment or dangerously diminishes Earth’s natural resources. The effectiveness of reputational sanctions can be considerable. Based on this, international institutions

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\begin{flushleft}1199\textsuperscript{ Gardner considers state sovereignty to be the most compelling obstacle that society has to overcome in order to be able to protect the natural environment. \textit{See} Royal C. Gardner, \textit{What is the Most Compelling Environmental Issue Facing the World on the Brink of the Twenty-First Century?}, 8 \textit{FORDHAM ENVTL. L. J.} 133 (1996).
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\end{flushleft}
sometimes use the “name and shame” techniques in order to put pressure upon a State to comply with its obligations via, e.g., the publication on official websites of international institutions of a list with the names of the States that do not comply. Many unintended consequences may occur out of its behavior through the “name and shame” technique; negative reputation of a State could, for instance, lead to the reduction in the number of tourists that visit that State in that particular year, since the younger generation of tourists tend to be more well-informed on social and environmental issues than the older generation and be more interested in the good environmental governance followed by a State. An example of this is that for several decades now, a factor influencing the choices of dozens of visitors has been the way that the people of a country treat animals, and in particular the degree to which a State respects animal welfare. Similarly, a “name and shame” technique could influence consumer behavior, making consumers reject products that are made within a country with anti-environmental behavior. Under this pressure, a State may become obliged to change this particular behavior. An example is the case of Japan that agreed to stop whaling, based on the pressure applied by the international community.\textsuperscript{1204}

\textsuperscript{1204} Whaling in Japan may have begun as early as the 12th century. During the 20th century, Japan was heavily involved in commercial whaling until the International Whaling Commission moratorium on commercial whaling went into effect in 1986. Japan continued to hunt whales using the scientific research provision in the agreement, and Japanese whaling is currently conducted by the Institute of Cetacean Research. The meat from scientific whale hunts is then sold in shops and restaurants. This is allowed under IWC rules, although most IWC members oppose it. These hunts are a source of conflict between pro- and anti-whaling countries and organizations. Nations, scientists and environmental organizations opposed to whaling consider the Japanese research program to be unnecessary at best and a thinly disguised commercial whaling operation at worst. Japan maintains that annual whaling is sustainable and necessary for scientific study and management of whale stocks. Japan also argues that objections to whaling are based upon cultural differences and emotional anthropomorphism. Whales have been prized in Japan as a source of both food and a variety of byproducts. Japanese whalers caught 2,769 whales in 1986. Japan ended commercial whaling in 1987, following the imposition of the afore-mentioned worldwide ban on the hunting of endangered species of whales by the International Whaling Commission, but announced that it would catch 875 whales for “research” purposes. The 2000 Japanese whale catch of over 16,700 toothed whales of various species represented about 82\% of the world’s whale catch. \textit{See, e.g.}, a comprehensive
Japan’s behavior regarding the implementation of M.E.A.s offers an additional example emphasizing another reason for international participation in a multilateral world. States would cooperate and follow both politically-driven and scientifically-driven international legislation, in order to avoid isolation. An example of this is the case of ivory trade. Although the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) ordinarily displays a good deal of tolerance for noncompliance on behalf of the States and permits the States to express reservations to their commitments, some of its provisions have received universal acceptance. For instance, there was universal adherence to the ivory trade ban, even including States, such as Japan, that had an interest in ivory trade. On the occasion of Japan’s offer to host the 1989 conference, the head of the Japanese Environmental Agency explained that the Japanese move was made “to avoid isolation in the international community.”

Japan’s decision was vital for the success of the regime. Although from the realist perspective only a relatively peripheral national interest was involved, it is said that a reservation – although typically permitted under the treaty – would essentially threaten the collapse of the regime.

A second group of scholars takes an individualistic and instrumentalist approach, a realistic view, according to which international law reflects the agreements of self-interested States that cooperate to maximize their individual utility and argues that States

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1206 CHAYES & CHAYES, *supra* note 1189, at 22.
will only enter into agreements, if doing so makes them “better off”.\footnote{Andrew T. Guzman, How International Law Works: A Rational Choice Theory 121 (Oxford and New York, Oxford University Press 2007).} Self-interest of the States will continue to play its influential role on international relations. Self-interest of the States does not necessarily lead to unilateralism. On the contrary, self-interest may very well indicate a turn toward multilateralism and the meaningful participation of the State to international institutions, so as to strengthen and not weaken the position of a state. According to realism, smaller States, developing States, enlightened States and States looking at long-term as opposed to short-term gains will look at the world differently. In particular, they will look to organizations to empower them.\footnote{See Nigel D. White, The Law of International Organizations 7 (Juris Publishing, Manchester University Press, 2005).} An illustrative example of this is the participation of a state in an international institution that is competent for the management of shared watercourses. If State A is considerably less powerful than State B and State B pollutes the watercourse, it is much easier for State A to protect itself and request from State B to clean up the water and stop polluting the watercourse by referring to the dispute settlement bodies of the international institution, rather than by confronting State B on its own. International institutions could also help States that have access to limited resources proliferate the potential resources that are available to them. In this way, a single State could access significant environmental information, which would not have been possible for it to obtain on its own.

On the other hand, there are well-justified grounds for doubting whether those theories would work on the very same scale among both small and hegemonic States. The hegemonic stability school of neorealism suggests that cooperation is most likely to
occur, when it is imposed by a dominant state or a “hegemon” with a “preponderance of national resources” that include “control over raw materials, control over sources of capital, control over markets, and competitive advantages in the production of highly valued goods” and the willingness to use them.\textsuperscript{1209} There are two different schools of hegemonic stability theory, a benign and a malevolent one, that differ most fundamentally in their basic presumption about the extent of conflict that exists in international relations. This orientation, according to Peter Haas, bears on whether or not they believe that all States will benefit from hegemonic cooperation. The benign version tends to view the nature of the issue being managed in collective goods terms, thus evoking the possibility that once institutions for cooperation are provided, all will benefit from participating. The malevolent one sees instead the cooperative arrangements themselves as public goods. Hence, they will only be provided by a powerful state, if the arrangements coincide with the interests of that State.\textsuperscript{1210} The benign version is based on the presumption that many cases of international cooperation are positive-sum games, and that all States may benefit from cooperation, even though they are leery about initially participating, out of fear of non-reciprocity.\textsuperscript{1211} In this benevolent view of leadership, the hegemon pursues its own long-term objectives; however, because of the nature of the issue, all Parties can benefit from such arrangements. Haas partially


\textsuperscript{1210} See also Duncan Snidal, The Limits of Hegemonic Stability Theory, 39 (4) INT’L ORG. (1985).

explained the success of the Med Plan invoking this very theory. \textsuperscript{1212} The benign version of hegemonic stability would explain the possibilities of cooperation under anarchy, even from a liberal point of view. \textsuperscript{1213}

Accordingly, the odds are with the acceptance and the implementation of the I.E.L. provisions, including science-based provisions. Additional factors could support the application of a pro-S.B.L.M. model on the international level. For instance, pressure by domestic institutions might be an additional reason according to which States would choose to follow science-based laws. In the absence of transnational mechanisms and according to the “integrated theory” by Hathaway, an important factor to assuming implementation of and compliance with international obligations, is the non-governmental powers. \textsuperscript{1214, 1215} These would influence the choices of the governments to abide by an international treaty or the actions of an organization to assist them in implementing the treaty provisions, even to measure and report about the implementation and compliance with the agreements.

On the very same grounds, most States should continue being bound by the new processes introduced by International Environmental Law. In addition, the adoption of

\textsuperscript{1212} HAAS, \textit{supra} note 46, at 40-41, accepting France as a hegemon among the Mediterranean countries.

\textsuperscript{1213} “The institutional design demands for cooperation are much fewer and merely need arrangements that will assure them that their partners will not renge on their obligations. As such, cooperation and most forms of international relations may be a positive sum, since all actors pursue objectives that will make everyone better off. Essentially, it is presumed that actors want to cooperate, and they merely need reassurance that they will not become “patsies.”” HAAS, \textit{supra} note 46, at 46.


\textsuperscript{1215} Compare the “liberal institutionalism” perspective or alias “institutional liberalism” according to which States pursue the aims preferred by “powerful domestic interest groups enfranchised by representative institutions and practices.” Andrew Moravcsik, \textit{The Origins of Human Rights Regimes: Democratic Delegation, in Postwar Europe}, 54 INT’L ORG. 217, 519-520 (2000).
those new processes will be the result of a cooperative and co-decision process, which will make the science-based lawmaking processes more easily acceptable by the parties. Further, the prospective efficiency of the processes will be positive for the signatory States of a M.E.A. and the member States of an IO whose participation in those arrangements in the first place indicates the interest they have for the outcome of the issue to be regulated by the M.E.A. or under the auspices of the organization. The objective and high quality scientific information to be guaranteed by those processes will be another positive element for the majority of the States. Another element that should always be kept into mind is that participation on behalf of the States in most of the international institutions is voluntary. That means that there will be always a way-out or an escape-clause for the States, in case the latter want to withdraw from a specific commitment, in the event of an adverse impact of a regulation on the economy, the defense or other fields at stake.

Another reason why States may obey science-based I.E.L. is that especially provisions that are promulgated after standardized procedures and based on solid science and expertise may carry a sense of obligation that States should obey them. The claim of a norm to obedience is further based to a large degree on its legitimacy. In addition, Tarlock argues that the best solution is the coupling of a presumption favoring science-based decision-making with public accountability as a checking mechanism.\textsuperscript{1216} Thus, legitimacy and accountability should be two of the basic features of the S.B.L.M. model and the institutions that support it. States, as well as the global citizenry, will accept, 

\textsuperscript{1216} Tarlock, supra note 63, at 1206.
implement and comply with science-based international environmental laws that comply with the legitimacy and accountability mechanisms.

**B. Building the Science-Based Lawmaking Paradigm**

Providing that the assumption that further integration of science and expertise in I.E.L. leads to advanced environmental protection holds true, what remains to be seen with only few exceptions are new ways according to which such integration could be achieved. Taking into account the democratic governance considerations, this Part presents some proposals for institutional reform that allow for further integration of expertise in law, without, at the same time, confronting the democratic governance requirement. In order to optimize the current lawmaking model in the field of I.E.L., it is necessary, though, to build a framework of operation as the necessary presupposition that would guarantee the impeccable function of the lawmaking system. The model should
address the “who” (political and expert bodies), “how” (lawmaking and procedural provisions) and “for whom” (demos + nature) of international environmental legislation.

How controversial the exercise of the delegated lawmaking power will be depends on the kind of subject -matter to be regulated. Where a matter is largely scientific or technical, delegation of lawmaking powers to experts raises fewer political concerns. On the other hand, where the concerns are more political in nature, the delegation question becomes more complex. Where political judgment is required, it therefore becomes more important that lawmakers enjoy ample democratic legitimacy. A presupposition of the delegation of lawmaking powers to expert bodies of international institutions is that, on the political scale, there has been a political decision for environmental protection. Provided that value choices have been made in the large-scale legal framework of international institutions and have been incorporated in what I call “primary international environmental law”, there is a bulk of “secondary international environmental law” referring to the implementation of the primary rules.\textsuperscript{1217} This secondary law could be promulgated exclusively by expert bodies, while “safeguard clauses” for the States objecting to these rules as well as meaningful and enhanced participation of the civil society will complement the model.

\textsuperscript{1217} The notion of “secondary legislation” is close to the notion of “subordinate legislation” at the national level, namely legislation that derives from any authority other than the sovereign power in a state and that therefore depends for its continued existence and validity on some superior or supreme authority. In parallel, the concept of the “primary legislation” corresponds to “supreme legislation” at the national level, namely “legislation that derives directly from the supreme or sovereign power in a state and is, therefore, incapable of being repealed, annulled, or controlled by any other legislative authority.” See both definitions at BLACK’S LAW DICTIONARY. A subcategory of the “secondary legislation” is “regulation”, namely “a rule of order, having legal force, issued by an administrative agency or a local government.” See BLACK’S LAW DICTIONARY.
Within the framework that primary rules create, including, among others, constituent instruments of inter-governmental organizations, framework multilateral environmental agreements,\textsuperscript{1218} and basic protocols,\textsuperscript{1219} and according to procedures and criteria already established by them, there exist secondary, technical and detailed provisions and implementing rules that serve to further specify the primary rules. These rules could be provisions in annexes, rules of technical nature, rules specifying obligations already accepted by the political bodies, rules that do not impose legal obligations, rules that do not impose additional costs to States or laws fully justified by clear science etc.\textsuperscript{1220} Each separate international institution can identify further criteria, in order to safely assort the type and scope of “secondary” rules.

While political bodies comprised of state representatives should hold the lawmaking power and main responsibility for the adoption of primary rules, expert bodies should be competent to design and adopt secondary implementation rules. The delegation of lawmaking powers to expert bodies, in combination with majority voting and opting-out possibilities seems more appropriate for the adoption of implementation rules. It serves better the timely adaptation of international environmental law to new technological evolutions and the speedy response to environmental emergencies and


\textsuperscript{1219} E.g., the Montreal Protocol, the Kyoto Protocol, and the Cartagena Protocol respectively.

\textsuperscript{1220} At this point the Thesis uses the word “implementation” under a broad sense, namely different from the rules that depict the implementation process of a multilateral environmental treaty, or the decision of an inter-governmental organization or national rules of implementation of international documents. Implementation rules under the meaning in the present Thesis may include a large part of rules of implementation under their usual meaning.
avoids the delays that political negotiations *de novo* may cause. Most importantly, it prohibits the States to act against the purpose of the primary rules by not adopting effective implementation rules.

This lawmaking is supported by an existing, rising body of international environmental rules, mostly, but not exclusively, soft law, promulgated and passed by experts in the framework of international organizations and treaty-based bodies that have been subject to analysis in former chapters.\textsuperscript{1221} Science-based international environmental laws will increase in quantity and prescriptive density in the future, while technology advances and more scientific certainty occurs and environmental problems become so acute as to leave only limited space for politically-driven choices. Such delegation of lawmaking competences endows administrative agents with so much wide discretion, that it breeds concerns of unaccountability, recklessness and, corruption. Most importantly, as discussed in the afore-mentioned Part, delegation of lawmaking powers to experts might result into disrespect for democratic choices. The same concerns stand true also in the realm of domestic jurisdictions.

\textsuperscript{1221} In these cases the general consent of the States was an adequate legal basis for the delegation of powers to expert bodies and no specific consent was necessary for each rule. At the national level, case law by the Greek Supreme Administrative Court supports that science is an adequate legitimacy basis for amendment of laws, even against the choice of the legislature, provided that there is a primary law, through which main (primary) value choices have been made. According to the Court, in Greek legislation, such a policy choice to protect the natural environment and promote sustainable development as a core principle of law and policy in Greece is included in art. 24 of the Greek Constitution. In 2002, during the World Conference of High Justices in Johannesburg, the justices declared their will to implement the ground norm of sustainability and decided that the issue of implementation of the sustainability principle is no longer political but mainly administrative, scientific, technical and juridical. Michael Decleris, *Introduction to Sustainable Polity* (Working Paper), Seminar "Environment and Sustainability - B’ Circle" by the Chamber for Environment and Sustainability, Athens, Greece, p. 5.
CHAPTER II: SCIENTIFIC EXPERTISE AS A LEGITIMACY BASIS FOR LAWMAKING AND ADDITIONAL BASES OF LEGITIMACY

A. In the Quest for Effectiveness

The main argument for a science-based lawmaking model vs. an absolute democratic lawmaking model is the effectiveness that the first type of model will most probably demonstrate in comparison with the latter regarding environmental regulation. Scholars over the years have strongly doubted that democracy can effectively serve environmental protection goals. As a result, they have called for different forms of governance.\textsuperscript{1222} International, regional and national institutions mainly base their success

\textsuperscript{1222} Some predicted that only a fascist state could meet the challenges of effectively regulating environmental pollution. According to William Ophuls in the initial edition of his darkly foreboding “Ecology and the Politics of Scarcity”, published in 1977, “[t]he golden age of individualism, liberty and democracy is all but over.” Garrett Hardin, author of the widely influential essay “The Tragedy of the Commons” in 1968, similarly contended that what was needed was a “world government that is sovereign in reproduction matters” and went on to claim that “injustice is preferable to total ruin.” Still others, while less pessimistic about democracy’s capacity to embrace the necessary legal regime, were confident that such revolutionary strides could occur only with the rise of a “Green Party” championing such a cause.” RICHARD J. LAZARUS, THE MAKING OF ENVIRONMENTAL LAW 2 (The University of Chicago Press, Chicago and London 2004), with reference to JOHN BROOKS FLIPPEN, NIXON AND THE ENVIRONMENT 214 (2000). Since the last decades, writers foresee a potential conflict between democratic governments and scientific governance due to the rising scarcity of natural resources. They wonder whether democracies will be sufficiently supple to respond to warning signals that resource-producing systems are stretched thin and in danger of collapse; these scholars express the fear that, at some point in the future, overuse of resources, overpopulation, or environmental degradation will force a choice between resource degradation due to open access and overuse of resources, making democracy untenable in the future. Bryan G. Norton, Democracy and Environmentalism – Foundations and Justifications in Environmental Policy, in DEMOCRACY AND THE CLAIMS OF NATURE – CRITICAL PERSPECTIVES FOR A NEW CENTURY 11, 23 (Ben A. Minteer & Bob Pepperman Taylor eds., Rowman & Littlefield Publishers, Inc., Lanham, Boulder, New York, Oxford 2002); Bruce Hannon, World Shogun, 8 JOURNAL OF SOCIAL AND BIOLOGICAL STRUCTURES 329-41 (1985); ROBERT HEILBRONER, AN INQUIRY INTO THE HUMAN PROSPECT (Norton, New York 1974); WILLIAM OPHUS, ECOLgy AND THE POLITICS OF SCARCITY: A PROLOGUE TO A POLITICAL THEORY OF THE STEADY STATE (Freeman, San Francisco 1977); WILLIAM OPHULS, THE POLITICS OF SCARCITY REVISITED: THE UNRAVELLING OF THE AMERICAN DREAM (Freeman, New York 1992); D. Ludwig, R. Hilburn, & C.
on their reliance on expertise and not on political bodies. For example, according to several analysts, the regulatory success of the European Communities lies in large measure in the relative insulation of the “Eurocrats” from the electoral cycles and the political considerations, which dominate national policy making. How is it possible to bridge democracy and effectiveness? How could the international environmental governance become effective, without violating political, individual, and social rights?

Delegation of Powers and Democratic Control in the European Union

Under the supra-national structure of the European Union and unlike most of their other international and transnational experience, Member States are now in a situation of facing binding norms, adopted wholly or partially against their will, with direct effect in their national legal orders. The decision-making model followed by the EU has been characterized as “bureaucratic”. Despite the criticism for the democratic deficit, especially within the European Commission, EU environmental law has better integrated science than I.E.L. and contributed to the protection of the Union’s environment as well as our natural global environment. Due to its success, it is useful to explore the administrative structure and the lawmaking processes followed within the EU, in order to sort out any useful lessons to employ at the level of the international administration.

Within the EU structure, it is the role of the Commission in the lawmaking process, the role of the independent regulatory agencies and the evolution of the “political administration” through committees (Comitology) that are of importance for the purposes of this Thesis. In the following analysis one has to take into consideration the supranational dimension of the European Union and the relevant delegation of political powers from the Members States to the European institutions, which distinguish the European Union case from the rest of the international institutions. Despite their differences, many of the issues related to

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Walters, Uncertainty, Resource Exploitation, and Conservation: Lessons from History, 260 SCIENCE 17-19 (April 2, 1993). Other scholars see democracy itself as a threat to environmental values and hold that democracy can be a threat to environmental values, since democracy is necessary, but not sufficient to protect the integrity of nature, and, thus, democracy should be “supplemented” by “second-order principles”, which are based on a “law of peoples” and will override any democratic process. See, e.g., LAURA WESTRA, LIVING IN INTEGRITY: A GLOBAL ETHIC TO RESTORE A FRAGMENTED EARTH 57 (Lanham, Md, Rowman & Littlefied 1998).


the independent regulatory agencies and the function of the European committees function apply mutatis mutandis in the context of the international lawmakers institutions.1226

The principal bodies of the European Union (which are also bodies of the European Atomic Energy Community (EAEC or Euratom), are the Council, the European Parliament (“EP”), the European Commission (“Commission”), the Court of Auditors and the Court of Justice of the European Union (ECJ) according to art. 7 (ex art. 4) of the EC Treaty. Lawmaking powers are primarily awarded to the Council and the European Parliament; nevertheless, the Commission and many other agencies and bodies are also directly involved in the lawmaking process. An attempt to categorize these bodies would lead us to the conclusion that the Council and the Parliament belong to the “political bodies” category, while the Commission and the rest bodies and agencies belong to the “expert” side, while the E.C.J. remains the primary adjudicatory organ of the EU.

Participation of the Commission as an Expert Organ in the Lawmaking Process 1227

The Commission comprises a complex structure including the College of Commissioners and its President, appointed by the governments of the Member States, but independent during the exercise of their duties, and the bureaucracy organized in various Directorates General (DGs)1228 and other units which provide General Services across the spectrum of Commission activities.1229, 1230 Regarding the category of bodies within which the Commission falls, this analysis follows the model that poses the Commission as an expert secretariat vis-à-vis the Council.1231 The powers of the Commission are set out in Article 211 (ex Article 155) EC which refers in a very laconic way to the legislative, administrative, executive and even judicial powers of the Commission.1232 Concerning the legislative process,

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1228 As, for example, DG Agriculture, DG Competition, DG Economic and Financial Affairs, DG Energy and Transport, and DG Environment.
1229 These include among others the European Anti-Fraud Office (OLAF), Eurostat, Press and Communication, Publications, Translation Service, Legal Service, Personnel and Administration, the Policy Advisor’s Group, the Joint Research Center, and the Secretariat General of the Commission.
1231 Rometch and Wessels have elaborated four models featuring the relationship between the Commission and the Council: the Commission as a dynamic technocracy with the Council as the body required to ratify Commission action, the Commission as a form of federal government, with the Council as the second chamber, the Commission as an expert secretariat and the Commission as a broker and negotiator within the Council. Rometch & Wessels, The Commission and the Council of Ministers, in THE EUROPEAN COMMISSION 203 (G. Edwards & D. Spence eds., Longman 1994). These models may infuse into each other and as Westlake comments, they are of relevance, depending on the context and on the time in the Community’s history. M. WESTLAKE, THE COUNCIL OF THE EUROPEAN UNION 336 (Cartermill 1995).
1232 Article 211 (ex Article 155) EC:
“in order to ensure the proper functioning and development of the common market, the Commission shall:
- ensure that the provisions of this Treaty and measures taken by the institutions pursuant thereto are applied;
- formulate recommendations or deliver opinions on matters dealt with in this Treaty, if it expressly so provides or if the Commission considers it necessary;
Before the Treaty on the Functioning of the European Union the most important competence of
the Commission in the Community pillar was its right of legislative initiative placing it thus at
the forefront of the policy development; In the Community pillar the right of initiative
belonged almost exclusively to the Commission.\textsuperscript{1233}

In particular, the “Community Method” had the following features: a) the
Commission monopolized the right of initiative; b) there was a general use of qualified
majority voting in the Council; c) the European Parliament had an active role in co-legislating
frequently with the Council; and, d) the Court of Justice ensured the uniformity in the
interpretation of Community Law. For the second and third pillar, the method used was the
“intergovernmental method” with the difference that the Commission shared its right of
initiative with Member States, the European Council was informed and consulted and the
Council could adopt binding acts.\textsuperscript{1234} The original Treaty of Rome provided that the Council of
Ministers needed unanimity to deviate from the Commission’s proposals\textsuperscript{1235}; nevertheless,
certain exceptions to this rule have been introduced after the entry into force of the Treaty on
the Functioning of the European Union.\textsuperscript{1236} Moreover, since the creation of the co-decision
procedure for the adoption of EU legislation, an exception that allows the Council – following
conciliation with the European Parliament – to amend the Commission’s proposals without the
latter’s consent has been introduced.\textsuperscript{1237} In contrast to the original community method, either

- have its own power of decision and participate in the shaping of measures taken by the Council
and by the European Parliament in the manner provided for in this Treaty;
- exercise the powers conferred on it by the Council for the implementation of the rules laid down
by the latter.”\textsuperscript{1233}

\begin{quote}
See, however, other cases, e.g., Article 67 (ex. Art. 73(0)) EC dealing with visas, asylum,
immigration.
\end{quote}
\textsuperscript{1234}

See at http://european-convention.eu.int/glossary.asp?lang=EN&content=C
(last visited October 31, 2010).
\textsuperscript{1235}

Article 250(1) of the Consolidated TEC provided “Where, in pursuance of this Treaty, the
Council acts on a proposal from the Commission, unanimity shall be required for an act constituting an
amendment to that proposal, subject to Article 251(4) and (5)”.\textsuperscript{1236}

Article 293(1) TFEU provides “Where, pursuant to the Treaties, the Council acts on a proposal
from the Commission, it may amend that proposal only by acting unanimously, except in the cases referred
to in paragraphs 10 and 13 of Article 294, in Articles 310, 312 and 314 and in the second paragraph of
Article 315”.\textsuperscript{1237}

Youri Devuyst, The European Union’s Institutional Balance After the Treaty of Lisbon:
“Community Method” and “Democratic Deficit” Reassessed, 39 Geo. J. Int’l L. 247, 265 (2008); Article
251(4) TEC provided: “The Conciliation Committee, which shall be composed of the Members of the Council or their representatives and an equal number of representatives of the European Parliament, shall
have the task of reaching agreement on a joint text, by a qualified majority of the Members of the Council or their representatives and by a majority of the representatives of the European Parliament. The Commission shall take part in the Conciliation Committee’s proceedings and shall take all the necessary
initiatives with a view to reconciling the positions of the European Parliament and the Council. In fulfilling
this task, the Conciliation Committee shall address the common position on the basis of the amendments
proposed by the European Parliament”; while articles 294(10) and (11) TFEU provide that:

“10. The Conciliation Committee, which shall be composed of the members of the Council or their
representatives and an equal number of members representing the European Parliament, shall have the task
of reaching agreement on a joint text, by a qualified majority of the members of the Council or their
representatives and by a majority of the members representing the European Parliament within six weeks of
its being convened, on the basis of the positions of the European Parliament and the Council at second
reading.

11. The Commission shall take part in the Conciliation Committee’s proceedings and shall take all
necessary initiatives with a view to reconciling the positions of the European Parliament and the Council.”
Article 294 TFEU describes the legislative procedure in general:
1. Where reference is made in the Treaties to the ordinary legislative procedure for the adoption of an act, the following procedure shall apply.


**First reading**

3. The European Parliament shall adopt its position at first reading and communicate it to the Council.

4. If the Council approves the European Parliament's position, the act concerned shall be adopted in the wording which corresponds to the position of the European Parliament.

5. If the Council does not approve the European Parliament's position, it shall adopt its position at first reading and communicate it to the European Parliament.


**Second reading**

7. If, within three months of such communication, the European Parliament:
   (a) approves the Council's position at first reading or has not taken a decision, the act concerned shall be deemed to have been adopted in the wording which corresponds to the position of the Council;
   (b) rejects, by a majority of its component members, the Council's position at first reading, the proposed act shall be deemed not to have been adopted;
   (c) proposes, by a majority of its component members, amendments to the Council's position at first reading, the text thus amended shall be forwarded to the Council and to the Commission, which shall deliver an opinion on those amendments.

8. If, within three months of receiving the European Parliament's amendments, the Council, acting by a qualified majority:
   (a) approves all those amendments, the act in question shall be deemed to have been adopted;
   (b) does not approve all the amendments, the President of the Council, in agreement with the President of the European Parliament, shall within six weeks convene a meeting of the Conciliation Committee.

9. The Council shall act unanimously on the amendments on which the Commission has delivered a negative opinion.

**Conciliation**

10. The Conciliation Committee, which shall be composed of the members of the Council or their representatives and an equal number of members representing the European Parliament, shall have the task of reaching agreement on a joint text, by a qualified majority of the members of the Council or their representatives and by a majority of the members representing the European Parliament within six weeks of its being convened, on the basis of the positions of the European Parliament and the Council at second reading.


11. The Commission shall take part in the Conciliation Committee's proceedings and shall take all necessary initiatives with a view to reconciling the positions of the European Parliament and the Council.

12. If, within six weeks of its being convened, the Conciliation Committee does not approve the joint text, the proposed act shall be deemed not to have been adopted.

**Third reading**

13. If, within that period, the Conciliation Committee approves a joint text, the European Parliament, acting by a majority of the votes cast, and the Council, acting by a
the Commission or a quarter of Member States may initiate legislation regarding judicial cooperation in criminal matters and police cooperation while in the common foreign and security policy, the College of Commissioners forfeits its right to make foreign policy proposals for adoption by the Council and only has the possibility to support those by the new High Representative of the Union for Foreign Affairs and Security Policy.\textsuperscript{1238} Finally, it must be noted that the Reform Treaty holds that one million citizens who are nationals of a significant number of Member States can invite the Commission to submit a proposal for a legal act.\textsuperscript{1239}

The Previous Committee System of the European Union (Comitology)

The Council conditioned the exercise of the delegated legislative power subject to institutional constrains by requesting the approval of committees composed of Member States representatives (Comitology.) In the Treaty Establishing the European Community in 1957, there was no provision for the establishment of such committees, and thus their legality was challenged before the European Court of Justice (ECJ.)\textsuperscript{1240} The ECJ upheld the validity of the committee systems, reasoning that if the Council had by the Treaty power to delegate to the Commission, then it could do so on terms. Responding to the necessity for an institutionalized committee system the Single European Act (SEA) modified Article 202 (ex Article 145) and provided a solid foundation for the functioning of such committees allowing for delegation of implementation powers from the Council to the Commission under conditions (requirements.)\textsuperscript{1241} The modification of Article 202 was followed by two decisions on the Comitology system, namely the Comitology Decision establishing the principles and rules to be followed adopted by the Council in 1987\textsuperscript{1242} and the Council Decision Laying down the qualified majority, shall each have a period of six weeks from that approval in which to adopt the act in question in accordance with the joint text. If they fail to do so, the proposed act shall be deemed not to have been adopted.

14. The periods of three months and six weeks referred to in this Article shall be extended by a maximum of one month and two weeks respectively at the initiative of the European Parliament or the Council.

Special provisions

15. Where, in the cases provided for in the Treaties, a legislative act is submitted to the ordinary legislative procedure on the initiative of a group of Member States, on a recommendation by the European Central Bank, or at the request of the Court of Justice, paragraph 2, the second sentence of paragraph 6, and paragraph 9 shall not apply.

In such cases, the European Parliament and the Council shall communicate the proposed act to the Commission with their positions at first and second readings. The European Parliament or the Council may request the opinion of the Commission throughout the procedure, which the Commission may also deliver on its own initiative. It may also, if it deems it necessary, take part in the Conciliation Committee in accordance with paragraph 11.”


\textsuperscript{1238} Devuyyst, supra note 1234, at 266.
\textsuperscript{1239} Id.
\textsuperscript{1240} Case, 25/70, Koster [1970] ECR 1161.
\textsuperscript{1241} Article 202 third indent states that: “To ensure that the objectives set out in this Treaty are attained the Council shall, in accordance with the provisions of this Treaty: … confer on the Commission, in the acts which the Council adopts, powers for the implementation of the rules which the Council lays down. The Council may impose certain requirements in respect to the exercise of these powers…”

The Decisions establish three types of committee procedures: the advisory procedure, the management procedure and the regulatory procedure. Under the advisory procedure (art. 3 of the 1999 Decision) committees of an advisory nature had the mandate to advise the Commission by issuing an opinion. The Commission shall take into “utmost account” this opinion, but would be not be bound by it. Under the management procedure (art. 4 of the 1999 Decision) the committee delivered an opinion to a proposal submitted by the Commission. The Commission adopted measures, which would “apply immediately” if they were in accordance with the opinion of the committee; otherwise, the Commission has to communicate that disagreement to the Council. The latter could take a different decision with a qualified majority. Under the regulatory procedure (art. 5 of the 1999 Decision) the Commission could adopt a measure only if it is in accord with the opinion of the committee. If the opinion of the committee differed or there was no opinion delivered, the Commission had to submit to the Council a proposal addressing the measures to be taken, and must inform the European Parliament (EP.) Both the institutions, the Council and the Parliament had a role to play in this procedure. The EP had the authority to evaluate possible excess of the implementing powers on behalf of the Commission and if so, the EP would inform the Council. The Council could, within three months of the date of the referral, make clear its opposition to the proposal. In this case, the Commission had to re-examine the proposal and submit an amended version or a completely new proposal. If the Council within three months does not act by either adopting the proposal or expressing its opposition, the Commission shall adopt the proposed act.

Criticism to the Committee Procedure
Against the Comitology process there has been extensive criticism on grounds of democratic deficit, non-transparency and lack of accountability. In order to address these shortcomings, the 1999 Decision as well as subsequent agreements were adopted and practice was developed. Commentators argue that comitology is a clear demonstration of an EU democratic deficit, because decisions are referred to a small panel of people not directly elected by the people. An important issue is that the comitology procedure shrunk the role of the European Parliament, because it took lawmaking competence away from the co-decision procedure, the only procedure that gave to the European Parliament the competence to directly participate into and influence lawmaking. The 1999 Decision partially addressed this issue under the regulatory procedure by obliging the Commission to inform the EP in case of non-accordance with the committee opinion and giving to the EP the right to oversee the excess of the exercise of the delegated implementing powers to the Commission. In addition, the EP was given a right by Article 7(3) to be informed by the Commission of committee proceedings.

The transparency issue and the accessibility of the committee system to the public was dealt with in Article 7, which provided for access to documents of the committees, for an obligation by the Commission to publish a list of all the committees, for the publication of an annual report on the working of the committees, and for the publicity of the documents sent to the EP. The Rothmans case (Dec. 94/90) was an example of the problems that occurred with the principle of transparency concerning the work of the European committees.

Lindseth, Democratic Legitimacy and the Administrative Character of Supranationalism: The Example of the European Community, 99 (3) COLUM. L. REV. (April 1999).


The Commission expresses its own consideration for the function of the committees. In its December 2002 Communication on Institutional Architecture, it argued that the implementation committees that oversee the executive powers of the Commission should continue to exist but only as advisory committees.\(^{1247}\) In the Report on European Governance, December 11, 2002, the Commission proposed to amend the 1999 Comitology Decision by revising the existing regulatory procedure, for implementing measures under enabling legislation adopted by co-decision, by introducing two distinct phases: an "executive phase" which is similar to advisory committee procedures; and a "control phase" where the Commission’s draft measures are considered by both the Parliament and Council. The Comitology procedure radically changed though after the adoption of the Lisbon Treaty.

The Comitology Procedure after the Lisbon Treaty

One of the biggest changes introduced with the Lisbon Treaty was the repeal of Article 202 of the EC Treaty which served as the legal basis for Comitology. Under the TFEU, the current Comitology system is replaced by two articles which set the conditions for the adoption of “non-legislative acts”, article 290 on “delegated acts” and article 291 on “implementing acts”. The Commission exercises delegated legislative powers regarding the implementation of rules laid down by the Council, which is a highly political body. Article 290 of the Treaty on the Functioning of the European Union specifically refers to delegation in order to issue secondary law and provides that:

“A legislative act may delegate to the Commission the power to adopt non-legislative acts of general application to supplement or amend certain non-essential elements of the legislative act. The objectives, content, scope and duration of the delegation of power shall be explicitly defined in the legislative acts. The essential elements of an area shall be reserved for the legislative act and accordingly shall not be the subject of a delegation of power.”

Additionally, both the European Parliament and the Council reserve for themselves the right to revoke the delegation and recall the mandate that was given to the Commission in the legislative act. The delegated act may enter into force only if no objection is expressed by the European Parliament and the Council within the set deadline; thus, the European Parliament needs a majority of its component members whereas the Council, a qualified majority.\(^{1248}\) In December 2009, the Commission issued a Communication to the European Parliament and the Council on the implementation of article 290 of TFEU which expands on the Commission’s views on the scope of delegated acts, on the framework for delegations of power, the procedures for adopting delegated acts and the scrutiny exercised over the delegated acts.\(^{1249}\) The enactment of such regulation by the Commission is part of the implementation

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\(^{1248}\) Art. 290 par. 2 of the TFEU.

stage of policies or laws promulgated by the Council (implementation through enactment of further legislation.) In this case the separation between primary and secondary legislation becomes more obvious.

The Commission has, further, administrative competences and through this administration assists in the implementation of all the European Union legislation. Article 291 TFEU provides that: “Where uniform conditions for implementing legally binding Union acts are needed, those acts shall confer implementing powers on the Commission, or, in duly justified specific cases and in the cases provided for in Articles 24 and 26 of the TFEU, on the Council. The European Parliament and the Council, acting by means of regulations in accordance with the ordinary legislative procedure, shall lay down in advance the rules and general principles concerning mechanism for control by the Member States of the Commission’s exercise of implementing powers.”

Thus, even though implementation of EU legislation is the responsibility of Member States, whenever “uniform conditions for implementing legally binding acts are needed”, the appropriate implementing powers are conferred to the Commission which must exercise them under the control of Member States. Thus, article 291 will become operational only if a new regulation delineating the extent of the awarded to Member States powers, is adopted; in March 2010, the Commission issued a proposal for a regulation of the European Parliament and of the Council laying down the rules and general principles concerning mechanisms for control by Member States of the Commission’s exercise of implementing power elaborating on the rationale and key principles guiding the proposal and on the main elements of the proposal, including the similarities and innovations in relation to Comitology.\textsuperscript{1250} In cases where the implementation remains with the Member States, the Commission maintains a general supervisory overview in order to ensure uniform and proper implementation of the rules within the Member State. Finally, the Commission acts as an investigator and initial judge of a treaty violation by either Member States or private firms and if such violation is affirmed the Commission could further bring actions against the Member States in case of breach of Community Law enjoying in a way “judicial powers.” In addition to the expert work undertaken by the Commission, there is a group of independent regulatory agencies.

\textit{Independent Regulatory Agencies}

The White Paper of European Governance\textsuperscript{1251} stresses the need for further delegation of decision-making powers to independent regulatory agencies: “The creation of further autonomous EU regulatory agencies in clearly defined areas will improve the ways rules are applied and enforced across the Union. Such agencies should be granted the power to take individual decisions in application of regulatory measures. They should operate with a degree of independence and with a clear framework established by the legislature. The regulation creating each agency should set out the limits of their activities and powers, their responsibilities and requirements for openness. The advantage of agencies is often their ability to draw on highly technical, sectoral know-how, the increased visibility they have for the sectors concerned (and sometimes the public) and the cost-savings that they offer to business.

\textit{Conditions for the creation of regulatory agencies at the EU level}

The Treaties allow some responsibilities to be granted directly to agencies. This should be done in a way that respects the balance of powers between the Institutions and does not impinge on their respective roles and powers. This implies the following conditions:

(a) Agencies can be granted the power to take individual decisions in specific areas but cannot adopt general regulatory measures. In particular, they can be granted decision-making power in

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areas where a single public interest predominates and the tasks to be carried out require particular technical expertise (e.g., air safety.)

(b) Agencies cannot be given responsibilities for which the Treaty has conferred a direct power of decision on the Commission (for example, in the area of competition policy.)

(c) Agencies cannot be granted decision-making power in areas in which they would have to arbitrate between conflicting public interests, exercise political discretion or carry out complex economic assessments.

(d) Agencies must be subject to an effective system of supervision and control. 1252

During the preparation for the White Paper, there was only one proposal that an agency had lawmaking powers and regarded the Air Safety Agency, while the proposed European Food Agency and the Marine Safety Agency would not have any such powers.

On the other hand, the necessity for more transparent and democratic processes becomes obvious. From the EU paradigm, one should sort out the following competences that the expert bodies within international institutions should enjoy, either exclusively or along with other bodies, as well as some good models of administrative procedures:

- the right of initiative to propose new legislation;
- the right to make specific regulatory proposals, to which, if the correspondent political body chooses not to follow, or to partially alter them, should give explanations why; and
- the lawmaking competence to expert bodies (as in the case of the independent regulatory agencies), in case of technical or purely scientific issues,

providing some procedural check and balances to satisfy the demand for democratic decision making, such as access to the documents, or participation in the pre-legislation stage via e-governance.

The EU lawmaking model exemplifies the importance of the expert bodies in the lawmaking process. It also elaborates further the details of delegation to expert bodies, circumvents the delegation to the issuance of only secondary laws and provides relevant examples. Due to its supranational character in comparison to other international institutions that are international and not supranational, it also indicates the upper “ceiling” to the delegation of the lawmaking powers in general to which the international community has reached thus far. The presentation of the European Union rule of science and law does not circumvent itself to the mere description of laws, but, in addition, there is a necessary reference to the governance structures of the European Union. There is also

1252  Id. at 24.
a reference to the limitations and criticism of the institutional structure. Finally, there is a discussion about the acceptability of this structure and the delegation of the lawmaking powers to expert bodies by the public and a very short reference to a system of checks and balances that the Union has created in order to respond to the institutional needs and balances. As a result, one could understand that the effectiveness, legality, public acceptance, and legitimacy of a lawmaking system do not depend only on a few rules and procedures. It is the overall structure of an international organization that needs to be taken into account. More than one aspect of its function should be legitimized in order for the science-based model to be accepted in society. There is more than one vision of legitimacy.
B. Visions of Legitimacy

Towards the end of the twentieth century, the international legal order faced a double challenge: on the one hand, the ineffectiveness of the existing institutions in the management of fundamental global interests and goods, including the issue of how to ensure a clean and healthy environment, and on the other hand, the growing doubts about the legitimacy of international institutions that assumed increased political power. In the awake of the 21st century, it has become clear that environmental issues require multilateral answers and that science and technology should play a more central role to the policy-making and law-making model. Many scholars have argued that science and policy need to be more explicitly and effectively interrelated; their interactions are inevitable and so those interactions should be open and accountable rather than concealed and unaccountable. This model is called the “co-evolutionary” model of science and policy-making. The Thesis extrapolates the “co-evolutionary” model to the relationship between science and law. The co-evolutionary model, extrapolated on the

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international level, should be grounded on many grounds of legitimacy in order to be accepted by the States and the public.

Legitimacy is a multi-disciplinary concept. The S.B.L.M. should include procedures and institutions that would ensure its democratic legitimacy and its expertise-based legitimacy. Democracy is seen in modern societies as fundamental to legitimacy. It has become, as Bodansky comments, the touchstone of legitimacy. Democratic legitimacy is generated by perceptions of real participation in governance, representativeness and accountability. Delegation of lawmaking powers would unavoidably create issues of democratic representation and accountability. To face these issues, one should devise international administrative procedures that could ensure internal and external accountability of the work of the administration and expert bodies, information disclosure, transparency in decision-making and democratic check and balances on the acts and laws by international administration. In addition, these procedures should create an overall framework that would support the S.B.L.M. processes.

Democracy is a basis of legitimacy for lawmaking powers but it is not the only one. Science and expertise should be further bases for legitimacy. Thus, in parallel

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1255 See, among others, ATHENA DEBBIE EFRAIM, p. 39 and seq.
1257 David. D. Caron, Protection of the Stratospheric Ozone Layer and the Structure of International Environmental Lawmaking, 14 HASTINGS INT’L & COMP. L. REV. 755 (Symposium Issue, 1991); Tarlock also holds the same; Tarlock, supra note 63, at 1206.
with the democratic check and balances, the S.B.L.M. model should incorporate and profit from the expert-based legitimization processes.\textsuperscript{1258} The expertise-based legitimacy is the kind of legitimacy that is currently missing from the contemporary international lawmaking processes. Expertise-based legitimacy should be reinforced, since it is the kind of legitimacy that is based on the rationality of legislative choices, necessitates neutrality of science and aims to the advancement of the efficacy and the efficiency of the international organizations. Weber, a warm supporter of the expertise-based legitimacy - had commented that the “primary source” of the “superiority” of the bureaucratic administration lies in technical knowledge, and that “the legitimacy of an order may… be guaranteed also (or merely) by the expectation of specific external effects, that is to say, by interest situations.”\textsuperscript{1259} Steffek applies Weber’s literature at the international level and argues that an international organization may be the “perfect bureaucracy” with a high potential for rational-legal legitimacy, because the detachment of international civil servants from their local backgrounds and prejudices heightens their ability to bring expertise to bear free from biases of national identity and cultural orientation that might otherwise cloud their judgment.\textsuperscript{1260} If science got, if not the monopoly, but at least a high degree of influence on the agenda-setting, it would help to transform scientific results into political practice more efficiently and effectively and better protect the environment


\textsuperscript{1259} Concerning efficacy as a key component of legitimacy, see Max Weber, Economy and Society: An Outline of Interpretive Sociology 953 (Guenther Roth & Claus Wittich eds., Bedminster Press 1968).

and public health. In this respect, legitimacy may further arise from the ability of the international environmental governance system to generate social welfare gains.

The generation of social welfare gains relates with the concept of “social legitimacy.” Social legitimacy signifies an empirically determined social acceptance occurring when relevant actors display a commitment to and actively guarantee values that are part of the general political culture, such as justice, freedom and general welfare.\(^{1261}\) In this case, social legitimacy on an international level exists when social values, including environmental protection, are evidently prevailing on the regulatory agenda and the policy priorities. In this sense, social legitimacy can be included among one of the bases of legitimacy that support a S.B.L.M model furthering environmental protection to the extent that the public is environmentally sensitive and willing to promote environmental protection over other goals.

Fairness relates to social legitimacy.\(^{1262}\) Fairness, legality, power sharing, are all parts of another concept, that of “systemic legitimacy.” At the international level, “systemic legitimacy” promises to become a substitute for democratic legitimacy. The over-arching governance structures shape the legitimacy of the laws that the system produces. At the national level, the system as a whole through several guarantees, e.g. the separation of powers, offers a web of checks and balances designed to produce pragmatic


governance that advances both efficacy and accountability through institutionalized cross-checks. At the international level the authority should come from the overall international governance system. Speaking of systemic legitimacy, the overarching global governance system, which is nowadays the United Nations System, should enjoy this type of legitimacy. Claude refers to and positively evaluates the collective legitimization, mainly by and of the United Nations agencies.

New lawmaking and administrative systems should be developed. The international governance system should acquire any good qualities of administration, lawmaking and governance, in general, that the national systems already have. Perfection of the system might not be possible; optimization of the system, however, is. Although the problems of democracy, sovereignty and delegation of lawmaking competences to expert bodies could never be fully addressed, one of the ways to decisively address these issues is by improving systemic legitimacy. An optimized “system” is, on its own, not a satisfactory value. The question is what kind of system this is. Turning back to the requirement of contemporary societies, it is imperative that this is a democratic system.

The new international administrative rules should aim, among others, to create a degree

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1264 David Kennedy, INTERNATIONAL LEGAL STRUCTURES 293 (1987) (arguing that the authority of the international legal order comes from its “overall systematic image”).

1265 Inis L. Claude, Collective Legitimization as a Political Function of the United Nations, 20 (3) INT’L ORG. 367-379 (1966). According to the author, the United Nations has developed and its role in world affairs has been adapted to the necessities and possibilities created and the limitations established by the changing realities of international politics. Collective legitimization has emerged as one of its major political functions. The world organization has come to be regarded, and used, as a dispenser of politically significant approval and disapproval of the claims, policies, and actions of States, including, but going far beyond, their claims to status as independent members of the international system.

1266 See also Daniel C. Esty, Legitimizing Supranational Governance: the Role of Global Administrative Law, in GLOBAL ADMINISTRATIVE LAW CONFERENCE, NYU (2005).
of political accountability, which relates systemic accountability with democratic accountability.\textsuperscript{1267}

Last, but not least, there are other identifiable visions of legitimacy, such as the “formal legitimacy.” “Formal legitimacy” is generated by results produced from institutions or systems created through democratic process. Accordingly, one could distinguish among two different types of legitimacy on grounds of means, and not of objectives: the substantial legitimacy and the procedural legitimacy of a system of law or governance. Wirth refers to “procedural integrity” that would offer a basis for legitimacy.\textsuperscript{1268} Procedural legitimacy or process-based legitimacy is also important according to Frank,\textsuperscript{1269} but mostly Luhmann and Habermas. As Luhmann poetically notes:

“Procedures are the magic formula of the enlightened political mind. They promise to transform the reign of arbitrary power into the legitimate exercise of public functions in the interest of the citizens.”\textsuperscript{1270}

The inclusion of the public in the decision-making processes should be further developed. The same holds true for the lawmaking process, as well. The degree and possibilities of acceptance by the public of secondary regulation promulgated by experts also depends on the degree of openness of the procedures. Dialogue, negotiations,

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\item \textsuperscript{1269} See, e.g., THOMAS M. FRANCK, \textit{THE POWER OF LEGITIMACY AMONG NATIONS} (Oxford 1990).
\item \textsuperscript{1270} NICKLAS LUHMANN, \textit{LEGITIMATION DURCH VERFAHREN} 11-26 (1969).
\end{itemize}
information disclosure and transparency, every means that allows for the participation of the civil society and the individual in the lawmaking processes, make the latter more familiar to the former and also creates the necessary counterbalance, so that the public can more easily accept science-based laws. As Habermas, makes clear, the process itself and the dialogue it generates fundamentally shape how readily people accept the decisions and policies that emerge.\textsuperscript{1271} For Habermas deliberation, transparency, participation and due process are important elements for the procedural legitimacy.\textsuperscript{1272} In essence, they guarantee representative and democratic systems or laws. Thus, it is important that a substantial open dialogue process takes place with a meaningful participation of the civil society at large.

In the S.B.L.M. model, procedures, in combination with the substantive content of laws, should combine all of the visions of legitimacy. Substantive legitimacy should help set the appropriate aims to save our natural environment and protect life and health. While procedural legitimacy would build the appropriate administrative and lawmaking procedures that would help build the “environmental capacity” of the international lawmaking system.\textsuperscript{1273} The international lawmaking system needs further openness (participative capacity) to scientific information and coordination (integrative capacity) between science and law. One way this could be achieved is not only \textit{via} a revision of the lawmaking competences of the various bodies of the international arrangements, but also

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\textsuperscript{1271} \textsc{Jürgen Habermas}, \textit{1 The Theory of Communicative Action} 287 (Thomas Mc Carthy trans. 1981).
\textsuperscript{1272} \textsc{Habermas, Modernity and Law} (Mathieu Deflem ed., Philosophy and Social Criticism series, Sage Publications, London, California, India 1996).
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via the so-called “procedural modernization” regarding the procedures surrounding the exercise of the lawmaking functions.\footnote{1274}

In modern terms, legitimacy of the international system has been partially transformed to an overall framework of good governance that is important to exist. Under the global good governance perspective, Daniel C. Esty has very comprehensively presented twelve (12) distinctive elements of good governance, as follows:\footnote{1275}

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\hline
\textbf{The Twelve Elements of Good Governance} \\
\hline
A. Rousseauian (democratic) legitimacy:  \\
1. representativeness,  \\
2. accountability;  \\
B. Weberian (expertise-based) legitimacy:  \\
3. rationality,  \\
4. efficacy,  \\
5. efficiency and  \\
6. neutrality;  \\
C. Madisonian (systemic) legitimacy:  \\
7. power sharing,  \\
8. legality,  \\
9. fairness,  \\
D. Habermasian (procedural) legitimacy:  \\
10. deliberation,  \\
11. transparency and  \\
12. participation and due process.  \\
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In order to become optimized, the S.B.L.M. model, should, thus, be viewed from a large-scale system perspective. Namely, it is not only the strictly legal procedures that have to change in order for scientific information to flow in an unhindered way towards the lawmaker or for a few experts to acquire a better post in the lawmaking power structure, but also large-scale policies and institutional architectures have to change in order for the S.B.L.M. model to find its own balance as part of the contemporary international governance system.

The previous Chapters discussed some of the lawmaking models and procedures that are met within international institutions with environmental competence. Some first conclusions on the changes that should occur to the lawmaking processes were drawn from that analysis. On the road to the model optimization, it might be useful to also draw some analogies and apply procedures and lessons learnt from the national administrations on the international administration by analogy. For instance, Majone supports that the very instrumental U.S. Federal Administrative Procedures Act (APA)\textsuperscript{1276} could serve as an excellent roadmap for a future European Administrative Procedures Act that would help the European Union better organize its complex administration.\textsuperscript{1277} In the very same way, an International Administrative Procedures Act (IAPA) could be applicable to

international institutions with environmental competence. A comparative exercise of good laws and practices among foreign administrative and legislative procedures could be useful for designing new international administrative instruments. These new instruments could be consolidated and codified either in a single instrument that is valid for all of the pertinent institutions or could be developed in several individual instruments that differ for each institution, while remaining similar in scope, goals and spirit.

The value of lessons learnt and good paradigms of the national administrations for the international administration, as well as the value of comparative studies among the procedures and practices of the various private and public international institutions, seem to have been recognized by a group of scholars that have in the recent years, devised the idea of a new field of law, the so-called “Global Administrative Law” (GAL).¹²⁷⁸ According to their understanding, much of global governance can be understood as regulatory administration. Such regulatory administration is often organized and shaped by principles of an administrative law character. Building on these twin ideas, namely global governance and regulatory administration, the GAL team of scholars argues that a new body of global administrative law is emerging. This new body of law includes, among others, the law of transparency, participation, review, and above all,

¹²⁷⁸ GAL seeks to encompass each of five main types of globalized administrative regulation: (1) international administration, by formal international organizations; (2) network administration, based on collective action by transnational networks of cooperative arrangements between national regulatory officials, such as the Basel Committee of national bank regulators; (3) distributed administration conducted by national regulators under treaty, network, or other cooperative regimes, such as the Basel Convention on transboundary movement of hazardous wastes; (4) hybrid administration, by hybrid intergovernmental-private arrangements, such as ICANN, the Internet Corporation for Assigned Names and Numbers; and (5) Private Administration, by private institutions with regulatory functions, such as the ISO, the International Organization for Standardization. Kingsbury, B. Krisch N. & Steward B. R., The Emergence of Global Administrative Law (Draft Paper for the Global Administrative Law Research Project of the New York University School of Law) (2004). For further working papers and project documents, please, visit the project website, www.iilj.org (last visited September 28, 2010).
accountability, in global governance. For the purposes of the present Thesis, under the same meaning, a sub-field of GAL could emerge that specifically addresses the international institutions with environmental competence. This sub-field could be called “Global Administrative Environmental Law” (GAEL.) Either in the form of a specific written text, such as an “I.A.P.A. for the environment” or a set of coherent written rules prescribed, though, in various legal instruments, as well as practice, such as GAEL, the international administrative environmental body of law could include a useful set of rules, general principles, soft law etc that could reinforce and supplement the S.B.L.M. model. Further, the simultaneous or repetitive implementation of similar rules of good administration in the field of the environment by international institutions could also lead to customary international environmental administrative law.

CHAPTER III: A NEW MODUS OPERANDI FOR THE INTERNATIONAL INSTITUTIONS WITH ENVIRONMENTAL COMPETENCE

A new modus operandi for the international institutions with competence on environmental issues should be devised. It should not only include lawmaking processes that enhance the science-base of the international environmental laws, but also reinforce the overall acts of an international institution, in order to balance the disadvantages and imbalances that a S.B.L.M. model may create. It should also place the S.B.L.M. model under a large-scale system perspective. A comprehensive new modus operandi should be instrumented based on sorting out the most successful organizational and regulatory decision-making models deriving by both the national and international administration in
order to achieve the model optimization. The new procedures and institutional structures that the S.B.L.M. requires should incorporate elements of all the types of legitimacy in order that the model be optimal from every aspect and also be sustainable in the long run.

In the following part, the Thesis shortly discusses some of the elements that an S.B.L.M. model could include according to the classification of the types of legitimacy proposed by Esty. The discussion of the elements of legitimacy that follows is only indicative and by no means exhaustive. This is because structuring a full paradigm for the S.B.L.M. model on grounds of legitimacy is outside of the scope of the Thesis. Secondly, many of the issues of legitimacy remain constant. The model either refers to science-based or purely political procedures of law and, thus, there is nothing in particular that would add to an S.B.L.M. model in contrast to a political model. On the contrary, what follows is a partial discussion of some of the issues raised.

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1280 See supra at…
A. Rousseauian, Democratic Legitimacy: Representativeness and Accountability

Part III of the Thesis discussed thoroughly the issue of democratic legitimacy and how it could be achieved. The degree of the democratic legitimacy of an international institution can be measured in several ways. One criterion is by public participation and the openness of a regime to public participation. Public participation and openness are also discussed below in the section on procedural legitimacy. The second aspect of accountability has also become part of the discussion in previous Chapters. The
discussion about democratic legitimacy, though, has not yet been exhausted and, thus, further consideration of this topic will follow. This is primarily because such a delegation of legislative competences from the political bodies to expert bodies would unavoidably create additional issues of, not only democratic representation, but also accountability. Despite the necessity of a science-based administrative and lawmaking system for environmental issues, the democratic principle raises limits to the delegation of lawmaking powers to expert bodies. To face these issues, reinforced accountability mechanisms¹²⁸¹ may be employed in order to ensure internal and external accountability of the work of the administration and expert bodies, information disclosure, transparency in decision-making, and checks and balances on the acts and laws by international administration.

1. Forms of Accountability

Mechanisms of both internal and external accountability should be further endorsed, in order to ensure the proper functioning of the organization, the timely and complete flow of information in the decision-making and law-making processes and the limitation of arbitrariness in the regulatory choices. Indeed, up to the present, most international institutions have mechanisms that, for instance, obligate them to answer

questions by their Member States ("internal accountability"). Especially in the cases of
delegation of regulatory competences to the expert bodies, internal accountability may
play a major role in due regard with the maintenance of an acceptable balance of powers
within an international institution. The States would have additional reasons to be
interested in closely following the work of the bodies of the international institution.
They should be able to get the necessary information to justify a decision for a specific
regulation taken by expert bodies over some other type of regulation.

Internal accountability does not guarantee by itself any democratic check. It
would depend on the domestic legislation and the polity that each State has, whether the
Administration of a State would give out information it acquired from the international
institution to its citizens or other third parties. In order for the citizens to be informed
about the work of the institution, citizens could employ the means of national
administrative law, if a provision of national legislation allows them to do so. Otherwise,
a citizen may be possible to directly render for information or exercise any type of
control directly upon the international institution. In order for such possibilities to exist, it
is important that mechanisms of "external accountability" be created. It might be rare, but
it is an increasingly observed phenomenon in International Law that civil society and, in
some cases, even individuals, gradually gain direct access and are able to question the
rules and acts of the international organization (external accountability). These
mechanisms are very important, especially since judicial review mechanisms are also
rare. External accountability mechanisms allow individuals to trust the work of
international institutions, thereby leading to enhanced acceptance of its rules and acts and
to a greater degree of implementation and compliance on behalf of the legal obligations deriving from the international institution at stake.

For the design of accountability mechanisms there are examples to be taken into account from the constellation of international economic institutions, such as the International Monetary Fund (IMF), the World Bank (Inspection Panels), the European Central Bank and other international financial institutions (IFIs.)\textsuperscript{1282} Ian Brownlie enumerates possible ways to control the acts by international organizations, including finding responsibility under general International Law; internal political control, such as division of competences between the political bodies of an organization, judiciary control, such as resorting to advisory opinions of the International Court of Justice, external political control, such as the requirement that regional arrangements seek authorization from the Security Council prior to taking enforcement action, direct judicial control, permitting, for instance, national courts to pierce the immunity of some organizational privileges and immunities in certain cases, external rights of appeal, noting that the FAO’s right to decide disputes is conditioned on a right of appeal to an appropriate international court or arbitral body, and administrative tribunals, noting the administrative tribunals frequently available to adjudicate staff complaints.\textsuperscript{1283}

\textsuperscript{1282} For further details, see \textit{One World Trust, Power without Accountability?}, The Global Accountability Report 3 (2003).

\textsuperscript{1283} \textit{See} \textsc{Ian Brownlie, Principles of Public International Law} 664-70 (Oxford, U.K. and New York: Oxford University Press, 6\textsuperscript{th} ed. 2003).
1.1. Responsibility of International Organizations

The introduction of the International Organizations Responsibility that would lead to the adoption of rules of responsibility in analogy to the traditional doctrine of state responsibility might be useful in order to (a) minimize ultra vires actions of International Organizations; (b) deal with cases when treaty provisions are rendered ineffective not because of the actions of the parties but because of the actions or inactions of some of the bodies created by the treaty; (c) provide to civil society, experts and Member States to the organization, as well as third States, a legal basis to bring the representatives of the international institutions to international tribunals. Rules governing the responsibility of the international organizations could serve for promoting the integration of science in the decision-making and law-making process of the international institutions. For instance, cases that would justify rendering to tribunals would include inaction equaling constituted wrongful behavior, in cases that an international institution did not take due account of scientific findings, and as a result of this inaction, the institution created risk or harm for States, third parties or the environment. The same would stand true in case that, by disregarding science, they did not contribute to the avoidance of harm, in cases where they had a legal obligation to do so.\textsuperscript{1284} Brownlie also suggests that general principles of international law, including the rules of responsibility, apply for the review

\textsuperscript{1284} The International Law Commission has only recently begun to consider the responsibilities of international organizations in the wake of its completion of its work on state responsibility. \textit{See} Report of the ILC, 55\textsuperscript{th} Session, General Assembly Official Records, 58\textsuperscript{th} Session, Supplement No. 10, UN Doc. A/58/10, Chapter 4 and Report of the Sixth Committee (UN Doc. A/58/514) of November 7, 2003, Part 3, §5.
of the failure to act by the international institutions. However, the body of law addressing the responsibility of the international institutions is still currently under development and there are no final laws in this regard. The International Law Commission (I.L.C.) conducts ongoing work on the responsibility of international organizations.

1.2. External Review Bodies

The effectiveness of the internal review bodies would be further empowered by including provisions of the M.E.A.s that allow for international arrangements that are not subsidiary bodies or otherwise affiliated with the COP or MOP to exercise external review. Such external review bodies could, for instance, be the Committee of Sustainable Development (“CSD”), which is a corpus composed of the majority of contemporary Member States in the United Nations, the Economic and Social Council of the United Nations (“ECOSOC”), the United Nations Environment Program (“UNEP”), or other relevant formations, that enjoy credibility and legitimacy in the world community. The Rotterdam Convention review processes are an interesting example of the development of such useful integrated synergies among M.E.A. mechanisms and external review

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1285 In relevance to the responsibility by international organizations, Brownlie cites on p. 665 the work of KLEIN, LA RESPONSABILITÉ DES ORGANIZATIONS INTERNATIONALES (1998); WELLENS, REMEDIES AGAINST INTERNATIONAL ORGANIZATIONS (2002); and DOMINICÉ, MELANGES VIRALLY 225-38 (1991).

actors. In addition to specialized Intergovernmental Organizations and their bodies, there are numerous external expert groups and networks that, although they function outside the institutional framework of the M.E.A.s, are able to provide advice to the decision-making bodies of the M.E.A.s and to assist them with review. This is, for example, the case of the International Panel of Climate Change (“I.P.C.C.”), the most authoritative body on global climate change issues.

1.2. Post-Legislative Scientific Review

Apart from democratic and other type of legitimacy checks and balances, scientific checks are also necessary. New clauses and procedures could be adopted so that International Environmental Law provisions could be examined for their scientific validity, such as review mechanisms in order to adjust legislation in light of new knowledge. A post-legislation scientific review requirement to check the status of the technical regulations and other provisions vis-à-vis the latest scientific findings or the lessons learnt by environmental expertise should adopted by either the international bodies or States. The results and suggestions after the scientific review could be reviewed to a second degree or even be imposed by means of judicial review. This is, for instance, the case in the US legal system, when post-legislative scientific review is combined with

1287 See, supra at...
the judicial review, which is at the very end “the most effective means to ensure the accountability of the regulators.”

1.4. Oversight

Finally, new oversight-like review processes can be introduced. The powerful presence of the States in the loose institutional architecture of the M.E.A.s can introduce a new approach of the review process that more closely resembles the political “oversight” exercised among the national administrations. Oversight refers to regulatory supervision. Political oversight may sometimes serve better than the stricto sensu administrative review procedures regarding the validity of science and expertise in use by I.E.L. In an S.B.L.M. model, one suggestion is that, political oversight should be, focused on the repetitive, active involvement of the signatory States and may create a new impetus for the effectiveness and success of the M.E.A.s.

1.5. The Duty to Give Reasons

A further example of a simple and promising procedure that the S.B.L.M. model could easily integrate is the duty of an international institution to give reasons for its actions or inactions or on another level, the duty of a body of an international institution to give reasons to another body (going back to the concept of the internal accountability.)

The duty to give reasons could be activated, when, in the case of a debate between the consultative, expert body and the decision-making, political body, the latter could abstain from adopting rules that are in accordance with the proposal of the consultative body. If the political body chooses to adopt legislation that is different in content, then it should give reasons, explain and justify its different decision. Alternatively, it could choose to abstain from regulating at all. Legislations from both civil law and common law countries have also adopted rules that are similar to the duty to give reasons.\textsuperscript{1290, 1291}

There are some relevant examples of the duty to give reasons on the international level, too. Under the Codex Alimentarius rules, for instance, in case of withdrawal from a previously accepted standard, the State is urged to give reasons, if possible, and provide advance notice.\textsuperscript{1292} The Codex Alimentarius rules do not go so far as to impose an obligation to give reasons, but rather they invite the Member State to explain its decision and withdrawal from a multilateral regime that governs standards harmonization and

\textsuperscript{1290} In addition, the Treaty of Lisbon incorporates the Charter of Fundamental Rights and the European Convention of Human Rights, which includes a right to good administration. Good administration means that administration is obligated to give reasons for its decisions.
\textsuperscript{1291} Domestic administrative laws in various jurisdictions provide for such duty, such as in Greece and the UK. See, e.g., C. Graham, \textit{Self Regulation, in ADMINISTRATIVE LAW AND GOVERNMENT ACTION} (G. Richardson & H. Genn eds., Oxford 1994).
chooses to adopt standards on its own following, thus, a unilateral way. This procedure certainly does not oblige a State to give reasons. From the realm of the M.E.A.s, a similar example for the duty to give reasons lays in the Montreal Protocol for Substances that Deplete the Ozone Layer. The Meeting of the Parties of the Montreal Protocol should justify its decision, if it decides to abstain from the recommendations of the Technology Assessment and Economics Panel (TAEP) and Methyl Bromide Technical Options Committee (MBTOC). A similar duty to give reasons also exists in Article 253 at the EC Treaty.\textsuperscript{1293} Another type of the “duty to give reasons” is the duty of a state to give reasons to the international institution for the non-ratification of a provision.\textsuperscript{1294} In this case, arguments based on science could play their own role toward the one or the other end.

1.6. Accountability through Dispute Settlement

Expert bodies should participate more directly or authoritatively in the international dispute settlement process, even if these processes are not purely adversarial, but also advisory, such as in cases of jurisdictional interpretation. In general, there are no provisions that would allow for the administration or the expert bodies of an M.E.A. to bring a case before a dispute settlement mechanism. An important contribution of a dispute settlement mechanism that would promote the integration of science into

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\textsuperscript{1293} For example, Greek administrative law provides for such requirement and Canadian law does the same. \textit{See, e.g.}, Baker \textit{v.} Canada, [1999] 2 CLR 273 (HCA).

\textsuperscript{1294} \textit{See, e.g.}, Articles 19 and 20 of the Constitution of WHO and Article 19 para 1 and 2 of the Constitution of ILO.
\end{footnotesize}
I.E.L. would occur if expert bodies were given the opportunity to bring a case before a dispute settlement mechanism. When there is a disagreement between an expert body and a political body, and the second, which is the decision-making body of the M.E.A., takes arbitrary decisions that enjoy no scientific justification, then usually the expert body has no recourse to any dispute settlement mechanism against this decision. The current international legal framework is, thus, bereft of any opportunity for effective judicial review of the political body’s work and this is something that should change in order to serve an effective S.B.L.M. model in International Environmental Law.

Developments in the international dispute settlement system occur in a very slow path. Even the International Court of Justice (“I.C.J.”), which is the supreme judicial organ on the international level, does not have obligatory jurisdiction to hear a case submitted to it by an international arrangement. This is especially true if the bodies that bring the case before it belong to the “loose” institutional regime of an M.E.A., since they do not enjoy their own international legal personality, and by any means they lack standing before the I.C.J. The only way the I.C.J. could exercise some kind of review over the work of an international institution is through the advisory opinion function. When acting in its advisory capacity, the I.C.J. will indeed hear requests, provided that an intergovernmental organization (IO) submits a request for legal interpretation. This venue is, however, until today limited, since, based on the principle of specialization that governs the international organizations, the question submitted to the I.C.J. must

\[1295\] For a comprehensive analysis of the role of the I.C.J. as a supreme global judicial body, see GIULIANA ZICCARDI CAPALDO, THE PILLARS OF GLOBAL LAW 95 (Ashgate Publications 2008).

\[1296\] See, supra at…
strictly fall within the subject-matter of the international organization that submitted it. Otherwise the Court will reject the request.\textsuperscript{1297}

Furthermore, another proposal includes building or reinforcing the connection between the expert bodies of an international institution and the dispute settlement bodies acting within the jurisdiction of a signatory State. Such a connection could be two-fold; on the one hand, the expert bodies of an international institution should be able to render to the domestic courts against the State to which these courts belong in the case that the State does not fully or correctly implement or comply with the international provisions. On the other hand, a domestic court should be able to render for advice and legal interpretation to the international expert bodies or the adjudicatory mechanism of the international institution. This second venue could be established through a mechanism similar to the “preliminary question” mechanism employed by the European Union.\textsuperscript{1298}

The “preliminary question” mechanism or, in other words, the request (or reference) for a preliminary ruling allows domestic courts of the EU Member States to request advice from the European Court of Justice (E.C.J.) on questions regarding the application of EU Law, before they determine the outcome of the case in question. \textit{Via} either dispute settlement or advisory and interpretation functions, issues on scientific and expert management of the natural environment could be further elaborated, promoted and, thus, directly or indirectly integrated into International Environmental Law.

\textsuperscript{1297} I.C.J. Reports 1993, pages 467 - 468. In 1946 the General Assembly authorized the W.H.O. to request advisory opinions from the I.C.J. on judicial issues arising in the framework of its activity in accordance with articles 96.2 of the Charter, 76 of the Constitution of the W.H.O. and X.2 of the agreement between the UN and the W.H.O.

\textsuperscript{1298} As regards the power to make a reference to the Court, see Article 35 of the Treaty of the European Union and the table of declarations made by the Member States in accordance with that provision, OJ 2005 C 143, pp. 1-4. \textit{See also} Article 23a of the Protocol on the Statute of the Court of Justice and Article 104b of its Rules of Procedure, OJ 2008 L24, p. 39-43.
B. Weberian, Expertise-based Legitimacy: Rationality, Efficacy, Efficiency and Neutrality

Starting from the Weberian approach on legitimacy, which is the centrepiece of the Thesis, an S.B.L.M. model should be imbued by expertise-based legitimacy. One aspect of the pathology of the contemporary International Environmental Law lies, indeed, in the core of the Thesis, namely the lack of capacity to make use of the existing science and expertise surrounding environmental issues. Institutions and processes have only limited capacity to do so. Accordingly, what is necessary for the international community is to devise its institutions and processes designed and governed by rationality and neutrality, aiming to efficacy and efficiency in governing our global natural environment. To the end of reinforcing the expertise-based legitimacy of the lawmaking procedures, it is also of major importance that the new procedures and institutional architecture elevate the role that the expert bodies play. As Part II of the Thesis has shown, expert bodies currently play a very limited role in the lawmaking processes of the international institutions. Their role is mostly advisory. Expert bodies in international institutions, however, can bring all of the necessary elements for achieving expertise-based legitimacy: rationality, efficacy, efficiency and neutrality. Independence of the expert opinion without the state influence and permanency of the appointment of the experts, are some of the *sine –qua –non* features that expert bodies should have in order to increase their expertise-based legitimacy.
1. Appointment of Independent Experts

1.1. Independence

In “The Republican War on Science”, Chris Mooney proposes that international institutions should respond to the challenges imposed upon them by the contemporary reality by employing their own experts, so that these experts are independent from the influences of industry.\footnote{CHRIS MOONEY, THE REPUBLICAN WAR ON SCIENCE (The New York Times 2005).} Nothing stands truer than that. Industry, States, civil society organizations and, research groups, all have their own agenda that they need to promote. Nowadays, there are only a few cases where experts participating in the bodies of the international institutions are working exclusively for them becoming able and trustworthy to express the collective interests of their institutions. In addition, if there are some independent experts that are working exclusively for the international institutions, then they most probably work within the framework of an inter-governmental organization, rather than of an M.E.A. This is because the former have a more developed infrastructure and more funds devoted to them by their Member States. However, on grounds of objectivity and reliability of expert advice, it is most important that M.E.A.s should also employ their expert staff.
1.2. Permanence and Stability

Furthermore, the appointment of experts as permanent staff of an international institution would facilitate their focus on the promotion of the purposes of the institution. In order to enhance the objectivity of the expert bodies, an international institution would be better off avoiding the solution of appointing *ad hoc* experts that are affiliated with the States. A second best solution would be, the international institution could hire permanent employees that are, however, detached from the domestic administrations of the member States (*nationaux detachés*).

Such a permanent appointment solves, at the same time another important issue, the issue of continuity of the work of the institution. Lack of continuity of the work of the expert bodies is one of the problems that expert bodies composed of representatives of the Parties may create. When an expert body consists of different representatives that are appointed on every occasion that the expert body needs to convene, there is nothing to prevent a State Party from sending different governmental officials to represent it. In fact, countries can send different representatives to future meetings than those representatives that they had sent in previous meetings. Acknowledging that several issues are associated with this practice, the Montreal Protocol provides that signatory States “shall endeavour to ensure that the same individual remains its representative throughout the entire term of office.”

First, it takes time for a new representative to understand the process and make valuable contributions. In an apparent attempt to overcome this problem, the

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1300 Paragraph 5 of the Non-Compliance Procedure (1998), following procedure has been formulated pursuant to Article 8 of the Montreal Protocol, UNEP/OzL.Pro/WG.1/18/CRP.8, p. 581.
procedure of the Montreal Protocol, which does not provide for the appointment of independent experts, provides that a Party “shall endeavour to ensure that the same individual remains its representative throughout the entire term of office.” Nevertheless, no procedure can ensure continuity as much as choosing an independent member of an expert group who cannot be removed or replaced by a Party. The placement of permanent independent experts at an international institution, and the continuity of the expert representation of a State to an international institution, are two factors that contribute to the satisfactory time management and efficacy of the process, as well.

In addition, experts who serve as representatives of Parties are bound to stating a political position of their home States. Thus, they are unable to express their own professional opinion. Instead they have to follow the mandate given by their governments or check with their governments before they answer different questions raised during the expert body work. This process has the potential to slow down the work by an expert body, its deliberations and the achievement of an outcome. In addition to making compliance decisions more politically than expertise-based, this also has the potential to slow down the work of the committee, perhaps for months. In the review of implementation or compliance, it is necessary that independent expert bodies undertake to complete the review and make the pertinent proposals to the political body. Then, the

political body could decide upon the proposals brought before it by the expert body. The political body should always have the obligation to give reasons for its decision in case that it decides not to agree with the findings, the evaluation and the proposals of the expert body.

Expert bodies that consist of national experts may have an additional drawback regarding the input of information. Since the national experts may be less receptive to the input of citizens criticizing governmental actions, they may deprive a committee from pieces of information that could help the committee better assess the true state of compliance.\textsuperscript{1302} Moreover, a national-driven approach might retard or even prohibit the review process, depending on the socio-economic dynamics that prevail in the interior political scene of each signatory State. This type of expert body reinforces the two-level game played in contemporary international politics.\textsuperscript{1303} The two-level game could have positive influence on the work and the outcome of an international institution, if the constituency within a state is in favour of the objectives of this international institution. On the other hand, the influence of the public upon the work of an international institution could also be destructive, when the public in a particular country is not well-informed on how effective the I.E.L. is on a specific subject-matter. Notwithstanding the influence of the civil society and the lay public is minimal to the influence exercised upon the national governments by the vested financial and industrial interests. A similar situation to the two-level game could develop in connection with the influence exercised upon the experts. The composition of the expert bodies by \textit{ad hoc} national experts may

\textsuperscript{1302} Kravchenko, supra note 975, at 12.

\textsuperscript{1303} See Robert D. Putnam, Diplomacy and Domestic Politics: The Logic of Two-Level Games, 42 INT’L ORG. 427 (1988); see also DOUBLE-EDGED DIPLOMACY (Peter Evans et al. eds. 1993).
create a two-level game of negotiations that independent experts must go through in order to propose new environmental regulations. At first, the experts must negotiate at the national level. Then, they must negotiate at the international level, too. This structure reflects the traditional two-level negotiation game followed in international relations. It practically limits the freedom of opinion of the experts and indirectly prohibits other interested parties, such as domestic, non-international NGOs and individuals, from meaningfully communicating their agenda at the international level. In contrast, allowing independent experts to participate in the second level of negotiations on international law and policy, offers a creative solution to breaking this traditional game, because it brings non-politically negotiated and science-based data into the international decision-making process. By minimizing the influence of the politically vested interests, the international framework can more objectively, efficiently and effectively incorporate both policy and law that are based on usable science and other types of expertise. Within the context of this better institutionally balanced and unbiased approach, the international community can further its goal to achieve Sustainable Development.

1.3. Institutional Liaison with External Expert Bodies

Expert bodies that consist of non-permanent employees of the international institutions bring diversity in the sources of information, their own professional network and resources, and the professional experience they have gained while working in another

1304 Id.
international institution. All of these are such important additions for a decision-making and lawmaking process that the international institutions should not be deprived of them. Another way for the international institution to take advantage of these resources is to develop strong institutional affiliations and pave the way for new forms of cooperation with academia, industry, national experts, and the civil society at large. For instance, international institutions can multiply the practice of employing experts part-time or employment experts part-time working in academia or independent research organizations, to work on a particular issue that is outside the expertise of its permanent staff. Moreover, they can strengthen their ties with experts that represent NGOs or non-institutionalized segments of the civil society. Some of the civil society expert groups are very competent in offering expert advice. This is, for example, the case of the IUCN World Commission on Protected Areas and the International Council for Science (“ICSU”). Needless to say, the competence of these external expert bodies should remain strictly advisory. The same holds true in the case of experts working in industry. These expert groups express positions that may be different from the objectives of the States and the international institutions.

2. The Right of Initiative

1305 See the official cite of the IUCN, www.iucn.org (last visited May 6, 2009).

1306 Examples of such expert bodies can be found in the Technology and Economic Assessment Panel of the Montreal Protocol, the Working Group on Implementation of the Convention of Wetlands of International Importance, Especially as Waterfowl Habitat, the Subsidiary Body on Scientific, Technical and Technological Advice to the Convention of Biological Diversity, and the Compliance Committee of Aarhus Convention. Some of these groups have a mixed status, since they accept as their members both independent scientists acting in their individual capacities and experts appointed by the signatory States. However, these bodies hold the position of a permanent body under the M.E.A.s.
Most of the expert bodies that belong to the architecture of an international institution do not hold the right to propose the adoption of new legislation or amendments to existing provisions of M.E.A.s, despite the extensive expertise they may hold on the relevant issues. The right of initiative remains mainly with the signatory States and, in a few cases, with the political bodies of the States, or even more rarely, the secretariats of the international institutions. For instance, even if the expert bodies have in their possession important information about a substance that is dangerous for the environment and the public health, and they consider that this substance should be added on the persistent organic pollutants (POP) list of the Stockholm Convention, they have no right to officially propose such an addition to Conference of the Parties. Even if the expert bodies unofficially do so, then the Conference of Parties has no obligation to whatsoever follow their advice and proceed to such action. The only way that expert bodies can make the case for a substance to be listed as a POP under the Stockholm Convention is to communicate the information they hold to the administration of a signatory State with the hope that the State will follow their advice and choose to proceed and submit a proposal for the inclusion of the new substance to the POP list to be reviewed by the POP Review Committee.\(^\text{1307}\)

Some examples that demonstrate which expert bodies and the administration at large of international institutions enjoy the right of initiative and include the Codex Alimentarius Commission and the Food and Agriculture Organization. A national government or a subsidiary committee of the Codex Alimentarius Commission holds the

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\(^\text{1307}\) See Article 8 of the Stockholm Convention.
power for the submission of a proposal for a standard to be developed. The same holds true with the administration under the Montreal Protocol for the substances that deplete the ozone layer. The administration of the Food and Agriculture Organization (F.A.O.) also has the power of initiative to propose new legislation. It has, for instance, proposed the adoption of supplementary agreements to the contracting governments of the International Plant Protection Convention. The right of initiative to propose new policies and legislation is not only a very essential element of a science-based lawmaking and administrative model, but also one of the building blocks of a science-based or expertise-based administration, a sine-qua-non condition that cannot be omitted. This is one of the most important rights of the Commission of the European Union. In the case of the Commission the right of proposal and initiation of new regulation is one of the features that reinforced the Commission’s role as one of the main actors of the European Union Law and Policy. From the aspect of the M.E.A.s, the Chemical Review Committee of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade has the power to propose new substances to be added to the list of chemicals falling under the Convention.

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1309 FAO provides the Secretariat of the International Plant Protection Convention. International Plant Protection Convention article 2, Dec. 6, 1951, 150 U.N.T.S. 67 [hereinafter IPCC]. The IPCC is an international plant health agreement, established in 1952, that aims to protect cultivated and wild plants by preventing the introduction and spread of pests. For more information, visit the official website of the convention, https://www.ippc.int/ (last visited April 26, 2011).

1310 See, supra at…

1311 See, e.g., the proposal of the Chemical Convention Committee that recommended that two pesticides – endosulfan and azinphos methyl – and one severely hazardous pesticide formulation – Gramoxon Super – be included in the Rotterdam Conventions’ Prior Informed Consent procedure. See the
In the quest for a science-based lawmaking model, the secretariat and the expert bodies of an institution should, thus, have the right to propose new legislative developments. Such a right should be coupled with an open process so that the civil society and the individuals can submit new information and proposals directly to the Secretariat and propose new regulations to be adopted. In order for such an open process to be meaningful, the secretariat should be obliged to review the submissions by third parties and then submit the information to an expert body for further consideration or, if so provided, directly to the political body of the institution, unless the proposal is obviously groundless. A second degree of judgment on the validity of the submission could be provided on the level of the expert bodies of the institution. The right of initiative, as structured above, namely by responding to the openness question strikes a good balance between expertise and democracy. It also keeps the institution “open” to the people. From this point of view, the right of initiative also belongs to the features that also reinforce the Madisonian systemic legitimacy.

3. Review of Implementation and Compliance and the Openness Question

Effective and meaningful review of implementation and compliance on behalf of the States with their obligations under the M.E.A.s, international organizations and the

whole corpus of I.E.L., promotes both environmental and public health protection and the rule of International Law. When the States that are the main recipients of the international environmental obligations ignore these obligations, they do not only damage the environment, but they also disregard the rule of International Law; free riding and legal uncertainly are some results of the widespread non-implementation and non-compliance. Without effective review mechanisms of implementation and compliance, actors who disregard or violate international environmental rules may benefit in comparison to actors who choose to comply. Recent shifts in compliance and implementation regimes move away from traditional confrontational methods for enforcing multilateral environmental agreements (i.e., dispute settlement, arbitration, and countermeasures like sanctions) and toward a more flexible, non-confrontational and cooperative approach. Expert bodies can acquire a meaningful role to play within these new frameworks.

In connection with the afore-mentioned power of initiative to propose new legislation, there is another kind of initiative that the expert bodies should have. This is the power of initiative to commence the review process of the status of I.E.L. Such rights should not remain exclusively with the signatory States. On the contrary, the expertise that expert bodies within the international institutions and other independent experts from the academia and the civil society hold qualifies them to play a more meaningful and active role in the review processes on the international level.

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1313 See the stages of the regulatory process, as they are presented in Part I and Part II of the Thesis.
Correlatively, review processes should offer standing to not only the expert bodies working within the framework of international institutions, but also to an open circle of actors that are outside the permanent institutional structure. In addition to the signatory States, an array of intergovernmental organizations, international arrangements, epistemic communities and the civil society at large should also be able to request the initiation of an extra review process of the existing legislation, its implementation and enforcement, at least under certain conditions. The Aarhus Convention is a good example of this type of openness of the agreement to third parties. The openness of the review procedures would lead to further integration of information, science and expertise into the decision-making and law-making system.

Especially regarding compliance, there are some M.E.A.s that have review mechanisms built-in. Raustiala, among others, proposes the use of dual (technical and political) bodies in compliance review and the build-up of legitimacy and expertise in review institutions.\textsuperscript{1314} Such a combination of both political and expert bodies would better maintain the balance and legitimacy of the lawmaking system. In general, periodic review assessments and reports of data on the effectiveness and performance of M.E.A.s and other international environmental legal instruments and institutions already take place. However, it is important that new mechanisms and techniques should be adopted, so that there is a cross-check between the multiple evaluations and reports. In addition, it is important to organize a relevant clearing-house so that double efforts of reporting the

\textsuperscript{1314} Kal Raustiala, \textit{Compliance & Effectiveness in International Regulatory Cooperation}, 32 \textsf{CASE WESTERN RESERVE J. INT’L L.} 387 (2000).
same data to various recipients will take place. Furthermore, the development of new tools and mechanisms, such as the so-called “peer-pressure” is necessary. This can serve as a mechanism to induce compliance with and enforcement of M.E.A.s (peer review compliance assessments.)

4. Legislation by Expert Bodies Followed by the Right of the States to Opt-out

To the extent that the political bodies, being either the initial assembly of the member States or the signatory Members or subsequent formations of the assembly, such as the COP and the MOP, have set the primary legislation and determined specifically the criteria under which new legislation would be issued, then the expert body should be able to decide upon new, secondary legislation on its own. For instance, if the criteria that a substance has to fulfill in order to be listed as a Persistent Organic Pollutant (POP) are specified, then an expert body of the Stockholm Convention on the Persistent Organic Pollutants could decide on its own to include the substance to the POP list. The expert body would be able to make such a decision, without necessitating the political body to convene anew for such a decision. If it is decided that the expert body has the competence to issue secondary implementing legislation on its own, then the COP, as the

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1315 See Principle 19 of the draft “Principles of International Law for Sustainable Development” prepared for the 4th session of the UN Commission on Sustainable Development: ”monitoring of compliance with international commitments” formulated as an obligation of States to accept collective supervision of their compliance with agreed norms. About the status of the principle of sustainable development as a principle of international law, see, e.g., CHRISTINA VOIGT, SUSTAINABLE DEVELOPMENT AS A PRINCIPLE OF INTERNATIONAL LAW – RESOLVING CONFLICTS BETWEEN CLIMATE MEASURES AND WTO LAWS (Martinus Nijhoff Publishers 2008). This volume provides a framework for the doctrinal foundation of sustainable development as a principle of integration in International Law. See, Peter H. Sand, Institution-building to Assist Compliance with International Environmental Law: Perspectives, in 1 MAKING LAW WORK, ENVIRONMENTAL COMPLIANCE AND SUSTAINABLE DEVELOPMENT 225 (Durwood Zaelke et al. eds, Cameron May 2005)
overarching body of the international institution, should retain the power to review the work of the expert body. In addition, any State Party to the Convention should have the opportunity to opt-out from the obligations imposed upon it by the new regulations adopted solely by the expert body. An obligation to explain its reasons for stepping out (opting-out) of the regulation should be at the same time imposed on the State. Any subsequent COP should enjoy the freedom to decide differently and change the ruling of the expert body. It is important, however, that the COP or any other body that will decide to abstain from the decision taken by the expert body will undertake the obligation to give reasons for such change.

The necessity that an expert body should be qualified to adopt secondary legislation becomes even more imperative in cases of urgency. In urgent cases, expert bodies should have a stronger say and should be allowed to adopt legislation. Even if the legislation has only provisional effects, it might serve as a necessary and invaluable response in cases of urgencies, such as in the case of natural disasters. In order for such decisions to be accepted by the States and the people, all of the necessary conditions of the delegation of the lawmaking competence to the expert bodies by the political bodies should have been delineated in detail in advance.

Experts’ competence to propose new legislation and occasionally adopt new legislation on their own, coupled with the option for the States to later opt-out of their obligations, would introduce new environmental regulations that would protect our global natural environment in timely fashion. In addition, maintaining the majority voting rule
and the opting-out-like procedures ensures that important political check-points remain at a stand-still, while surpassing time-consuming obstacles beyond which legislation would have to pass to be enacted. Shared competences between political and expert bodies, so that, on the one hand, political bodies issue the primary legislation and also decide the specific criteria for the promulgation of secondary legislation and on the other hand expert bodies issue secondary legislation within the framework set by the aforementioned, in combination with the majority voting rule and opting-out options would create an optimal legislative framework for International Environmental Law.

5. The Time Dimension

One additional argument supporting the delegation of lawmaking competences to expert bodies by the political bodies is closely related with the time dimension and the long delays in lawmaking procedures that the present international environmental organization presents. The time factor can be especially crucial when it comes to coping with environmental issues, since delays in addressing environmental issues could lead to irreparable damages for the environment and public health. The international institutions should, first and foremost, adopt similar procedures that would allow expert bodies to promulgate timely legislation in cases of urgency.\textsuperscript{1316} The time factor is important not only in cases of urgency, but also in general cases of prevention or restitution of environmental damage.

\textsuperscript{1316} See supra Part II, Chapter II, at 282.
Currently, the political bodies of the international institutions have the sole discretion to initiate the process of lawmaking, adopt new legislation and conduct updates, implementation and compliance review processes. These political bodies meet very rarely. Usually they meet at intervals of two or even three years making processes too lengthy. On the other hand, expert bodies, including those that do not employ permanent personnel, are more flexible and meet on a more regular basis. For example, the Chemical Review Committee of the Rotterdam Convention meets annually, while the Conference of the Parties of the same Convention meets every two years. This is usually the case with the meetings under the auspices of other M.E.A.s, as well. With respect to the Chemical Review Committee’s decisions, there can be an eighteen-month lapse between the Chemical Review Committee’s decision and the COP’s consideration on whether, for instance, to list or not the recommended substance in Annex III of the Convention. In cases where the COP is unable to make a decision in its first meeting where it considered the Chemical Review Committee’s recommendation, the time that might elapse between the point at which the Chemical Review Committee issued that recommendation and the time that the COP might reconsider the recommendation can extend to even three and a half years! The same holds true regarding the review processes of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade. Adding new substances to the list of the chemicals whose use is restricted by the provisions of the Rotterdam Convention can take place only after a rather tedious procedure. This procedure includes

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1318 See [supra](#) note 896.
a signatory State proposing the chemical’s submission, followed by a review by the POP Committee, a risk profile, a risk management evaluation and finally a decision by the COP. The whole procedure until the final inclusion of the chemical to the list of the Rotterdam Convention may take up to several years. This time-consuming procedure deprives, from the signatory States of the Rotterdam Convention and from the international expert community, the possibility to act on real time and adopt a regulation regarding a dangerous substance as soon as usable science allows. The span of time between the acquisition of usable science and the response of the international community is usually considerably long under many M.E.A.s and international organizations.

In order to avoid long time lapses between an evaluation by the expert bodies and the final decision upon this evaluation by the political bodies and cure long delays until the adoption of legislation, the regulation of an international institution may provide rules that its expert bodies propose could have provisional effect. In other words, under prespecified conditions, new secondary legislation, amendments, review evaluation, or corrective measures could be adopted by the expert bodies on a provisional basis followed by the later approval of a political body. This type of procedure by which a recommendation has provisional effect, is already practiced by some institutions, as discussed above, and is a viable answer to the long delays.

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1319 See Chapter II, at 296.
6. Remedies against Regulatory Inaction (Failure to Act)

Even when usable science exists that can solve an environmental issue, a State Member to an international institution is not obliged to reveal the relevant information to the institution, and even if the State does so, then the competent bodies of the institution may fail to take the necessary action. For instance, according to Article 8 of the POP Convention, there is no obligation of the Parties to propose any substance for listing, even if they hold reliable information that proves that a substance has specific features and, scientifically speaking, should be listed among the POPs. Article 8, rather, simply enables the Parties to propose a substance for listing: "a Party may submit a proposal" [emphasis added.] This provision, and numerous similar provisions introduces voluntary and not obligatory processes, undermines the international community’s efforts to enact I.E.L. In combination with the fact that in most of the cases of the international institutions, when only States can propose new legislation for adoption, this becomes especially evident. The States’ monopoly on proposing new legislation and the non-obligatory character of such initiative, therefore, prevents integration of existing science with I.E.L.

Regulatory inaction, namely omission to take regulatory measures in the face of existing usable science, could be considered illegal if so provided by I.E.L. In addition, the obligation to act could be further enforced by the establishment of a right for judicial or quasi-judicial review of such inaction. An example of such regulation could be drawn from the European Union Law: Article 232 of the EC Treaty (Art. 265 TFEU), which provides a procedure by which one can challenge a “failure to act” by the Commission or
another Community entity. In most respects, action under Article 232 can be understood as simply applying the principles of the annulment action to the specific context of official inaction. As the Treaty language shows, the basic approach of the Article is straightforward: the applicant must first “call upon” a Community entity to take the desired action. After two months, if the entity has not “defined its position”, the applicant has an additional two months in which to seek judicial relief. Such possibility would be a useful tool in the hands of the States or even civil society vis-à-vis the inaction of international institutions to take due consideration of new technology and science in order to solve environmental problems. The group of the people that could have standing is a question to be decided according to each particular case. There is a tendency, however, in recent jurisdictions for the group of the people that have standing to expand.

The text of Article 232 reads as follows:

“Should the European Parliament, the Council or the Commission, in infringement of this Treaty, fail to act, the Member States and the other institutions of the Community may bring an action before the Court of Justice to have the infringement established.

The action shall be admissible only if the institution concerned has first been called upon to act. If, within two months of being so called upon, the institution concerned has not defined its position, the action may be brought within a further period of two months. An natural or legal person may, under the conditions laid down in the preceding paragraphs, complain to the Court of Justice that an institution of the Community has failed to address to that person any act other than a recommendation or an opinion.

The Court of Justice shall have jurisdiction, under the same conditions, in actions or proceedings brought by the ECB in the areas falling within the latter’s field of competence and in actions or proceedings brought against the latter.”

Cf. Article 226 (Art. 258 TFEU) introduces the infringement procedure and empowers the Commission to bring a Member State before the ECJ for failure to fulfill Community obligations.

C. Madisonian, Systemic Legitimacy: Power Sharing, Legality, and Fairness

Systemic legitimacy, especially regarding the power sharing among the actors of a system, is a multi-dimensional issue that depends on the point of view of the drafter of the system on who should actually hold the overarching power. Under the traditional approach of the primacy of the democracy principle, mechanisms that would enhance the openness of the system or would promote the reinforcement of representativeness of the people to the international institutions would be enough to create satisfactory international governance. For others that do not promote the principle of democracy as the primary organizational principle of international governance, but are proponents of the existing status quo and the sovereign integrity of a State, the existing power sharing
that currently prevails among States, international institutions and other actors might be satisfactory. Under the S.B.L.M. model, the current system of international institutions, global environmental governance and the input and output between the international institutions and the States, the epistemic community and the civil society are imbalanced and their power sharing has to change. The current power sharing between the political and expert bodies should change in favor of the expert bodies; the civil society, especially the epistemic community, should acquire a stronger voice vis-à-vis the international institutions, while international institutions with technical expertise should gain a more important role in international environmental governance than the private sector and the States. S.B.L.M. could be achieved with large-scale changes within the system of the international institution and between this system and external systems.

Any international institution should promote and guarantee fairness. Fairness in International Law and institutions may take various forms, both procedural and substantive, and may support a large range of issues, including self-determination, just and unjust wars, collective security, international trade and investment, and environmental norms. The objective of fairness as an objective of the system does not differ depending on whether the lawmaking process is based on an S.B.L.M. model, the traditional model, or another one. Fairness in environmental law is better served by the S.B.L.M. model to the extent that an S.B.L.M. model better serves the objective of environmental protection. Fairness may refer not only to humans, but to non-humans, as well. When referring to the latter, then an S.B.L.M. model may serve them better, since

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THOMAS M. FRANK, FAIRNESS IN INTERNATIONAL LAW AND INSTITUTIONS (Oxford University Press Publisher 1997).
such a model may better represent the “voice” of nature, through expert bodies. To the extent that the reference to fairness regards the conventional meaning of social fairness, institutions should develop such mechanisms that would promote social considerations. Environmental fairness and social fairness coincide to the extent that environmental protection goals are also public health and quality of life goals. An international institution as a system that needs to be legitimized should develop decision-making, policy-making and lawmaking processes that promote societal and environmental considerations from an environmental justice, intra-generational and inter-generational point of view.

Legality depends on the degree of conformity of the international institutions with International Law and the degree of conformity of the bodies working for the international institution with the law governing the international institution itself. Legality can be ascertained by many prerequisites, review processes, including internal and external review, the establishment of an effective dispute settlement system, accountability, responsibility, and oversight mechanisms. The Thesis describes these features and the dimensions of these features of an S.B.L.M. model in the sections above. A well-organized system promotes legality, fairness and power-sharing, all at the same time.
D. Habermasian, Procedural Legitimacy: Deliberation, Transparency, Participation and Due Process

1. Transparency

The concept of transparency under the framework of international institutions refers to the availability and accessibility of information regarding the content of the norms, rules, and procedures established by the law and practice of the international institutions. It also refers to the policies and activities of both State and non-State parties
to the international institutions and the main bodies of the institutions, especially regarding matters that are relevant to treaty compliance and regime efficacy. Transparency can be a valuable feature of an international institution with environmental competence that could serve a lot of purposes. The purposes commence from informing the public about the work of the institution and the preparation of I.E.L. The work and legislative product of the organization becomes more easily acceptable to the public via information and accessibility of information. Furthermore, it facilitates third actors that are directly or indirectly affected by the work of the institution to be informed about developments in their field of interest. Transparency, moreover, enhances potential participation in the review processes by both internal and external bodies vis-à-vis the international institution. One of the most important services of the existence of transparency is that it helps enhance compliance with treaty norms and provides reassurance that the States are not being taken advantage of when they comply with other participants to the regime. It also exercises deterrence against actors contemplating noncompliance and facilitates participation.

There are many ways of achieving transparency. One of the most prominent functions that promote transparency is verification. Verification can be exercised by a variety of mechanisms. It may include, for instance, self-reporting by the States to the international institution or allow for monitoring. Both self-reporting and monitoring are important functions for measuring implementation and compliance, with existing international environmental obligations by a State. Environmental regulation relies primarily on self-reporting to generate data on compliance, which might be questionable.

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1323 CHAYES & CHAYES, supra note 1189, at 135.
in occasion. Based on the principle of the non-interference in a State’s internal affairs and due to the human and financial limitations of an international institution, self-reporting on behalf of the States remains today the most common approach for the international institution to collect information on legal affairs and environmental data, irrespectively of the official confirmation of the accuracy and completeness of the information.\textsuperscript{1324} In most treaties, there is a general injunction to review the reports, but neither the Conference of the Parties nor the secretariat is likely to have the resources or technical capability to do so systematically. The role of technical monitoring, including satellite surveillance, is increasing in environmental agreements. On-site inspection will also find applications in environmental monitoring. Only expert bodies would be able to take advantage and perform the complex actions required by these mechanisms. Once again, the quest for the optimization of the S.B.L.M. model depends on the capacity of the expert bodies.

\textbf{2. Participation and Openness of the Meetings}

Meaningful participation of the civil society at the meetings of international institutions is of high importance for not only the procedural legitimacy, but also the systemic legitimacy and the expertise-based legitimacy, since it promotes fairness and

effectiveness of the institutions. From a procedural point of view, the participation of civil society at the meetings of the international institutions promotes, not only the concept of transparency and indirectly heals the democratic deficit that exists on the international level, but also contributes to the optimization of other functions of the international institutions. It can also offer benefits for International Law at the level of the States; e.g., participation of civil society representatives at a meeting regarding the compliance of the States with their obligations under an M.E.A., may reinforce the tendency of a State to comply or may give incentives to the civil society of that State to further influence the State in order to comply with its obligations in the future. It may also make the lay public within a State more familiar with the international environmental regime at hand.

3. The Right to Know as a Human Right

Participation in global environmental governance should not be recognized as only a collective right, but also as the right of the individual. Indeed, transparency is further effectuated by the right of an individual to have access to information. Such information on issues that can affect public health and the status of the environment can be of tremendous importance for the individual and this is why access to environmental information should be listed on the catalog of human rights. On the international level the protection of the environment falls to a certain extent within the concept of human
Since then, the right to know under the meaning of gaining access to information should be recognized as an individual right on the international level, too. Many domestic jurisdictions and international legal instruments have already recognized this right as one of the human rights, but there is not such a globally recognized right thus far. When it concerns environmental issues the right to know may be – literally – vital. What people know or do not know about the environment may affect not only the state of the natural environment, but also their health and life. For instance, the state of the environment may affect reproductive capacities of humans and non-humans due to the disruption of endocrines because of several toxic substances and their combined effect. In order for people to be able to effectively and in good timing protect themselves and the natural environment, they should have access to all pertinent information. The Thesis does not discuss public health and environmental protection from a human rights perspective. The reference to this right and the corresponding obligations, as well as to the procedures that are necessary to be developed within the framework of the international institutions, should necessarily be part of the procedures comprising a

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1325 During the last year of her life, Rachel Carson discussed before a U.S. Senate subcommittee her emerging ideas about the relationship between environmental contamination and human rights. She urged recognition of an individual’s right to know about poisons introduced into one’s environment by others and the right to protection against them. Rachel Carson on environmental human rights: Senate Testimony hearings before the Subcommittee on Reorganization and International Organizations of the Committee on Government Operations, Interagency Coordination in Environmental Hazards (Pesticides)”, US Senate 88th Cong., 1st Sess, June 4, 1962.

lawmaking model. This holds equally true no matter whether the lawmaking model is a science-based model or other type of model. In the case, however, of a science-based model, the procedures should integrate science, expertise and human rights. This should happen not only on grounds of equity etc, but also because public participation, information-sharing etc could further support a science-based lawmaking model. The tendency to recognize rights related with environmental protection as human rights in International Law is a rising tendency at the moment. Accordingly, any drafter of a future lawmaking model should take this development into account, in order that the model that (s)he creates be updated and current.\footnote{See, e.g., Francesco Francioni, \textit{International Human Rights in an Environmental Horizon}, 21 EUR. J. INT'L L. 41 (February 2010).}

The right to know is paired with the obligation on behalf of the international institution for information disclosure. There should be specific provisions under the framework of the international institutions, providing for access to information. Access to information is one of the procedural rights that is easy to be fulfilled without much effort or institutional redesign of the international institution upon which the obligation is posed. Data processing technologies and telecommunications are very helpful to this end.

From a procedural point of view, procedures should promote the direct participation of the individual to the work of the international institutions. The individual, scientist or any other citizen should have access to information, concerning the work of the institution, the data that the decisions were based on, and the deliberations of the expert and political bodies of the institutions. Individuals should have access to the pool
of information that international organizations hold in order to support their case, even if their case can go against the interests of the international organization.

A detail that might be, however, very useful is the access that could be provided to documents expressing dissenting opinions. The route to knowledge and transparency is disagreement and openness in debate, the pluralist expression of conflicting views. Via publication of dissenting scientific opinions, the general public can be fully informed about all of the aspects of an issue. Especially in cases where science is contested or different expert approaches might be equally applicable, it might be useful for the public to have access to all of the pertinent information. Openness of the institution and its processes combined with information, may become transformed to a form of *ex ante* accountability. The sort of accountability represented by opportunities to challenge decisions after they have been made will depend on the balance struck between rights to challenge the process and rights to challenge substantive conclusions.

Finally, there is currently no obligation on behalf of the States to reveal environmental information to the international institution in relevance with the subject-matter of the latter. Such obligation would, however, be very useful – to the extent that it would guarantee timely and adequate flow of valuable information toward the international administration. Intellectual property law, industrial property law or the public interest, or the defense interests of the State, would pose their limits to such obligation. The recognition of such an obligation might be proven a very useful tool, though, for both a science-based and democratic lawmaking model.
4. Due process

The Habermasian legitimacy, namely the procedural legitimacy, demands that due process requirements exist. Due process in International Law guarantees that special fundamental procedures are respected. Due process is a legal principle, American in origin, indicating that the government must respect all of the legal rights that are owed to a person according to the law. In the case of the international organizations, due process should guarantee that the international institution should respect all of the legal rights of the States, the epistemic groups, the civil society groups or other individuals. For instance, on the domestic level the non-delegation doctrine requires that agencies structure delegated authority with regularized procedures.\footnote{Kenneth C. Davis, Administrative Law Treatise 207-8 (2d ed. 1978).} Similarly, courts uphold delegations, because a substantive judicial review of agency decisions is available.\footnote{Ethyl Corp. v. EPA, 541 F. 2d 1, 68 (D.C. Cir. 1976) (Leventhal, J.).} The more specific the requirements and the procedures for the delegation of lawmaking competences to expert bodies are, the more legitimacy the lawmaking process acquires.

This Chapter briefly presented some of the elements that a contemporary lawmaking model for international environmental regulation should have. These elements could be applicable in all of the existing international institutions with environmental competence, both international organizations and M.E.A.s. The Thesis did not seek to provide any model laws or one single legislative proposal. Rather, it attempted to sort out
some successful examples of legislative methods and supporting administrative principles and procedures that the international institutions could adopt. It is not necessary to adopt the full range of these proposals. On the contrary, the international institutions could choose only some of them. Alternatively, international institutions could choose to adopt their own legislative and administrative procedures that are similar to the aforementioned procedures under the spirit of a rising procedural harmonization. Procedural harmonization should provide the procedural foundation of the substantive International Environmental Law. On the way toward procedural harmonization, one should build those lawmaking processes that will, in the end, “unite the political power with the wisdom” for the benefit of both humankind and nature.

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CONCLUSION

The Thesis takes the approach of a critique of the current international environmental lawmaking processes and the systemic shortcomings and aims to address the international environmental lawmaking system on new terms. Through case studies and doctrinal analyses, an array of initial questions guided the research through a variety of factors influencing the International Environmental Law. The Thesis mainly tested and found the following hypotheses positive; some of the decisive factors that would create an optimized lawmaking framework and advance the purposes of I.E.L. include, but are not limited to, the adoption of:

(a) progressive voting processes, including the majority rule and opting-out procedures as a means of adopting primary and, most importantly, secondary legislation resulting in legally binding rules upon the States without requiring prior ratification by the States within the framework of International Organizations or Multilateral Environmental Agreements;

(b) science-based secondary legislation, defined by specific criteria and boundaries that primary laws pose on them, that is more detailed than primary laws and of a more technical nature, promulgated by expert bodies alone, without the intervention of political bodies, and is binding upon States, unless the latter object with reason; and
(c) new procedural rules, related to the pre- and post-lawmaking stages that enhance participation in the lawmaking process by both experts and the public and review the implementation, compliance and validity of science and technology of the laws, while at the same time guarantee all forms of legitimacy.

Departing from the traditional lawmaking models that prevail today, all of the aforementioned measures would bring a meaningful change in the lawmaking process lato sensu and establish a new and effective science-based lawmaking model in the field of International Environmental Law, that would respect all forms of legitimacy that are by now acquisitions of the common legal and political civilization.

New international arrangements and actors continue to change the sources of Public International Law and International Environmental Law. Science, expertise and direct public participation generate new information on environmental issues that the lawmaker should not ignore. New developments should inescapably shape the content of the International Environmental Law, in order to protect, by all means possible, the overarching societal value of the protection of the natural environment, namely, the foundation of life and health on Earth. Traditional procedures do not allow for the integration of such developments. In order to amend these shortcomings and respond to the fundamental challenge of global environmental change, the adoption of new lawmaking processes is necessary.
In formulating a new framework for environmental lawmaking, it is essential to re-shape the procedures so that experts have greater participation and thereby improve the quality of International Environmental Law. The role of experts in the regulation of environmental issues on the international level remains rather advisory and consultative; therefore, in addition to re-designing institutions and policies, the international community should develop new lawmaking procedures that include expert opinion. The inclusion of expert opinion will simultaneously facilitate generating new scientific data and appropriately adapting to new information as it appears. In order to address the current absence of checks and balances in the I.E.L. legislative process, there should be a follow-up review system to ensure that I.E.L. further develops in a timely manner and that States sufficiently implement and comply with international environmental regulations. These checks and balances should be developed both within and outside the framework of the international institutions. External review by public and private actors is necessary in order to ensure legality, effectiveness and democratic legitimacy of the I.E.L.

Science serves as the foundation for the tools that will help the world transition to a sustainable future.\textsuperscript{1331} Contemporary science is incapable of completely resolving all of environmental challenges. In some cases uncertainties can be resolved by policy choices. Fortunately, in many cases uncertainties may be capable of being resolved by further scientific studies and this is the reason why research and development should go on. The decades immediately ahead of us are crucial. Governments must bring a new toughness to

International Environmental Law and make serious efforts to address the underlying drivers of environmental deterioration and improve the overall economic and political context that determines whether legal regimes are meaningful and successful or not. Such development, namely of a robust international environmental polity, is absolutely possible, as the first and foremost example of the international financial system, the World Trade Organization, has shown us.

By identifying some of the substantive and procedural issues which international institutions with environmental competence face today, I have sought to provide a better understanding of how I.E.L. functions and develops within the present global environmental governance system and provide some alternatives in order to make I.E.L. more effective, functional, timely and legitimate. Through this study, I hope to have furthered the process of discovery and dialogue, and influenced the evolution of legal thinking through mapping out innovative paths by which international lawmaking procedures can become more functional and responsive to the realities of the contemporary world. Many solutions to environmental problems remain to a great extent with the processes of the promulgation of new and progressive rules of the International Environmental Law. With all eyes turned toward the Earth Summit of 2012 and beyond, not only legal scholars, but the entire international community should always look ahead to create the next generation of International Environmental Law.
### Appendices

**Appendix No. 1: Main Global Environmental Issues**

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<th>Chemicals</th>
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<td><strong>Definition and significance</strong></td>
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<td>To date, over 10,000 chemical compounds have been identified, including among them known carcinogens, immuno-toxins and hormone disrupters. Human-made chemical compounds have been found in even the most remote areas of every continent. Some chemicals bioaccumulate poisoning not only humans but other...</td>
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#### Encompassed terms and concepts

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<th>Farming</th>
<th>Fauna</th>
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<td>Indoor air pollution</td>
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**Climate Change**

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<td><strong>Definition and significance</strong></td>
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Climate change is defined by the UNFCCC as any change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time period. Climate change is one of the most salient issues on the global agenda, cross-cutting nearly every environmental concern.

Desertification occurs most often as a result of human activity and climate change. The loss of productive topsoil associated with desertification reduces biomass productivity and arable land. For example, desertification removes 1.2 million hectares of land from production each year which could have been used to produce 20 million tons of grain (MA 2005a).

Energy encompasses both production and conservation measures. Energy programs receive enormous subsidies from national governments around the world. The search for alternative energy sources is also increasing. The extraction and consumption of energy resources such as coal and oil contribute to air and water pollution as well as increased greenhouse gas concentrations and subsequently climate change.

Fisheries, especially ocean fisheries, have been in rapid decline as a result of rapid technological improvements in fishing fleets. About half of the wild marine fish stocks for which information is available are fully exploited and offer no scope for increased catches. Like agriculture, fisheries provide enormous impetus to the global economy. Fisheries also provide a key source of protein for millions of people around the world, many in developing nations.

### Encompassed terms and concepts

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<th>Global warming</th>
<th>Drought</th>
<th>Energy production</th>
<th>Marine resources</th>
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<td>Monitoring atmosphere</td>
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<td>Climate prediction</td>
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### Forests

Forests are classified by the level of canopy cover in an area, and any reduction of canopy cover is considered to be deforestation or degradation. Forests present an important carbon sink for greenhouse gases but are cleared at increasing rates around the world, especially so in tropical regions. Currently, there exists no international environmental

### Invasive Species

Invasive species have become an increased threat that represents the "globalization of nature" (MA 2005b). For example, waters in North America are heavily invaded by mollusks transported in ship ballast water tanks in a pattern corresponding to trade routes. The Great Lakes have suffered from the introduction of the

### Trade in Endangered Species

Trade in endangered species encompasses the illicit dealing of protected plant and animal specimens. The international illegal trade in wildlife and wildlife products, such as ivory, endangers the species, which are often already threatened. Such trade also poses a security risk: transnational criminal

### Water

Water, the most vital natural resource to human survival, is in short supply in many parts of the world. Globally, from 5 to 25% of freshwater use exceeds long-term accessible supplies and is now met either through engineered water transfers or overdraft of groundwater supplies. Water scarcity poses both
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<th>Timber</th>
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Appendix No 2: Table of options and ideas for broader reform

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<tr>
<th>Objectives</th>
<th>a) Creating a strong, credible and accessible science base and policy interface.</th>
<th>b) Developing a global authoritative and responsive voice for environmental sustainability.</th>
<th>c) Achieving effectiveness, efficiency, and coherence within the United Nations system.</th>
<th>d) Securing sufficient, predictable and coherent funding.</th>
<th>e) Ensuring a responsive and cohesive approach to meeting country needs.</th>
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<tr>
<td>Functions</td>
<td>i. Acquisition compilation, analysis and interpretation of data and information.</td>
<td>i. Global agenda setting and policy guidance and advice.</td>
<td>i. Coordinating policies and programmes.</td>
<td>i. Mobilising and accessing funds for the global government.</td>
<td>i. Human and institutional capacity building.</td>
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<td>ii. Information exchange.</td>
<td>ii. Mainstreaming of environment into other relevant policy areas.</td>
<td>ii. Efficient and effective administration and implementation of MEAs.</td>
<td>ii. Developing innovative financing mechanisms to complement official funding sources.</td>
<td>ii. Technology transfer and financial support.</td>
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<td>iii. Environmental assessment and early warning.</td>
<td>iii. Promotion of rule making, standard setting and universal principles.</td>
<td>iii. Facilitating interagency cooperation on the environment.</td>
<td>iii. Utilising funding effectively and efficiently in accordance with agreed priorities.</td>
<td>iii. Mainstreaming environment into development processes.</td>
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<tr>
<td>Macro level state and gaps</td>
<td>Status Many institutional data and assessment mechanisms; several intergovernmental advisory bodies; some intergovernmental assessments.</td>
<td>Status High number of treaties; several intergovernmental bodies tasked with agenda setting; environment on the agenda of many policy sectors.</td>
<td>Status Several intergovernmental and interagency coordination bodies; some intergovernmental bodies for review of effectiveness; several arrangements for Multilateral Environmental Agreements (MEAs) administration.</td>
<td>Status Several global funds for different purposes; some markets for environmental services.</td>
<td>Status Several capacity building mechanisms; some financial support mechanisms; a few technology transfer mechanisms.</td>
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<td>Gaps Lack of developing country capacity</td>
<td>Gaps Alarming gap between commitment and</td>
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<td>a) Creating a strong, credible and accessible science base and policy interface.</td>
<td>1. Create a multi-scaled and multi-thematic global information network of national, international and independent scientific expertise for keeping the impact of environmental change on human well being under review and issue early warnings. The network would be facilitated by a web-based facility for sharing of “live” information with the support from an interagency cooperation arrangement.</td>
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<td>b) Developing a global authoritative and responsive voice for environmental sustainability.</td>
<td>1. Establish a global policy organization with universal membership to set, coordinate and monitor the global environmental agenda.</td>
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<td>c) Achieving effectiveness, efficiency, and coherence within the United Nations system.</td>
<td>1. Clustering secretariat functions and common service- establish a mechanism for global, overall coordination among existing MEAs with one mechanism having innovative tasks that are not performed by MEA Secretariats individually, and without prejudice to their decision-making and budgetary independence. This would include joint MEA institutional structures, including 1. Secretariats, 2. Legal, financial and conference services, 3. Reporting, 4. Scientific</td>
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<td>d) Securing sufficient, predictable and coherent funding.</td>
<td>1. Widen the donor base, e.g. establish mechanism for receipt of private/philanthropic donations. 2. Establish a joint management mechanism for all major trust funds for the environment with equal roles for project selection, appraisal and supervision of environment-related activities, in accordance with the respective spheres of expertise. 3. Link global environmental policy making with global environmental financing</td>
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<td>e) Ensuring a responsive and cohesive approach to meeting country needs.</td>
<td>1. Establish environment-development country teams and/or desk in existing intergovernmental offices in developing countries around the world. 2. Develop and overarching framework for capacity building and technical assistance for the operational activities of MEAs, UN agencies and IFIs.</td>
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Draft Elaboration of Ideas for Broader Reform of International Environmental Governance

Appendix No. 3: International Organizations and Treaty Secretariats Primary and Secondary Environmental Focus

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## Appendix No. 4: Main Functions and Features of Expert Bodies

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<thead>
<tr>
<th>Function &amp; Features of Expert Bodies</th>
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<tbody>
<tr>
<td>Scientific Committee of the Convention on the Conservation of Antarctic Marine Living Resources</td>
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<td>CITES Advisory Animals and Plants Committees</td>
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<td>Scientific Council of the Convention on the Conservation of Migratory Species of Wild Animals</td>
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<td>Committee on Science and Technology of the UN Convention to Combat Desertification</td>
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<tr>
<td>Technical Working Group of the Basel Convention</td>
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<tr>
<td>Subsidiary Body for Scientific and Technological Advice to the UN Framework Convention on</td>
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<tr>
<th>Science &amp; Technology Review (Progressive Implementation)</th>
<th>Implementation</th>
<th>Compliance</th>
<th>Binding Contribution to Progressive Implementation</th>
<th>Independent Experts as Participants to Review Bodies</th>
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<td>Technology and Economic Assessment Panel of the Montreal Protocol</td>
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<td>Persistent Organic Pollutant Review Committee</td>
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<td>Chemicals Review Committee of the Rotterdam Convention</td>
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<td>Implementation Committee of the Protocols to the Convention on Long-Range Transboundary Air Pollution</td>
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<td>Implementation Committee of the Espoo Convention</td>
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<td><strong>Consultative Group of Experts on National Communications of the UNFCCC</strong></td>
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<td><strong>Compliance Committee of the Basel Convention</strong></td>
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<td><strong>Compliance Committee of Aarhus Convention</strong></td>
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<td><strong>Compliance Committee of the Cartagena Protocol on Biosafety</strong></td>
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<td><strong>Kyoto Protocol Compliance Mechanism</strong></td>
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# Index of 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
- **SBSTTA**: Subsidiary Body for Scientific, Technical and Technological Advice
- **CBD**: Convention on Biological Diversity
- **CCAMLR Commission**: Commission on the Conservation of Antarctic Marine Living Resources
- **CCAMLR**: 1980 Convention 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**: year Convention on International Civil Aviation
- **CIPM**: International Committee for Weights and Measures
- **CIS**: Commonwealth of Independent States
- **CLRTAP**: year 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 2012: 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: Cooperative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe
• 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
• ICIJ: 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: 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: 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
• LRTAP: Long-range Transboundary Air Pollution
• MA: Millennium Ecosystem Assessment
• MAP/UNEP: Mediterranean Action Plan
• MARPOL Convention: 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 Convention: 1971 Convention on Wetlands of International Importance, Especially as Waterfowl Habitat
- Rio Plus 20: UN Conference on Sustainable Development in 2012
- 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
• SBLM: science-based lawmaking
• 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
• SPS Agreement: Agreement on the Application of the 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: year 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: year United Nations Framework Convention on Climate Change
• UNFF: United Nations Forum of Forests
• 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
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