



GLOBAL ENVIRONMENTAL GOVERNANCE AS WE ENTER THE ANTHROPOCENE

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ABSTRACT

This paper presents an overview of the current state of global environmental governance with an eye toward highlighting the challenges that are presented by the scale and speed of environmental change that we are now witnessing. The scale of anthropogenic environmental change has led to what many now dub the Anthropocene - reflecting that humanity is changing our natural planetary systems in ways that have fundamental implications on a geologic scale. It also harkens in an era when humanity will be called on to consciously manage on a planetary level massive environmental change and the economic and social impacts that arise from this change.

Keywords: Environment, sustainable development, UNEP.

INTRODUCTION

We have until now taken certain aspects of the Earth for granted, particularly the environmental services provided by such global systems as the carbon cycle, the nitrogen cycle or the hydrologic cycle. These and other global systems are now or soon will be so stressed that we have to manage them proactively as well as the impacts that come from shortages in natural resources or environmental services.

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Such a need to manage planetary systems proactively is beyond anything we have attempted in the environmental arena thus far, and it will require new approaches to global environmental governance. Just as the disaster of two world wars required a fundamental rethink of the international system, so too may the onrush of the anthropocene, at least with respect to environmental governance.

So what is the current state of global environmental governance? The current state of global environmental governance has the following elements:

(1) a set of general environment and development principles, most of which are not binding law, that provide a framework for the global dialogue about approaches to sustainable development.

(2) a series of global high profile summits, the latest being Rio+20, aimed primarily at building political commitment and consensus among governments to address sustainable development challenges.

(3) a decentralized and fragmented institutional architecture that largely reflects an *ad hoc* approach to global environmental issues with limited ability to address environmental issues in an integrated or flexible way.

(4) approximately 15 global environmental treaty regimes, each addressing a different environmental problem, and more than 700 regional or bilateral environmental instruments;

(5) a relatively strong set of institutions and processes for monitoring and developing the scientific basis for understanding and managing the global environment;

(6) a growing set of 'new governance' instruments or partnerships that are born from multi-stakeholder processes and include a diverse range of standards, guidelines, programs and policy initiatives.

Major elements of this governance system are discussed further below, followed by a preliminary discussion of challenges presented by the rise of the anthropocene.

1. THE CONCEPTUAL FRAMEWORK FOR ENVIRONMENTAL GOVERNANCE: THE PRINCIPLES

Fundamental to understanding global environmental governance is to understand the extent to which there is a shared conceptual framework for global environmental governance. The 1992 *Rio Declaration on Environment and Development* is the closest instrument we have to setting forth the general framework for cooperation with respect to sustainable development. Although not binding law, the

Rio Declaration reflects the political consensus that existed for sustainable development as of 1992. It has thus formed much of the basis for the past two decades of global environmental governance. Although the political consensus reflected in the 1992 Rio Declaration has eroded in important ways, the document was reaffirmed by the governments in Rio+20 and is still the most important conceptual foundation for global environmental governance.

At the heart of the Rio Declaration consensus, were three interrelated concepts: (1) the world accepted the goal of sustainable development as the integration of three pillars of environment, economic development and social progress for the primary purpose of promoting human welfare (and not, for example, conserving nature); (2) states have the sovereign right to adopt their own environment and development policies; and (3) achieving sustainable development required a “global partnership” based on the principle that all countries have “common but differentiated responsibilities” in this effort.

The Constructive Ambiguity of Sustainable Development

Sustainable development is viewed as the general goal of international environmental policy, guiding the integration of environment and development at the international and national levels. The term has proven to be elastic enough to embrace a wide range of approaches to the environment and development dialogue. In fact, the primary value of ‘sustainable development’ is that it provides a rhetorical framework for multiple stakeholders to discuss how the economy relates to environmental limits, and its inherent ambiguity creates a valuable, albeit contested, space for dialogue that allows a wide range of actors to embrace the concept and then fight over its meaning. We may not know precisely what the term means, but its constructive ambiguity does allow for an enriched dialogue over the interface between environment and development.

The concept has had an important impact on global environmental governance. Environmental protection is viewed as only one of three ‘pillars’ of sustainable development (economic growth and social progress, being the other two). The need to integrate environment, economy and society meant that within the UN environmental issues are primarily addressed under the Economic and Social Council (or ECOSOC), and it also guaranteed that virtually all organizations within the UN system had a role to play, but none would be held clearly accountable, for achieving sustainable development. The UN Commission on Sustainable Development (UNCSD) would be created at Rio as a forum for convening governments and other institutions to discuss cross-cutting issues

inherent in the concept of sustainable development but with no decision-making authority. And the United Nations Environment Programme (UNEP) would be relegated to the environmental pillar only—marginalizing it somewhat in the broader discussions that now take place under the rubric of sustainable development

The concept of sustainable development and its inherent emphasis on integration (and compromise) among three pillars obscures the critical role that the natural environment serves as the basis for all human activity. The focus on three equal pillars is probably a mistake, given that environment is less an equal pillar than a foundation for economic and social progress. This becomes clearer and more urgent, as we enter the anthropocene and an era of shortages in environmental resources. In this context, a definition of sustainable development that subjugates the fundamental role of environmental resources and planetary environmental systems may be ill-equipped to address the profound challenges engendered by future global environmental change. The emergence of environmental services as a key concept has helped to increase the understanding that environmental shortages risk fundamental challenges to our quality of life and economic security. A clearer recognition of the potential role of environmental shortages suggests a stronger response than found in concepts of integration or sustainable development. Redefining “development” through green accounting and other steps may present an opportunity within the frame of sustainable development, but such incremental changes may not reflect the urgency and seriousness of environmental change in the anthropocene. *In short, we may need to replace sustainable development with a conceptual framework that recognizes the threats to economic security and survivability that are presented by environmental change. Such a new conceptual framework should reflect “security”, “survivability” “resilience,” and “restoration” more than “development” or “integration”.*

Challenging the Primacy of State Sovereignty

Global environmental governance, like all international governance, is based on the fundamental principle of state sovereignty. State sovereignty in the legal sense signifies independence—that is, the right to exercise, within a portion of the globe and to the exclusion of other States, the functions of a State such as the exercise of jurisdiction and enforcement of laws. A bedrock principle of international environmental law is thus that countries have the sovereign autonomy to make their own environmental and developmental policies and exploit the resources within their own. International environmental law reflects the fundamental tension between a State's interest in protecting its independence (*i.e.* its

sovereignty) and the recognition that certain problems, in this case certain environmental problems, require international cooperation.

In the environmental sphere there are two exceptions where state sovereignty does not predominate: (1) where the States voluntarily consent to give up some sovereignty in favor of international cooperation, for example by joining an international institution or treaty; or (2) where the country's activities harm the environment outside their territory (i.e. in a neighboring state or the global commons). These two exceptions have been narrowly applied by States who jealously protect their sovereignty and independence.

The implications for global environmental governance of the primacy of sovereignty are the following:

- Most activities that have domestic environmental impacts will be addressed, if at all, through the discretion of the state in which the activities occur and any interference from the outside will be viewed as an affront to the state's independence;
- a system based on state sovereignty and consent means that international cooperation can be held hostage to the least common denominator;
- states are the sole voice of how society speaks in formal processes, frequently excluding other elements of society (for example citizens, companies, communities);
- by organizing solely through states, the system rebuffs efforts to build an international society with global citizens expressing common concerns about common issues like the environment;
- an environmental governance system so state-centered only indirectly addresses the main economic actors (industry) responsible for environmental impact;
- the system is slow to respond to environmental concerns because overriding state sovereignty requires the formation of broad political consensus.

To move environmental issues from the domestic domain to the international level requires articulating a clear (and typically narrow) exception to sovereignty. In general, international cooperation with respect to environmental issues has occurred where (1) transboundary environmental impacts are clear (for example, ozone depletion or climate change); (2) migratory species are threatened (for example, treaties regarding whales, tuna, sea turtles and other migratory species); (3)

resources are at stake in the global commons outside of national boundaries (for example, law of the sea or the Antarctic Convention); or (4) where international economic activities have potential environmental harm (for example, conventions addressing trade in endangered species, hazardous wastes, or toxic substances). The narrow application of these exceptions to the default rule of sovereignty adds to the *ad hoc* nature of international governance.

In the environmental context, the primary counter to state sovereignty is the nascent principle that sustainable development and protection of the environment are “common concerns of humanity”. This principle reflects the growing consensus that because the planet is ecologically interdependent, humanity may have a collective interest in certain activities that take place, or resources that are located, wholly within State boundaries. Thus, for example, the recognition that nations have a common concern in the global environment has provided a critical conceptual framework for treaties addressing climate change and biological diversity. This concept of common concern has little substantive meaning but provides a primary conceptual counterweight to state sovereignty. *As we enter the anthropocene, humanity’s common concern in managing the planet must eventually counter the primacy of state sovereignty as the overriding organizing principle for international relations in the environmental context. In the future in an era where the environment/development balance must be proactively and continually managed, responding to global environment and development challenges must be viewed less as a narrow exception to state sovereignty and more as the default position favoring international cooperation.*

Fall of the Global Partnership for Sustainable Development

The 1992 Earth Summit launched a “global partnership” for the advancement of sustainable development. This global partnership was predicated on a grand bargain: developing countries would participate in the partnership and shared goals of environmental protection, but industrialized countries would pay for this participation through additional new financial resources and technology transfer. The partnership was based on an agreement that all States have common but differentiated responsibilities to protect the environment and promote sustainable development. The responsibilities among States were differentiated because of the resources commanded by industrialized countries and the disproportionate impact their development has had in causing global environmental problems. Industrialized countries were expected to take the first steps in addressing global environmental problems and provide financial and technical support for developing countries to follow their lead. The principle reflected core elements of equity,

placing more responsibility on wealthier countries and those that are more responsible for causing specific global environmental problems.

Since 1992, the principle of common but differentiated responsibilities has provided the conceptual framework for political compromise and cooperation in negotiations to address many complex environmental challenges, including most notably climate change. In recent years, however, the global partnership based on common but differentiated responsibilities has begun to show clear signs of unraveling. First, much of the money and technical assistance promised by the North at the Earth Summit has not materialized. Second, the United States, Canada and Australia, among others, have not fulfilled the promise to “take the lead” in addressing climate change. In both cases, this has led to a decline in trust with respect to industrialized country promises. At the same time, the middle income countries, notably China, Brazil and India, can no longer clearly invoke the ‘equity’ arguments underlying common but differentiated responsibilities. Thus, the United States at least implicitly now resists the application of the principle as a basis for global environmental governance. The net result is that the global partnership, always fragile, has now unraveled, and we are currently left without an accepted general framework for compromise in global environmental negotiations.

The current erosion of the general framework for shared responsibility in addressing global environmental issues presents a major short- to mid-term problem for global environmental response to the anthropocene. *We must rebuild the terms on which major countries participate in global environmental governance and this new partnership will have to be built on an understanding of multi-polar power and responsibility in managing the planet.* The emergence of new economic (and emitting) powers creates a new political reality. To the United States, Europe and Japan have been added Brazil, Russia and India and the basic underlying assumptions of cooperation have not yet formed in a way that will allow effective management of the anthropocene.

2. THE INSTITUTIONAL ARCHITECTURE FOR GLOBAL ENVIRONMENTAL GOVERNANCE

International organizations² play a particularly important role in international environmental law and policy because of the complex and global nature of many

² "Public international organizations" or "intergovernmental organizations" (IGOs) typically refer to bodies that are created by international agreements among States. The agreement creating the IGO establishes its goals, authority, and procedures. Their governing bodies are generally comprised of State delegates representing the interests of their respective States. IGOs are nonetheless

environmental problems. Transboundary pollution and environmental damage, in which one or more States suffers damage at the hands of another relatively easily identified State, can be taken care of through bilateral negotiations or discrete dispute resolution processes. Transboundary issues are still important, but global environmental issues such as climate change, ozone depletion and biodiversity now predominate. Global environmental issues, in which all or nearly all States may be both causing and suffering environmental damage, are ill-suited to isolated dispute resolution efforts. Such multi-party issues need to be *managed* over time in ways that increase cooperation and coordination among a large number of stakeholders. This task is the responsibility of public international organizations both inside and outside the UN system, as well as bodies created under specific treaty regimes.

No single organization has sole responsibility for the management of global environmental issues. Within the United Nations, environmental issues have largely been seen as one of three co-equal pillars of sustainable development (along with economic and social issues). Thus, environmental issues and the institutions that address them have been placed under the UN Economic and Social Council. Environmental issues have not, with limited exceptions, been viewed as fundamental to security issues and thus only briefly or marginally addressed within the Security Council. *This framing of environmental protection as one of three pillars of sustainable development and neither the foundation for economic and social development nor central to security concerns is one weakness of current global environmental governance as we enter the anthropocene.*

Within the United Nations, the UN Environment Programme (UNEP) is the principal international environmental organization within the United Nations, but it has limited powers and resources. The UN Commission on Sustainable Development (CSD) was created twenty years after UNEP, in part to coordinate and integrate environmental issues with economic and other issues within the UN system. Many other UN organs have responsibility for one or more environmental issues; one study found that no fewer than 44 agencies within the UN system address environment-related issues. In addition, most of the major environmental treaties also have a permanent treaty secretariat with responsibilities for implementing the specific regime (although in several, but not all, instances UNEP serves as the secretariat). Literally scores of other official, semi-official, and private

mission-oriented and develop agendas that may differ from those of their constituent States, typically taking a more proactive role towards international issues than most of their members. Note, too, that just like domestic agencies, IGOs compete for limited resources and political attention, seeking opportunities to expand their authority and resources, often at the expense of other IGOs.

organizations and agencies also work in areas relating to global environmental protection. Given this panoply of institutions with environmental jurisdiction, it is not surprising that issues of coordination and fragmentation plague global environmental governance.

UN Sustainable Development Summitry: Stockholm to Rio+20

A significant feature of global environmental governance are regular high profile summits held by the United Nations that provide a forum for an ongoing global dialogue around environmental protection in the context of sustainable development. The latest, of course, was the Rio+20 Summit, which followed in the footsteps of the 1972 UN Conference on the Human Environment (also known as the Stockholm Conference), the 1992 UN Conference on Environment and Development (referred to as either UNCED, the Rio Conference, or the Earth Summit), and the 2002 World Summit on Sustainable Development (WSSD or the Johannesburg Summit).

These sustainable development summits are often maligned, but they remain important events for forcing governments to periodically review the state of the global environment and our progress (or lack of it) in responding to global environmental change. Although the past two Summits (2002 and 2012) have not resulted in significant new legal instruments or stronger institutions, they have enabled sustainable development to capture global attention at least for a short time and have provided a forum for testing the political will to address certain global environmental issues.

In recent summits (beginning with the Millennium Development Summit in 2000), the governments have focused part of their efforts on setting a finite number of discrete, but ambitious, goals. The eight Millennium Development Goals (MDGs) set in 2000 as well as additional sustainable development goals set in 2002 at Johannesburg have helped to catalyze international attention and coalesce activities around targeted outcomes. Only one of the original MDGs (a commitment to cut the number of people without access to water and sanitation in half by 2015) is likely to be met by the 2015 timeframe, but some progress can be seen in others. Moreover, UNEP and other agencies actively monitor progress toward these goals. Some governments called for a new set of “Sustainable Development Goals” to be announced at Rio+20, but no consensus could be reached. *The governments did agree to consider setting SDGs through a separate process and the use of goals to coordinate and prioritize the actions of various governments and intergovernmental organizations shows some*

promise and could be an important component of future governance around sustainable development.

Also important, the forums provide a high profile venue for the global environment movement both to advocate for broad, systemic change and to showcase public-private initiatives that have the potential for making demonstrable change on a range of specific activities. Some 40,000 activists, journalists and business leaders attended Rio+20 and literally millions followed the conference or participated in it online. By some counts more than 700 commitments and over \$500 billion in pledges were made by all of the stakeholders present at Rio+20. The emergence of a global “sustainability community” is clearly one of the most important developments in recent decades, and the sustainability summits provides a time to both showcase and catalyze this community’s activities.

The sustainable development forums have implications for how global environmental governance may adapt to the challenges of the anthropocene. These UN forums are likely to provide regular opportunities for discussing the broad inter-governmental response to environmental change over time. Also, because they are so broad in their scope, these summits match up at least theoretically with the breadth of the impacts in the anthropocene. Moreover, regularly bringing the global sustainability community together in high profile events will be critical for making progress at the many different—public and private, global and local—levels required to meet the challenge of the anthropocene. Unlike most other elements of global environmental governance, the ambition and scope of the UN sustainability summits thus match up to the scope and extent of the challenges—even if the actual outcomes have not responded to the urgency of the problems.

United Nations Environment Program (UNEP)

UNEP was conceived at the 1972 Stockholm Conference on the Human Environment and created by the UN General Assembly later that year. UNEP became the first UN agency with a specific environmental agenda. Its mission is to "facilitate international co-operation in the environmental field; to keep the world environmental situation under review so that problems of international significance receive appropriate consideration by Governments; and to promote the acquisition, assessment and exchange of environmental knowledge." (U.N.G.A. Res. 2997 (XXVII), 1972). Its present work program focuses on five areas (1) assessing global, regional and national environmental conditions and trends, (2) developing international and national environmental instruments, (3) strengthening institutions for the wise management of the environment, (4) facilitating the transfer of

knowledge and technology for sustainable development, and (5) encouraging new partnerships and mind-sets within civil society and the private sector.

Among the most important of UNEP's functions is its role in organizing and disseminating the scientific evidence of global environmental change. It, along with other organizations such as the World Health Organization, the World Meteorological Organization, the Intergovernmental Panel on Climate Change, and the Food and Agricultural Organization, issue regular reports that have helped the world understand the threats posed by the Anthropocene. UNEP's recent release of its GEO-5 report deftly demonstrates the dire state of the world's ecology. *These science-based efforts provide a vital evidentiary platform on which to build effective management systems for the Anthropocene and must be viewed as one of the successes of the current governance system.*

UNEP has suffered from several persistent challenges. First, it has a relatively narrow and toothless mission: UNEP has always been conceived as a small coordinating body whose mission was to catalyze environmental cooperation within the UN system and member States, not to act directly as an executive agency. Moreover, many functions that one would expect would be housed at UNEP are distributed throughout many other agencies inside and outside the UN. Second UNEP suffers from unpredictable and limited funding. UNEP is heavily reliant on voluntary contributions from donor governments, with direct allocations from the UN accounting for only 3% of UNEP's \$300 million budget. Finally, UNEP is politically weak; as a UN program, UNEP reports to the UN Economic and Social Council (ECOSOC) and has no independent legal authority or personality. UNEP's Governing Council is comprised of 58 governments, who are represented by their environment ministers, themselves relatively weak officials in their own governments.

UNEP's obvious flaws—including the lack of money and political support—make its reform a perennial focus of commentary, particularly in the context of the UN sustainability summits described above. With Rio+20's explicit focus on environmental governance, the focus was once again on how to strengthen UNEP. Despite many ambitious proposals (some of which are discussed below under institutional reform), Rio+20 managed only to affirm governments' commitments to strengthening the role of UNEP "as the leading global environmental authority that sets the global environmental agenda, that promotes the coherent implementation of the environmental dimension of sustainable development within the United Nations system and that serves as an authoritative advocate for the global environment".

The governments also invited the UN General Assembly, to establish universal membership in the Governing Council of UNEP, which is seen as a modest way of demonstrating greater political commitment to the agency.

UN Commission on Sustainable Development

At the 1992 Earth Summit, participants called for the creation of a high-level UN commission to ensure and monitor the implementation of Agenda 21. Responding to that call, the UN General Assembly created the Commission on Sustainable Development (CSD) in January 1993. (G.A. Res. 47/191, GAOR, 47th Sess., UN Doc. A/RES/47/191, 1993). The CSD is a functional commission within the Economic and Social Council, funded through the UN's regular budget. It has 53 member states elected for three-year terms with one-third elected annually. Only member States may vote at the CSD's annual meetings, but other States, representatives of UN organizations and accredited inter-governmental and non-governmental organizations may attend the sessions as observers.

The CSD has a staggering scope but an equally staggering lack of authority. In short the CSD is to monitor the world's progress toward sustainable development, particularly those commitments made in Agenda 21, the 500-page blueprint for sustainability adopted at the 1992 Earth Summit. The CSD organized itself around annual high level discussions of three thematic and cross-cutting themes each year. Though its substantive scope was broad, it had little authority to recommend, let alone compel, actions. Thus, in monitoring the implementation of sustainable development around the world, it relies solely on voluntary self-reporting by States. Both the decision whether to report and the contents of any report submitted are left to the discretion of the States.

Despite continuing critiques that the CSD is long on generalities and discussion but short on specifics and action, such a forum has some value for discussion of progress and challenges in addressing the range of international environmental problems, even if it has little capacity or resources to solve these problems. The CSD's stakeholder dialogue has also been praised by some groups, particularly NGOs, who claim that other UN bodies should model their dialogues on the CSD's inclusive approach. Moreover, the CSD has been effective in bringing to light some notable failures to comply with commitments made at the Earth Summit. Perhaps of most concern to developing countries has been the industrialized countries' failure to provide the promised funding for implementation of *Agenda 21*.

In the run-up to Rio+20, a consensus emerged that the CSD in its current form did not contribute sufficiently to the global pursuit of sustainable development, and that some forum with greater political prominence was needed to ensure the effective integration of the three pillars of sustainable development within the UN system. At Rio+20, the governments “decided to establish a universal intergovernmental high level political forum, building on the strengths, experiences, resources and inclusive participation modalities of the Commission on Sustainable Development, and subsequently replacing the Commission. The high level political forum shall follow up on the implementation of sustainable development and should avoid overlap with existing structures, bodies and entities in a cost-effective manner.” (The Future We Want, 2012; The Rio+20 Outcome Document). The governments could not agree, however, on the precise functions of the new high level forum, providing a laundry list of possible functions that include:

- (a) provide political leadership, guidance, and recommendations for sustainable development;
- (b) enhance integration of the three dimensions of sustainable development in a holistic and cross-sectoral manner at all levels;
- (c) provide a dynamic platform for regular dialogue, and stocktaking and agenda setting to advance sustainable development;
- (d) have a focused, dynamic and action-oriented agenda, ensuring the appropriate consideration of new and emerging sustainable development challenges;
- (e) follow up and review progress in the implementation of sustainable development commitments ...;
- (f) encourage high-level system-wide participation of UN Agencies, funds and programmes and invite to participate, as appropriate, other relevant multilateral financial and trade institutions, treaty bodies, within their respective mandates and in accordance with UN rules and provisions;
- (g) improve cooperation and coordination within the UN system on sustainable development programmes and policies; (The Future We Want, 2012).

The mission and modalities of the high level forum will be negotiated under the General Assembly during the next year or two.

Although the forum will likely be a toothless talk shop for governments, it will also continue to be the primary official location for discussions of sustainable development at least in the interim periods between major sustainability summits. If current trends continue, the equal focus on the three pillars of sustainable development will likely mean that too little attention will be paid in the forum to the fundamental implications of environmental change. On the other hand, *if significant economic and social impacts of environmental change occur (e.g., food shortages, droughts, resource scarcity, etc.) then this high level forum may provide an avenue for dialogue.* It is unlikely to have significant authority to compel or recommend action directly, however.

Treaty Regimes and Secretariats

Treaties create specific legal obligations between those States who have consented to become treaty parties, and they are primary method for creating binding rules of international law in the environmental field. By most estimates more than 700 treaties relate to environmental protection. Although most environmental treaties are bilateral or regional, over 45 MEAs have at least 72 signatories. More than a dozen multilateral environmental agreements (MEAs) have been negotiated in the past few decades and have garnered nearly universal acceptance by countries around the world. *See Table 1 below.* The table also demonstrates the failure to co-locate many of the secretariats, implicitly revealing today's fragmented approach to environmental governance.

A “treaty” is defined as “an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation.” (Vienna Convention on the Law of Treaties). The instrument need not be called a treaty; it can be called an agreement, convention, pact, covenant or virtually any other name; what matters is that the Parties demonstrate their consent to be legally bound. Treaties take on special significance precisely because they legally bind those States that choose to become parties.

For multilateral agreements, consent is typically demonstrated by ratification, which is usually done by depositing an “instrument of ratification” with the United Nations or another designated depositary organization. In many States, a treaty must be approved through domestic political processes before the treaty is ratified. In the United States, Senate ratification requires two-thirds vote. As a result of longstanding political gridlock with respect to international environmental issues, the United States has failed to ratify several major environmental treaties, including

the Kyoto Protocol, the Convention on Biological Diversity and the UN Convention on the Law of the Sea. The US State Department and most of our negotiating partners now actively look for ways to avoid negotiating treaties, because of the widespread understanding that ratification will not be possible. Even after ratification, most treaties must be implemented through national law, monitored for compliance, and enforced.

Table 1: Parties to Global Environmental Agreements

Treaty	Number of Parties	Opened for Signature	Entered into Force	Secretariat
Convention on Biological Diversity	193	1992	1993	Montreal (adm. by UNEP)
Convention on International Trade in Endangered Species	175	1973	1987	Geneva (adm. by UNEP)
Basel Convention on the Transboundary Movement of Hazardous Wastes	173	1989	1992	Geneva (adm. by UNEP)
Montreal Protocol for the Protection of the Ozone Layer	196	1985	1988	Nairobi (adm. by UNEP)
UN Framework Convention on Climate Change (UNFCCC)	194	1992	1994	Bonn
Kyoto Protocol to the UNFCCC	190	1997	2005	Bonn (UNFCCC)
Desertification Convention	193	1994	1996	Bonn
Ramsar Convention on Wetlands of International Importance	160	1971	1975	Gland, Sw. (IUCN)
UNESCO World Heritage Convention	186	1972	1975	Paris (UNESCO)
Law of the Sea Convention	160	1982	1994	New York (UN Div of Ocean Affairs)
Stockholm Convention on Persistent Organic Pollutants	170	2001	2004	Geneva (adm. by UNEP)
Rotterdam Convention on Prior Informed Consent	134	1998	2004	Geneva & Rome (adm. by UNEP and FAO)

In addition to establishing the specific obligations of State parties, most environmental treaties also create their own administrative and policymaking bureaucracy to help the parties fulfill treaty obligations, to help further the treaty's mission, and to provide international environmental governance. These institutions may be permanent or intermittent, and include Conferences of the Parties, Secretariats, and subsidiary bodies including technical or expert committees.

1. Conferences of the Parties. Much like a corporate board of directors, the Conferences of the Parties (CoPs), comprised of the governments who have ratified the convention, are the primary decision-making organs of most global environmental treaty regimes. The CoPs usually occur once every one or two years and conduct the major business of monitoring, updating, revising, and enforcing the conventions. Once an environmental regime has entered into force, the CoP provides the mechanism by which new protocols are adopted and amendments and modifications made. Thus, the CoPs play a crucial role in the vitality and continuing development of environmental regimes, adapting those regimes as new information and changing circumstances arise. For example, amendments and modifications adopted at a series of CoPs have extended both the scope and the extent of reductions in ozone depleting substances under the Montreal Protocol. At the same time, the CoPs increased the effectiveness of the ozone regime by establishing mechanisms for financing technology conversions in developing countries and for addressing non-compliance problems wherever they occur. This ability to evolve over time has been viewed as one of the critical reasons for the Montreal Protocol regime's success.

Through their regular review of the effectiveness of the respective conventions, the CoPs are also able to address scientific developments within the scope of their conventions' particular objective. For example, when elephant stocks plummeted in the 1980s and early 1990s, the biennial meeting of the CITES CoP adopted a moratorium on trade in elephant ivory. *Thus, treaty regimes through their CoPs (and secretariats) do exhibit important flexibility and an ability to manage complex environmental issues over time, at least within the constraints of their respective mandates.*

2. Secretariats. Secretariats are responsible for the day-to-day operations of treaty regimes. The precise functions of the secretariat vary from one treaty to the next. Among the more common functions are: monitoring, collecting information, and reporting on treaty implementation and compliance; preparing for and supporting the Conference of the Parties; promoting scientific research relevant to the treaty's objectives; coordinating with other treaty secretariats or other agencies;

and facilitating communications between the Parties. Some MEA secretariats are part of existing institutions—for example, UNEP administers the secretariats for CITES, the Basel Convention, and the Montreal Protocol—or it may be a stand-alone institution, like the Biodiversity and Climate Change secretariats. Even where UNEP administers the treaty, however, each treaty is a separate institution reporting to a separate set of Parties and following separate rules. In all cases, environmental secretariats generally lack the authority and resources to ensure full implementation and compliance. A typical environmental secretariat has fewer than 20 employees and an annual budget of a few million dollars. The Secretariat for the Montreal Protocol, for example, was budgeted a mere \$3.6 million for 2006 with only six professionals and nine support personnel on staff. These conventions frequently involve implementation in more than 100 or more countries. Thus, secretariats must rely heavily on the parties' cooperation and veracity in monitoring compliance or gathering information under the treaty.

3. *Subsidiary Bodies and Committees.* In addition to secretariats, many environmental treaties also create subsidiary bodies or committees to address specific (and usually technical) issues arising under the treaty. The Biodiversity Convention's Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA), for example, exists to further scientific and technical cooperation among the appropriate conventions and institutions. Its members meet annually to draft proposals for consideration by the CoP. Similarly, the Ramsar Convention has convened a Scientific and Technical Review Panel (STRP), consisting of a panel of individual volunteer experts that advises both the Ramsar Convention Bureau and Standing Committee on scientific matters. The STRP has addressed toxic chemicals, economic evaluation, the Ramsar Database, criteria for identification of wetlands of international importance, and an array of other issues. The STRP presents its reports at Standing Committee meetings, and its representatives may also participate in non-Ramsar technical and scientific meetings.

4. *Implications of the MEA Treaty Regimes.* The treaty regimes are in many ways the centerpiece of global environmental governance. When they function well, they provide some flexibility within the scope of their mandates to address new issues and challenges as they arise. Those that have standing institutional bureaucracies (i.e. secretariats) with professional staff can sustain an ongoing and dynamic dialogue about their specific issue of concern. Treaty regimes also create the institutional framework and policy space for the creation of international "epistemic" communities of experts" networks 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." (Haas, 1992; Keohane and Nye, 1974; Slaughter, 2004). Such expert communities play a fundamental role in framing the cause and effect of, and response to complex problems; can help states find common ground through expert and scientific advice; can help build political support for difficult decisions; and can create solutions outside of formal state-to-state relations that nonetheless further the goal of the treaty.

The primary challenges presented by the existing approach to MEAs are mostly related to the relatively narrow scope of the issues that each regime addresses. The narrow mandates of multiple MEAs exemplifies the atomized, fragmented approach we generally take to environmental issues—each treaty having been negotiated and developed to address a relatively discrete and bounded environmental problem (or at least we viewed the problem at the time as bounded). As a result, broader and more complex interrelated issues that inevitably arise in the future may fall between the cracks of the MEA regimes or may fall in overlapping areas where two or more regimes are active.

This has given rise to a persistent call for increasing coordination and policy coherence among the treaty regimes. Some modest progress has been made in recent years as both the chemical conventions and the biodiversity conventions now meet as “clusters” with the hope that unified meetings of the parties and secretariats will enhance efficiency and coordination. Nonetheless, the mechanisms, procedures and institutions for building coherence and coordination between the MEAs are only in their infancy, and more fundamental efforts to consolidate the conventions are not close to gaining sufficient political support to overcome the inertia of the existing fragmented system.

Fragmentation and narrow mandates are only two of the issues plaguing the MEA treaty regimes. The regimes are also under-resourced for fulfilling their missions, and fulfilling those missions will only be more difficult in the anthropocene era. Biodiversity conservation or the conservation of wetlands, for example, will become much more difficult in the face of future climate change.

Perhaps the most important impediment to the treaty regime model meeting the challenges of the Anthropocene, however, is the model’s heavy reliance on state consent. To be sure, the climate change regime is sufficiently broad in scope to address at least one of the major planetary changes we are facing. The regime can cover virtually all sources and impacts of climate change, and the regime is heavily resourced, but significant progress in the regime’s evolution has been stalled to a large extent by the need to have consent by all parties. The difficulty in reaching

consent with 100+ countries in the room over issues as complex as climate change is a big reason for the inadequate outcome of recent climate negotiations. As the issues in the Anthropocene will be no less complex, we may need to look for forums and processes that require less than universal consent of all the parties.

International Finance Institutions

International financial institutions (IFIs), such as the International Monetary Fund (IMF) and the World Bank, play significant, albeit indirect, roles in international environmental governance.³ First, through project financing and adjustment lending, such institutions provide substantial financial support for economic development, often in ways that profoundly affect the development paths of borrowing countries. At the same time, these institutions have been largely unwilling or unable to move from traditional development to "sustainable" development models. Critics question both the scale and effectiveness of their assistance, particularly the top-down approach to development they typically promote. These concerns have led environmental organizations and other stakeholders to promote a "do no harm" agenda at the IFIs, an agenda that emphasizes strong environmental and social standards, increased transparency and enhanced accountability.

Second, many financial institutions, including most notably the World Bank and the Global Environment Facility (GEF), are central players in the successful implementation of international environmental or sustainable development commitments. In this context, the issue becomes how to increase funding for environmentally beneficial projects. This proactive, "do-good" agenda tries to use the IFIs as international delivery mechanisms for sustainable finance.

1. *IFIs, Globalization and the "Do No Harm Agenda.* The IFIs are widely viewed as major agents in the push towards globalization. Their financial muscle as well as their policies and intellectual leadership are squarely behind the broader globalization agenda. Many see the World Bank and IMF as agents for pushing the

³ The World Bank and IMF are considered "specialized agencies" within the UN System. This means that they are autonomous organizations with their own governance structures, treaties, membership and specialized missions. Specialized agencies do not report directly to the United Nations, but are expected to coordinate their actions through an agreement with the UN Economic and Social Council (ECOSOC). Other examples of specialized agencies with some relationship to global environmental issues include the World Meteorological Organization (WMO), Food and Agriculture Organization (FAO), World Intellectual Property Organization (WIPO), and the UN Educational, Scientific and Cultural Organization (UNESCO).

neo-liberal economic model complete with lower trade barriers, privatization, deregulation, and export-oriented development paths. From this perspective, the World Bank and IMF's primary goal is to create a friendly climate for foreign investment. The IFIs argue such increased foreign investment will lead to broader poverty alleviation, while critics argue such a strategy primarily benefits foreign investors and developing country elites, thus widening the gap between the world's rich and poor.

Regardless of their impact on helping the poor, the World Bank and other IFIs are primarily focused on the economic aspects of sustainable development, with environmental harm seen most of the time as a potential externality that must be managed. Environmentalists have argued, often successfully, for the adoption of environmental and social "safeguard" policies. These policies and procedures guide the conduct of Bank staff in preparing and implementing Bank projects, require the integration of environmental and social issues in project planning, and provide for specific protection for vulnerable groups and their environment. The Bank's safeguard policies are not only important to the extent that they constrain and regulate the activities of the World Bank, but they have also influenced the development of environmental policies at other financial institutions, including the policies of the International Finance Corporation, the regional development banks, export credit agencies and even commercial banks through the Equator Principles. The IFC's performance standards, in particular, have become probably the most widely accepted set of environmental standards for international project finance.

As we enter the Anthropocene, the primary problem with the environment-as-externality approach is it fails to reflect the environment as a crucial input into development. Environmental services and natural planetary cycles need to be recognized more fully in the IFI's development approach. To some extent, this has fueled an explicit goal of civil society to 'mainstream' environment in to the IFIs' operations, but progress over the past two decades in this regard has been slow. Agreements at Rio+20 to expand natural resource and environmental accounting could be an important step in more fundamentally shifting the environmental approach of the IFIs.

2. *Sustainable Development Financing.* The World Bank remains among the most important sources of financial resources to environmental projects. The Bank employs over 300 senior environmental staff members. According to the Bank, it provided more than \$2 billion in environmental lending in FY2005, and at the end of FY 2005 approximately 11% of the Bank's active portfolio, amounting to \$10.7 billion, had "environmental content." About 60% of the total related to pollution

management and water resource management. Regional development banks also provide significant funding to support environmental-related projects.

Created in 1991, the Global Environment Facility (GEF) is the primary mechanism for providing financial assistance to developing countries to address specific *global* environmental priorities. The GEF is the largest source of international grant funds (as opposed to loans) available for environmental protection. It provides "new and additional" funding to meet the agreed full "incremental" cost of measures in six focal areas: climate change, conservation of biological diversity, protection of international waters, ozone depletion, desertification and persistent organic pollutants (Instrument for the Establishment of the Restructured Global Environment Facility, Preamble, 1994).

The GEF also operates as a primary financial mechanism for the Climate Change Convention, the Biodiversity Convention, the Desertification Convention and the POPs Convention. The respective Conferences of the Parties establish eligibility criteria for the GEF to apply in making grants to Parties under the respective treaty frameworks. As of 2011, the GEF had provided \$10.5 billion in grants and leveraged \$51 billion in co-financing for over 2,700 projects in 165 countries.

In addition to GEF, countless other funding mechanisms have proliferated under various environmental regimes and initiatives. A short illustrative list includes the Montreal Protocol Fund, the Global Climate Fund, the Climate Investment Fund, the Adaptation Fund, the Clean Development Mechanism, the Forest Carbon Partnership Facility, and UNEP's Environment Fund. To these can be added significant environmental funding provided by the World Bank and regional development banks.

Although the number of different funding mechanisms is impressive, the total amount of environmental financial assistance available through governmental channels is not. Donor countries have seriously lagged behind their commitments since the 1992 Earth Summit, and the availability of funding is a major issue in every international environmental discussion. Commitments under the climate regime, for example, include commitments that \$100 billion of new funding will be available per year by 2020. Actual resources are not on track to match those pledges. On the other hand, private sector investments in sustainability have increased and quite clearly dwarf investments from government sources. Public-private partnerships, too, are new and important sources of funding. Some

estimates put the total amount of financing committed at Rio+20 (including from the private sector) at nearly \$500 billion.

In addition to the scale of funding, the most important persistent problem for sustainable development financing in the global arena is the difficulty in coordinating and prioritizing funding across all of the various funding mechanisms. There is duplication with redundant administrative costs, sequencing problems in how funding is provided, and a generally ad hoc and atomized approach to funding. The lack of coordination and atomized approach also leads to anomalies where funding for one global priority issue can actually undermine progress in other global issues. (Investments in forest management for climate purposes may, for example, undermine biodiversity goals if not done with sufficient environmental and social safeguards.) Funding also tends to be top-down with inadequate buy-in from recipient countries.

The World Trade Organization and Environmental Dispute Resolution

The past two decades have witnessed an almost blinding pace of international economic activity around the planet. In 2008, world exports of goods and commercial services topped \$16.2 trillion and \$3.7 trillion, respectively. The international trade of goods and services now makes up about one quarter of global GDP. This rapid growth has been driven in large part by international efforts to remove barriers to the flow of goods, services, and capital. The growing economic interdependence among nations created by such liberalization has important consequences for the relationship between the global economy and the global environment.

To some, free trade is a paramount value in international relations. To others it is a threat against competing and equally important values, including that of the environment. Regardless of where one stands on the virtues of free trade, what is certain is that the World Trade Organization and to a lesser extent regional trade organizations now play an important governance role with respect to the environment. In particular, the WTO Dispute Settlement Body and the Appellate Body have decided a significant number of disputes involving allegations that environmental regulations have unduly infringed on free trade principles. Although many observers believe that these decisions are increasingly balanced with respect to the environment, the basic structure of these disputes means that trade experts will be applying trade rules to evaluate the effectiveness or necessity of environmental measures. The potential for such challenges undoubtedly handicaps and chills national efforts to address the environmental impacts of globalization.

The same is true of the recent rise in investor-state arbitrations in the context of multilateral and bilateral investment agreements. In increasingly common arbitration proceedings, investors can bring claims against states for regulations, including environmental regulations, that the investors believe have harmed their private property rights. The arbitrators who hear these cases are typically not environmental experts, and the rules that apply to the cases are set forth in treaties aimed primarily at promoting investment.

The role of WTO dispute resolution and investment arbitration in environmental governance is enhanced by the lack of any similar dispute resolution mechanism in the environmental field. With the exception of the Law of the Sea Convention, none of the environmental treaties have mandatory judicial dispute resolution mechanisms. Moreover, environmental disputes have been relatively rare at the International Court of Justice, with only three ICJ cases thus far that have explicitly addressed international environmental law. Jurisdiction in most ICJ cases also requires the consent of both parties.

The asymmetry in power and jurisdiction of trade and investment dispute systems as compared to environmental institutions means that the primary venue for judicial decisions on sustainable development (i.e. the integration of environment and economy) are forums where claims can only be brought on behalf of economic interests and the rules of decision are under economic-oriented treaties. There is no remotely equivalent process to advance environmental interests in international governance.

Non-UN Venues: The G-8, G-20, OECD, Major Economies Forum

Increasingly in the past decades, critical sustainable development issues have been discussed and coordinated through other forums not directly linked to the United Nations. Thus, for example, first the G-8 and then the OECD promoted environmental standards for export credit agencies; the G-20 has called for the phase-out of fossil fuel subsidies in the medium term; and the Major Economies Forum has provided a forum for discussing climate change among major economies/emitters. Although managing the global economy is the primary focus of these forums, increasingly that has meant addressing environmental or sustainable development issues.

These forums are potentially important because they generally attract high-level political participation, involve the most important and powerful economies in the world, and do not require the painstaking and numbing process of reaching consensus among a large number of countries as is the case in UN processes. For

these reasons, we would expect that these forums will be important for addressing the challenges of the Anthropocene. Barring the creation of any other permanent institution aimed at addressing global environmental change, these forums may provide the most nimble and politically capable forums. Their relative informality, compared to the UN processes, allow for a wide range of approaches to be developed and coordinated in response to new challenges as they arise. Until now, these forums have been somewhat reactive to environmental challenges as they relate to the economy, and like other economic-oriented institutions approach environmental harm as an unintended output of the economy; they do not see healthy environmental services as an economic input that must be proactively managed and maintained for our future economic security.

3. FORMAL CALLS FOR REFORMING GLOBAL ENVIRONMENTAL GOVERNANCE

To many observers, the present environmental governance system is already inadequate to meet the global environmental challenges we now face, let alone the more profound challenges that are coming with the Anthropocene. For one thing, the concept of sustainable development, with its inherent emphasis on integrating both environmental and developmental concerns, has meant that literally dozens of international institutions and treaty secretariats have laid some claim to a role in environmental protection. And yet there is no clear mechanism for coordination, cooperation and leadership. As Dan Esty puts it, the international organizations charged with managing environmental issues "have been given narrow mandates, small budgets and limited support. No one organization has the authority or political strength to serve as a central clearinghouse or coordinator." (Esty, 1993; Berstein and Ivanova, 2007). Moreover, we have no mechanism for systematically (1) identifying or filling policy gaps addressing overlaps in the fragmented system, (2) responding to new challenges identified by environmental science, or (3) coordinating on an equal footing with the activities of the economic or social institutions. Every major policy initiative requires revving up a new and discrete negotiating process, dependent on gaining and maintaining the consent of all of the states.

Centralization might offer real benefits through improved coordination among the fragmented convention secretariats and IGOs. Dan Esty has aptly illustrated the problem:

"UNEP, CSD, UNDP, WMO, as well as the OECD and the World Bank, have climate change programs underway with little coordination and no sense of strategic division of labour. With

entities stretched from Nairobi to Geneva, focus is dissipated, efforts splintered, responsibilities scattered, funding squandered, and accountability lost. Priorities are not set in a coordinated or systematic fashion nor are budgets rationalised." (Esty, 2000).

By contrast, if one looks at how international labor or international trade issues are addressed, one can see a different possibility for environmental governance. There are no functionally discrete secretariats in either the labor or trade area. The International Labor Organization and the WTO, respectively, administer multiple labor and trade treaties. The standing bodies at those organizations act to ensure coordination and to help fill in gaps or address issues as they emerge. Restructuring international environmental governance in a similar way may offer additional benefits, as well. Economies of scale can improve the quality and size of financial and technology transfers to developing countries, and reduce the costs of participating in the so many unconnected meetings. A centralized environmental body could also improve compliance through enhanced monitoring and a common reporting system for all environment-related issues.

Calls for strengthening environmental governance have engendered some political support, but are far from having what is needed. For example, a strong effort was put forward at Rio+20 by the African bloc and supported by others to upgrade UNEP to a specialized agency with the same status as other UN agencies like the WHO or WMO or to create a new World Environment Organization with new authorities. These efforts did not prevail, in part because many governments simply do not want a more powerful environmental organization. Moreover, upgrading UNEP in this way would require negotiation of a treaty among the governments, and no one believes the US Senate would ratify a treaty empowering a new global environmental organization. And a UNEP or World Environment Organization without the United States as a member would be crippled from the outset.

Upgrading UNEP or establishing a new World Environment Organization would certainly provide an opportunity to enhance global environmental governance in ways that could better prepare us for the Anthropocene. Such a WEO could, for example, consolidate the many MEA treaties under one roof and provide a strong institution for working with the international economic institutions on a more equal footing. A standing organization could also in theory include a policy-making function that could respond more quickly to environmental challenges as they emerge, providing a permanent venue and procedures for continual dialogue relating to environmental

change. It could also develop a compliance monitoring and dispute resolution system that could hold states more accountable to their commitments in the environmental sphere.

Such a major governance reform would certainly be welcome for responding to the Anthropocene, but current political realities make such a change unlikely in the near term. As mentioned above, solutions that require ratification by the United States are met with skepticism both at home and abroad. Moreover, political support for stronger international environmental institutions is not widespread in the face of global deregulatory values and a fear of global environmental governance. Finally, we should recognize that even substantial reform of global environmental governance that is restricted to changes in inter-governmental architecture may miss the more fundamental opportunities that exist in embracing civil society and the private sector in new forms of governance. This is discussed below.

4. NEW GOVERNANCE MODELS: A CLOUD OF COMMITMENTS

The formalistic, non-participatory, consensus-based nature of the international law system has hindered efforts to formulate an effective international response to our global environmental crisis. International law is not sufficiently developed to hold States accountable for environmental damage. Moreover, the primary behavioral changes needed to address global environmental challenges are frequently those of corporations, consumers and other private actors—not necessarily governments. Private actors are only indirectly the subject of treaties or other forms of international environmental law and thus escape direct accountability under traditional state-centered approaches.

The inherent limitations of a state-centered architecture for addressing global environmental challenges have left room for innovation and more flexible models of ‘new governance’. These new approaches are inclusive, frequently relying on multi-stakeholder processes that may include not only governments, but international organizations, private sector companies, civil society organizations and community groups, all sitting down at the same table. (Maatli and Woods, 2009). Broadly speaking these initiatives may be both policy-oriented focused on creating norms or action-oriented aimed at addressing a specific problem with concrete action.

1. New Governance Norms. Environmental standards now come in many forms, targeting specific projects, corporations, industry sectors or general behaviors. Some of these international standards may be wholly voluntary, require public reporting,

or be part of elaborate certification systems that include third-party monitoring. Others may be issued as standards or rules by international organizations and be implemented and enforced through their operations. Examples of these normative measures include: the OECD Guidelines for Multinational Enterprises, the Equator Principles requiring environmental and social assessments in project finance activities of large commercial banks, the Forest Stewardship Council or Marine Stewardship Council certification processes that try to set forth standards for forest and fisher supply chains, respectively, or the International Cyanide Code developed by the International Council on Mining and Metals.

The above are just a few examples of international environmental standards that now number in the hundreds, and apply in a variety of ways to a wide range of actors in a wide range of industry or resource sectors. Although strictly speaking these new forms of global environmental norms are not international law, they may nonetheless be prescriptive and enforceable in some contexts. Whether an environmental provision is found in a treaty, for example, may be relevant to whether it is binding international law with respects to State Parties—but other factors may be more important for whether it effectively helps to address an environmental problem. For example, the IFC environmental and performance standards are clearly not binding law, but they are standards issued by an international organization that may be enforceable when included as conditions in loan contracts. Similarly, retail stores may require in their supply chain contracts that all forest products be FSC certified. In this way, such standards blur the sharp lines between public and private law, and between binding and non-binding norms. In the future, more relevant than the form of the underlying instrument and whether states have consented to it may be whether it is written in clearly enforceable terms, whether a reporting or monitoring process is attached to the provision, and whether some form of sanctions are available.

2. Partnerships for Sustainable Development. In addition to efforts to develop norms or standards, many of the new governance initiatives are aimed at establishing partnerships or initiatives that seek to catalyze actions on a particular issue. These initiatives run the range from single companies announcing that they will agree, for example, to go carbon neutral or eliminate the use of toxic chemicals to complex, public-private partnerships that span multiple countries, intergovernmental organizations, civil society organizations, and private businesses and entail commitments of billions of dollars. The common denominator in these initiatives and partnerships are that they are action-oriented, and the best ones have specific targets and timetables. Action-oriented announcements at Rio+20

numbered in the hundreds and involved commitments of more than \$500 billion by some estimates.

These initiatives, particularly the more comprehensive public-private partnerships often have significant government involvement and offer a new governance model. Beginning with the 2002 Johannesburg Summit, the United Nations has embraced these partnerships as key vehicles for achieving the Millennium Development Goals and other sustainable development commitments. They were also officially recognized at Rio+20, where the governments:

“welcome[d] the commitments voluntarily entered into at Rio+20 and throughout 2012 by all stakeholders and their networks to implement concrete policies, plans, programs, projects and actions to promote sustainable development and poverty eradication. [The governments invited] ... the Secretary-General to compile these commitments and facilitate access to other registries that have compiled commitments, in an internet-based registry. The registry should make information about the commitments fully transparent and accessible to the public, and it should be periodically updated.”

3. *Building Accountability in New Governance Models.* Much of the debates around both Johannesburg and Rio+20 have been about how to build accountability around these voluntary initiatives. Accountability in this context is unlikely to be a formal enforcement or compliance model, but will more likely depend on clarity in setting targets and timetables, transparency in reporting results, independent verification efforts, public naming-and-shaming, and in some cases supply chain contracts and similar private law agreements. Through dynamic and ongoing monitoring and reporting processes, these initiatives hold some promise for being more than empty rhetoric. Although in both Rio+20 and the previous Johannesburg summit, the governments have refused to endorse any form of accountability or monitoring system with respect to these voluntary commitments, governments through the United Nations or otherwise could step up their role by conditioning their participation or endorsement on real procedures for accountability.

The new governance models may not ultimately depend on the full participation of government however. Indeed, with the advent of information technology as well as technology for monitoring environmental change, accountability measures (like the substantive initiatives themselves) may ultimately develop in a more bottom-up way. Tired of waiting for governments, Jacob Scherr

of the Natural Resources Defense Council has led the creation of what he calls a “cloud of commitments” that has emerged from Rio+20 (<http://cloudofcommitments.com>). This registry of commitments records or links to all public or private commitments related to sustainable development and he plans to monitor progress over time through self-reporting and independent verification by civil society.

5. CONCLUSION: IMPLICATIONS AND CONSIDERATIONS

The following are some initial considerations and implications that emerge from the above survey of global environmental governance. In general, the scale and speed of current and projected environmental change presents unprecedented challenges for the global community and will require reshaping and strengthening our global environmental governance system. The state-centered, consent-based, fragmented character of current global environmental governance is ill-equipped for the pro-active management of disruptions in complex, planetary-wide cycles and global resource shortages. The likely policy responses to these disruptions and shortages will also trigger new demands for international cooperation. These new demands will require more urgent, nimble, proactive and effective governance responses than we have generally seen under the existing governance system. These general points are elaborated more fully below.

Rethinking Environmental Protection as a Pillar of Sustainability to a Foundation of Security. The global consensus and approach that environmental issues should be treated as one of three co-equal pillars of sustainable development is flawed as it ignores the critical role that the natural environment serves as the foundation for all human economic and social activity. This becomes clearer and more urgent, as we enter the Anthropocene and an era of shortages in environmental resources. We need to replace the three pillars of sustainable development with a conceptual framework that recognizes the threats to economic security and survivability that are presented by environmental change. Such a new conceptual framework should reflect “security”, “survivability” “resilience,” and “restoration” more than “development” or “integration”.

From State Sovereignty to Common Concern. The primacy of state sovereignty in global environmental governance must be eroded, so that the default position in matters of global environmental change is one of recognized common concern and international cooperation. Global environmental governance, like all international law, is based on the fundamental principle of state sovereignty—specifically all countries have autonomy to make their own environmental and developmental

policies and decisions within their own territories. This primacy presumes that transboundary impacts from national-level development policies would be discrete and manageable through specific negotiations or dispute resolution processes. In the Anthropocene the scale of our domestic economies now collectively have global impacts that inherently raise questions of common concern and require global cooperation and management.

The Need for a New Global Partnership for Managing the Anthropocene. The current erosion of the general framework for shared responsibility in addressing global environmental issues presents a major challenge for global environmental response to the Anthropocene. We must rebuild the terms on which the planet's major economic powers (and the major contributors to environmental change) cooperate. A new partnership will necessarily involve new players. To the United States, Europe and Japan we now must add the BRIC countries. Yet, the basic underlying assumptions of cooperation that served us in the past decades (principles like common but differentiated responsibilities) will not form the basis for a future partnership that must reflect multi-polar economic power and responsibility in managing the Anthropocene.

Elevating Environment inside the United Nations. The scale and pace of global environmental change in the Anthropocene will require rethinking how environmental issues are addressed in the United Nations. As noted above, environment should not be seen as one pillar of sustainable development but should be seen as the foundation for economic security and social progress. This suggests environmental change issues should not be primarily relegated under the UN Economic and Social Council (ECOSOC), but be elevated more frequently as a security issue under the auspices of the UN Security Council. It also suggests elevating and upgrading the environmental agency (i.e. UNEP) in ways that have yet to prove politically possible.

Addressing the Ad Hoc, Fragmented Approach and Narrow Mandates that Characterize Global Environmental Governance. It is well recognized that the existing approach to governance suffers from too many disconnected institutions with relatively narrow environmental mandates. The result is an atomized, fragmented approach that does not allow for addressing the basic interconnectedness and complexity of global environmental problems. This will become even more acute in the Anthropocene as issues relating to global ecological cycles and resource shortages will require institutions with broader scopes and stronger forms of inter-agency coordination.

Moving away from the State Consent Model. Related to the problems of fragmentation and to the discussion of sovereignty above is the failure of today's global environmental governance to build processes that do not rely on the consent of most of the world's countries. The universal participation of most countries in the major environmental treaties and the reliance on the UN General Assembly for broader pronouncements means many environmental issues are discussed in forums that require broad state consent—and thus can be hijacked or gridlocked by a relatively few countries. Heavier reliance on smaller country blocs—the G-20, G-8 or ad hoc coalitions of the willing—will need to be more central features of global environmental management in the Anthropocene. In addition, a new institution with the ability to make decisions or hold negotiations on an ongoing basis (for example as is the case in the WTO or ILO) may also be warranted.

Strengthening Financial Response to the Anthropocene. The mechanisms for international financial support for sustainable development mirror the fragmentation, duplication and narrow mandates that exist generally in global environmental governance. Centralizing and improving the effectiveness of this aspect of governance is also important. The current approach is to treat environmental issues at best as necessary costs of development projects. The problem with this environment-as-externality approach as we enter the anthropocene is it fails to reflect the environment as a crucial input into development. Environmental services and natural planetary cycles need to be recognized more centrally in the IFI's development approach. Nascent efforts to green accounting systems are a step in this direction.

Addressing the Asymmetry between Trade/Investment/Economic Governance and Environmental Governance. Economic, investment, trade and finance institutions are far stronger than the environmental institutions. Most environmental issues are seen through the prism of these institutions as externalities that must be managed. Disputes between trade/investment on the one hand and environment on the other are always resolved in trade/investment forums by trade/investment experts. This institutional asymmetry harms the ability to address global environmental change as a 'co-equal' pillar to economic and social progress, let alone to address the fundamental role environmental resources play to our economic security.

State-based Systems of Governance Must Be Supplemented by New Poly-Centric Forms of Governance. Inherent limitations of a state-based architecture for addressing global environmental challenges have left room for innovation and more flexible models of 'new governance'. These new approaches are inclusive, frequently

relying on multi-stakeholder processes that may include governments but also international organizations, private sector companies, civil society organizations and community groups, all sitting down at the same table. These hybrid or “poly centric” forms of governance, as Elinor Ostrom called it, seek to leverage the relationships, resources and expertise among multiple nodes of authority to achieve regulatory or policy goals. This suggests a bottom-up, not top-down, approach to governance and emphasizes linkages, connectivity and shared goals.

Leadership will still be required from governments but not necessarily in the form of laboriously negotiated texts of binding commitments between States. Rather leadership will be wielded in ways that take advantage of the resources, expertise and energy brought by other actors. It will also build on domestic level actions taken by countries in concert. One recent example of such an approach was the 2012 launch of the Climate and Clean Air Initiative by the United States, Canada, Bangladesh, Mexico, Sweden and Ghana to reduce “fast-acting climate forcers” such as methane (<http://www.state.gov/secretary/rm/2012/02/184061.htm>). Many of the commitments in NRDC’s Cloud of Commitments mentioned above also reflect this model. This bottom-up approach has promise for building a dynamic governance system that harnesses the energy and actions from a wide range of actors. But leadership and a global architecture will also be required to ensure the commitments are fulfilled and that they are sufficient in the aggregate to meet the hardest challenges of the Anthropocene.

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