Choosing Norms to Promote Compliance and Effectiveness: The Case for International Environmental Benchmark Standards

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CHAPTER 5
CHOOSING NORMS TO PROMOTE COMPLIANCE AND EFFECTIVENESS: THE CASE FOR INTERNATIONAL ENVIRONMENTAL BENCHMARK STANDARDS

by Richard W. Parker

As the number of international environmental agreements (IEAs) continues to mount\(^1\) so too does the continuing destruction of the environment by mankind. Notwithstanding the Convention on International Trade in Endangered Species (CITES), endangered mammals continue to be taken and traded at alarming rates.\(^2\) Notwithstanding the Biodiversity Convention, the global heritage of biodiversity continues to be reduced at the estimated rate of 50,000 species per year and the impact of the Biodiversity Convention on that trend has, so far, not been detectable.\(^3\) Notwithstanding the enumeration of countless fisheries conservation agreements, many of the fish stocks of the world are reported on the brink of collapse.\(^4\) Notwithstanding the Framework Convention on Climate Change, greenhouse gas emissions continue to spiral upward and it appears probable that all but two of the industrialized countries will fail to fulfill their aggregate greenhouse gas emissions commitments for the year 2000.\(^5\) Although the Basel Convention on Transboundary Movement of Hazardous Waste expresses the aim of both restricting trade in waste and limiting generation of waste at the source, its success in restricting trade is undetermined and generation of hazardous waste continues to mount worldwide.\(^6\) Even the hitherto highly successful Montreal Protocol on Protection of the Ozone Layer is threatened by the rise of a massive global black market, i.e., non-compliance at the private level, that clearly challenges the integrity
of the regime and so far has not been answered by any effective enforcement response.\(^7\)

While few would deny that a number of IEAs have made important contributions to global environmental protection, their mixed record of accomplishment, their uncertain future, and the troubling juxtaposition of accumulating agreements and mounting harm have summoned forth new inquiries into the external conditions, and strategies of regime design, that promote or hinder compliance and effectiveness.\(^8\)

Meanwhile the majority of nations, particularly developing countries, find themselves burdened with "local" problems that acutely threaten life and livelihood within their own borders: e.g., urban air pollution, toxic waste exposure, contaminated drinking water, soil erosion and desertification. Twenty-five years after the 1972 Stockholm Declaration affirmed the right of governments to address these problems autonomously, it is clear that the complexity and diversity of environmental problems have overwhelmed the resources of most national environmental ministries. While IEA conferences clamor for participation, the burden of trying to cope with acute, and often life threatening, local problems distracts and deters many countries from participating fully in collective efforts to protect the global commons. The question arises whether international coordination has anything to offer countries grappling with these "local" (within-country) threats, at least those challenges that confront many countries in common.\(^9\)

In thinking about these questions, we begin with the observation that many environmental harms do not arise from the activities of states—at least not from states acting in their sovereign capacity. Rather, they arise from the activities of private actors and state enterprises (hereafter "private sector") who design, produce, or use goods or dispose of waste products. Norm specification therefore takes place at both the international and national levels; so does compliance oversight. Moreover, it often happens that the environmental harm results from a product or activity that cannot simply be banned completely, because the product or activity is useful. The challenge is to win governmental and private sector acceptance of an alternative or modified product or process that provides the same (or similar) economic benefit with reduced environmental impact. In this situation, and it is a very common one, we can discern at least three possible models for environmental policy coordination: (1) no international coordination; (2) commitments to limit aggregate impacts (or transboundary impacts)
arising within each country’s jurisdiction, with no specification of implementing policies for particular products, processes or activities; and (3) harmonization or convergence of specific national policies to control specific environmental impacts arising from identified products, production processes, or waste disposal practices. These three models will be labeled, respectively: autonomy; aggregate goals; and international standards. They differ, obviously, in the degree to which they decentralize decision-making, and in the balance they strike between greater flexibility and autonomy, on one hand, and greater specificity and directedness on the other.

The choice among these models may seem technical; but the implications are fundamental. As one author pithily put it, “regime design matters”; so do ideas about how regimes should be designed and about whether they have any business addressing particular problems at all. When the international community decides, as by and large it has, that the autonomy or no-coordination model is the best approach to addressing local harms, that decision has vast ramifications for “local” environmental protection worldwide. At the global level, when the drafters of the Climate Change Convention adopted the aggregate goals approach in 1992—capping aggregate emissions of greenhouse gases while rejecting internationally agreed standards or incentives for particular products or processes, they adopted the only approach that possibly could have yielded agreement in time for the Rio Conference. But can policymakers continue that approach—without ever coordinating sectoral policies—and hope for compliance or effectiveness long-term? We will see there is reason to doubt they can.

This chapter examines how this fundamental choice of control strategy—no coordination, aggregate goals, and standards—is reflected in current thinking and in the practice of states and international environmental regimes. It seeks to contribute to the emerging debate over how policymakers ought to approach this crucial choice.

The first part examines traditional doctrine and practice. Though more empirical research is needed, it appears that international standards for products or production processes have been used in a primary role in some IEAs addressing transboundary and global harms; that variants of the standards concept has served in a secondary role in others; and that certain important IEAs, e.g., the Climate Change and Biodiversity Conventions, do not use standards at all. The latter agreements adopt the aggregate goals model. Meanwhile, in the context of local (within-country) harms, the
autonomy model reigns virtually supreme. International product and especially production process standards are seldom used and, in fact, confront a categorical presumption against their use.\textsuperscript{12}

The second part will call this presumption into question and make the conceptual case for wider deployment of international standards, which I will loosely refer to as “benchmark” standards, applied to both transboundary and local harms. The term benchmark standard will be used broadly in this chapter to include any standard or economic incentive keyed to the environmental performance of products, production process, or waste disposal practice. The concept thus includes command-and-control regulations. It also includes baseline allocations of marketable permits, and/or internationally agreed structures of economic incentives such as taxes and charges. The defining element of a standard is not the method of regulation chosen, but the fact that a method is chosen and applied to identified products, processes and activities.\textsuperscript{13} Although benchmark standards as proposed would be “nonbinding” on governments, it is anticipated that standards adopted and implemented by national governments would be fully binding on their respective private sectors. The second part will show that competitive impacts, the traditional foundation of arguments for international standards, comprise one but only one factor in the analysis. The fundamental contribution of international standards to regime effectiveness lies in their ability to supplement scarce national resources in standards-development and enforcement; their potential for building compliance-enhancing “epistemic” networks among government officials, industry leaders, and environmental NGOs; their contribution to promoting technology transfer, expanding markets and generating cost-saving learning curves and economies of scale for clean technologies; their conduciveness to public-private mechanisms of compliance oversight that can leverage the woefully inadequate enforcement resources of most environmental ministries; and, in particular cases where competitive impacts matter, the ability of international standards to help establish what is perceived as a more or less “level playing field,” as reassurance to those who fear that adopting effective environmental measures without international coordination will cause domestic producers to suffer unwarranted competitive harm.

While standards have these advantages, they also suffer from a number of potential drawbacks. The third part will address some of the arguments that have been levied against the international standards model: that such standards are inherently “Procrustean” and overlook the fundamental diversity of national circumstances
and preferences; that international standards might lower rather than raise levels of environmental protection; that international standards will not be complied with or be effective unless they are enforced by trade sanctions which are themselves unacceptable; and that development of such standards would be excessively cumbersome and unwieldy.

The last part will sketch out a model for the development and implementation of nonbinding, substantive international standards or incentives for improving environmental performance of particular products, production processes or other activities. My purpose in offering a model is both to imagine a workable process for developing standards that is representative and meets the criticisms outlined above; and to demonstrate that many of the criticisms of anti-standards advocates are criticisms of stereotypically "bad" standard setting. They are not, and need not be taken as, criticisms of international standard setting per se. It will be seen that the model proposed is innovative but not radically new in concept; indeed, it represents a logical culmination of recent trends in public-private standard setting and compliance oversight.

An overview of the argument may help the reader as we proceed. We will see that the reigning presumption against the standards model for products and (especially) production processes rests on three problematic assumptions. First, it assumes that states have the technical and institutional capacity to develop cost-effective environmental standards for products and processes on their own, and to enforce them. Second, it assumes that circumstances and preferences of nations vary so widely that uniform or even tiered performance standards would be economically inefficient and environmentally ineffective. Third, it assumes that competitive disadvantages arising from differential regulation of particular products or processes are negligible and/or irrelevant to policy in all important cases.

None of these assumptions is tenable, at least not as a categorical proposition. Effective environmental regulation is an enormously complex undertaking which frequently occurs at the frontiers of technical and scientific knowledge. Regulators in many countries, particularly developing countries, find themselves forced to address local and global environmental problems with fledgling agencies, few technical resources and even less political clout. Such agencies are likely to lack the expertise needed to properly assess the risks and formulate cost-effective environmental standards for products and activities under their jurisdiction. They may lack the
domestic institutional and legal infrastructure effectively to monitor and enforce the standards they have promulgated. In some cases, they may have to grapple with fears (founded or otherwise) that effective, but unilateral, environmental regulation will place their domestic producers at a competitive disadvantage in world markets, and trigger a political backlash. And it may or may not be the case that other regulators in other countries are facing similar challenges from similar products, activities, or production processes.

My purpose at this point is not to assert that international process standards should be developed and applied in all cases; on the contrary, there undoubtedly are regulatory scenarios in which decentralized regulation is the optimal response and this chapter will briefly consider how such situations might be identified. My purpose is simply to call into question the presumption against international standards that has crept, or is creeping, into current thinking, and to suggest the benefits of a case-by-case empirical analysis of these issues in particular regulatory contexts. When it comes to international standards, there should be, in Esty’s words, a “presumption against presumptions.”

I would emphasize that this chapter represents a preliminary analysis and an agenda for further research. Much remains to be explored; there is a particular need for in-depth scholarly study of the specific achievements and failures of standards-type approaches in those environmental regimes where they have been used. I will indicate as I go along those additional areas where further research is likely to be fruitful.

**The Role of Standards in Current Practice and Doctrine**

The most obvious examples of international product and process standard-setting can be found in European Union (EU) environmental regulations and directives, and much could be learned from reviewing the EU experience in this field. Ultimately, however, the EU experience must be considered *sui generis*: the EU embraces a much greater degree of economic and political integration than is acceptable to most countries outside the union. This section accordingly will focus on the role of international standards in other contexts.

Although an overview of the 900 or so IEAs lies well outside our scope, this section will review the way standards or analogous instruments are used, or not used, in a few of the more prominent international accords that address harm arising from products or
production processes, and it will document the rarity of international standards addressing purely local harms. This section also will examine the doctrinal underpinnings of current practice, revealing (1) an implicit pragmatic preference for aggregate goal approaches in IEAs addressing harms arising from numerous and diverse sources; and (2) a categorical presumption against international coordination, and especially against use of process standards, in responding to local harms.

Standards in the Context of Transboundary and Global Impacts

IEAs addressing transboundary and global harms from products or production processes employ three broad approaches to standards. Some employ standards as their primary substantive rule. A second group employs aggregate limits on impacts (or transboundary impacts) from national activities, supplemented by “guidelines” for product or process design. A third group does not make use of standards or guidelines at all. IEAs in the third group (including the climate change convention) rely exclusively on norms keyed to aggregate national performance.

IEAs Using International Standards as the Primary Operative Norm

Perhaps the most striking examples of international product and process standards are to be found in high seas fisheries regimes, which commonly employ such measures as gear restrictions, catch limits, by-catch limits, and practice requirements in the effort to conserve marine resources. A few examples may be given. The Inter-American Tropical Tuna Commission has established a declining schedule of limits on permissible dolphin kill rates (a production process standard) in the eastern tropical Pacific tuna fishery. These standards have been extremely successful in reducing incidental dolphin mortality in the eastern tropical Pacific tuna fishery, with mortality levels down from over 130,000 per year in 1987 to less than 5,000 in 1995.15 Likewise, three UN General Assembly resolutions on high seas driftnet fishing have proscribed use of driftnets in excess of a given length on the high seas (another international production process standard).16 These are technically “nonbinding” although they are enforced by unilateral trade sanctions under the U.S. Pelly Amendment. They are believed to have been effective in curbing the use of very large driftnets, although this is only one small part of the high seas fishery conservation dilemma.
The Basel Convention on the Control of Transboundary Hazardous Waste and Their Disposal (Basel Convention) also embraces a “standard” for waste export activities. It requires that specified procedures be followed and conditions met before individual shipments of hazardous waste may be exported. A more recent amendment simply bans exports of hazardous waste from OECD countries to non-OECD countries.\(^7\)

The International Convention for the Prevention of Pollution by Ships (MARPOL) has relied on standards for both tanker operations and tanker design to achieve quite significant reductions in ship-based discharges of oil at sea.\(^8\)

The Convention for the Protection of the Rhine River Against Pollution by Chemical Pollution requires each Contracting Party to inventory its sources of named pollutants, and to apply to each source the quantitative emissions standards developed for that pollutant and source by the International Commission for the Protection of the Rhine Against Pollution.\(^9\)

The Protocol for the Protection of the Mediterranean Sea Against Pollution from Land-Based Sources provides for a ban on discharges of “black list” substances and strict limits on discharges of “gray list” substances. It also calls for “common emissions standards” on gray list substances listed in annex I to the Protocol, but the provision proved controversial and to date it appears that only eight such standards have been developed. Preliminary research does not reveal their level of specificity or whether they have been implemented.\(^10\)

Standards and Guidelines Used to Supplement Aggregate Norms

A number of IEAs do not use standards for products or private actions as their primary operative rule, but do make use of them in an ancillary mode. For example, the Convention on Long-Range Transboundary Air Pollution (LRTAP Convention) and its protocols principally limit national aggregate emissions of acid-rain causing compounds. But these aggregate limits are supplemented by a series of product- or process-specific standards. For example, the Nitrogen Oxides Protocol commits the parties to, e.g., “apply national emissions standards to major new stationary sources and/or source categories [of nitrogen oxides], and to substantially modified stationary sources . . . based on best available technologies which are economically feasible taking into consideration the Technical Annex.”\(^21\)
Similarly, the international stratospheric ozone regime relies principally on a series of aggregate national phase-out commitments for the production and consumption of specified ozone-depleting substances (ODS). However, the regime has also made effective use on occasion of "proto-benchmark standards" in the form of international guidance documents and reports. Pursuant to Article 6 of the Montreal Protocol, the parties have established a Technical and Economic Assessment Panel (TEAP) and seven Technical Options Committees (TOCs) focused principally on the generation and analysis of available alternatives to ODS in a wide variety of specific applications. These seldom-studied TOCs appear to be playing a crucial role in the forward movement of the ozone regime. For example, the methyl bromide TOC, convened in 1993, produced a very influential group of case studies identifying non-ODS alternatives to four critical uses of methyl bromide—cut flowers, tomatoes, strawberries, and cucurbits—drawing on research sponsored by a variety of institutions around the world. The control options identified in the report would, if implemented, allow a 25 percent reduction in methyl bromide emissions by 2001 and a complete phase-out by 2010 of methyl bromide uses in developed, and largely temperate climate, countries. This report has been praised as "critically influential in convincing parties to the Montreal Protocol that methyl bromide alternatives were available in key use areas."

**Regimes that Do Not Use Standards at All**

Many IEAs do not employ standards for products, processes or activities and could not be expected to do so. For instance, some instruments, such as the Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat, require only actions by states (setting aside wetlands) which do not require conforming private behavior for accomplishing regime goals. Other agreements simply seek to ban certain activities, like the taking or trade of endangered species, rather than regulate them. Other agreements establish an international liability rule, without seeking directly to regulate either aggregate national or individual impacts. The standards model is not directly applicable in such contexts.

Little purpose would be served by reciting all the various situations where standards are not employed because they are not applicable to the regulatory situation. This section will focus on two very important situations where environmental harms arise as an incident to the use of products or production processes and where
standards approaches might have been used—in either a primary or supplementary mode—but were not.

The first example is the Biodiversity Convention. Deforestation, a principal culprit in biodiversity loss, clearly arises from productive activities—agriculture and forestry—that are susceptible to regulation. Yet the Biodiversity Convention does not make use of forestry standards; in fact, it states no verifiable norms of any kind. Predictably, it has had no detectable impact on the rate of biodiversity loss worldwide. Nonetheless, a form of “standard” may be emerging under separate auspices, and holds the potential of making a significant contribution to reducing biodiversity loss arising from unsustainable forestry. The Forest Stewardship Council (FSC)—a consortium of environmental NGOs and wood trade organizations, subsidized by the Austrian government and headquartered in Mexico City—has developed criteria and guidelines for certifying forests as “sustainably managed.” It is too soon to say whether or how widely adopted the guidelines will be, or whether they will have a major impact on behavior. But the work of the FSC is interesting as a demonstration that industry and environmental groups can reach consensus on responsible environmental practice even in relatively contentious areas.

Likewise, the Framework Convention on Climate Change (FCCC) has rejected, so far, the adoption of benchmark standards or even proto-standards of the kind supplied by the ozone technical options committees. Like the ozone treaty, the climate change convention adopts the approach of seeking national aggregate commitments for emissions reductions, rather than coordinated product- or process-specific performance targets, e.g., targets for energy use in particular steel production processes, or standards for methane emissions from pipelines. Like the ozone treaty, the climate change convention provides for subsidiary bodies—in this case a “Subsidiary Body for Scientific and Technological Advice” and an Inter-governmental Panel on Climate Change (IPCC)—which are charged with, among other things, analyzing and disseminating promising technology options for reducing GHG emissions. Unlike the ozone treaty, however, the climate change parties have not used these bodies to develop “proto-standards.” At the most recent conference of parties in Geneva (July 1996), the IPCC proposed to set up intergovernmental technical advisory panels to evaluate the technical and market potential of current and emerging technologies. However, the proposal was blocked and the advisory panels were not established.
Notwithstanding the U.S. position in Geneva, there is evidence that the lack of relevant national or international standards may be impeding progress. It now appears that all but two industrialized countries will miss their aggregate emissions targets for the year 2000. Yet an EPA analysis found that "institutional change" in the United States could yield greenhouse gas reductions of up to 21 percent below 1990 levels with a positive GDP impact of 0.5 percent.

Another study has identified an "efficiency gap"—a disparity between actual and economically feasible levels of energy efficiency—of 14–30 percent. Why are money-saving options for energy conservation being passed over? The explanation offered by these studies is that individual and corporate consumers simply are not aware of cost-effective sources of energy savings. The same is true, no doubt, world-wide. If these analyses are correct, it would appear that widespread adoption of benchmark standards to require low-cost energy savings in identified uses could achieve dramatic energy savings at a tiny fraction of the cost required to achieve the same results through energy taxes (even if such taxes could be enacted).33

Much could be learned from a comparative study of all the IEAs reviewed above, focusing on the process by which benchmark standards have been developed, their substantive level of rigor and specificity, the number of countries adopting the standard, their compliance oversight mechanism, and their overall record of compliance and effectiveness. Has the specification of relatively precise performance standards and reporting requirements promoted complying behavior? To the extent that benchmark standards were called for, but never developed, why not? To my knowledge, no such study now exists.

As Applied to Local Harms

Outside the European Union, there are essentially no binding international standards addressed to the prevention of local harms and even nonbinding instruments are few and far between. The Codex Alimentarius has published a set of nonbinding guidelines for pesticide residues on food (i.e., product standards), which nations may apply both domestically and also to imported food. Although particular Codex standards have been criticized as too weak and have been trumped by stricter standards in some countries,43 many other Codex standards have been widely adopted in advanced industrial and developing countries alike.

UNEP has developed a group of nonbinding practice guidelines aimed at guiding national efforts to control local harms, including well-known guidelines on drinking water quality, on technologies
and techniques for limiting environmental impacts from a variety of production practices, and guidelines for environmentally sound waste management practices. Preliminary research does not indicate whether, or to what degree, UNEP's guidelines for environmentally sound management of hazardous waste have been incorporated into national practice. Further research is needed on the track record of these guidelines in the area of implementation, compliance and effectiveness.

Apart from the Codex standards and UNEP guidelines, intergovernmental standards initiatives addressed to local harms have largely been confined to "pre-standards" harmonization, i.e., international collaboration in the analysis of risk but not in the choice of final standard. For example, the OECD has developed a set of standardized protocols on good laboratory practices and methods for chemical testing and risk assessment in support of national standard setting. These methodological standards clearly are non-substantive and hence do not fill the shoes of true substantive standards. But they do suggest a new and fruitful line of inquiry: what is the actual, and optimal, role of pre-standard harmonization, e.g., harmonization of analytical and test methodologies in the global regime of environmental protection?

While governments avoid international standards aimed at local harms, the public remains concerned about the environmental impact abroad of the products they consume. In response to this public demand, industry associations such as the Chemical Manufacturers Association (CMA) and the American Petroleum Institute (API) have developed codes of conduct to which members (most of whom are multinational corporations) must swear allegiance as a condition of membership. They apply to the members' operations worldwide. However, these private codes are not of a substantive nature and a recent study (which did not receive much publicity) has reported that less than 20 percent of the surveyed firms said they followed the CMA guidelines. These findings support a common sense skepticism of multinational corporate claims (never verified) that their overseas operations meet the same environmental standards as their facilities in the home country. And they suggest that nonbinding accords at the international level must be made binding on domestic actors in order to be effective.

As Roht-Arriaza's chapter points out, private sector standard-setting is also proceeding in the International Standards Organization (ISO) and other fora. ISO's "Environmental Management System" and the EU's Eco-Management and Audit
Scheme (EMAS) both require that companies wishing to be ISO or EMAS certified, respectively, must install business management structures and procedures that are thought to be conducive to improved environmental performance. These are not substantive standards. They do not actually require improved environmental performance or establish criteria for judging whether a product's or facility's environmental performance is adequate. It will be seen, however, that these emerging management standards offer a useful model for environmental compliance oversight. If widely adopted they may themselves create a vitally useful monitoring and reporting infrastructure upon which a regime of substantive standards might be built.

One group of non-governmental or quasi-governmental initiatives does try to establish substantive performance criteria for controlling local as well as transboundary harms. A fledgling group of eco-labeling programs have developed or are developing substantive criteria which address all major environmental impacts from the full life-cycle—production, use, disposal—of products subject to the standard. They have generated a firestorm of controversy for doing so, with industry and developing country representatives arguing that local impacts arising from the production process are of no legitimate concern to consumers in other, importing countries. In many ways the environmental performance criteria employed by these eco-labeling schemes can be seen as analogous to benchmark standards and much can be learned from their experience. However, the analogy is inexact. Eco-labeling criteria are not minimum criteria, but rather "top of the line" criteria which intentionally exclude all but the best producers, environmentally. These eco-label schemes do not invite balanced participation in criteria development; they so far have precluded any variation or tiering of standards (as commonly practiced in domestic standards programs) to accommodate the different requirements of different ecosystems. They raise issues of aggregation—how to "score" one impact against another in awarding an overall scale of approval—that simply do not arise in a standards context. Unlike the case of true standards, moreover, participation in these eco-label schemes is completely voluntary at the private sector level. Both their producer participation rate and their impact on consumer purchasing behavior remains unclear at this time.

The preceding discussion makes clear that benchmark standards, or rough equivalents thereof, are present on the stage of international environmental protection, but their role is not well
understood and appears to be quite limited. They are employed in a few IEAs, adverted to in a limited and general form in a few others, and avoided altogether in several of the most important IEAs, such as the climate change and biodiversity conventions. The latter instruments leave nations largely on their own to implement appropriate national standards or incentives, aided by whatever technical or financial assistance they can procure from public or private donors. We have also seen that substantive, international standards to control local harms are virtually non-existent, although we find no shortage of second cousins to the concept. The question arises, what thinking and doctrine underlies this result?

**Current Doctrine On Appropriate Models of Cooperation**

We begin our doctrinal analysis with the language of Principle 2 of the Rio Declaration on Environment and Development, which is thought to embody customary law. It provides that

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies, and the responsibility to ensure that activities within their jurisdiction do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.41

States thus have a duty to cooperate with respect to transboundary and global harms, and no duty to cooperate with respect to local impacts.

The matter is not quite as simple as that, however. The question of what sort of impact is “local impact” and what is transboundary can lead to depths of scientific complexity.42 Duty to cooperate is, moreover, only a starting point for analysis. A duty to cooperate with respect to transboundary harms does not indicate what form this cooperation should take. Nor does a lack of legal duty to cooperate in respect of local harms tell us much about whether voluntary cooperation, in particular cases, would be a good thing—improving environmental outcomes and promoting sustainable development at equal or less cost than would obtain in the absence of coordination. Duty and good policy simply are not co-extensive.

What is good policy with regard to international cooperation, according to prevailing doctrine? In the context of transboundary and global harms, it is widely agreed that cooperation of some sort is not only required but desirable, and that it may take the form of a
product- or process-specific standard if such an approach is readily available. In practice, it turns out that standards approaches have been used only in regulatory situations where the harm addressed by an international instrument is the product of a single product/activity or a very narrow range of products/activities, i.e., the ban on large-scale high seas driftnet fishing, or the limit on dolphin mortality in the eastern tropical Pacific purse seine tuna fishery. Where numerous or diverse sources are involved, as in the climate change convention, the aggregate goals approach is preferred. Aggregate caps are easier to negotiate in a short time frame than product or process-specific standards from different categories of sources. And nations understandably value the policy flexibility built into an aggregate commitments model. We will shortly consider whether these advantages are purchased at too high a price.

While current doctrine acknowledges standards approaches to transboundary environmental problems (in principle and sometimes in practice), opinion and doctrine is set against the use of international standards to address local harms. Here, the analysis of economists and trade lawyers has largely prevailed to date. International environmental standards are written off as economically inefficient, environmentally ineffective and conducive to trade protectionism.

The economist William Nordhaus has stated the economic objection to international standards succinctly as a "Fundamental Result":

For local environmental problems, under competitive conditions, efficiency requires that countries should not harmonize their environmental policies. Countries should determine their policies by balancing local marginal costs and benefits. The resulting efficient standards or emissions fees will generally be different in different countries... Efforts to harmonize policies for local environmental problems will lead to a decline in potential economic welfare.\textsuperscript{43}

Similar sentiments have been expressed by other economists, such as Bhagwati, Srinivasan, and Leebron;\textsuperscript{44} and feature regularly in the statements of national delegates to various international fora, and in reports issuing from such fora.\textsuperscript{45} This view holds not only that states should not be coerced into accepting international standards, but that international standards for localized impacts are in principle a bad idea.
The free trade community is slightly more qualified in its opposition to standards, but only slightly. International product standards—i.e., standards related to the design and characteristics of products—are encouraged under the rules of the new World Trade Organization (WTO). Indeed, WTO creates a rebuttable presumption in favor of international product standards including, presumably, environmental standards, wherever such standards exist. But the presumption applies only for the purpose of judging the permissibility of national restrictions on imports or exports of products moving in international trade. In this limited context, where international standards for product design apply to goods made in one country and used in another, the harm in question is really a form of transboundary harm: the source of the harm (product design) occurs in one country, while the impact (via use of the product) falls in another. By and large, therefore, economists and trade lawyers agree that international standards applied to truly local harms are presumed a bad idea.

The next section calls this presumption into question as a matter of environmental policy, making the case for greater openness to international application of product- or process-specific performance standards to address both local and transboundary environmental impacts.

The Case for Benchmark Standards

Every knowledgeable person accepts by now that physical externalities—transboundary pollution or depletion/destruction of the global commons—require and warrant international cooperation, at least if the harm is reasonably significant and certain. But what kind of cooperation is appropriate? And what sort of coordination, if any, is appropriate in response to purely local harms? In considering these questions, benchmark standards offer four advantages that merit more attention than they have received to date.

First, benchmark standards minimize the burden on national capacity for standard-setting and compliance oversight. They do this because they are expressed in a form that can apply directly to the products or activities that cause environmental harm, and thus correspond to the policy instruments that all environmental ministries employ, and must employ, in order to implement broad IEA commitments or address local environmental challenges. Also, benchmark standards, properly designed, are readily monitorable and directly verifiable at the level of particular products or facilities.
Compliance with benchmark standards can be supervised not only by government inspectors but by internationally accredited auditors, following procedures similar to those now in use by the International Standards Organization. By enhancing national capacity to regulate, benchmark standards enable countries to achieve environmental objectives jointly that they could not achieve alone. **Benchmark standards may be seen in this light for what they really are: a sovereignty-enhancing mechanism by which governments as a group could more effectively regulate private actors as a group.**

A second advantage of benchmark standards, though related to the first, is more speculative. It derives from the fact that benchmark standards provide an opportunity for a process that brings all elements of the compliance community—scientists, policymakers and industry/NGO representatives—together for a common dialogue. Such a dialogue—if it can be maintained on a constructive footing—creates an opportunity for building “epistemic networks” that promote consensus on standards, and greater compliance thereafter. Thus, in the course of building capacity to comply with IEAs or protect the local environment, benchmark standards can also mobilize the political will to do so—under the right circumstances.

A third advantage of benchmark standards is that, if widely adopted, they offer a more level playing field to producers in those instances where strict national standards would inflict competitive injury on national producers in the absence of an international standard. In such instances, international benchmark standards can reduce both the economic cost and the political difficulty of policies needed to cost-effectively address both local and transboundary harms. A final advantage of benchmark standards is that they potentially expand markets for clean production and/or clean-up technologies, promoting economies of scale and technical learning that reduce compliance costs for regulated industries.

This part will discuss the nature and significance of each of these advantages.

**National Capacity**

National capacity is a concept that does not fit neatly into economists’ models. It refers to the technical competence of environmental regulators to estimate and fully understand environmental risks, to assess the availability and cost of risk-avoiding technologies and techniques, to promulgate cost-effective rules and regulations to reduce risk (preserving where possible the
economic gains from the underlying activities at issue) and to ensure compliance with the rules thus promulgated. Capacity limitations in economists’ parlance are a “transactions cost” that is difficult for theories to accommodate and thus is all too easily forgotten.

Nordhaus' passing reference to “under competitive conditions” and to balancing “local marginal costs and benefits” in his “fundamental theorem,” for example, allows him, as much of his profession, to simply assume that all environmental costs are fully internalized, to assume that “local marginal costs and benefits” are, or can easily be, balanced in any and all cases; and thereby to conclude what his assumptions firmly establish: that harmonization of local-harm standards serves no valid purpose.49 Reality is otherwise. Although further research would be needed to document in detail the actual staff size, training, and budget of environmental ministries in other countries (hard data on foreign environmental ministries is difficult to find and quantitatively measuring “capacity” is no easy task), there appears no reasonable question that many developing countries, and even a number of OECD countries, have small, technically unsophisticated and politically weak environmental ministries. Their staffs are under-trained in relation to the technical challenges facing them, and under-paid in relation to the temptations facing them. Governmental inspection and enforcement capacity will remain inadequate for the foreseeable future, creating serious problems of compliance-assurance with respect to both national and international standards.50 To be sure, technical assistance programs have been created on a multilateral and bilateral basis. But few would maintain that existing programs show promise of removing, within the foreseeable future, the serious deficit of standard-setting and enforcement capacity that hampers environmental protection worldwide. Limited capacity is and will remain a fact of life in many countries.

Impact On Local Standards

The implications of severely limited national capacity are profound. Cost-effective environmental protection requires a host of highly technical and complex analyses both as to the level and nature of the risk and as to the availability (or prospective availability) and cost of various control options. Although these decisions contain an important “value” component, e.g., how much extra cost can a pollution control option impose and still be acceptable, they are calculations with an irreducible technical core that require significant scientific and technical expertise.
To put the matter in perspective, the United States Environmental Protection Agency (EPA) has a staff of over 17,000 and an operating budget of over $2 billion. It is the largest and most sophisticated environmental ministry in the world. Yet EPA cannot meet its statutory deadlines for performing risk assessments and for drafting standards to address various environmental risks from various products and/or production processes. Furthermore, the standards EPA has developed have frequently been criticized as "unscientific," commercially infeasible or otherwise flawed. The remedy invariably proposed for these defects is yet more analysis, for which EPA is given no additional resources. If this is the plight of overworked and understaffed EPA, despite a $2 billion operating budget, imagine the situation of environmental ministries in developing countries or smaller industrialized countries.

Under circumstances of severely constrained national capacity for informed decision-making and effective compliance-oversight, the foreseeable consequence of complete, unguided national autonomy in standard setting and enforcement is not the nicely-tailored and nuanced body of standards—each country internalizing environmental costs in keeping with local tastes and conditions—so blithely assumed in the models of classical economists such as Nordhaus and Bhagwati. The consequence may well be no standards; or standards that are merely imported from other, dissimilar countries without knowledge or conviction of their appropriateness; and/or unrealistic standards that are not enforced or intended to be enforced. This same lack of capacity also has ramifications for IEAs addressing global and transboundary harms in broad aggregate terms.

Impact on Commitments to Remedy Global/Transboundary Harms

IEA effectiveness requires that a sufficient number of nations adhere to sufficiently rigorous commitments. Nations will be wary of undertaking ambitious commitments expressed in broad aggregate terms when they have no clear idea of the product- or process-specific measures or the related costs necessary to comply with such measures. This, once again, requires a highly complex analysis of the products and processes giving rise to the harm, the technologies and mitigation options that are available, the present cost of those options and the prospects for new technologies offering improved environmental performance. The analysis must be undertaken and translated into a cost-effective standard or emissions fee for each product or production process that needs to be controlled. Such an undertaking, when added to the local responsibilities of the agency,
may well exceed the fairly limited technical and administrative
capacity of many environmental ministries. And if the experience of
the ozone and climate change treaties is any guide, international
resource transfers under current IEA arrangements are not likely to
fill the gap.11

Certainly, discussion of control options and costs can occur under
either an aggregate commitments or a benchmark standards
approach. But under the former approach—in the absence of
benchmark standards or a credible process leading up to them—the
exploration of control options and costs tends to be sidelined, back-
channeled, and unstructured. Quality assurance is absent and risk
of error or exaggeration in this context is high. Compliance costs
associated with standards are hard to measure and even harder to
predict. They often appear large initially, then decline rapidly as new
pollution reduction technologies and know-how come on line. Producers invariably offer worst-case estimates of compliance costs
in the norm formation stage in order to avoid or minimize regulatory
requirements. Environmental groups likewise may tend to
exaggerate risks in order to increase the pressure for action. In the
absence of a structured and balanced dialogue yielding a balanced
picture of current and foreseeable compliance options and costs, it
should not be surprising if national delegates and regulators are
confused, and tend to err on the side of economic caution.

A well-designed benchmark standards process will yield a
structured, quality-assured examination of the costs and benefits of
possible standards or taxes. It will amplify national capacity by
drawing into the standard-setting process an array of private sector
expertise and resources offering a full range of data and analysis to
guide decision-making. And it will generate vitally important
regulatory efficiencies. When countries face certain challenges in
common and those challenges are complex, why should each separate
ministry re-invent the wheel?

Impact of Benchmark Standards on IEA Compliance

IEA effectiveness requires not only strong commitments by
countries, it also requires faithful implementation and diligent
enforcement against private sector actors. National enforcement
capacity in many countries is at least as problematic as standard-
setting capacity. In a context of limited governmental enforcement
capacity, benchmark standards are valuable in that they articulate
norms in a format that is measurable, readily monitored and
verified. Furthermore, as recent developments in private standard
setting demonstrate (see the Roht-Arriaza chapter in this volume),
product or facility level benchmark standards could be monitored by auditors and verified by internationally-accredited registrars, easing the governmental enforcement burden. Moreover, when a violation of product- or process-specific benchmark standard is established, the proper response is immediately apparent. Breach of an aggregate national commitment, e.g., cap on total GHG emissions, by contrast, is difficult to establish and yields no clear policy remedy.

**Epistemic Communities and Political Will**

The capacity to understand environmental risks and options for controlling them is not the same thing as the will to take appropriate action. To what extent can benchmark standards, either by the process of their formation or their existence, promote political will to address particular environmental harms through effective policies?

In a valuable study of the Mediterranean Action Plan, Peter Haas has demonstrated that national environmental preferences are not necessarily static. He shows how members of a transnational scientific “epistemic community” focused attention of governmental policymakers on the risks and harms arising from marine pollution, and thereby mobilized international consensus for a coordinated program to clean up the Mediterranean. In essence, they persuaded policymakers to re-calculate their national interest in ways that reflected the benefits of cleaner Mediterranean waters.

Haas’s study also indicates, however, that international emissions standards, though recognized as essential by European delegates, proved highly controversial and were deferred to a later date. Indeed, developing country delegates were reluctant to enter into generalized commitments to ban discharges of certain wastes because, in Haas’s words, “LDC delegates were generally unaware of the actual chemical composition of their industrial waste . . . .” If so, it would appear that the “epistemic community” contributing to the development of the “Med Plan” did not include experts knowledgeable of the production processes involved, the available or foreseeable control options applicable to those processes, or the emissions standards achievable by those control options. Any such knowledge gap surely would have made LDC delegates not only reluctant to accept emissions standards on particular kinds of facilities, but reluctant to accept any controls on certain pollutants for fear of the unknown costs involved.

This is an issue which merits further study in the context of the Med Plan and more generally. Would enlargement of the epistemic community to include experts knowledgeable of production processes
and control options facilitate consensus on suitable emissions standards? Would greater appreciation of the availability and cost of various control options facilitate acceptance of more ambitious general commitments? Or would it produce deeper gridlock?

**Competitiveness**

The debate over international standards has traditionally ignored all of the considerations outlined above. It has focused instead on competitiveness concerns: the concern of environmental advocates that, without harmonization of standards, industry migration from high standard countries to low standard countries, or the prospect of it, will create downward pressure on standards in all countries except the dirtiest. At a minimum, it will produce political drag on efforts to raise standards further in the higher standard countries.

This narrow focus on competitiveness, pollution havens and race-to-the-bottom fears has produced calls for international standards (or extension of national standards) backed by trade sanctions against non-conforming products or countries of origin. These proposals in turn have galvanized vigorous opposition from free traders who fear opening the door to a new round of trade restrictions. Competitiveness-based harmonization proposals have also produced an evidentiary and conceptual gridlock over the question of whether divergent environmental requirements have competitiveness impacts, and, if so, whether that matters.

Economists insist that there is no systematic evidence of differential environmental regulation causing industrial migration on any significant scale in the past; but they also acknowledge that the data are inconclusive. \(^5\) Besides the recognized limitations of the data themselves, a seldom-mentioned but fundamental difficulty confronts efforts to draw policy relevant conclusions from existing data. Retrospective empirical studies do not take account of U.S. laws and policies (and no doubt many other countries' laws or policies) which instruct regulators or permit writers to design and apply standards with a view to containing cost and, by implication, competitiveness impacts. \(^5\) Thus, existing studies do not rule out the possibility that widespread competitiveness impacts have not shown up so far because they have been designed out the system by cost-conscious regulators—at the expense of the environment. If so, future efforts to achieve truly "sustainable production" in particular sectors might very well produce encounter plausible and significant
competitiveness objections—if such measures impose higher costs without international coordination.\(^{59}\)

There is anecdotal evidence that fears of future competitive impacts from measures under consideration are already hampering achievement of objectives in both the ozone and climate change regimes. Ozone treaty parties have been lucky in that ODS-free alternatives have been available for many applications at little or no extra cost, thereby mooting competitiveness concerns while allowing a simply phase-out (with identified essential use exemptions) of nearly all use of ODS. The parties so far have not felt the need to develop intermediate use standards allowing limited use; and they have not faced strong competitiveness-based objections in moving forward with a total phase-out of ODS in many applications. Methyl bromide, however, is a major ODS of vital importance to agriculture in both developed and developing countries. The competitiveness impacts of denying methyl bromide use to producers in some but not all countries could be severe, and vigorous resistance has arisen within the U.S. agricultural community to any phase-out proposal that fails to include developing country agricultural producers.\(^{60}\)

Those who maintain that competitiveness impacts never matter should consider the case of methyl bromide.

Meanwhile, in the climate change regime, fears of competitiveness loss stand athwart efforts to implement policies needed to meet aggregate emissions reductions goals. A number of European countries have been frustrated in their efforts to impose substantial industrial-sector energy or carbon taxes in order to meet their aggregate commitments because of industry fears that such taxes will render them commercially uncompetitive—unless other countries impose similar taxes or equivalent regulatory incentives.\(^{61}\)

The United States is likely to fall short of its commitments thanks largely to a pattern of denial in the Congress (and in the compliance community) that is only partly based, if at all, on true appreciation of scientific uncertainties surrounding the climate change hypothesis. Stoking the fires of denial is a steady flow of industry testimony to the effect that imposing energy taxes or other mandates on energy-intensive U.S. industries such as steel will raise prices and cost U.S. jobs by reducing U.S. industry competitiveness.\(^{62}\)

The main point to emphasize is that the existence, or relevance, of competitiveness impacts flowing from differential environmental regulations cannot be meaningfully determined as a categorical proposition, or on the basis of retrospective data. Such impacts are fundamentally case-specific: they will vary according to the product
or process in question, the level and costliness of regulation or tax that exists or is proposed, and numerous other market factors. What is required is a case-by-case assessment of the impact of a current or proposed regulation or incentive as applied to the product or process in question.

Suppose an actual or prospective environmental standard is shown to have potential competitive significance if adopted by some but not all major producers. Does that matter? It has been argued—articulated most famously by Lawrence Summers's 1992 memo reported in the *Economist*—that differing standards may be a good thing even if they result in the migration of dirty industries to pollution havens. If other countries have ecosystems that are less burdened or more robust, if they have a population that is more dispersed or less likely to live to the age where latent cancers would develop, then migration of dirty industry to such locales is, in Summers's view, supported by "impeccable logic."

Suffice it to say that the logic of Summers's argument is "impeccable" only if the environmental and health costs are fully internalized in all countries. Yet the achievement of such internalization cannot be assumed. That is precisely the purpose of the proposed international standards regime, in respect of both local and transboundary harms. In the real world of limited government capacity that exists outside of economists' models, there is no reason to suppose full cost internalization will happen automatically across all countries acting in isolation.

In cases where prospective optimal taxes or regulations will produce competitive shifts if higher standards are adopted by some but not all countries of origin, then the conceptual case for benchmark standards is strong. To the extent they are widely adopted they allow countries to elevate their standards without imposing on their producers deadweight costs of compliance associated with market share loss and production shifting to other countries. However, these cases also produce incentives for other countries to hold out on adopting benchmark standards in hopes of winning a short-term competitive gain. This means that, in these cases, nonbinding benchmark standards are not likely to be universally adopted unless they are supported by material inducements such as conditional financial aid, trade preferences for joiners or threat of trade sanctions against holdouts. These are likely to be forthcoming, if at all, only in the context of collective efforts to address transboundary and global harms.
Ironically, the situation most favorable to adoption of nonbinding benchmark standards arises in the case where they have least often been considered, and most often opposed: when addressing local or global environmental harms through measures that can implemented without major impact on competitiveness. It is in these cases that technically proficient and procedurally credible benchmark standards, though nonbinding, will have most appeal to national governments. And it appears that there are surprisingly many situations in this category. As seen, it has been estimated that significant GHG emissions reductions could be achieved through national measures that impose little or no net cost on producers. The Business Council for Sustainable Development (BCSD) has made a virtual gospel of the concept of “eco-efficiency”: the idea that many products and processes can be redesigned in ways that better the environment while lowering producer costs.

An early application for benchmark standards, then, and a fruitful area for further research, would be to identify these situations, and formulate a credible process for developing benchmark standards to exploit them.

Efficiency and Economies of Scale

The efficiency gains from international product and process standards are obvious. Both offer economic efficiencies by expanding markets for “green” products, clean production technologies and end-of-pipe emissions control technologies. This would create both learning curve benefits as well as economies of scale in production, thereby lowering costs of compliance. Indeed, in some cases, it may render control options feasible that would not be commercially feasible otherwise.

There is some evidence that balkanization of state and national process standards has already impaired and is continuing to impair the commercialization of environmental technologies, rendering the trade-off between environment and growth even more painful. Esty reports the testimony of a California venture capitalist, Dag Syrrist, to the effect that, in Esty’s words, “[e]very year, hundreds of young environmental companies with potentially important new pollution control and prevention technologies fail to reach financial viability and die on the vine because of a regulatory process that lets separate environmental authorities [in different nations] force companies to re-prove the effectiveness of their products.” More empirical research is needed to test this proposition.
The Case Against Benchmark Standards: Overview and Response

Despite the advantages of international environmental standards reviewed above, the contrary view seems to have carried the day thus far, especially with regard to production process (PPM) standards. Therefore, it behooves us to pay careful attention to the arguments supporting the contrary view.

Once again the arguments vary somewhat, according to whether the impact in question is transboundary or local in nature. Broadly speaking, the case against international process standards involves allegations that such standards would: (1) infringe national sovereignty; (2) inefficiently over-ride the fundamental diversity of national circumstances; (3) risk downward harmonization of standards; (4) require a lengthy and unwieldy process; and (5) depend on unacceptable trade sanctions for effectiveness.

Loss of Sovereignty

The Rio Declaration, as we have seen, provides that "States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental and developmental policies . . . ."\textsuperscript{66} For many government officials the single word "sovereignty" is the beginning, and often the end, of any discussion of international standards addressed to local harms.\textsuperscript{67}

Yet the argument is a red herring. Sovereignty concerns may explain why countries resist unilateral imposition of one country's national standards upon another. But they do not explain why countries have not found it more often in their own self-interest to agree on, and adopt, benchmark standards for environmental performance. Explanation for the latter—beyond simple inattention or apathy—must be found in the influence of a widely-shared belief that international benchmark standards to address local harms are economically inefficient and environmentally undesirable. The veracity of that belief must be proved. To the extent that efficient and cost-effective standards can be designed through collaboration, they clearly are sovereignty-enhancing—improving the practical ability of governments as a group to regulate private actors as a group.
Diversity of National Circumstances

At the heart of the case against benchmark standards lies the belief that such standards will be grossly inefficient by over-riding the fundamental diversity of national preferences and circumstances. This argument works differently depending on whether the harm is transboundary/global or local. We begin with the "hard case" of local harms.

Local Harms

A widely shared view, encapsulated in Nordhaus' "Fundamental Result," holds that "[for local harms], countries should determine their policies by balancing local marginal costs and benefits. The resulting efficient standards or emissions fees will generally be different in different countries . . . Efforts to harmonize policies for local environmental problems will lead to a decline in potential economic welfare."

Underlying this view are two widely-shared albeit often implicit assumptions. First, nations are assumed to have the technical capacity and will to develop cost-effective standards and incentives which fulfill treaty commitments and efficiently remedy local harms. As Nordhaus candidly acknowledges, his Fundamental Result assumes that "environmental goods are correctly priced internally," meaning that costs are fully internalized by national policies.\(^{68}\) We have seen that fundamental limitations on national capacity to evaluate standards, set standards and enforce them renders this assumption untenable.

A second assumption of the anti-standards argument is a conceivable cure for the first. It holds that even if the possibility of government failure to internalize costs (due to lack of capacity or will) is admitted, that failure is without policy relevance because the diversity of national circumstances simply does not permit efficient international standard setting in respect of local harms.\(^{69}\) Applying international standards notwithstanding this diversity of national circumstances would be, in the words of one analyst, like "lying down with Procrustes."\(^{70}\) Among the frequently mentioned dissimilarities of national circumstance are: (1) variations in environmental assimilative capacity; (2) variations in products or production processes and marginal cost of controls; (3) variations in levels of economic development; and (4) variations in political preferences.

This chapter does not hold that these dissimilarities are never predominant or that benchmark standards are always appropriate. But it does suggest that such variations should not be presumed to be dominant and to be correlated with nationality in all cases.
Variations not strongly correlated with nationality can and should be dealt with by appropriate variegation or tiering of standards, as is done in national environmental standard-setting schemes.

(1) Variations in assimilative capacity. One major argument for maximum diversity of standards is the belief that the soil, terrain, climate and geographic situation of nations varies widely and that this gives rise to major differences in the capacity of the environment of various nations to "assimilate" environmental impacts without lasting harm. Standards harmonization is objectionable because it would preclude taking account of such variation. Why should a power plant in Jakarta, whose sulfur dioxide plume blows out over the Pacific, be subject to the same standard as a similar facility in Los Angeles?

The answer is that it should not, but that objection assumes that international standards must be rigidly uniform. It is irrelevant to the case for tiered international standards as described later. Ecosystem variations occur within provinces, within nations and across national boundaries. Significant variations in environmental impact, as Nordhaus acknowledges, have been mapped in the immediate vicinity of individual power plants! The United States has a very wide range of industrialization, human exposure scenarios and ecosystems within its national boundaries. And yet it has a discrete set of standards, tiered to reflect these variations, e.g., higher standards for sources in air quality non-attainment areas or for sources adjacent to pristine areas; more lenient standards for sources located in less burdened or sensitive areas. Ecosystems assuredly vary as do their capacity to assimilate environmental stresses. But there is no evidence to support the assumption that such variations correlate strongly with nationality. The assimilative capacity of the atmosphere in Mexico City is not greater than in Bangkok. Nor are Mexican lungs more tolerant of carcinogens than Thai lungs. It will be seen that differing levels of economic development may support a difference in standards. But putative differences in human or environmental assimilative capacity do not.

Now it may be argued that ecosystem variation is so wide that national standards are themselves procrustean. Making standards international is just another step in the wrong direction of excessive uniformity. Ideally, so the argument goes, standards for each facility would be custom-made to reflect the assimilative capacity and vulnerabilities of its surrounding ecosystem. The problem with this argument is that it works only in theory. In practice, the
"assimilative capacity" of any ecosystem is virtually impossible to measure or predict with any precision. The capacity of an ecosystem to absorb insults from any particular facility depends heavily on the total number, magnitude and interaction of all combined sources of stress on the system. These variables may change drastically over time, leaving an infinitely complicated pattern of pollutant interactions which cannot be predicted or modelled at the time the permit for a particular facility is issued. Treating first-come facilities leniently because the local environment is, at that time, relatively unburdened means that later facilities have less of an increment of acceptable degradation available to them. They must over-control because early comers undercontrolled. On the compliance side, the control options available to mitigate damage are generally known, but not infinitely varied. They are normally "lumpy" and take the form of various technologies or techniques that might be applied to prevent or clean up pollution (or, in the case of combustion, various fuels that might be burned) at various costs. The more widely they are required, the more cheap and efficient they will be for each facility to install. In the light of these practical realities, standards for environmental performance are essential, and tiered standards to reflect coarse gradations of environmental sensitivity make eminently good sense.

In short, differing assimilative capacities of differing ecosystems can be used, at most, to argue against rigidly uniform standards at the national as well as the international level. They do not make a case against international standards *per se.*

(2) **Differing marginal costs of control.** A related economic objection, raised by Nordhaus *et al.*, is that marginal costs of a given level of emissions reduction may vary among different producers. The objection is that international standards would over-ride these natural variations and that would be economically inefficient. This argument assumes, however, that marginal costs of unit reductions are homogeneous within countries, variant between them. The assumption is entirely without empirical support or plausibility. In fact, it is far more likely that marginal costs of compliance will vary among categories of sources within countries—large/small, old/new, this process or that process—rather than among countries. A paper mill in Argentina may show a compliance cost structure remarkably like a paper mill in Michigan, particularly if both apply the same production process and both are owned by Georgia Pacific. Again, the proper response to differing marginal costs and benefits of regulation
is tiering of standards by appropriate criteria; not abandoning a standards approach.

In a perfect world with no uncertainty and no regulatory transactions costs, each facility and each point source within it would be subject only to controls that are “custom-made” to equalize exactly the costs and benefits of controls in that facility located in that particular environment. We do not inhabit such a world. We never will. In practice, standards must be set at some level—local, state, federal, or international—with a recognition that no “fit” will ever be exact. In view of the high transactions costs and extreme complexity of the standard-setting process, there is no reason to presume that decentralized decision-making is always optimal.

(3) **Differing levels of economic development.** Why should Bangladesh—whose poorer population is dying from hunger, malaria, and untreated water—be asked to force its electricity producers to install the latest stack gas scrubber on a coal fired power plant? This, in stark terms, is the argument against applying the same standards in poor developing countries as apply in developed ones.

The argument has a certain rhetorical appeal, but there are several things wrong with it. First, not all environmental standards are expensive to implement. Depending on the product or process in question, there may well exist less ambitious mitigation options that would realize smaller though still substantial gains at a still lower cost. The Business Council on Sustainable Development (BCSD) has concluded that in many cases substantial improvements in environmental performance can be achieved at a net cost saving. In these cases, management inaction, in the absence of standards, is explained by knowledge gaps, inattention, inertia, or a very short time horizon for planning.

Benchmark standards do not have to be expensive; and they certainly do not have to be unitary. In cases where high performance standards are expensive to meet, it may often be possible to design a lower tier of standards which seek lower levels of environmental performance at a lower cost. At the same time, an international standards regime that searches for such a lower tier would stimulate development or dissemination of inexpensive control technologies that would meet Bangladesh’s needs; or assist Bangladeshi regulators to in their awareness of technologies or practices in existence.
Second, it is wrong to assume that lower level of development means lower benefit from environmental protection. *A priori* one might argue the opposite with equal plausibility. The benefits of pollution control are greater in developing countries—where a large percentage of the population live in close contact with the environment and derive their livelihood from it—than in developed countries where people lead relatively insulated lives. The question of relative benefits from pollution control is an empirical one, which must be answered on a case-by-case basis, according to the pollutant and the sets of affected ecosystems in question.

Third, the differing-levels-of-development line of argument overlooks that fact that countries, by and large, do not produce goods. Firms do. It is by no means obvious that a major multinational firm located in Bangladesh or Indonesia and producing textile and apparel for export back to the United States or Europe should be subject to lower environmental standards in those developing countries. The developing country status of Bangladesh is essentially irrelevant to the determination of the efficient standard for such a firm.

In general, the choice of efficient standard is far more likely to turn on the product, the process involved, the cost of complying with the standard, the ultimate customer, and the size and sophistication of the producer or facility, than on the level of development of the country where a facility happens to be located.

(4) *Differing values and political preferences.* Here is a variable that presumably changes by country. Differing countries have differing attitudes on risk, on the value to be placed on human life and environmental preservation, on the priority to be accorded to industrialization, and so forth. International standards, it is said, would ride rough-shod over those preferences.

Such differences in values certainly cannot be ignored on the ground that they reflect “political choice” problems, or special interest pressures. Who is to make that judgment? It is reasonable in the abstract to predict that, other things equal, a highly visible and widely-inclusive international process is more likely to be merit-based than the process leading to a national (or sub-national) standard. In particular cases, however, it is hard to know how one would prove that a given process was tainted by special interest pleading and, furthermore, tainted more than a hypothetical alternative process would have been.
A more fundamental rejoinder to arguments based on diverse preferences is that national preferences can change in response to information. As Haas has documented in detail in the context of the emerging regime to protect the Mediterranean from land-based sources of pollution, the values and preferences of various countries (such as Algeria in his case study) are prone to substantial change as understanding of environmental problems matures, as knowledge of available solutions grows, and as experts within national governments are increasingly vested with decision-making authority. Thus, the prevailing chaotic status quo cannot be defended on the grounds of differing preferences when those preferences are themselves likely to evolve significantly as a result of the standard-setting exercise. At the end of the day, if the country remains opposed to an international standard it will remain free not to adopt it. That is the essence of a nonbinding standard.

At the core of the argument for tiered international standards lies the plausible premise that national capacity for independent standard setting is limited, that the design of cost-effective standards is complex and resource intensive, and that a number of products and agricultural, extractive, or industrial processes, e.g., oil refining, chemical manufacture, pose a relatively discrete and finite range of environmental challenges wherever they take place. While there certainly are some important differences that correlate with where the plants are located, there also may be important cross-national similarities in processes, in environmental and health impacts arising from those processes, and/or in the various technical and policy options available to mitigate those impacts. In cases where the similarities are substantial, and the differences can be reflected in a finite number of discrete tiers, there are important efficiency and environmental gains to be reaped from international collaboration in standard setting. Indeed, in such cases the alternative to international standards may be no meaningful and enforceable standards at all.

How does one identify such cases? Esty argues for a "jurisdictional matching principle" whereby decisions would be taken at the level that corresponds to the geographic scope of the physical harm, although elsewhere in his article he argues for the relevance of economic or psychic spillovers. On this view, local harms would be regulated at the local level; regional harms at the regional level; and global harms at the global level. This view, however, effectively dismisses the possible relevance of capacity constraints and cross-national similarities of condition, although Esty elsewhere
acknowledges the relevance of these factors. It reiterates the status quo rejection of internationally coordinated policies addressed to local harms. If we accept that capacity constraints are or should be significant and relevant factors in regime design, and that there are or may be cross-national similarities in local challenges that warrant coordinated approaches, then one derives a rather different decision rule. Rather than looking case-by-case at the scope of the externality at issue, one looks case-by-case at whether there are similarities in the issues facing regulators. My recommended approach, therefore, would be to analyze the products and processes having important environmental and health impacts. The Dutch government, for example, has identified a number of industries which it calls "homogeneous" industries, meaning that production processes are broadly similar across the industry. These might be likely candidates for early standardization. But even so-called heterogeneous industries might be candidates for tiered and variegated standards approaches at some point, if the heterogeneity of products and production processes turns out not to be well-correlated with nationality. The point is not that tiered standardization by product or process category should be pursued in every case, but only that it should not be categorically ruled out.

Global Harms

Are there sufficient cross-national similarities of circumstance to permit the development of relevant and appropriate benchmark standards to address transboundary or global harms? Certainly, such variations of circumstances are not greater for global and transboundary harms than for local ones; in the case of the receiving environment, they are less.

Nonetheless, the other sources of variation reviewed in the context of local harms remain applicable to product or process standards addressing global harms. For example, new facilities are likely to be subject to stricter control requirements than existing facilities; major sources may be more strictly controlled than minor sources; small, unsophisticated producers cannot be held to the same costly and stringent requirements as major multinationals; subsistence goods should not be taxed or regulated as heavily as luxuries. Again, these are all the same sorts of distinctions as occur within countries and are taken into account in setting national standards. International standard setting may expand the relevant range of variation somewhat, but doubling the number of countries probably will not double the range of variation. To the extent that there are similarities in products or production processes across
countries—again, this is an empirical question—there are efficiencies to be gained from international collaboration.

The two variables that do correlate with nationality are risk preference and moral position. Although a harm may be global, it is likely to affect various countries differently depending on their location, climate and topography; countries also may vary in their assessment of the likelihood of that impact, and in the priority assigned to avoiding it in the context of the other challenges they face. Developing countries may make a moral claim that developed countries, having contributed the most to the damage, should pay the most to clean up the damage.

These arguments, however, will be raised and must be resolved through persuasion or inducement in the context of any international regime addressing transboundary harms, whether the norms contained therein are expressed in the form of aggregate commitments or benchmark standards. They have been used to claim special and differential obligations for developing countries and, by inclusion, producers in developing countries, in responding to global harms. In the context of benchmark standards, they support rejection of rigidly uniform standards, and they comprise an appeal for a “developing country” tier in standards wherever there is more than one control option for mitigating harm from a particular product or source. But they do not constitute a critique of international standards in principle.

***Risk of Downward Harmonization of Standards***

Here is the bugaboo that haunts environmental advocates leading many of them to oppose, or be wary of, “harmonization.” It causes them to insist that any standard emerging from such a standardization process must be a floor, not a ceiling, for national standards.

Higher-than-international product standards applied to imported products are already subject to the trade disciplines of the WTO Agreements on Technical Barriers to Trade and Sanitary and Phyto-sanitary Standards. These agreements expressly respect the right of governments to impose higher-than-international standards to domestic and imported products without discrimination, subject to certain safeguards against disguised protectionism. Although environmentalists have expressed concern that these safeguards are broadly worded and could allow a GATT dispute panel to invalidate a national standard that legitimately differed from an international
one, I believe that risk is slight under the emerging jurisprudence of the WTO. 79

On the other hand, the GATT/WTO offers no recognition of international PPM standards and has been interpreted, in fact, as generally prohibiting governments from applying national or international environmental standards to imported products in respect of non-product-related PPMs. 80 Negotiation of international PPM standards would not change that. Governments would remain free, as they are now, to maintain higher-than-international PPM standards for their own producers; but would be barred, as they are now, from extending domestic standards to imported goods, unless and until the GATT is clarified.

While downward harmonization of standards is not a major risk arising from benchmark standards so long as such standards are clearly minima, it must be admitted that the benefits of uniformity are reduced to the extent governments feel the need to establish higher-than-international standards to meet their own needs. One way of responding to this concern is simply to ensure that international standards include a "high performance" tier to accommodate high standard countries.

Unwieldiness

One of the most fundamental objections to an international process standards regime is its unwieldiness. If it takes EPA 6 years to promulgate a single rule setting standards on hazardous air pollutants, how is the world going to do it in less than 100? And how would the standard ever be amended to reflect new technologies? The possibilities for gridlock and ossification seem endless.

The answer is that it should be no harder, and may be easier, for an international body to enact and revise a standard than for EPA. Presumably, the international panel would have greater resources around the table. It would have access to greater expertise and wider data. And it would not be worried about preparing a record for judicial review; nor would it be subject to the procedural miasma imposed by the Administrative Procedure Act.

On the other hand, internationalizing the process may expand the variety of products or PPMs at issue, and would certainly increase the range of cultural perspectives around the table. The key to an effective process is establishing an effective system of representation that brings expertise and legitimacy to the table while keeping the numbers manageable (see the discussion below). In addition, it would be highly advisable to have a neutral, IPCC-like
scientific and technical advisory panel that would do studies, prepare reports and otherwise advise on the technical and technological aspects of the process.

Perhaps the best way to keep a perspective on the unwieldiness issue is to remember the alternative: scores of different states separately developing, or revising, their own standards. That too is unwieldy.

**Dependence on Trade Sanctions**

The debate over “harmonization” of standards has often centered on whether high standard countries are justified in imposing trade restrictions—embargoes or countervailing duties—on products of lower standard countries. In fact, critics of international standards approaches often assume that international standards will be imposed on other countries through trade sanctions. That, of course, is not the issue here. Whatever the merits of allowing importing countries to impose their own national standards on imports in the absence or presence of an international standard, the more fundamental issue addressed by this chapter is whether truly international product or process standards are efficient, effective and feasible.

Another common observation among industry and government delegates to trade and environment fora is that international process standards are a lousy idea because no one will join them unless they are forced to by trade sanctions, and trade sanctions for that purpose are categorically unacceptable.

This point of view is most plausible in respect of costly standards which have significant competitiveness implications. Consider first the case of costly standards addressed to local harms. Under this scenario, the temptations for non-implementation or non-compliance with such standards are strong, and the economic discomfort considerable for producers in countries that voluntarily adopt them while others do not. Trade measures against non-complying goods will likely be required to persuade nations/producers to join and to deter widespread holdout behavior that would undermine the viability of the regime. A heated and complex debate has been waged over whether trade measures in the form of “eco-countervailing duties” against environmentally “subsidized” goods from low standard countries are legitimate or practicable. That debate has largely subsided, with a clear victory on the ground for free traders waging the powerful argument that eco-subsidies are not only theoretically questionable but practically impossible to administer.
With the possible exception of recyclable hazardous waste covered by the Basel Convention, the trading community will almost certainly reject any proposal for trade-backed international PPM standards aimed at addressing local environmental effects confined to the exporting countries.

Not all international standards addressed to local harm are, or need be, expensive to comply with, however. Where environmentally effective, nonbinding standards can be met without ceding a major competitive advantage to producers in holdout countries, there is reason to believe they will be widely adopted—if they are technically proficient. Similar codes of practice and guidelines relating to occupational safety and health have been put forward by the International Labour Organisation (ILO) and, as Virginia Leary has observed, there is general agreement that the codes and guidelines, in this field, while nonbinding, “have had an important influence on national laws and practice.” Properly developed environmental standards could have the same influence.

This brings us to the case of environmental standards addressing transboundary or global impacts. Once again, trade measures are likely to be needed only to uphold standards imposing significant compliance costs. But where the standard is embodied in an IEA addressing transboundary or global harms, any categorical aversion to trade measures is groundless. There is sterling precedent—CITES, the Montreal Protocol, Basel Convention—for the employment of trade measures as an essential part of a comprehensive and widely consensual arrangement addressing transboundary and global harms. There is no apparent reason why future product- or process-specific standards deemed essential to achieving the same or comparable objectives should be assigned a lesser claim to the support of trade incentives. The GATT should be clarified so as to expressly permit national trade measures which restrict imports of goods that fail to conform to international standards addressing transboundary and global harms, be they product or process-based.

A Model for Benchmark Standards

Benchmark standards represent, in essence, a middle road between the course advocated by those who seek upward harmonization of standards at the highest conceivable level, and those who advocate no convergence of substantive standards at all. Contrary to the stereotypical characterization of harmonization
proposals as "Procrustean beds" on which nations will be forced to lie,\textsuperscript{88} benchmark standards as proposed would not be rigid or uniform. They need not be secretive or undemocratic.

Here is how benchmark standards for production processes might be developed in practice:

First, concerned governments would choose the environmental impact to be addressed—either a transboundary or global impact or a widely shared local concern—and the categories of producing facilities or activities to be covered by the standard. Examples might include sustainable forestry standards for particular types of forest (tropical and temperate); high seas fishery practice requirements to limit by-catch; standards to limit the use of methyl bromide in particular agricultural applications; standards to limit emissions of persistent organic pollutant (POPs) from identified applications; standards to limit emissions of hazardous pollutants from classes or sub-classes of oil refineries or chemical manufacturing plants; practice guidelines to eliminate use of CFCs in cleaning computer circuit boards; and/or industrial pre-treatment standards for the discharge from identified categories of manufacturing facilities into municipal water sources.\textsuperscript{89} Attention should focus on environmentally significant activities or facilities which are either (1) relatively large-scale and small in number, or (2) relatively homogeneous or at least subject to limited nationality-correlated variation.

Second, covered producers would conduct internal audits of key emissions or other impacts following standardized monitoring and reporting procedures.\textsuperscript{90} The initial impact audit would establish the baseline for the standard-setting process, identifying what levels of emissions are forthcoming from which sorts of products or processes. Subsequent audits of emissions and other aspects of environmental performance would then provide the basis for standards improvement and for compliance oversight.\textsuperscript{91} ISO environmental management standards and emerging environmental audit standards provide both precedent and guidance for how such audits might proceed.

Third, a negotiating group would be convened to develop a draft standard in consultation with all affected stakeholders not directly represented in the group. There are several models for how such a group might be constituted: (1) technical experts drawn from a variety of disciplines and nationalities, as in the ozone treaty's technical options committees; (2) governmental representatives only—the traditional model for international negotiation; (3) balanced representation of private stakeholders and government
representatives (e.g., ILO and U.S. negotiated rulemaking); or (4) some hybrid or variation of the foregoing. Full discussion of the advantages and disadvantages of each approach is beyond our scope. Suffice it to say here that the ISO standards process used to develop international environmental management standards is a model of sorts, although as Roht-Arriaza observes, a flawed one. It establishes a precedent for government, industry, and environmental NGO collaboration in setting international standards for corporate behavior; but it does not provide for balanced representation in ISO decision bodies and hence lacks the degree of credibility necessary for a body charged with developing substantive and enforceable limits.

Fourth, the negotiating group would develop a draft standard following a consultative and negotiating process similar to that now employed by ISO. As in the case of national standards, applicable international standards might be sub-divided to allow variation according to the nature of the product or process, the age and size of the facility, the vulnerability of the receiving population or ecosystem to further impacts (high/medium/low), and/or a forecast of the likely economic impact of a particular control option on producers or consumers (high/medium/low). This may sound complicated, but it actually represents a rough approximation of how standard setting and permit writing is currently done at the national level: a wide range of factors and judgment calls enters into the selection of the standard, but the standards that finally emerge are discrete and finite in number, representing a discrete and finite range of control options.

Once the draft standard is issued, there would be a comment period and then a negotiation to prepare the final version. A standard would be adopted only when agreed to by a specified number of countries (or countries representing an agreed proportion of relevant production and consumption of the product in question). The standards would be updated periodically by a similar or possibly abbreviated process.

Under sound standard-setting principles, benchmark standards generally would prescribe performance levels and would not require adoption of particular practices. There is always the possibility that new or previously unexplored processes would emerge which yield more of one pollutant in exchange for less of another. Like national standards, international standards would require a variance procedure, at the national or international level, which would be implemented based on determinations of environmental equivalence. Such a procedure could also be used to accommodate reasonable
experimentation with new processes offering the prospect of greater pollution reduction at less cost. And it could be used to minimize adaptation costs arising from the existence of national standards that may be different from, but no less stringent than the international norm.

As in the U.S. where federal standards are used as benchmarks for permitting individual facilities, international benchmark standards would be applied to particular products or facilities either by national government permit writers, or by individual certifiers (analogous to permit writers) who would be located within the country in question but would be directly accountable to the international regime. Although it is not essential to the scheme, it will be helpful if certifiers are nationals of the country in question but have experience with the industry in question and are trained and certified by a national or international accreditation board. This will help protect both the integrity and the competence of the certification process. The International Organization for Standards (ISO) is already establishing a system for training and accrediting certifiers who are knowledgeable of particular industries to implement its environmental management system certification program.\(^9\)

Compliance with benchmark standards would be monitored by government inspectors where available. In addition, compliance would be overseen by producer self-audits checked by independent third-party verification, as ISO currently provides for on a volunteer basis. Substantive standards would require mandatory third-party certification of the audit—and of compliance with all applicable laws, regulations and standards—in order to be credible. Here the model, as Roht-Arriaza observes, is EMAS, the European variant of ISO.\(^9\)

Beyond monitoring, auditing, and reporting, as Gareth Porter has observed, a key element of any sectoral standards regime is the establishment of national or regional centers for technical assistance in pollution reduction.\(^9\) These centers would advise industries or trade associations on requirements and techniques for monitoring and reporting emissions. They also would counsel industries on ways they could meet minimum standards through least-cost or efficiency enhancing techniques. Porter notes that UNEP has already established working groups on cleaner production in several industries, including leather tanning, textiles, solvents, metal finishing, pulp and paper, and petroleum.\(^9\)

A further essential ingredient, as always, would be establishment of a funding mechanism for the program. In this
instance, it would be used to finance the technical assistance centers, to facilitate the participation of developing countries in standard setting and enforcement, and to provide financial assistance to small and medium-sized enterprises, particularly those in developing countries, in complying with standards.

The procedure outlined above for developing and overseeing compliance with benchmark standards is both manageable and not unprecedented. With a few important adjustments the model can be understood as an incremental evolution from current or emerging practice in standards development and compliance oversight.

**Conclusion**

Benchmark standards are not simple or easy to develop. Neither are the myriad national standards that are needed to manage the multiple environmental risks which now menace mankind both globally and locally. The model proposed is designed to be inclusive, flexible, capacity-enhancing and trade-promoting. It has been seen that the approach proposed is workable and not radically new.

If national technical capacity turns out to be as limited in many countries as it now appears to be, some form of benchmark standards may turn out to be the only path to effective environmental protection against both transboundary and global harms.

**Endnotes**

[Many thanks to Steve Charnovitz, Dan Esty and Joel Paul for helpful comments, with special thanks to Kurt Strasser for reviewing two drafts. Scott Foster, Iwa Cheng and Stephen Hryniewicz provided valuable research assistance.]


2 A spokesperson for the European Union Environmental Committee, Maartje van Putten, has stated that, “Everyone present is aware of the importance... in combatting an illicit trade worth $17 billion and which is size is getting close to arms and drugs.” *Parliament Endorses Compliance with*

In 1995 environmental scientists Norman Myers and Peter Raven estimated that 50,000 species are lost annually. This estimate is 1,000 to 10,000 times the rate of extinction experienced over the past 65 million years. Their estimates exceed a November 1995 UNEP report which estimated that extinctions are occurring at a rate of 50 to 100 times the average expected natural rate. Environment Award Prize Winners Cite Massive Extinction, Urge Drastic Measures, 19 Int'l Env't Rep. (BNA) No. 5, at 190 (Mar. 6, 1996). A January 1994 estimate listed the rate of extinction at 27,000 species per year. Switch Senate Action on Biodiversity Pact Seen as Best Protection for U.S. Business, 17 Int'l Env't Rep. (BNA) No. 8, at 373 (Apr. 20, 1994).

On June 6, 1996, it was reported that approximately 70 percent of the world's commercially-important marine fish stocks were either fully fished, overexploited, depleted or only recovering slowly under the effect of partial protection measures. World Said Facing Catastrophe from Over-Fishing, Reuters North American Wire, June 6, 1996, available in LEXIS, Nexis Library, World file.

Delegates Struggle to Reach Accord before Climate Conference Ends, Agence France Presse, Apr. 6, 1995 available in LEXIS, Nexis Library, World File; see also Environment Experts Warn of North-South Conflict at Berlin Meeting, Inter Press Service, Mar. 27, 1995 (Reporting that CO\textsubscript{2} emissions have not leveled off let alone fallen in most countries; fossil fuel is rising even in the United States, where per capita emissions are already five times the world average). PETER F. GUERRERO, GLOBAL WARMING—DIFFICULTIES ASSESSING COUNTRIES' PROGRESS IN STABILIZING EMISSIONS OF GREENHOUSE GASES, GAO Report No. GAO/RECD–96–188, Sept. 19, 1996, at 3.
It is very difficult to estimate the amounts of hazardous wastes involved. In many countries, systematic monitoring of hazardous waste management and collection of relevant data does not exist. . . . National definitions . . . vary widely, and states accordingly monitor wastes in different ways and to a different extent. Estimating the volume of hazardous wastes subject to transboundary movement is even more difficult: a large number of exports take place without the knowledge or beyond the control of state authorities . . . .” Also, “[a]ccording to OECD estimates, the OECD member states generated around 300 million tons of hazardous wastes per year in the late 1980s, of which the United States produced between 260 and 275 million tons and the member states of the European Union (previously the European Community) between 20 and 35 million tons, Eastern European States produced around 19 million tons, while the share of the rest of world amounted to about 16 million tons.” KATHARINA KUMMER, TRANSBOUNDARY MOVEMENTS OF HAZARDOUS WASTES AT THE INTERFACE OF ENVIRONMENT AND TRADE 6 (1994).

According to a recent report, the “second most lucrative illegal trade in Miami is now estimated to be in internationally proscribed CFCs . . . . The trade [in Miami alone] is thought to be worth between $150 million and $300 million annually.” Mike Townsley, Still Playing with the Banned, THE SCOTSMAN, July 2, 1996, at 17. World-wide the illegal trade of CFCs constitutes about 20 percent of the global market. Id. DUNCAN BRACK, INTERNATIONAL TRADE AND THE MONTREAL PROTOCOL 114 (1996).

Professors Jacobson and Brown Weiss have usefully delineated the conceptual distinctions among the terms implementation, compliance, and effectiveness: “In looking at compliance, it is useful to distinguish between implementation, compliance and effectiveness. Implementation refers to the legislation, the regulations and other steps required to implement the agreement. Compliance means not only whether these measures are observed but also whether the targets of agreements change their behavior and comply. . . . Implementation and compliance differ from effectiveness. The agreement may be complied with but still be ineffective in
attaining its stated objectives.” Brown Weiss & Jacobson, supra note 1, at 3.

Failures of environmental coordination are harming more than just the natural environment. They have also created trade conflicts that have spawned a whole new field of law and controversy: trade and environment law. As Farber and Hudec pointed out in an important recent study, “The so-called conflict between trade and environment arises from the simple fact that nations have different environmental policies.” Daniel A. Farber & Robert E. Hudec, GATT Legal Restraints on Domestic Environmental Regulations, in 2 FAIR TRADE AND HARMONIZATION 59 (Jagdish Bhagwati & Robert E. Hudec eds., 1996). One obvious way to reduce these tensions would be to seek greater convergence of national environmental policies.

Choices not mutually exclusive. Choice (1) is exclusive of both (2) and (3); but choices (2) and (3) themselves can be and occasionally are used in complementary ways.


Two classifications are in order here. First, the presumption I speak of does not derive primarily from the trading system, at least not yet. The WTO promotes use of international product standards. Moreover, the WTO creates no barrier to domestic application of international process standards. It merely prohibits, or has been construed as prohibiting, application of domestic or international process standards to imports made with non-conforming processes. But it will be seen that few if any such standards exist. If they did exist, as proposed in this paper, the text of GATT Article XX could easily be interpreted as allowing import restrictions to uphold them.

Second, the presumption against international standards in respect of local harms is of long-standing vintage in the international community. But it is being strongly reinforced in U.S. and European policy circles by the emergence of new calls for “subsidiarity,” “devolution,” and other catch-words for decentralization of decisionmaking. In
the U.S. the argument is taken so far as to advocate devolution of federal standard-setting power to the states. See Richard L. Revesz, Rehabilitating Interstate Competition: Rethinking the "Race to the Bottom" Rationale for Federal Environmental Regulation, 67 N.Y.U. L. REV. 1210 (1992); for a rebuttal see Daniel C. Esty, Revitalizing Environmental Federalism, 95 MICH. L. REV. 570 (1996).

Examples of benchmark standards include, or might include, agreed limits on lead content of gasoline; practice guidelines for the use of methyl bromide in specified agricultural applications; an agreed tax on energy use in particular industry sector or sectors; and/or a international baseline allocation of tradeable CO2 emissions allowances among major fossil-fuel electric power plants.

The term does not include procedural requirements such as environmental impact assessment, notification, or prior informed consent, except insofar as such procedural requirements may be ancillary to substantive standards—e.g., standards for risk assessment, test methods, monitoring and/or reporting of impacts. Nor does the term include ambient standards for water, soil or air quality, except, again, insofar as they are used to inform product or process-specific standards—e.g., standards for critical loads or air quality attainment used to establish the needed level of stringency of emissions standards. The term also excludes aggregate national commitments, such as those contained in the climate change convention whereby countries undertake to cap or reduce greenhouse gas emissions from all sources within their jurisdiction.

Esty, supra note 12, at 574.


UN G.A. Res. 44/225 on Large-Scale Pelagic Driftnet Fishing and Its Impacts on the Living Marine Resources of the World’s Oceans and Seas, para. 3, 29 I.L.M. 1555, 1558 (1990); see also UN G.A. Res. 45/197 on Large-Scale Pelagic


19 Convention for the Protection of the Rhine River Against Pollution by Chemical Pollution, 6 I.L.M. 242 (1977). Preliminary research does not indicate whether or to what extent that Commission has developed such standards; and to what extent they have been complied with.

Similarly, the Convention for the Protection of the Rhine River Against Pollution by Chlorides calls upon the French Government to “install an injection system in the subsoil of Alsace in order to reduce over a period of ten years the discharges from the Alsace Potassium Mines by an initial quantity of 20 kg/s of chloride ions.” Otherwise, the convention merely requires each party to cap its national aggregate discharges of chloride ions into the Rhine. *See* Convention for the Protection of the Rhine River Against Pollution by Chlorides, 16 I.L.M. 265 (1977), arts. 2, 3.

20 Gabriela Kutting, *Mediterranean Pollution: International Cooperation and the Control of Production for Land-Based Sources*, 18 MARINE POL’Y 233, 238 (1994); *see also* Peter M. Haas, *Comparative Assessment of Regional International Programs to Control Land Based Marine Pollution: The Mediterranean* C12 (May 1992) (paper prepared for Woods...
The Technical Annex contains a list of very precise product standards for mobile sources, and a more generalized list of NOx performance standards (mg/m$^3$ of undiluted effluents) for a variety of processes (e.g., fossil fuel combustion, nitric acid production, stationary gas turbines) used in stationary sources. Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution Concerning the Control of Emissions of Nitrogen Oxides or Their Transboundary Fluxes, 28 I.L.M. 212 (1989). Similarly, the 1994 Sulfur Protocol contains both national aggregate targets for reducing sulfur emissions over the period 1994–2010, as well as, in Annex IV, a series of emission limit values for sulfur emissions from a variety of major stationary combustion sources burning a variety of fuels. See also 1991 Protocol to the 1979 Convention on Long-Range Transboundary Air Pollution Concerning the Control of Emissions of Volatile Organic Compounds or Their Transboundary Fluxes, 31 I.L.M. 568 (1992). Although the LRTAP Convention is itself a binding instrument, the technology solutions embodied in the Technical Annex which parties are to “take into consideration,” are clearly nonbinding.

While these aggregate national commitments obviously are not application-specific benchmark standards, one can find implicit within them a series of de facto standards calling for zero use of the banned chemical in each and every product or process where it formerly was used.

Article 9 of the Montreal Protocol calls for international cooperation in developing and exchanging information on “(a) best technologies for improving the containment, recovery, recycling or destruction of controlled substances or otherwise reducing their emissions; and (b) possible alternatives to controlled substances, to products containing such substances, and to products manufactured with them; and (c) costs and benefits of relevant control strategies. Article 6 calls for quadrennial assessments of available control measures drawing on analysis provided by “appropriate panels of experts.” A further example of implicit benchmark standards...
of a less environment-friendly sort can be found in the adoption of "essential use exemptions" under the London Revisions (halons and HCFCs, respectively) and the 1992 Copenhagen Amendments. These product- or process-specific exemptions are properly regarded as a sort of permissive standard of a crude, binary sort—either an ODS use is permitted without any restriction as to amount, or it is not.


25 *Id.*


31 Although the Climate Change Convention has not yet employed benchmark standards officially, it is, perhaps inadvertently, laying the groundwork for eventual development of benchmark standards. The convention parties have adopted revised reporting guidelines at their Second Conference in July 1996, which should standardize inventory and reporting procedures and greatly improve the comparability of national inventories and reports of greenhouse gas (GHG) sources and sinks. This process of developing comparable databases of emissions sources is, of course, the first essential step in any system for establishing guidelines to control those sources. And Article 9 of the Framework Convention instructs the Subsidiary Body for Scientific and Technological Advice, *inter alia*, to "identify innovative, efficient and state-of-the-art technologies and know-how and advise on the ways and means of promoting
development and/or transferring such technologies.” United Nations Framework Convention On Climate Change, 31 I.L.M. 849 (1992). Preliminary research does not indicate clearly whether, how, or to what degree the Subsidiary Body has yet taken up this mandate.

32 Seth Dunn, *The Geneva Conference: Implications for the U.N. Framework Convention on Climate Change*, 19 Int'l Env't Rep., Current. Rep. 906 (Oct. 2, 1996), *available in* LEXIS. Ironically, a number of prominent business groups were prepared to go further. The Business Council for Sustainable Energy, composed of European and U.S. natural gas, efficiency, and renewable energy companies held their own round table discussion in Geneva on increasing the feasibility of their technologies. Speakers for 58 insurance and re-insurance companies worldwide released a position paper highlighting the risks of climate change and supporting a process to increase investment in clean energy. But the United States led opposition to the proposal, citing the need for “flexibility.” More probably, the Clinton Administration realized that virulent anti-environment sentiment in the current Congress left no prospect whatever of implementing any recommendations that might come out of such a process. The only thing left was to stall for time. *Id.* at 912.


Kummer, supra note 6, at 18, 21.

Developed in response to the vast and daily growing backlog of untested chemicals which exceeds the capacity of any environmental ministry to evaluate, the Screening Information Data Set (SIDS) program allows participating governments to avoid duplicative testing and evaluation by drawing on the tests done by other governments. Standardization of test methods and procedures provides each country a level of confidence that the tests and risk assessments conducted by other countries will be performed under known procedures and will be scientifically valid. Debate on Exposure Criteria Postpones OECD Review of Need to Test Seven Chemicals, 13 Int'l Env't Rep. (BNA) No. 15, at 502, 504 (Dec. 5, 1990).

Arik Levinson, Environmental Regulations and Industry Location: International and Domestic Evidence, in 1 FAIR TRADE AND HARMONIZATION, supra note 9, at 432.


One lesson to be drawn from the EU experience with eco-labeling is the importance of fair and inclusive procedures: The EU eco-labeling authorities have come in for heavy and well-deserved criticism for developing substantive eco-label criteria through procedures that are not open and inclusive—at least not for non-EU producers. The main objection levelled
at seal-of-approval eco-label schemes is one that does not apply to benchmark standards. Seal of approval eco-labels require the aggregation of “points” assigned to a wide-variety of different impacts arising over the full life-cycle of the product. Staffin at 259. This requires highly subjective (and ultimately arbitrary) judgments about the weight (points) to be assigned to various kinds and degrees of impact, in order to yield a single score. Benchmark standards apply separately to individual impacts from products or facilities and hence do not raise this concern.


42 Esty has documented instances where environmental impacts once thought to be exclusively local in scope later are revealed to have transboundary or even global ramifications, as scientific understanding of ecosystems evolves. See Esty, supra note 15, at 625.


44 See Jagdish Bhagwati & T.N. Srinivasan, Trade and the Environment: Does Environmental Diversity Detract from the Case for Free Trade?, in 1 FAIR TRADE AND HARMONIZATION, supra note 9, at 167. “[T]he basic presumption is that different countries will have a legitimate diversity of [cross-country intra-industry] CCII environmental taxes and standards . . . . [T]he diverse tax rates can come from differences in technology and endowments in the broadest sense (so as to include weather, demography, geography, inherited abatement policies, etc.).” (emphasis in original). See also David W. Leebron, Lying Down with Procrustes: An Analysis of Harmonization Claims, in id. at 88–90.

See Uruguay Round Final Act, Agreement on Technical Barriers to Trade and Agreement on the Application of Sanitary and Phyto-Sanitary Measures.

See Esty, supra note 15, at 587, for an excellent review of the arguments for cooperation in the face of externalities or, what he calls, "structural mismatches."

Of course, national governments remain primarily responsible for enforcing standards against private actors. As the unfortunate example of the NAFTA environmental side agreement makes clear, lack of enforcement capacity and fear of being stigmatized for non-enforcement can cause national governments to become very sensitive about accepting international standards, or agreeing to any effective mechanism for oversight with them. Nonetheless, the flawed and stigmatizing model of the NAFTA environmental side agreement need not be perpetuated. A more plausible model—and the model which is actually being implemented by the NAFTA parties—is one in which governments cooperate in compliance oversight possibly, as seen below, in collaboration with private sector actors.

Indeed, the Bhagwati and Hudec collection on the economic merits and demerits of harmonization manages to devote five chapters to debate over harmonization of environmental standards without once mentioning the issue of national capacity. See 1 FAIR TRADE AND HARMONIZATION, supra note 9, chs. 1, 2, 4, 10, 11, and 12.

Thailand has considered private monitoring to compensate for its own acknowledged deficiencies in compliance oversight. See Paul Violette, Conversations with Thai Officials 1 (Nov. 11, 1996) (unpublished memorandum reporting conversations with Thai officials in the Thai Pollution Control Department).

Funding to assist LDC phase-out of ODS was set at $340 million to $500 million in a November 1992 meeting to set up the Montreal Protocol Multilateral Fund. Whether Accelerating Phase-Out Deadlines Apply to Developing Countries Unresolved, 15 Int'l Env't Rep. (BNA) No. 24, at 771 (Dec. 2, 1992). As of October 1994, only $216 million had
been received. *Cash Crisis Cited as Major Threat to Use of Non-Ozone-Depleting Substances*, 17 Int'l Env't Rep. (BNA) No. 21, at 841 (Oct. 19, 1994).


53 *Id.* at 55. Haas defines "epistemic community" as a "professional group that believes in the same cause-and-effect relationships, truth tests to assess them, and shares common values. As well as sharing an acceptance of a common body of facts, its members share a common interpretive framework . . . from which they convert such facts, or observations, to policy-relevant conclusions. They identify problems in the same manner and process information similarly. They also share a common vocabulary, common political objectives to which such policies should be addressed, and a common network in which findings are exchanged and shared concerns are formulated. Although members of a community may be drawn from different scientific disciplines, all will share a common world view and concern about the same subject matter."

54 *Id.* at 114.

55 *Id.*

56 *Id.*

57 For a useful, recent survey of the literature on competitiveness, see Levinson, *supra* note 38, at 429–59. One problem besetting measurement efforts is the difficulty of comparing regulatory stringency across nations. It has been suggested, plausibly, that compliance costs might be used as a proxy for regulatory stringency, but there is a lamentable lack of disaggregated data on environmental compliance costs at the level of individual facilities even in the United States, much less in other countries. Thus, it is difficult to assign a value to compliance cost as a measure of regulatory stringency in various countries. Equally lacking is reliable data on the various other factors that are known to affect
industry location. It is therefore hard to isolate compliance costs from the other variables that affect industry location. *Id.* at 441–42. Survey data have been used to try to develop an ordinal picture of the impact of compliance cost on investment decisions of senior managers. But in view of the predictable unpopularity of the response, "yes, I go in search of pollution havens," the validity of management surveys is open to question.

58 See, e.g., Federal Water Pollution Control Act, § 301(b) and 304(b), 33 U.S.C.A. §§ 1311, 1314 (West 1996) (requiring "best practical control technology" for water-borne effluents, based on considerations of cost and benefits of reduction); Clean Air Act (CAA) § 112(d)(2), 42 U.S.C. § 7412(d)(2) (West 1996) (instructing EPA Administrator to consider costs in setting emissions standards for hazardous air pollutants); CAA § 169(2)(C)(3), 42 U.S.C. § 7479(2)(C)(3) (requiring that cost be considered in determining "best available control technology" for reducing emissions of criterion pollutants in air quality attainment regions); CAA § 111(a)(1), 42 U.S.C. § 7411(a)(1) (requiring cost consideration in setting new source performance standards); Toxic Substances Control Act (TSCA) § 6(A), 15 U.S.C. § 2605 (requiring "least burdensome response" to finding that new chemical poses health or environmental risk); see also Corrosion Proof Fittings v. Environmental Protection Agency, 947 F.2d. 1201 (1981) (reversing EPA for failing to balance costs and benefits of asbestos regulation under TSCA).

59 In fact, empirical studies of industrial relocation trends typically have looked at data from the seventies and early eighties when compliance costs in the U.S. and other countries were relatively low. Levinson, *supra* note 38, at 429. Compliance costs have "ramped up" in response to a new wave of regulations in the nineties and predictions are for further increases in aggregated costs of compliance in the United States and, no doubt, elsewhere as the green revolution spreads. Past impacts of differential regulations on competitiveness may be a poor indicator of future impacts.

Certainly, competitiveness-based arguments against stricter environmental standards are already evident. The European Union is now struggling with politically potent
competitiveness concerns surrounding proposals to levy an energy tax on industry in an effort to meet its commitments under the Framework Convention on Climate Change; the American Mining Congress opposed mining reform in the United States because it would send mining jobs overseas; U.S. industry has regularly testified against carbon or energy taxes or standards citing competitiveness concerns, etc.

60 Indeed, Congressional representatives such as Dan Miller (R-Fla) have introduced legislation prohibiting the imposition of controls on methyl bromide use in the United States that are more strict than those employed by other nations. See Methyl Bromide Bill Only Goes So Far To Even Playing Field for U.S., Food Institute Report, Jan. 15, 1996, available in LEXIS.


66 Rio Declaration on Environment and Development, supra note 41, princ. 2.

67 This observation is drawn from the author's experience as Coordinator for Trade and Environment at EPA and conversations with foreign officials in the course of that experience.

68 Nordhaus, supra note 43, at 11.

69 Id. at 16.

70 See Leebron, supra note 44, at 41.

71 Nordhaus, supra note 43, at 32, Fig. 2.

72 Further, in the context of a global harm such as species extinction, ozone loss, or global warming, this argument completely disappears.

73 Nordhaus, supra note 43, at 10, Fig. 2.

74 Some multinationals claim they follow the same high standards in developing countries that they are required to follow in their home country. These allegations are completely unverified, however, and not all multinationals even make this claim.

75 See HAAS, supra note 52, at 33–63.

76 See Esty, supra note 15, at 614–25, for a good theoretical discussion of the circumstances favoring centralized decision-making and the various policy options for building flexibility into centrally designed standards.

77 Id. at 648.

The recent and seminal decision of the WTO Appellate Body in the Reformulated Gas case reversed a plainly discriminatory U.S. environmental regulation, but did so in terms that are quite deferential to national standards and which clearly recognize their right to exceed international standards. See WTO Appellate Body: Report of the Appellate Body in United States—Standards for Reformulated and Conventional Gasoline, 35 I.L.M. 603 (1996).


See, e.g., the essays by Charnovitz, Bhagwati, Morris, Baucus and Jackson, collected in TRADE AND THE ENVIRONMENT: LAW, ECONOMICS AND POLICY (Durwood Zaelke, Paul Orbuch & Robert F. Housman eds., 1993); Robert E. Hudec, Differences in National Environmental Standards: The Level Playing Field Dimension, 5 MINN. J. WORLD TRADE 1 (1996). Bhagwati and Hudec recently edited a major two-volume collection of essays in which international standards are pervasively characterized as one-sized norms imposed on countries from above. See FAIR TRADE AND HARMONIZATION, supra note 9.

See, e.g., 1 FAIR TRADE AND HARMONIZATION, supra note 9, at 166 (opposing international standards because “[i]mposing one country’s pollution tax rates on another will then create an inefficient, globally Pareto suboptimal solution.”).

If so, it seems likely that nonbinding environmental standards, properly arrived at and monitored, will be adopted, at least in many cases. And if holdouts are the only barrier to effectiveness, there is room for reasonable debate over whether trade measures can or should be used to remove the block. If the answer is negative, however—if international product or process standards are relatively inefficient, ineffective or infeasible (compared to the alternatives)—then benchmark standards are not to be desired; they are certainly not to be “coerced” through threats of unilateral or multilateral trade measures for non-compliance.
The author heard this view expressed repeatedly by both government and private delegates to governmental meetings of the WTO Committee on Trade and Environment, and the OECD Trade and Environment Joint Experts Group.

Zaelke, Orbuch and Housman offer a collection of essays which nicely capture the essence of this controversy, supra note 81.


The term “benchmark standards” may be confusing to anyone familiar with corporate benchmarking as a practice. In the corporate context benchmarking is understood as the continuous process by which one company measures the performance (usually unrelated to environment) of its own products, services or manufacturing processes against that of companies recognized as the “best” in the first company’s peer group. See William B. Slowey, *Benchmarking: Boon or Buzzword?*, ANTITRUST, Summer 1993, available in Westlaw, 7-SUM Antitrust 30. Corporate benchmarks thus do not aim at coordination of industry performance and would probably violate the antitrust laws if they did. Id. National environmental regulators, by contrast, are not prohibited from coordinating their actions and so are free to discuss among themselves not only what is the most appropriate standard or incentive to choose for a particular regulatory situation, but whether and to what degree each country will adopt or adapt the benchmark standard in its own laws and regulations.

Leebron, supra note 44, at 41.

The reason for the sectoral focus is that the nature of the environmental impact and the availability and cost of control options correlates most strongly with industry or agricultural sector or sub-sector and the processes employed in that sector.

Country representation would be limited (hopefully self-limited) to countries that have significant production in the
sector in question, in the case of PPM standards; or major consuming countries or regions, in the case of product standards. This will help preserve a manageable number of participants in the process.


92 See Roht-Arriaza Chapter, supra note 39, at 211.

93 *Id.* at 207. Such a reporting requirement will be controversial with industry, particularly U.S. industry. However, this author is aware of no credible evidence that such a requirement would disclose trade secrets. Indeed, the European EMAS system already calls for mandatory disclosure and certification of compliance by participating European firms. Moreover, U.S. industry is already subject to very broad environmental impact reporting requirements, e.g., toxic release inventory requirements for public disclosure of all toxic releases from covered manufacturing facilities, and broad emissions release disclosure requirements under the Clean Water Act and Clean Air Act, without proven loss of commercially valuable proprietary information.

94 Porter, supra note 91, at 12.

95 *Id.* at 11–12.