

Globalization and Environmental Protection: a Global Governance Perspective

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INTRODUCTION

Globalization has ushered in an era of contrasts – of fast-paced change and persistent problems. It implies a growing degree of interdependence among economies and societies through cross-country flows of information, ideas, technologies, goods, services, capital, finance, and people. It has challenged the traditional capacity of national governments to regulate and control. The rapid pace of economic integration – a central force behind and a manifestation of globalization – has led to interlinked world markets and economies demanding synchronization of national policies on a number of issues. One dimension of this coordination concerns the environment. From shared natural resources such as fisheries and biological diversity, to the potential for transboundary pollution spillovers across the land, over water, and through the air, we now understand that governance defined solely by the traditional notion of national territorial sovereignty cannot protect us from global-scale environmental threats. An effective response to these challenges will require fresh thinking, refined strategies, and new mechanisms for international cooperation.

This paper explores the relationship between globalization and the environment and seeks to answer four key questions: (1) How does globalization affect the environment? (2) In parallel, how does national environmental regulation affect globalization, particularly efforts to promote economic integration? (3) What is the logic for collective action at the global scale? Or, in other words, what are the challenges that national governments face for which a degree of international cooperation is useful or even necessary? (4) What institutional structure is needed to manage interdependence and to maximize the opportunities that globalization provides?

Globalization can have both positive and negative effects on the environment. It can exacerbate environmental problems as well as provide new means for addressing them (Anderson, Cavanagh, and Lee 1999; Jobs 2003; Speth 2003). Environmental choices can also shape the path of globalization as national regulatory choices may act as barriers to liberalized trade or trigger a convergence toward higher international standards. The range of recent “trade and environment” disputes at the World Trade Organization (WTO) – over beef hormones, regulation of asbestos, genetically modified food, shrimp fishing that kills endangered sea turtles, etc. – highlights this tension. The challenge is thus to establish an appropriate mix of competition and cooperation, market forces and collective action, economic prosperity and environmental protection.

Our central argument is that to maximize globalization’s potential for good across the world requires a fundamental reform of global governance structures in general and the international architecture for environmental cooperation in particular. Building greater environmental sensitivity into the multilateral trade and financial institutions is necessary but will not be sufficient. An equally rigorous and urgent reform of the global environmental governance architecture is imperative. We propose the creation of a Global Environmental Mechanism

(GEM) to reveal global-scale environmental risks, facilitate bargaining and negotiation, support sound management of the global commons, and promote the dissemination of best policy practices and new technologies.

GLOBALIZATION EFFECTS ON THE ENVIRONMENT

Globalization presents a mixed blessing for the environment. It creates new opportunities for cooperation but also gives rise to new issues and tensions. For example, liberalized trade may generate economic growth, which, in turn, may translate into increased pollution, including transboundary spillovers of harm (“super externalities”) and unsustainable consumption of natural resources (Dua and Esty 1997). Likewise, economic integration strengthens competitive pressures across national borders that may help consumers by lowering prices, improving service, and increasing choice (Bhagwati 1993, 2000). But these same pressures constrain national government capacities to regulate and necessitate intergovernmental coordination of domestic policies as well as cooperation in the management of the global commons. Without effective international-scale governance, globalization may intensify environmental harms wherever regulatory structures are inadequate (Nordstrom and Vaughan 1999).

Minimizing Negative Impacts

Economic theory contends that the free market can be expected to produce an efficient and welfare-enhancing level of resource use, production, consumption, and environmental protection if the prices of resources, goods, and services capture all of the social costs and benefits of their use (Anderson 1992, 1998; Panayotou 1993). However, when private costs – which are the basis for market decisions – deviate from social costs, a “market failure” will occur resulting in allocative inefficiency as well as suboptimal resource use and pollution levels. Intensified international trade and the competitiveness pressures it generates can wield deleterious impacts on environmental quality, as market failures are a hallmark of the environmental domain. Many critical resources such as water, timber, oil, fish, coal, etc. are underpriced. Ecosystem services such as flood prevention, water retention, carbon sequestration, and oxygen provision often go entirely unpriced. Because underpriced and unpriced resources are overexploited, economic actors are able to spill onto others all or part of the environmental costs they generate and environmental strains are exacerbated.

Another (and related) concern is that freer trade will lead to competitive pressures that will push down environmental standards. A regulatory “race toward the bottom” might occur as jurisdictions with high environmental standards relax their regulations to avoid burdening national industries with pollution control costs higher than competitors operating in low-standard jurisdictions (Klevorick 1996; Esty 2001). While there is little evidence that standards are dropping, the real concern is not about a literal race to the bottom. Rather, the concern arises from

the possibility that economic integration will create a regulatory dynamic in which standards are set strategically with an eye on the pollution control burdens in competing jurisdictions. The result may be a “political drag” that translates into suboptimal environmental standards at least in some jurisdictions (Dua and Esty 1997). These effects might involve not only weakened environmental laws, but perhaps more importantly, lax enforcement of existing rules, or standards not strengthened as much as they would have been.

Diversity in circumstances generally makes uniform standards less attractive than standards tailored to the heterogeneous conditions that exist (Mendelsohn 1986; Anderson 1998). But not always. Divergent standards across jurisdictions may impose transaction costs on traded goods that exceed any benefits obtained by allowing each jurisdiction to maintain its own requirements. Upward harmonization (a “race to the top”) may also occur (Vogel 1994). But this logic only applies to product standards. Standards that relate to production processes or methods are not subject to the same market pressures. Yet, how things are produced matters. Production-related externalities cannot be overlooked. For example, semiconductors manufactured using chlorofluorocarbons contribute to the destruction of the ozone layer. Where international environmental agreements are in place, as with the Montreal Protocol on the protection of the ozone layer, trade rules should be interpreted to reinforce the agreed-upon standards. Recrafted trade principles that accept the legitimacy of environmental rules aimed at transboundary externalities would make global-scale trade and environmental policies more mutually reinforcing and reduce the risk of the trade regime providing cover for those shirking their share of global environmental responsibilities.

Maximizing Positive Effects

Expanded economic growth and trade can be broken down into four categories. Scale effects refer to increased pollution and natural resource depletion due to increased economic activity and greater consumption. Technique effects arise from the tendency toward cleaner production processes as wealth increases, and trade expands access to better technologies and environmental “best practices.” Income or wealth effects appear when greater financial capacity results in more resources being invested in environmental protection and creates demands for greater attention to environmental quality. Composition effects arise as the economic base evolves toward a high-tech and services-based economy involving a shift in preferences toward cleaner goods. The overall environmental impact of economic growth depends on the net result of these four effects. If the technique, income, and composition effects overwhelm the negative scale effect of expanded activity, then the overarching impact will be positive (Grossman and Krueger 1995; Selden and Song 1994; Shafik 1994; Antweiler, Copeland, and Taylor 2001).¹ For some issues and some levels of development the gains seem to outweigh the losses.

¹ In effect, the goal is to shorten the direction and flatten the amplitude of the environmental Kuznets curve.

For example, free trade appears to lower sulfur-dioxide concentrations. Income effects in this case outweigh scale effects. As a recent study by Antweiler, Copeland, and Taylor (2001) shows, a 1-percent increase in the scale of economic activity raises pollution concentrations by 0.25 to 0.5 percent but the accompanying increase in income drives concentrations down by 1.25-1.5 percent via a technique effect. However, it appears that expanded trade and economic activity may worsen environmental conditions in other cases (Esty 2001). Regional and global environmental harms, for example, exhibit positive correlation with rising incomes. When harms can be spilled onto other countries or the commons, there is little incentive to pay the costs of abatement since much of the benefit will accrue to citizens in other jurisdictions (Dua and Esty 1997).

Economic integration has broader economic and social impacts. Increasing interdependence often leads to a sense of community that builds a foundation of shared values and gives citizens a basis for demanding that others with whom they trade meet certain baseline moral standards, including a commitment to environmental stewardship. As economic integration broadens and deepens, the scope of demands that citizens feel should be encompassed within the set of baseline standards grows. The process of parallel economic and political integration will not always be smooth. However, creating a sense of community will be necessary if countries wish to deepen their economic ties. This dynamic may create tensions as some countries, particularly those in the developing world, may have an expectation of complete national sovereignty in setting their own environmental standards. But the idea that environmental policy can be made in a political vacuum and be immune from external pressures misunderstands the imperatives of deepening economic integration. At the same time, developed nations which believe that their moral preferences should be accepted by others without question will find themselves facing a major backlash. In sum, absent a solid political foundation, including agreement on how to address shared environmental challenges, the drive for economic integration will falter.

ENVIRONMENTAL EFFECTS ON GLOBALIZATION

Just as environmental protection efforts will be shaped by the path of globalization, environmental choices may affect the course of globalization, particularly efforts to liberalize trade and investment flows. At one extreme, a rigid harmonization of policy approaches and regulatory standards could run roughshod over the diversity of environmental circumstances, endowments, and preferences. At the other extreme, uncoordinated national environmental policies might become non-tariff barriers to trade that obstruct efforts to open markets. Deeper economic integration makes countries more sensitive to the regulatory choices and social policies of their trade partners. In the 1970s, when China's trade with the United States totaled less than \$1 billion a year, few US citizens cared about China's labor or environmental policies. Today, as China emerges as a major trade partner and competitor – and US-China trade has increased almost 100-fold to \$92 billion in 2002 – these choices seem much starker. Thus, a key focus of

trade policymaking centers on non-tariff barriers to trade and the need for a “level” playing field in the global marketplace.

Environmental Standards

Because many domestic regulations could act as non-tariff barriers to trade, trade agreements now routinely include market access rules and regulatory disciplines. Public health standards, food safety requirements, emissions limits, waste management and disposal rules, and labeling policies all may shape trade flows. For example, the EU import ban on genetically modified foods has led to a 55 percent decrease in U.S. corn exports to Europe since 1998 (United States Trade Representative 2003). Venezuela objected to the discriminatory approach of the reformulated gasoline provisions of the U.S. Clean Air Act of 1990 and won a WTO dispute settlement case restoring its access to the U.S. gasoline market. From the “tuna dolphin” case of the early 1990s to the recent “shrimp turtle” dispute, the number of trade-environment flash points has continued to expand. Environmental proponents fear that liberalized trade might make it harder for high-standard countries to keep their stringent environmental requirements in the face of market access demands from trade partners.

The difficulty in the trade and environment debate lies in separating legitimate environmental standards from protectionist regulations advanced under the guise of environmental protection. Few would argue, for example, that automobile emission control standards are an illegitimate requirement or an unwarranted barrier to trade. However, the fear of protectionism in an environmental disguise is not unfounded and needs to be addressed, particularly if developing countries are to retain confidence in the fairness of the international trade system. The smooth functioning and efficiency of the international economic system cannot be maintained unless there are clear rules of engagement for international commerce, including environmental provisions.

Trade Sanctions for Environmental Ends

Environmentalists fear that commitments to trade liberalization will limit the use of trade measures as a way of obtaining leverage over countries refusing to live up to their environmental obligations (Blackhurst and Subramanian 1992; Chang 1995). The need to discipline “free riders” – those benefiting from but not contributing to pollution control or resource management – is well understood (Zhao 2000). Trade officials often argue, however, that trade sanctions deployed for environmental purposes are inappropriate and a violation of GATT principles. Environmentalists contend, in turn, that there are very few ways of exerting pressure in the international domain and that trade measures must therefore be available as an enforcement tool. They argue that trade provisions (such as those found in the Montreal Protocol’s restriction of trade in CFC-related products with non-parties to the convention) have helped to promote international environmental

cooperation and to prevent free-riders from seizing an unfair competitive advantage in the global marketplace.

One way to reduce this trade-environmental tension is to insist that any global standard to be enforced with trade measures must be agreed upon multilaterally. But even this approach is not without critics. Some developing countries officials are suspicious of any “environmental conditionality.” They remain convinced that global-scale environmental standards of any sort provide a guise for protectionism² and obstruct Southern efforts to export to Northern markets (Runge 2001).

Multilateral Institutions for Trade and Environment

In the absence of a functioning global environmental management system capable of addressing trade and environment issues, responsibility for integrating these two policy realms has fallen to the WTO. Although the WTO has a Committee on Trade and Environment that has been meeting for a number of years, the Committee is dominated by trade experts, has demonstrated little understanding of the trade effects on environmental policy, and has almost nothing in the way of results to show for its efforts (Esty 1999). A sense of frustration about this state of affairs now permeates both the environmental and trade communities. Both sides agree that trade rules must not condone free-riding on global environmental commitments (Bhagwati 2000). But how to implement this principle remains in dispute.

Environmental groups have focused much of their attention over the past decade on reform of the World Bank and other multilateral economic bodies, including the WTO. Leaders of the trade community have begun (belatedly) to respond to this pressure. But they have also started to argue that the WTO lacks the capacity to address environmental issues effectively and that the WTO’s efficacy and legitimacy are undermined whenever the organization is forced to make decisions that go beyond the scope of its trade mandate and expertise. Thus, the push for a parallel environmental governance structure now seems to be gathering momentum. The recent WTO Director-General, Renato Ruggiero, and the current Director-General, Supachai Panitchpakdi, have both urged the creation of a World Environment Organization to help focus and coordinate worldwide environmental efforts, thereby relieving environmental pressures on the WTO. During the World Summit on Sustainable Development in 2002, French President Jacques Chirac called for the creation of a World Environmental Organization that would bring greater balance to a multilateral system excessively focused on the economy. Similar calls have come from Mikhail

² The economic reasoning of multilateral finance organizations encourages this attitude. A recent IMF report states: “Calls in rich countries for environmental and labor standards are often presented as being motivated by a concern for limiting the adverse impact of globalization on poor countries. In fact, their effect would be to create barriers to the growth-creating trade that permits poor countries to narrow the gap with rich countries” (Masson 2001).

Gorbachev, Lionel Jospin, *The Economist* magazine, and others.³ It is becoming increasingly clear that successful reform of the trade and finance system in support of a process of globalization that works for all needs to be coupled with an equally rigorous and fundamental reform of the global environmental regime.

THE LOGIC FOR GLOBAL COLLECTIVE ACTION

The essence of globalization is connectivity. The forces that connect people and places across the world and, in the words of Thomas Friedman, have shrunk it “from size medium to size small,” are also profoundly affecting the global environment. Globalization is, in part, an ecological fact. A series of environmental challenges span multiple countries and even the world. Polluted waters, collapsing fisheries, invasive species, and the threat of climate change have all been brought about, at least in part, through the forces of globalization. Clearly, the primary responsibility for environmental protection rests with national governments and local communities. But some problems are inescapably global in scope and cannot be addressed without international cooperation.

Global Commons

The management of a common resource inescapably requires the participation and cooperation of multiple jurisdictions (Kaul, Grunberg, and Stern 1999). Yet, incentives to pursue behavior that is individually rational but collectively suboptimal are especially strong with regard to shared resources, which at once may be seen as belonging to everybody and nobody. It is rational for a fisherman, for example, to try to maximize his personal gain by catching as many fish as possible as quickly as possible. Collectively, however, such a strategy leads to overexploitation of the resource and a “tragedy of the commons.” The fish stock will be depleted, leaving the entire fishing community worse off than if it had found a cooperative arrangement to manage the fishery on a sustainable basis. When extended to a global scale, the problem becomes even more acute and intractable in the absence of clear rules and institutions ensuring compliance.

Similarly, in a world of multiple governing authorities, upwind or upstream jurisdictions tend to under-attend to pollution harms which they externalize onto their neighbors. Optimal pollution reduction is thus unlikely to occur without collaboration. Theory suggests that the solution to this policy dilemma lies in collective action enforced by an overarching authority. However, while governments serve the Leviathan role within the context of the nation state, when the issues are of

³ For the text of the speeches, see (Ruggiero 1998; Panitchpakdi 2001; Jospin 2002). For arguments in favor of a World/Global Environment Organization, see (Esty 1994, 2000, 2000a; Biermann 2000; Whalley and Zissimos 2001; Runge 2001; Charnovitz 2002). For the opposing view, see (Von Moltke 2001; Juma 2000).

international or global character no supranational authority exists to devise and impose comparable rules (e.g., taxation and regulation). The number of beneficiaries and potential contributors to a global public good is much larger as is the number of potential contributors to a public “bad” adding to the difficulty of achieving a collaborative outcome. The spatial and temporal distribution of causes and effects, makes it hard to identify those who fail to cooperate. Moreover, in the absence of an international authority, even if defectors were detected, there are few means of discipline and sanction. The problem therefore is one of organizing cooperation to overcome the tendency toward what is called in game theory a lose-lose Nash equilibrium. The situation must be converted from one in which decisions are made independently based on narrow self-interest to one in which actors adopt cooperative solutions serving a broader, common interest (Ostrom 1990).

Super Externalities

Internalizing externalities represents a core environmental policy challenge. “Transboundary” spillovers of pollution from one country to another, which result in “super externalities” (Dua and Esty 1997) are especially difficult to manage. The need to bring multiple countries together in a common response represents a qualitatively more difficult problem to address because (similarly to global commons problems) no single jurisdiction has an incentive to regulate such harms optimally. In the case of regular externalities (harms within one jurisdiction), there are many reasons why governments may not optimally regulate emissions or other harmful practices, but at least they have an incentive to do so in the face of the welfare losses of their own citizens. When harms span multiple jurisdictions or even the entire world, there is an increasing likelihood that the government whose facility is causing the negative impact will choose not to act because its own cost-benefit calculus does not justify intervention.

Moreover, the traditional policy prescriptions – a set of taxes or subsidies – cannot be easily applied to a multi-jurisdictional context with fragmented institutional structure. Successful intervention requires some mechanism for promoting collective action (Baumol and Oates 1988). Trade measures are one potential candidate for this function. Admittedly, trade sanctions are imperfect, costly to those who impose them, and may backfire. But, at least in some cases,⁴ trade penalties have worked to enforce commitments and to overcome the collective action problem (Brack 1996; Barrett 1997). Better tools to discipline free riders in the international

⁴For example, in an attempt to pressure Myanmar’s military rulers to release an imprisoned opposition leader, the United States banned imports from the country. The Burmese Freedom and Democracy Act signed on July 28, 2003 imposes economic sanctions for a maximum of three years, including closing U.S. markets to imports. The logic is that depriving the regime of hard currency will provide “strong incentives for democratic change and human rights in Burma.” CBC News 29 July 2003. Available at http://www.cbc.ca/stories/2003/07/28/myanmar_us030828.

environmental domain do not seem readily available. As environmentalists point out, the weakness of the extant global environmental regime cannot be wished away nor dismissed as irrelevant to the question of how environmental market failures get addressed ensuring that the trade liberalization and environmental policy agendas are mutually reinforcing.

Common Environmental Problems

The third category of environmental issues that could benefit from international efforts consists of “common” problems encountered nationally – issues that are local in scope and do not spill across national boundaries (except for countries in close proximity) but are found all across the globe and thus are of interest to policymakers the world over (Esty 1994). These problems could be – and should be – dealt with by local or national authorities. There is no inherent need for global-scale cooperation. But the fact that many countries face a problem in common creates another logic for cooperation – the potential to gain from sharing data, information, and policy experiences. Comparative analysis often helps to illuminate issues and highlight “best practices” – policies and technologies – to be deployed in response. To the extent that a problem requires substantial scientific or technical analysis, cooperation may also generate economies of scale in data collection, analysis, and other research functions. And to the extent that some countries lack the requisite capacity to perform this analysis, shared knowledge is even more essential. The most valuable contribution of international institutions in such cases will therefore be in the form of information, technology, and best practices exchange.

Managing Interdependence

A globalizing world requires thoughtful ways to manage ecological interdependence. The integrated and interdependent nature of the current set of environmental challenges contrasts sharply with the nature of the institutions we rely upon for their solutions. These institutions tend to be fragmented, ill-coordinated, with limited mandates and often impenetrable decision-making processes. The real world of interlocked economic and ecological systems will not change; the institutions and policies must. Shifting from a prisoners’ dilemma world of free-riding and lose-lose outcomes to one where reciprocity is recognized and collaboration understood requires a carefully constructed institutional architecture. We need an approach that acknowledges the diversity and dynamism of environmental problems and recognizes the need for specialized responses (Esty and Ivanova 2002). A multi-layered institutional structure is required to address the issues demanding immediate attention at various geographic scales (Esty 1999; Karlsson 2000; Ostrom 1990; Vogler 2000).

The starting point for any regime building strategy must be rigorous analysis. We believe that the best hope for achieving progress in revitalizing global environmental cooperation lies in building on a carefully constructed foundation of identified needs and functions. Figure 1 summarizes the functions of global and national institutions for both global- and national-scale environmental

problems. International institutions have important roles to play not only in addressing global problems but also in facilitating national action through the exchange of information, technology, best practices, approaches, and management systems.

States have created international organizations to respond to collective action problems in the management of the global economy (Keohane and Nye 1977; Abbott and Snidal 2001). Indeed, a great deal of effort went into establishing the Bretton Woods system at the end of the Second World War. Ecological interdependence and global environmental governance now require the same sort of attention and political focus.

PROBLEM

		GLOBAL-SCALE	NATIONAL-SCALE
		Institution	GLOBAL-SCALE
Institution	NATIONAL-SCALE	<ul style="list-style-type: none"> ❖ Implementation Exchange of: ❖ Data ❖ Best practices ❖ Policies ❖ Technologies ❖ Approaches ❖ Management systems 	<ul style="list-style-type: none"> ❖ Data collection and analysis ❖ Environmental assessment ❖ Standards setting ❖ Policy formulation ❖ Enforcement ❖ Compliance monitoring and reporting ❖ Financing and support for actions ❖ Evaluation

OPTIMAL INSTITUTIONAL STRUCTURE: REFORMING GLOBAL ENVIRONMENTAL GOVERNANCE

Collective action is necessary and urgent, yet in the environmental domain it has fallen short as a result of the deep-seated weakness of the institutional architecture and decision-making processes of the existing international environmental regime. Fragmentation, gaps in issue coverage, and even contradictions among different treaties, organizations, and agencies with environmental responsibilities have undermined effective, results-oriented action (Esty and Ivanova 2002). As pointed out by Charnovitz (2002), “[I]like a city that does not have zoning ordinances, environmental governance spreads out in unplanned, incongruent, and inefficient ways.” A pervasive lack of data, information, and very limited policy transparency adds to the challenge. A new institutional structure could provide the data foundation needed for good environmental decision-making; a capacity to gauge risks, costs, benefits, and policy options comparatively; a mechanism for leveraging private sector and governmental resources deployed at the international level; and a means for improving results from global-scale environmental spending and programs.

Fundamentally, the focus and design of the United Nations Environment Programme (UNEP) predates a full appreciation of the international scope of pollution issues. Hampered by a narrow mandate, a modest budget, and limited political support, UNEP competes with more than a dozen other UN bodies including the Commission on Sustainable Development (CSD), the UN Development Programme (UNDP), the World Meteorological Organization (WMO), and the International Oceanographic Commission (IOC) on the international environmental scene. Adding to this fragmentation are the independent secretariats to numerous conventions including the Montreal Protocol (ozone layer protection), the Basel Convention (hazardous waste trade), the Convention on International Trade in Endangered Species (CITES), and the Climate Change Convention, all contending for limited governmental time, attention, and resources.

The existing international environmental system has failed to adequately deal with the priorities of both developed and developing countries. The proliferation of multilateral environmental agreements has placed an increasing burden on member states to meet their collective obligations and responsibilities. The toll on developing countries has been especially heavy as little assistance in way of financing, technology, or policy guidance has been forthcoming. The inadequacy and dispersion of the existing financial mechanisms – scattered across the Global Environmental Facility, UN Development Programme, World Bank, and separate funds such as the Montreal Protocol Finance Mechanism – reinforces the perception of a lack of seriousness in the North about the plight of the South. Furthermore, fundamental principles of good governance such as fair representation, transparency, and accountability are still at issue in many of the institutions with environmental responsibilities. These procedural shortcomings undermine the legitimacy of the system as a whole.

A multi-prong agenda of refinements and reform of UNEP and the other elements of the current international environmental system could be developed to address these many issues. But the list of problems is so long and the baggage associated with the current regime is so heavy that, at some point, a fundamental restructuring rather than incremental tinkering becomes a better path forward. In the face of so many difficulties and the existing regime's poor track record, any presumption in favor of working with the status quo cannot be sustained. Moreover, as the analysis above suggests, the nub of the issue is structural, making a different starting point and a new institutional design advisable.

Toward a Global Environmental Mechanism

An effective response to both the common elements of national problems and the special demands of transboundary issues requires a structure that promotes worldwide cooperation. While many institutional designs are possible, we believe the best strategy centers on a new Global Environmental Mechanism (GEM). Conceptually, a GEM fills an undeniable need for a mechanism to promote collective action at the international scale. Practically, it offers the chance to build a coherent and integrated environmental policymaking and management framework that addresses the challenges of a shared global ecosystem (Esty and Ivanova 2002, 2003).

We see three core capacities as essential: (1) the provision of adequate information that can help to characterize the problems to be addressed, reveal preferences, and alter interests; (2) the creation of a policy "space" for environmental negotiation and bargaining; and (3) the sustained build up of capacity for addressing issues of concern and significance. We identify data collection, monitoring, scientific assessment, and analysis as central in the information domain. A forum for issue linkages and bargaining, a mechanism for rulemaking, and a dispute settlement framework are essential to ensuring cooperative solutions. The development of technical, financial, human, and institutional capacity for addressing diverse challenges is another critical function demanding effective institutional mechanisms at the global level.

Various institutions and agencies are currently performing many of the identified capacities. Others are flagrantly absent. For example, a suite of international organizations, scientific research centers, national governments, and environmental convention secretariats are carrying out data collection, scientific assessment, financing, and technology transfer albeit with little coordination and poor comparability across jurisdictions. Compliance monitoring and reporting are unsystematic, scattered, and largely informal. The means of participation of non-state actors require further elaboration and institutionalization along with procedures for rulemaking. A forum for issue linkage, bargaining, and trade-offs and a dispute settlement mechanism are lacking. Moreover, a stronger policy space for the environment is necessary to sustain efforts at environmental advocacy within the broader system of global governance and ensure that environmental concerns are integrated into sustainable development policies.

Building on the expertise and capacities of existing institutions and creating new mechanisms where functions are currently unfulfilled, we see the following institutional elements as central to a revitalized global environmental regime:

- *Data Collection*, ensuring the availability of reliable data of high quality and comparability, developing indicators and benchmarks, and publishing *State of the Global Environment* reports;
- *Compliance Monitoring and Reporting*, providing a repository for information on compliance with agreements and established norms, and a continuous and transparent reporting effort;
- *Scientific Assessment and Knowledge Networking*, drawing on basic research on environmental processes and trends, long-term forecasting, and early warnings of environmental risks;
- *Bargaining and Trade-offs* facilitating the internalization of externalities through exchanges of commitments on various environmental issues (forest cover, biodiversity protection, species management, etc.) in return for cash or policy change (market access);
- *Rule-Making for the global commons* establishing policy guidelines and international norms on protection of shared natural resources such the atmosphere and oceans;
- *Civil Society Participation* providing a business and NGO forum for direct participation in problem identification and policy analysis;
- *Financing* for global-scale issues mobilizing both public and private resources to provide structured financial assistance to developing countries and transition economies;
- *Technology Transfer* promoting the adoption of best options suited to national conditions and encouraging innovative local solutions;
- *Dispute Settlement* with agreed procedures and rules to promote conflict resolution between environmental agreements and vis-à-vis other global governance regimes in an equitable manner;
- *Implementation Strategies* ensuring coordination with institutions with primary implementation responsibility (such as national and local governments, UNDP, World Bank, business, civil society organizations) and providing a database of best practices.

These mechanisms would close many of the gaps in global environmental governance. If global politics require, a new GEM could start modestly and grow over time, progressively gaining new responsibilities and enlarging its mandate as its value is demonstrated and power delimited. Because scientific activities represent the dimension of the policy realm where economies of scale and other efficiency gains can most quickly be realized from increased cooperation, a Global Information Clearinghouse might represent the best first step toward the establishment of a new global environmental regime. The coordination of existing institutional mechanisms for data collection, scientific assessment, and analysis might attract broad-based support. A Global Technology Clearinghouse focusing on information sharing and best practices dissemination

might also be launched as an early initiative with likely broad appeal. With its competence established in these areas, the GEM mandate might then be expanded to include monitoring, rulemaking, and the development of a Global Bargaining Forum. Subsequently, the GEM might acquire a dispute settlement mechanism.

Global Environmental Information Clearinghouse

Better environmental data and information make it easier to identify issues, spot trends, evaluate risks, set priorities, establish policy options, test solutions, and target technology development (Esty 2002). A global information clearinghouse providing timely, relevant, and reliable data on environmental issues and trends could transform the policymaking process at the global scale. Knowledge about real threats based on better data, science, and analysis could shift assumptions, preferences, and policies. In the case of acid rain in Europe, for example, knowledge of domestic acidification damage allowed for refined policies that triggered emission reductions in several countries (Levy 1993). Simply put, data can make the invisible visible, the intangible tangible, and the complex manageable.

Information on how others are doing in reducing pollution and improving resource productivity tends to stimulate competition and innovation. Comparative performance analysis across countries – similar to the national PROPER scheme in Indonesia⁵ – could provide much greater transparency, reward policy leaders, and expose laggards (Afsah, Blackman, and Ratananda 2000). Just as knowledge that a competitor in the market place has higher profits drives executives to redouble their efforts, evidence that others are outperforming one's country on environmental criteria can sharpen the focus on opportunities for improved performance. The attention that the World Economic Forum's Environmental Sustainability Index has generated demonstrates this potential (Seelye 2002; Yeager 2002).

Data gathering should primarily be the function of local or national organizations. But a central repository for such information and a mechanism for making the information publicly available could generate significant economies of scale, provide an efficient way to generate relevant comparisons, and represent a useful mechanism to expose slack performance (Chayes and Chayes 1995). An information clearinghouse would not centralize science policy functions but create a centralized source for coordinating information flows between the institutions responsible for performing the different science policy functions (UN University 2002).

⁵ PROPER (Program for Pollution Control, Evaluation, and Rating) is Indonesia's innovative program for reducing pollution by rating and publicly disclosing the environmental performance of industrial facilities.

Global Environmental Technology Clearinghouse

Globalization is fueled by and can play a central role in the diffusion of technologies. Technological advances are often the key to environmental gains (Chertow and Esty 1997). However, industrialized countries dominate the technology market and the generation of innovations. Some technologies and their environmental features may therefore be inappropriate for the economic and environmental circumstances of less developed countries (Karlsson 2002).

Most multilateral environmental agreements contain provisions related to technology transfer as part of the incentive packages for developing countries to meet their obligations under the conventions. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Montreal Protocol on the Ozone Layer, the Convention on Biological Diversity, the Framework Convention on Climate Change and its related Kyoto Protocol all cite technology transfer as a critical method for achieving concrete environmental improvements. Agenda 21 also underscores the importance of technology transfer to sustainable development. The existing institutional mechanisms for technology transfer have, however, been less than effective. A new mechanism to bring new technologies to developing countries must be part of any strategy to improve international environmental policy results.

An effective environmental technology clearinghouse could guide nations toward appropriate technologies, support North-South partnerships, and provide a forum for coordinating financial assistance to developing countries. It would contain information on best practices around the world and facilitate technology development and continuous learning.

Global Bargaining Forum

Successful responses to global-scale environmental problems depend on agreements on financial burden sharing. Developing countries need support, subsidies, and other incentives to encourage their efforts to internalize externalities. All too often, issue linkage has been avoided and a practice of agreeing to lowest-common-denominator programs promoted in the absence of funding to support those least well positioned to act. As Whalley and Zissimos (2002) have argued, there would be great value in a forum for the facilitation of international deals on the environment that improve quality and result in positive cash flow to custodians of environmental assets.

A global bargaining forum could act as a catalyst between countries or private entities negotiating over resource management. Thus, a government in one country might negotiate a deal to preserve a particular natural resource in another country – part of a rainforest, a set of species, etc. – in return for a sum of money or other policy benefits. For example, Brazil might commit to certain limits on development in the Amazon in return for guaranteed access to European and US

markets for its orange juice. The forum might also provide mechanisms for verification, financial transfers, and potential dispute settlement.

Designing a GEM

In designing a new global environmental regime, form should follow function. We envision a “light” institutional superstructure providing coordination through a staff comparable in size and quality to the WTO secretariat in Geneva. The secretariat’s primary role would be to promote cooperation and achieve synergies across the disparate multilateral environmental agreements and other international institutions with environmental roles. A properly designed structure would provide a counterpart as well as a counterweight to the World Trade Organization and an alternative forum for addressing tensions over divergent environmental values and approaches. The Global Environmental Mechanism we envision would not add a new layer of international bureaucracy nor create a world government. Quite to the contrary, movement toward a GEM should entail consolidation of the existing panoply of international environmental institutions and a shift toward a more modern “virtual” environmental regime.

At the center of our proposal lies a global public policy network, which draws in expertise from around the world on an issue by issue basis. By utilizing the resources of national governments, NGOs, private sector enterprises, business and industry associations, think tanks, research centers, and academic institutions on “as needed” basis, the GEM would have far broader issue expertise and analytic capacity than the existing environmental regime. Such a system for advancing international environmental agenda-setting, analysis, negotiation, policy formulation, implementation, and institutional learning would be more flexible, cost-effective, fleet-footed, and innovative. The benefits of such a structure are increasingly clear (Reinicke 1998; Reinicke and Deng 2000; Rischard 2002; Witte, Streck, and Benner 2003). Global public policy and issue networks represent an innovative organizational mechanism for responding to an ever more complex international policy environment, taking advantage of Digital Age communications and information technologies to draw in relevant expertise, analyze problems from multiple perspectives, and build new opportunities for cooperation.

Streamlining the environmental regime to a small hub and largely virtual structure would be especially beneficial to the South. In particular, a single venue for negotiations and international coordination would make it much easier for the over-stretched Environment Ministries of the developing world to monitor the spectrum of environmental issues at play and to contribute thoughtfully to the global-scale debate even with a relatively small international policymaking team (Biermann 2002). There would be no need to traipse around the world trying to keep up with the plethora of separate bodies and meetings. A “network” approach drawing in diverse perspectives and expertise and using the Internet could facilitate even greater developing country participation in the international policymaking process.

Of particular importance to developing countries is also the question of who will pay for global-scale environmental problem solving. As shown in the analysis so far, globalization has put increasing pressure on national governments to become more competitive in the global marketplace. Expending scarce financial resources for environmental protection is therefore often regarded as counterproductive by developing countries, especially if there is no urgent demand from domestic constituencies. By placing the principle of common but differentiated responsibilities at the center of the new mechanism along with a real forum for bargaining and trade-offs, efforts to strike a fair balance of rights and responsibilities with regard to transboundary environmental issues might be improved. A more carefully considered and coherent set of international environmental standards would also alleviate fears in the South that the industrialized world seeks to impose unreasonably high standards (and perhaps trade penalties for non-compliance) on developing countries, all of whom have many competing demands for limited public resources. Moreover, mechanisms to support technology transfers and to subsidize developing country environmental initiatives in pursuit of global environmental goals would help to alleviate North-South tensions.

A related issue is whose values will be promoted in a strengthened international environmental regime. Such concerns make it essential that a GEM be seen as a transparent and inclusive forum that seeks to build consensus on a basis that respects the diversity of views across the world. It should also be noted that properly managed public policy networks create “virtual public space” that is easier to enter than the established physical fora where decisions are currently made (Streck 2002). An Information Age set of outreach mechanisms could also decrease the distance between decentralized constituencies and global decision makers – making it easier to insert into the policy process the broad array of values, perceptions, and perspectives that are now often overlooked or incompletely considered and facilitating public understanding of the issues addressed and decisions made at the global scale.

CONCLUSION

Both economic and ecological interdependence demand coordinated national policies and international collective action. Our increasingly globalized world makes new thinking about international environmental cooperation essential – both in its own right and to undergird further economic integration. An extraordinary mix of political idealism and pragmatism will be required to coordinate pollution control and natural resource management policies on a worldwide basis across a diversity of countries and peoples, political perspectives and traditions, levels of wealth and development, beliefs and priorities. But the gains will go beyond the environmental domain. Indeed, coordinated pollution control strategies and natural resource management standards provide an important set of ground rules for international commerce, serve as an essential bulwark against market failure in the international economic system, and make it more likely that globalization will yield broad benefits.

It is time to re-engineer the environmental regime, aiming for a new, forward-looking, sleeker, and more efficient architecture that will better serve environmental, governmental, public, and business needs. A new global environmental architecture need not compete with efforts to strengthen national pollution control and natural resource management programs – and should, in fact, reinforce such efforts. Success in the environmental domain depends on a multi-tier governance structure supporting vibrant efforts at the local, national, and global scales.

The logic of a Global Environmental Mechanism is straightforward: a globalizing world requires thoughtful and modern ways to manage interdependence. The world community would benefit from the presence of an authoritative environmental voice in the international arena, a recognized forum for national officials and other stakeholders to work cooperatively to address global-scale issues, and a legitimate mechanism to ensure that efforts to promote economic progress and environmental goals are mutually reinforcing.

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