Environmental Protection and International Competitiveness

A Conceptual Framework

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I. INTRODUCTION

Over the last several decades, many nations have adopted sophisticated environmental policies. At the heart of these policies are a variety of standards and regulations that address the environmental characteristics of both products and production processes. Environmental laws generally require producers or consumers to clean up their pollution or to pay for the environmental harms they cause. By "internalizing" the costs of environmental degradation, these policies create incentives to reduce air and water pollution, promote better waste management and disposal practices, and encourage the conservation of natural resources.

At the same time, nations have become increasingly economically interdependent.1

The emergence of a global marketplace has made States concerned about their ability to compete internationally.2 In this context, policy-makers, lawyers, economists, environmentalists, and labour and industrial interests have begun to debate the possible impact of environmental standards and regulations on national competitiveness. Opinions on the issue of environmental policy-induced competitiveness effects diverge considerably. On the one hand, labour and business interests in industrialized nations

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have claimed that adoption of strict environmental regulations may put domestic companies at a competitive disadvantage vis-à-vis foreign competitors and may trigger industrial relocation of heavily regulated industries to lax-standard jurisdictions. Some observers have called upon their governments to adopt measures, such as trade restrictions or subsidies, designed to "level the playing field". In addition, environmentalists have claimed that differences in the stringency of environmental regulations may trigger an environmentally destructive "race-to-the-bottom" in the regulatory system. To prevent competitiveness-driven "political drag" on environmental policy-making, some analysts have called for broader international environmental policy co-ordination if not full harmonization of standards.

On the other hand, most economists dismiss the impact of environmental regulations on competitiveness. They cite empirical studies which seem to suggest little link between a nation’s level of pollution control, its capacity to attract investment and the ability of its firms to compete in domestic and international markets. Some scholars have even dismissed the theoretical logic of the race-to-the-bottom theory and, instead, praised the virtues of "regulatory competition". To the extent that fears of a race-to-the-bottom are overstated and that circumstances across countries are diverse, attempts to harmonize or to reduce the disparities in standards may well be misguided and welfare reducing.

Against that backdrop, this article has two main objectives. First, it provides a conceptual framework for examining the relationship between environmental regulation and international competitiveness. Specifically, it categorizes the various competitiveness concerns arising from the intersection of trade liberalization and environmental protection, as well as the various responses that may be used to address such concerns. In doing so, this article aims to develop a framework for understanding issues of competitiveness in their various forms with greater attention to the nuances and subtleties of this concept than is found in most of the existing trade literature.

Second, this article reviews why competitiveness matters. It argues, in particular, that, regardless of whether fears of industrial flight and other traditional focuses of race-to-the-bottom theories are legitimate, competitiveness concerns affect the

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4 See the proposed "eco-duties" introduced in the US Congress as a response to calls from industry and labour interests. See also text accompanying notes 116–141, below.


environmental policy-making process. While actual races-to-the-bottom in which environmental standards are lowered appear to be rare, considerable evidence suggests that government officials, facing the prospect of reduced sales, lost jobs and diminished investments in domestic industries caused by competition with foreign companies whose costs are lower due to more lax environmental requirements, often choose not to elevate environmental standards and sometimes even to relax enforcement of current standards. This competitiveness-driven “political drag” or “regulatory chill” creates a strategic dynamic that can make it difficult, and in some circumstances impossible, for governments to move towards optimum levels of environmental protection.

Recognizing, despite the protestations of Paul Krugman and others,\(^\text{11}\) that competitiveness matters, this article explores various policy responses that can reduce the tensions created by differences in the stringency of environmental regulations across jurisdictions. In particular, contrary to the position taken by most economists, the authors believe that there are circumstances where some degree of harmonization of environmental standards will increase social welfare. Fundamentally, the challenge is to find a policy mix that minimizes the sum of welfare losses from: (1) excessive uniformity in standards that should vary to reflect the diversity of circumstances; and (2) sub-optimal standards that emerge from the prisoners’ dilemma dynamic of policy-making in the context of an economically integrated marketplace in which some jurisdictions have inadequate environmental programmes. In effect, it is necessary to analyse on a case-by-case basis how severe the welfare loss will be from movement toward harmonization, which will depend on the relative heterogeneity of the parties in a trade regime, and how significant the risk of welfare-reducing strategic behaviour is, which will also vary depending on the parties and the degree of overlap in their circumstances, values and level of development.

In the end, this article seeks to make a few simple points. Section II describes the various competitiveness concerns that may arise from the intersection of environmental protection and trade liberalization. Section III offers a taxonomy of responses to these various competitiveness issues. This section also evaluates the available spectrum of tools and strategies which ranges from non-integration and a laissez faire approach to differences in environmental standards across jurisdictions to total harmonization of environmental standards requiring a high degree of regulatory integration. Finally, section IV argues that competitiveness issues cannot easily be ignored and should not be disregarded in trade policy-making.

II. COMPETITIVENESS CONCERNS

This section spells out and categorizes the various competitiveness concerns that may arise from the intersection of trade liberalization and environmental protection. The first two sets of concerns, namely “distortions of competition” and “industrial

\(^{11}\) See note 2, above.
relocation”, relate to the impact differences in the stringency of environmental regulations may have on industry and production activities. The next two sets of concerns, “race-to-the-bottom” and “political drag”, relate to the impact differential environmental requirements may have on the environmental policy-making process.

The first group of issues, which we might call traditional competitiveness concerns, focuses on the position of companies trying to sell their products in markets where others face lower costs due to less strict pollution control requirements. Differential environmental costs translate into lost sales, reduced profits and/or slower growth. These business impacts eventually lead to reduced investment and perhaps even a shift in the locus of production. The second set of issues involves not corporate performance, but the functioning of the regulatory system. To the extent that pressures to reduce the “burden” of pollution controls on industry induce governments to regulate more efficiently, competitiveness pressures may enhance welfare. However, to the extent that governments lower their environmental standards simply to protect the competitive position of their industries, there is no guarantee that such changes in pollution control policies will be welfare enhancing. Note that the welfare loss in this case will not be seen in the industrial sector (which may, in fact, gain sales, profits or market share as a result of the government’s strategic behaviour). Instead, the loss emerges in the form of sub-optimal environmental standards. In other words, regulatory requirements that would have yielded a higher benefit-cost ratio are not adopted for fear of compromising industry’s competitive position.

Prior to turning to the discussion of these various sets of concerns, it is important to draw a distinction between two distinct types of environmental standards or regulations. Product standards regulate the characteristics of goods offered for sale in a given market. Production process or methods standards (also known as “PPM standards”) do not regulate the characteristics of products themselves, but the way they are made. Understanding the distinction between these two categories of regulation is essential as competitiveness concerns generally arise only from differences between the stringency of environmental process standards. Producers located in jurisdictions applying strict process standards will incur higher production costs than those located in

12 Although disruptive to the individual corporations involved, these economic effects may be welfare-enhancing if consumers are provided with the same goods and services at lower costs (and perhaps with reduced pollution to the extent production shifts offshore).

13 Product standards prescribe the physical or chemical properties of a product (e.g. lead additives in gasoline), the maximum permissible pollutant emissions from a product during its use (e.g. automobile emissions or detergent biodegradability) and the rules for making up, packaging or presenting a product (e.g. prescribed conditions for the elimination of packaging material and product labelling). C. Thomas and G.A. Tereposky (1993) The Evolving Relationship between Trade and Environmental Regulation, 27 J.W.T. 4 August 1993, at 37.

14 Thomas and Tereposky define process standards as “emission and effluent standards and other standards governing the production process”. Thomas and Tereposky, as note 13, above, at 37. This article will define process standards in a broader fashion that includes all measures (i.e. not only standards) affecting the production process. This will cover emission and effluent standards, and also liability regimes and energy taxes, as the latter clearly affect production costs.

15 The line between product and production process standards will sometimes blur. For example, a requirement that all tuna sold in the United States be “dolphin-safe” might be considered a product standard although it has generally been seen as a PPM standard. See S. Charnovitz (1994) Green Roots, Bad Profits: GATT Rules and their Application to Environmental Trade Measures, 7 Tulane Environmental Law Journal 299, at 303–330.
jurisdictions enforcing more lax requirements. Other things being equal, these higher costs will affect their ability to compete in both domestic and international markets.\textsuperscript{16} In contrast, differences in product standards may create barriers to trade,\textsuperscript{17} but adoption of strict environmental product standards by a jurisdiction will generally not adversely affect the competitive position of its domestic producers as all producers, foreign as well as domestic, must meet the required standard. In fact, strict (or unusual) product standards may enhance the position of domestic producers by making it harder for foreign competitors to enter the market.\textsuperscript{18}

A. The Impact of Competitiveness on Industry

Competitiveness is a confusing and often confused concept. In the context of an individual company, it refers to the ability to produce and sell goods or services in the marketplace at a profit. In the context of a country, competitiveness is best understood as the ability of a nation’s producers to meet the demands of the international marketplace while ensuring that its citizens have a sustainable standard of living that rises in the long run.\textsuperscript{19}

1. The Conditions of Competition

Differences in the stringency of environmental process standards may affect the conditions of competition.\textsuperscript{20} Other things being equal, companies operating in jurisdictions with lax environmental rules will face lower compliance costs and, hence, be able to bring their goods to market at lower costs than those operating in high-standard jurisdictions. This economic advantage may result in increased sales, market share and profitability. The result may be welfare-enhancing, but it may also not be. The question is whether the differences in standards are “legitimate” and, therefore, justified. As discussed below (see text accompanying notes 32–38), the authors believe that


\textsuperscript{17} Inconsistent product standards impede interstate trade because they deny manufacturers the ability to realize economies of scale in production and distribution and generally create market fragmentation. See D. Geradin (1997) Trade and the Environment – A Comparative Analysis of EC and US Law, Cambridge University Press, at 3.

\textsuperscript{18} Indeed, strict product standards may be used to protect domestic competitors from foreign competition. As Stewart observes, even if the standards applied to domestic and imported product are equivalent, domestic producers are likely to enjoy economies of scale in complying with their jurisdictions’ more stringent standards and, hence, gain a competitive advantage over foreign producers. See Stewart, as note 16, above, at 2043. Of course, this sort of protection reduces rather than raises welfare, forcing domestic consumers to pay higher-than-necessary prices.

\textsuperscript{19} See Competitiveness Policy Council, First Annual Report to the President and Congress, 1992. As economists are fond of observing, exchange rate fluctuations can make any country competitive by lowering the relative prices of its products. However, this “competitiveness” is acquired at the price of more expensive imports and, thus, a lower standard of living.

divergent standards are legitimate if they are based on natural locational advantages or public preferences.  

Most economists and trade theorists point out, however, that a series of sophisticated macro-economics studies have failed to establish a link between the level of environmental regulation and the performance of companies in international product markets. Although the methodologies used in these studies vary considerably, their findings are relatively consistent. First, estimates of total pollution control costs by industry tend to be low. In all but a few industries, abatement costs represent a small fraction (one–two percent) of total production costs. Second, reductions in productivity growth caused by pollution control costs are small and insignificant on average, although they may be relatively more important in some narrow sectors. Finally, there is no evidence of any significant impact of pollution control costs on trade patterns.

Several recent studies suggest, however, that the economics literature may have systematically underestimated pollution control costs because past analyses rely on mis-specified data or use too narrow a definition of such costs. Stewart, for instance, observes that these studies do not attempt to measure the opportunity costs imposed by

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21 Differences should be considered illegitimate and unjustified if they derive from cost-benefit calculations skewed because some of the harm (or benefits) in question fall beyond the regulating jurisdiction’s boundaries (what Dua and Esty call “super externalities”) or because policy-makers’ decisions reflect analytic errors, public choice failures (notably, outcomes distorted by special interest interventions in the policy process), or strategic behavior in response to the choices of others (the “race toward the bottom”). See A. Dua and D.C. Esty (1997) Sustaining the Asia Pacific Miracle: Environmental Protection and Economic Integration, Institute for International Economics, Washington, D.C., Chapter 4 (spelling out what constitutes legitimate differences). See also D.C. Esty (1994) Greening the GATT: Trade, Environment and the Future, Institute for International Economics, Washington, D.C. at 117–121 (reviewing the factors that go into legitimate policy-making); 137 Cong. Rec. S 13169 (remarks by Senator Baucus). (“If one nation chooses not to impose adequate environmental protection requirements, it artificially lowers the cost of doing business in that nation at the expense of the environment. In addition to harming the environment, this creates a competitive advantage vis-à-vis nations that do protect the environment. The advantage can translate into trade gains and additional investments.”)


25 M. Porter suggests that high environmental standards might, in fact, improve competitiveness if the regulatory requirements induced innovation among the regulated companies. In the dynamic world of business whatever costs or disadvantages might be imposed by strict regulatory requirements will pale in comparison to the competitive advantage obtained through innovative thinking to meet customer needs. See M.E. Porter (1991) America’s Green Strategy, Scientific American, April, at 68; see also D.C. Esty and M.E. Porter (1998) Industrial Ecology and Competitiveness, 2 Journal of Industrial Ecology, at 37.

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regulatory constraints, delays and uncertainties, and by the risks of damage liability.\(^{27}\) He further observes that these studies focus on the costs imposed on the regulated industries, but fail to take into account the indirect effects of environmental regulations on the economy as a whole.\(^{28}\) A recent study also suggests that the costs of pollution control measures may in fact have been mitigated by the grant of government subsidies to help industries implementing such measures.\(^{29}\)

More dramatically, economists and trade theorists argue that, to the extent that differences in environmental process standards cause tensions, this impact is beneficial, forcing governments to regulate in a more streamlined fashion. Attempts to level the playing field are thus misplaced.\(^{30}\) Specifically, they argue that differences in the stringency of process standards simply reflect differences in circumstances and preferences playing out in the marketplace. Attempts to mitigate or eliminate diversity in process standards will, therefore, reduce social welfare by erasing natural comparative advantages, thereby reducing the benefits of specialized production and trade.\(^{31}\)

It is true that, in some circumstances, local conditions (for example, strong winds or fast rivers that dissipate pollution more quickly, a less dense population or lower levels of existing pollution) justify relatively lax environmental regulations. In these cases, less strict pollution control requirements reflect the natural locational advantages and the fact that some emissions cause less harm than others.\(^{32}\) From an economic vantage point, internalizing environmental costs will be cheaper in some circumstances than in others. Intervention to eliminate this type of difference would not be good policy.\(^{33}\) Indeed, such differences make gains from trade possible.

\(^{27}\) Stewart, as note 16, above, at 2063.

\(^{28}\) Stewart, as note 16, above, at 2066. See also D.C. Esty (1994) *Greening the GATT: Trade, Environment and the Future*, Institute for International Economics, at 160–161; and D. Chapman, J. Agras and V. Suri (1995) *International Law, Industrial Location and Pollution*, 3 Indiana Journal of Global Legal Studies 5, at 26. Chapman, Agras and Suri discuss six sources of errors made by economists in their evaluation of the costs of environmental regulation. Specifically, economists have failed to take into account: (i) labour costs (such as those incurred in attempting to control dust in a pit mine); (ii) costs of monitoring and planning activities (time spent with inspectors of protection systems as well as time spent preparing reports and in meetings with regulatory officials); (iii) the cost of protecting workers from environmental hazards; (iv) interest expense or opportunity cost for investment in protection equipment; (v) under-reporting environmental costs in surveys; and (vi) productivity losses (“[w]hen production stops or is slowed because of environmental problems, this output loss is not counted as an environmental expense”).

\(^{29}\) See van Beers and van den Bergh, as note 26, above.

\(^{30}\) See Kleverick, as note 10, above.

\(^{31}\) See C. Stevens (1993) *Synthesis Report: Environmental Policies and Industrial Competitiveness in OECD Papers on Competitiveness*, OECD, at 15. (“Process standards will legitimately differ by country according to environmental conditions and preferences. These differences will form part of the environment-related comparative advantage of countries in international trade.”)

\(^{32}\) For instance, D. Vogel quotes a British official arguing against the adoption of technology-based uniform water effluent standards in Europe: “Italy economically benefits from the amount of sunshine that it receives every year. Why should not our industry be able to take a similar advantage of our long coastline ... and rapidly flowing rivers?” D. Vogel (1986) *National Styles of Regulation: Environmental Policy in Great Britain and the United States*, Cornell Uni. Press, at 103. See also O. Lomax (1988) *Environmental Protection, Economic Conflict and the European Community*, 34 McGill Law Journal, at 507.

Cost advantages obtained by producers facing lower pollution control expenditures might be unfair, however, in cases where less strict requirements are not based on any legitimate comparative advantage. "Unnatural" or inappropriate advantages may be obtained, for instance, where pollution harms spill across national boundaries (what Dua and Esty refer to as "super-externalities")34 or standards derive from strategic behaviour on the part of governments (the "race toward the bottom").35 In such cases, adoption of lax standards amount to a regulatory subsidy to domestic producers, the effect of which is to distort trade.36

In other cases, countries will adopt sub-optimal standards because of regulatory incapacity. In fact, many countries suffer from serious environmental policy-making shortcomings and some have virtually no regulatory capacity whatsoever. In yet other cases, regulatory failure will be a function of public choice distortions—corruption, special interest manipulation of regulatory outcomes or underdeveloped democratic structures. In each of these circumstances, sub-optimal standards in Country B may induce Country A to adopt standards other than the ones it would have chosen as a welfare-maximizing "island" jurisdiction.37

Contrary to the overly-simplified view propounded by some economists,38 differences in environmental standards are not always legitimate. Authorities must guard against the risk of regulatory races toward the bottom.

2. Industrial Relocation

Another competitiveness concern which has been voiced is that differences in the stringency of environmental process standards may induce industries located in high-standard jurisdictions to relocate to low-standard jurisdictions to preserve their

34 Dua and Esty, as note 21, above, at 59 (drawing a distinction between "regular externalities" arising in situations where the environmental harm is limited in geographic scope to a single political jurisdiction, and "super-externalities where the harm crosses political boundaries and spills over into other countries or into the commons, beyond the scope of any nation").
35 See text accompanying notes 59–81, below.
36 See J.P. Trachman (1993) International Regulatory Competition, Externalization, and Jurisdiction, 34 Harvard Journal of International Law 47, at 56. ("Weak environmental protection regimes are increasingly seen by some as subsidies to polluting producers. According to this perspective, the failure to maintain environmental protection at an appropriately high level provides an illicit subsidy to local business.")
37 In deviating from B's "island" jurisdiction policy optimum, its officials are not acting irrationally as some commentators would have us believe. See Revez, as note 9, above, at 1243 (concluding that the reaction to regulatory choices elsewhere is a policy "error" and a function of the "State's failure to act in an economically rational manner"). To the contrary, B's deviation is both rational and predictable under the Theory of the Second Best. See Esty, as note 5, above, at 634 (concluding that "the scope for failure in the market for environmental-policy-determined location rights is significant enough to make untenable a presumption that regulatory competition in this domain will be welfare enhancing").
38 See Bhagwati, as note 7, above, at 33 and 168 (arguing that "diversity in environmental standards, within an industry across countries is reasonable" and that the notion "that the diversity of ... pollution [control] standards is illegitimate and constitutes 'unfair trade' is itself illegitimate").
competitive position. This industrial migration will result in lost jobs, reduced investment and downward pressure on wages in high-standard countries.

There is, however, little empirical evidence that such shifts toward “pollution havens” occur. The lack of data can be explained by several reasons. First, the cost of moving production from one place to another is often considerable (due, for instance, to the pressure of large sunk costs) and environmental compliance costs are too small a share of most companies’ cost structure to trigger industrial relocation. Second, to the extent that industrial relocation takes place, it will usually be based on other, more significant factors such as labour costs, taxes, transportation expenditures, availability of raw materials, and market access. Third, companies doing business in a variety of jurisdictions often find it cost effective to apply their “home country” environmental requirements. In doing so, a company can use the same plant and equipment, avoiding the need to design different production processes for each location. It will also be able to develop a single company-wide environmental management system and training materials, all of which generate economies of scale in regulatory compliance. Multinational corporations may also decide to apply the stringent regulations to avoid potential subsequent liability (the so-called “Bhopal effect”) or in response to consumer pressures (“green demand”) in industrialized nations.

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39 There is, however, little empirical evidence of such shifts toward “pollution havens”. See, for example, Energy Tax Would Be Detrimental for German Chemical Firms, International Environment Reporter, 10 August 1994, at 668 (quoting Jurgen Strube, President of Chemical Company Basf AG, as saying that adoption by Germany of an energy tax would force numerous industries, especially the energy-intensive chemical sector, to relocate out of the country); and Amid Industry Opposition, Toppler Firm on Plans for Energy Tax to Curb Emissions, 7 September 1994, at 730 (quoting Rainer Grohe, a member of the board at German trade, manufacturing and energy conglomerate Viag AG, as saying that an energy tax would lead to the exodus of energy-intensive industries and would force Viag to relocate its aluminum production abroad, possibly in Canada).


41 As pointed out by Revesz, industrial migration will only occur when “the reduction in the expected cost of complying with the environmental standards is lower than the transaction costs involved in moving”. See Revesz, as note 9, above, at 1215.


44 See, for example, N. Birdhall and D. Wheeler (1992) Trade Policy and Industrial Pollution in Latin America: Where Are the Pollution Havens? in P. Low (Ed.) International Trade and the Environment, World Bank, Washington, D.C., at 159, 162 (reporting that a manager of a larger pulp and paper plant in Chile had been quoted as conceding that the investment in pollution control undertaken by his company was not to abide by Chilean law, but rather to be able to sell pulp in Europe, where environmental movements were putting pressure on governments to impose high import tariffs on pulp made with a process that creates chlorine gas as a by-product). See also Second Major UK Firm Cancels Contract for Pulp from Forest Company in Vancouver, International Environmental Reporter, 23 March 1994, at 267 (reporting that Kimberly-Clark, the maker of Kleenex tissue, notified lumber giant MacMillan Bloedel it would not renew its US$ 7 million contract when it expires at the end of the year because of concerns about British Columbia’s environmental practices); and Esty and Gentry, as note 42, above.
Nevertheless, as a matter of theory, economists hold that the logic of comparative advantage should cause pollution-intensive industries to move, over-time, to lower-standard jurisdictions.\textsuperscript{45} This dynamic should be most evident in industries where pollution control costs are above average, meaning that compliance costs feature relatively more heavily in locational decisions. Some studies support this theory. For instance, a 1990 US General Accounting Office study of the furnishing industry (which bears heavy expenses for treating toxic wastes from paints, varnishes and solvents) found some companies moving out of California to avoid the state’s strict pollution control requirements.\textsuperscript{46} A 1991 OECD analysis also observed that some shift of competitive advantage to countries with lower environmental standards in pollution-intensive textile and leather tanning industries had occurred.\textsuperscript{47} A 1993 OECD study concluded that some environmentally dirty activities, particularly in the resource-based sectors (e.g. the phosphate fertilizers industry), had migrated to lower income countries with weaker environmental standards, and that the result was “a geographical shift in production capacity within sectors with a consequent acceleration of industrial pollution intensity in developing countries”.\textsuperscript{48}

Moreover, as other costs (e.g. capital and labour) equalize across jurisdictions, small differences in variables such as pollution control expenditures may grow in relative importance, exacerbating environmental competitiveness concerns. In certain industries (e.g. refining) environmental costs already represent a significant share (more than 10 percent) of total costs.\textsuperscript{49}

In most industries, moreover, pollution prevention and control expenditures are constantly rising. For instance, the US Environmental Protection Agency estimates that US pollution control costs have gone from 0.9 percent of Gross National Product (GNP) in 1972 to 2.1 percent of GNP in 1990 and will rise to 2.8 percent of GNP by the year 2000.\textsuperscript{50} The relative significance of pollution control expenditures could rise sharply if governments adopt more stringent policies to curb greenhouse gas emissions.\textsuperscript{51} A November 1996 German government-commissioned study by the Rhine Westfälische

\textsuperscript{45} See, for example, L. Sumner’s (in)famous World Bank internal memorandum leaked to the press and published in The Economist, 8 February 1992. (“Only the lamentable fact that so much pollution is generated by non-tradable industries (transport, electrical generation) and that the unit transport costs of solid waste are so high prevent world-welfare-enhancing trade in air pollution and waste.”)


\textsuperscript{48} See Stevens, as note 31, above, at 11. See also H. Heerings (1993), The Role of Environmental Policies in Influencing Patterns of Investments of Transnational Corporations: Case Study of the Phosphate Fertilizer Industry in OECD Documents, Environmental Policies and Industrial Competitiveness, Paris, at 113 (discussing the relocation of Western European phosphate fertilizer production to low-standards nations).

\textsuperscript{49} See Deutsche Shell May Cut German Investment if Faced with More Environmental Regulation, International Environment Reporter, 6 April 1994, at 312 (reporting that of the German oil industry’s total annual capital spending of roughly US$ 700 million, around 15 percent was needed to meet environmental requirements, and more than 20 percent or roughly US$ 580 million of the industry’s annual refinery operating costs was earmarked for the environment).


Institute for Economic Research claimed, for example, that Germany’s pledge to reduce carbon dioxide emission levels by 25 percent by the year 2005 from 1990 levels will cost more than 270,000 jobs. According to the study, these jobs will be lost as polluting companies scale back their German operations or relocate production to countries with less stringent emission restrictions.

In addition, the recent progress in trade liberalization and economic integration achieved at both multilateral (World Trade Organization (WTO)) and regional (e.g., European Union (EU), the North American Free Trade Agreement (NAFTA) and the Free Trade Agreement of the Americas (FTAA) as well as the Asia-Pacific Economic Cooperation Council (APEC)) levels may further reduce transaction costs for producers considering a move from a high-standard jurisdiction to one with less strict emissions controls. With fewer barriers to foreign investments, easier repatriation of profits and other commitments facilitating trade and capital flows, industrial relocation becomes ever easier.

Finally, it should be noted that, in limited circumstances, industrial relocation may be encouraged not so much by the existence of lax standards in some jurisdictions, but by the existence of excessively strict (i.e. sub-optimally high) standards or even bans on certain industrial activities in others (the “NIMBY” or “Not-In-My-Backyard” syndrome). For instance, faced with public opposition, governments may decide to ban the landfilling or incineration of hazardous waste within their territory. Although “pollution havens” scenarios may be generally prevented by the imposition of minimum environmental standards across jurisdictions, preventing welfare-reducing NIMBY scenarios require the adoption of maximum environmental requirements.

B. THE IMPACT OF COMPETITIVENESS ON THE ENVIRONMENTAL POLICY DYNAMIC

Whereas most of the discussion of competitiveness and the environment is cast in terms of the economic effects on industry, investment, profits and jobs, environmental groups and scholars focus on the environmental policy consequences of inter-jurisdictional competition. Specifically, they worry that lax environmental practices elsewhere that result in production cost differentials will induce government officials in high-standard jurisdictions to reduce environmental standards so as to lower compliance.

33 These competitiveness concerns underlie the concerns in the US Congress that developing countries not be allowed to escape emissions reduction obligations. See the Byrd-Hagel Resolution, S. Res. 98, 105th Cong., 1997.
36 Esty and Geradin, as note 6, above, at 287.
37 See Geradin, as note 17, above, at footnotes 196–197.
costs, "improve" the business environment, retain production facilities, attract new investment and protect the competitiveness of their industry. The lowering of environmental protection requirements which may result from economic competition among nations is generally referred to as the "race-to-the-bottom", although a more apt description is "race-toward-the-bottom".\textsuperscript{58}

In this section, we observe that the significance of the race-to-the-bottom may have been misunderstood or mis-stated. The actual lowering of environmental standards to obtain an improved competitive position is rare. Competitiveness concerns have a more subtle effect on the environmental policy-making process. Specifically, fears about cost disparities with other jurisdictions operate as a political drag making it difficult for governments to raise environmental standards or to vigorously enforce their rules even if more stringent requirements would demonstrably optimize net environmental welfare.

1. The Race-to-the-bottom

The race-to-the-bottom theory,\textsuperscript{59} which was initially developed in the context of US federalism,\textsuperscript{60} builds on the logic of a "prisoners' dilemma".\textsuperscript{61} In a context of international economic competition, each nation fears that other nations adopting lax standards will cause competitive disadvantage to its industry. To avoid perceived competitiveness harms, nations engage in strategic behaviour and adopt lower standards than they would have chosen without international economic competition. As each nation acts in a similar fashion, all countries adopt sub-optimal environmental policies. Race-to-the-bottom theorists generally argue that the most appropriate way to overcome this competitiveness-driven strategic deregulation is to harmonize process-related standards or at least to ensure some degree of environmental policy convergence across nations.\textsuperscript{62}

\textsuperscript{58} See Esty, as note 5, above, at footnote 135 (explaining why the race is "toward" not "to the bottom").
\textsuperscript{59} The race-to-the-bottom has been defined as "a race from the desirable levels of environmental quality that States would pursue if they did not face competition for industry to the increasingly undesirable levels that they choose in the face of such competition". See Revesz, as note 9, above, at 1210.
\textsuperscript{60} The term was introduced by W.L. Cary (1974) Federalism and Corporate Law: Reflections Upon Delaware, 83 Yale Law Journal 663, and has since become a term of art in the US literature on federalism. For illustrations in the corporation law field, see D. Charney (1991) Competition Among Jurisdictions in Formulating Corporate Law Rules: An American Perspective on the "Race to the Bottom" in the European Communities, 32 Harvard International Law Journal, at 423; and B.D. Baysinger and H.N. Butler (1985) Race for the Bottom Versus Climb to the Top: The All Project and Uniformity in Corporate Law, 10 Journal of Corporate Law, at 431. For illustrations in the environmental field, see Revesz, as note 9, above; and K.H. Engel (1996) State Environmental Standard-Setting: Is There a "Race" and Is it "To the Bottom", 48 Hastings Law Journal 271. Over the last few years, the race-to-the-bottom theory has gained increasing significance in the international sphere. See, for example, Senator J.F. Kerry (1994) Trade and Environment: Charting a New Course, 27 Cornell International Law Journal 447, at 52 (outlining the risk of an international race-to-the-bottom).
\textsuperscript{61} See Revesz, as note 9, above, at 1219 (arguing that "[t]he race to the bottom is a form of prisoner's dilemma").
\textsuperscript{62} For an early analysis of the problem, see R.B. Stewart, Pyramids of Sacrifice: Problems of Federalism in Mandating State Implementation of National Environmental Policy, 86 Yale Law Journal 1196, 1977 (suggesting that federal environmental standards were needed to prevent States from competing for jobs and investments by lowering environmental requirements).
Recent studies have, however, dismissed race-to-the-bottom theory as a valid rationale for collective action. Richard Revesz, for example, casts doubts on the "theoretical foundations" for a welfare-reducing race. Referring to a series of theoretical studies, Revesz declares that "there are no formal models supporting the proposition that competition among States creates a prisoner's dilemma in which States, contrary to their interests, compete for industry by offering progressively laxer standards". On the contrary, drawing an analogy between competition in product markets and competition in regulation, Revesz argues that regulatory competition will lead to the adoption of efficient environmental standards in each jurisdiction and, thus, to welfare gains.

Other studies have, however, questioned the validity of Revesz's methodology and demonstrated the benefits of collective environmental action. Esty makes it clear that Revesz's analysis only holds so long as public choice failures—such as the lure of short-term economic gains (e.g. more jobs), which politicians tend to find irresistible—do not drive some jurisdictions to sub-optimal regulatory postures. Moreover, if governments fail to act "rationally", as they almost all do at least some of the time, there can be no guarantee that regulatory competition will yield welfare maximizing results. In fact, the theory of the second best suggests that once one jurisdiction diverges from its optimal environmental policy (for whatever reason), other jurisdictions cannot be certain that their preferred "island jurisdiction" policy will remain optimal. Swire, Engel and Wilson spell out a variety of other factors that disrupt the smooth functioning of the market for locational rights.

Moreover, anecdotal evidence tends to show that some lowering of environmental standards is occurring. Governments in the Canadian province of Ontario and in Germany have recently been accused of relaxing environmental standards to boost economic development. A July 1997 study by the Canadian Institute for Environmental Law and Policy (CIELAP) reports that the Ontario government has amended virtually every statute in the province dealing with the environment or natural resources.

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63 See Revesz, as note 9, above. See also Klovnik, as note 10, above, at 181 (arguing that even if the race-to-the-bottom existed, which he questions, the harmonization of environmental standards would be an inappropriate answer).
64 See Revesz, as note 9, at 1233–1244.
66 See Revesz, as note 9, above, at 1242.
67 See Revesz, as note 9, above, at 1232–1234.
70 See P. Swire, as note 69, above, at 98.
management.\textsuperscript{71} The main beneficiaries of such amendments, the study argues, have been the forestry, mining, homebuilding and agribusiness industries which now face less stringent environmental requirements.\textsuperscript{72} Similarly, the German government's proposal to speed up and simplify the approval procedure for companies planning to invest in new production facilities in the country has been perceived by environmental experts as a threat to environmental protection.\textsuperscript{73} The recently amended nature and conservation laws have been seen as additional examples of the German government efforts to "give the economy a clear priority over the environment".\textsuperscript{74}

The United States and the EU have also been subject to deregulatory initiatives.\textsuperscript{75} In a July 1995 speech, EU Environment Commissioner Ritt Bjeregaard criticized what she perceived as the Republican-led efforts in the US Congress to relax environmental standards.\textsuperscript{76} She also expressed her concern that any repeal or relaxing of environmental law in the United States would send a dangerous signal to the rest of the world.\textsuperscript{77} However, at the same time, Bjeregaard faced strong pressure from a number of industry lobbies to revise the EU legislative framework in the areas of waste\textsuperscript{78} and biotechnology,\textsuperscript{79} and to shift toward voluntary environmental agreements instead of binding legislation\textsuperscript{80} to advance the competitiveness of European companies. The December 1995 decision of the European Commission to approve a proposal to ease restrictions on the use of genetically modified organisms was perceived as concrete evidence of this policy thrust.\textsuperscript{81}

These examples suggest that some degree of competitiveness-induced lowering of environmental standards is taking place at the national and regional levels. What these examples do not tell us is whether the lowering of standards is welfare enhancing or not.


\textsuperscript{73} See Building Approves Streamlined Procedures; Critics See Threat to Environmental Standards, International Environment Reporter, 10 July 1996, at 611 (noting the environmental groups' concern that relaxed planning procedures would result in factories and housing projects being built anywhere on greenfield sites); and Draft Targets Environmental Law to Make Project Approval Process Faster, Easier, International Environment Reporter, 15 May 1996, at 405.

\textsuperscript{74} See Government Accused of Softening Stance on Environment in Face of Economic Crisis, International Environment Reporter, 8 January 1997, at 23.

\textsuperscript{75} See A.C. Aman (1995) A Global Perspective on Current Regulatory Reforms: Rejection, Retooling or Reinvention?, 2 Indiana Journal of Global Legal Studies, at 429 (arguing that the global competition among nations contributes to an overall political context that encourages deregulatory reform proposals).


\textsuperscript{77} As note 76, above.

\textsuperscript{78} See Business Targets Waste Laws in EU Dengulation Drive, Environment Watch, 27 October 1995, at 3.


\textsuperscript{81} As note 79, above.
reducing. If, on the one hand, competitive pressures caused Ontario and Germany to wake up to the fact that their current regulatory structures were too demanding (sub-optimally strict) or inefficient (unnecessarily costly), then the race-toward-the-bottom dynamic might induce a shift to more carefully specified or crafted standards. The new standards, if the theory of regulatory competition works properly, would be the ones these governments would have chosen even in the absence of international competition had they been forced to bear down harder on their regulatory policy choices.

On the other hand, there is good reason to believe that the new regulatory requirements are, at least in part, a function of strategic behaviour and not an optimal and independent standard setting process. At the very least, the fact that the standards selected were chosen in a context of competitiveness concerns must generate a presumption that the results reflect particular weight being given to tangible and apparent short-term economic factors as opposed to the often intangible and long-term benefits of stricter environmental protection. In brief, there is little reason to believe that the regulatory regime adopted is the one that would have been chosen in the absence of regulatory competition.

2. Political Drag

Although some jurisdictions are, in fact, lowering their environmental standards, the authors believe that the most significant impact of regulatory competition is a more subtle political drag or “regulatory chill” on the environmental policy-making process. This hypothesis cannot be proven empirically, because it requires hearing (and measuring) the bell that does not ring—standards that were not raised, enforcement actions that were not brought, and so on. There exists, however, ample anecdotal evidence to support this line of argument.

The failure of major industrialized nations to adopt energy taxes to address climate change provides one illustration. Over the last few years, proposals have been made in the EU, United States, Australia and other nations for the adoption of energy taxes with a view to controlling greenhouse gas emissions. In 1992, the European Commission put forward a proposal for a combined carbon and British Thermal Units (BTU) tax.\textsuperscript{82} The proposed tax was to be levied on carbon dioxide emissions and energy content of products, such as natural gas, mineral oil and certain kinds of electricity.\textsuperscript{83} It was to be set at a level of US$ 3 per barrel and be increased up to US$ 10. But the proposal was conditioned on the EU’s major trade partners acting in tandem.\textsuperscript{84} Given the failure of the United States to act, the EU energy tax package has not been taken up. In 1993,


\textsuperscript{83} As note 82, above, art. 3.

\textsuperscript{84} See the “conditionality” provision contained in the proposed directive pursuant to which the introduction of the tax in the EU depended on the implementation “by other member countries of the OECD of a similar tax or of measures having a financial impact equivalent to those provided for in this Directive”. As note 83, above, art. 1(2).
President Clinton proposed the adoption of a broad-based energy tax of 25.5 cents per million BTUs to be phased in over three years starting in 1994. 85 However, energy-intensive industries complained about the competitiveness impacts of the tax, sought exemptions from the fees and ultimately caused the collapse of the proposal. 86 In 1994, the Australian government contemplated the adoption of a carbon tax, but again the proposal fell to the wayside in the face of competitiveness concerns. 87 At about the same time, discussions concerning the possibility of adopting an energy tax also took place in Japan. 88 However, this debate came to naught because of the perception that higher energy taxes would affect the competitiveness of Japanese industries and irreparably harm Japan's already weakened economy.

In the end, no industrialized nation has systematically relaxed controls on greenhouse gas emissions, but almost all have failed to tighten their controls in spite of treaty commitments to address climate change and a mounting body of scientific evidence about the seriousness of the climate change threat. The proposed energy tax regimes, acknowledged by almost all climate change policy analysts to be the preferred policy instrument, 89 have faltered because of competitiveness fears.

While the carbon tax saga offers a case-in-point of the "political drag" effect, there are many other examples. In almost every political debate over environmental policy in the United States, competitiveness concerns are cited as a reason not to move toward tougher standards. 90 Similarly, the UK Department of Environment (DoE) decided to postpone for two years pollution controls on volatile organic compounds (VOCs) after competitiveness pressures were cited by the coatings industry. 91 In 1995, the concentrations of low-level ozone, which are caused by emissions of VOCs, were serious enough to cause the DoE to issue health warnings and to consider tightening controls over such emissions. 92 In the end, however, the DoE deferred to the coatings' industry claims that the burden of further pollution controls on VOCs would cost its members a

86 See D. Erlanson (1994) The BTU Tax Experience: What Happened and Why it Happened?, 12 Pace Environmental Law Review, at 173, 179 (observing that the BTU tax was a target for several powerful industrial lobbies, such as the American Energy Alliance, The Affordable Energy Alliance and the American Petroleum Institute); and H. Hanlon (1993) Oil Industry, Cities Voice Concern About Impact of Proposed BTU Tax, Tax Notes, 19 April, at 313 (reporting the claim made by C. DiBona, President of the American Petroleum Institute, that, by 1998, the BTU tax would result in a loss of US$ 34 billion a year in gross domestic product and a loss of 400,000-600,000 jobs).
90 See Politics in the Air, National Journal, 6 May 1989, at 1098 (reciting the industry arguments about how more strict air pollution controls would competitively disadvantage US companies).
92 As note 91, above.
total of US$ 306 million and would threaten the competitive position of the entire sector. More recently, in September 1997, the French government decided to back away from plans to increase taxes on diesel fuels in 1998. Despite its electoral promises to address air pollution problems through energy taxes, Prime Minister Jospin eventually chose to listen to pro-industry voices who claimed that higher diesel tax would have a negative impact on business.

Another way that the political-drag dynamic plays out is through lax enforcement of existing environmental standards. If government officials systematically overlook violations of environmental rules, in effect, the standards are lowered. In the United States, President Reagan sought to relax the environmental burden on industry not by rolling back the standards but by targeted budget cuts and “reorganization” of the US Environmental Protection Agency’s enforcement activities. In Ontario, in addition to substantive environmental standards, the government has been accused of slack enforcement as a further way of relaxing the compliance burden on the province’s industry. As with standards not raised, the loosening of enforcement is hard to track and even harder to measure. However some evidence of this trend can be found. For example, in California, another jurisdiction where high environmental standards have been perceived by some to be a deterrent to business expansion, economic development officials have taken to advertising their “flexible air standards” or commitment to “environmental problem solving”. Although no promises are made, an unmistakable signal is being sent.

III. Response Strategies

Various responses to the competitiveness concerns outlined above have been advanced by lawyers, economists, environmentalists and policy-makers. These

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93 As note 91, above.
95 As note 94, above.
100 See Esty, as note 5, above; Geradin, as note 17, above; and Stewart, as note 16, above.
102 See, for example, Arden-Clarke, as note 5, above; S. Hudson (1993) Exploring the Relationship Between Investment, Trade and the Environment in OECD Papers on Competitiveness, OECD, at 130.
103 See, for example, S. Charnovitz (1993) Environmental Trade Measures and Economic Competitiveness in OECD Papers on Competitiveness, OECD, at 141; Stevens, as note 31, above, at 7.
responses range from a “laissez faire” approach, which relies on the “invisible hand” of the market, to strict harmonization strategies, which mandate the adoption of uniform standards across jurisdictions.

A. **Laissez Faire**

One response to the competitiveness concerns outlined above is to do nothing and let each jurisdiction regulate as it sees fit. Many trade economists argue that diversity in environmental process standards appropriately reflects differences in circumstances and preferences playing out in the marketplace. Any attempt to dictate the bounds of environmental process standards, they suggest, will reduce social welfare by artificially eliminating “environment-related comparative advantages of countries in international trade”.104 More dramatically, regulatory competition theorists, such as Revesz, argue that locational competition among horizontally arranged jurisdictions disciplines regulators and, thus, is efficient and welfare optimizing.105

A *laissez faire* approach yields poor results, however, if the variance in environmental process standards does not reflect legitimate differences in preferences or circumstances. Where transboundary environmental harms exist, for example, officials may set low standards knowing that part of the pollution damage will fall beyond their jurisdiction. When costs can be externalized, the regulatory cost-benefit calculus is skewed, and governments systematically select levels of environmental protection which may be optimal for those within the jurisdiction but will be inadequate when viewed from a broader perspective.106 In such cases, low standards are not based on any comparative advantage, but simply strategic cost-shifting behaviour. Thus, inter-jurisdictional pollution externalities create the need for some form of collective action to avoid market failure and allocative inefficiency. This “structural failure” requires, at the very least, a regime that clarifies property rights and permits the vindication of the rights of those who suffer pollution spillovers.107

In addition to the case of transboundary “super externalities,” a *laissez faire* approach to inter-jurisdictional differences in environmental standards may not optimize welfare if open-access resources become scarce.108 Contests over the commons again require some governmental intervention to prevent market failure. Similarly, where there is a temporal disjuncture between those who benefit from polluting activities and those who bear the harm, a *laissez faire* approach will be sub-optimal unless regulators take into account fully the needs and desires of generations to come. Of

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104 See Stevens, as note 31, above.
105 See text accompanying notes 66–67, above.
106 See Esty, as note 5, above, at 587–589 (discussing “structural flaws” in environmental regulation).
107 See Esty, as note 5, above, at 583–584.
108 See Esty and Dua, as note 21, above, at 58–62.
course, there is also substantial evidence that bequest motives are inadequate to overcome intergenerational cost-shifting.\textsuperscript{109}

As noted earlier,\textsuperscript{110} however, where differences in standards arise from legitimate variations in circumstances, a laissez faire response that encourages regulatory competition may well be welfare enhancing. Production activities will shift over time to those locales where they do the least environmental harm and where the value placed on the damage is lowest. However, there remains a risk that regulatory competition will spin out of control and engender a race toward the bottom if one or more jurisdictions is unable to identify its optimal environmental policy mix or chooses strategically to forego its environmental optimum to pursue other goals such as short-term economic growth.\textsuperscript{111} Given the rampant regulatory incapacity of governments the world over and the prevalence of public choice failures that result in non-optimal policy selections, a presumption that regulatory competition will operate as theorized to maximize welfare cannot be supported.

The foregoing analysis suggests a laissez faire response to competitiveness pressures will be optimal only in limited circumstances, notably when differences in environmental process standards are based on legitimate comparative advantages. In contrast, such an approach will be sub-optimal when differences in standards reflect physical spillovers or derive from strategic behaviour. In such cases, governmental intervention to promote welfare-enhancing collective action may be necessary.\textsuperscript{112} The policy goal must be to maximize the opportunity for legitimate differences to play out in the marketplace without permitting competitive pressures thereby unleashed to cause market failures or a welfare-reducing regulatory races-to-the-bottom.\textsuperscript{113}

B. Trade measures

Over the last decade, some policy-makers and a number of industry and environmental groups in nations with high environmental standards have repeatedly called for the use of trade measures to fight what they perceive as "unfair competition" from low-standard nations.\textsuperscript{114} The purported objective of such measures, which include trade bans and eco-duities, border tax adjustments (BTAs) and green subsidies, is to

\begin{itemize}
\item \textsuperscript{110} See text at notes 30–31, above.
\item \textsuperscript{111} See Dua and Esty, as note 21, above, at 66–72; and Esty, as note 5, above, at 630–638.
\item \textsuperscript{113} See Dua and Esty, as note 21, above, at 159.
\item \textsuperscript{114} See \textit{Gephardt Bill To Allow Sanctions for Not Enforcing Environmental Laws}, 11 International Trade Reporter, 30 March 1994, at 500 (reporting Congressman Gephardt's intention to propose legislation treating any failure to adopt proper environmental standards as an unfair trade practice actionable under s. 301 of the Trade Act of 1974). See also C. Arden Clarke (1993) \textit{Environment, Competitiveness, and Countervailing Measures in OECD Papers on Competitiveness}, OECD.
\end{itemize}
combat "eco-dumping" and to "level the playing field". These efforts to provide fair and equal conditions of competition between domestic and foreign competitors may themselves not be fair or equal.

1. Trade Bans and Eco-duties

The most radical type of trade restrictions is to impose a ban on imports of any product that has been produced under standards more lax than those imposed on domestic producers. Ross Perot argued during the NAFTA debate, for instance, that all products which were produced according to standards inferior to US standards should be banned from the US market. Another, slightly more sophisticated, form of trade restriction is to impose duties on imported products that have been produced by processes that do not conform to the importing country’s requirements. The rationale for imposing such charges on imported goods is that any cost differential arising from lower standards is unfair and distorts the price at which the products enter the market place. However, to eliminate every environmental cost differential is to eliminate the gains from trade. The key issue, as noted above, is whether the cost differential arises from a point of legitimate comparative advantage.

In many cases the use of environmental trade measures cannot be justified. Indeed, the General Agreement on Tariffs and Trade (GATT) rules treat such measures harshly. In the famous “tuna dolphin” case, a GATT dispute settlement panel ruled that process-related trade bans were inconsistent with the principles of the international trading system. Specifically, the panel ruled that a US ban on the imports of Mexican products that were not caught in accordance with the standards set out in the US Marine Mammal Protection Act violated the GATT national treatment requirement and could not be justified under any of the exceptions contained in the Agreement. In a little-analysed definitional provision, Uruguay Round negotiators appear to have also barred

115 Eco-dumping is, in fact, a misnomer. What is at issue in reality is whether low environmental standards operate as an unfair subsidy. See T.K. Plofchan Jr. (1992) Recognizing and Counteracting Environmental Subsidies, 26 International Lawyer 763.

116 See H.R. Perot and P. Choate (1993) Save Your Job, Save our Country: Why NAFTA Must be Stopped—Now, New York, Hyperion Press, at 109. ("The standard is simple: products cannot be imported into the United States from Mexico that are produced in factories or by companies that violate either US or Mexican environmental standards. No exceptions . . . . That’s America’s sovereign right.")

117 Several bills have been put forward in the US Congress proposing the adoption of such eco-duties schemes. See 137 Cong Rec. S 13169 (recommendation of Senator Baucus proposing the creation of a GATT environmental code pursuant to which, "if imported products or the process used to produce such products does not meet the importing nation’s environmental standards, duties can be applied to the imported product"); and 137 Cong Rec. S 5298 (recommendation by Senator Boren to adopt an International Pollution Deterrence Act, "making a country’s failure to impose and enforce meaningful pollution controls on its industries a countervailable domestic subsidy under US Law"). These proposed bills were never enacted.


"implicit subsidy" eco-duties based on low environmental standards.\textsuperscript{120} Specifically, the Agreement on Subsidies and Countervailing Measures defines, for the first time, what a subsidy is and, therefore, what sorts of subsidies are countervailable.\textsuperscript{121} The agreement says that a subsidy must reflect "a financial contribution by a government or any public body".\textsuperscript{122} The definition goes on to spell out that subsidies arise only if there is "a direct transfer of funds (e.g. grants, loans or equity infusion), potential direct transfers of funds or liabilities (e.g. loan guarantees)".\textsuperscript{123} This language suggests that any attempt to impose countervailing duties premised on an implicit subsidy argument would appear to be GATT-illegal.

Some analysts have suggested that the GATT rules are too narrow and that trade bans and eco-duties should be permitted in some circumstances.\textsuperscript{124} Although the attack on the use of trade measures has been shrill and unrefined (failing, for example, to differentiate between bans, which are almost always overly blunt, and eco-duties, which could be applied in a careful and thoughtful manner), a careful analysis of such measures suggests that they will rarely be good policy. For instance, assume that cement produced in country A costs 30 percent more to make than in country B where environmental requirements are less stringent. If B's relatively lax standards reflect its more favourable geographical circumstances (fast rivers, strong winds or low population density), imposing an eco-duty on its cement will be inefficient. The effect of the duty will be to artificially improve the competitive position of A's cement producers and, hence, to increase production in a country with lower assimilative capacities.

Even if B's more lax standards are not based on a natural locational advantage, but reflect an attempt to externalize costs or to engage in strategic behaviour, the question remains whether banning imports of cement produced in A or imposing eco-duties on the imports is an appropriate course of action. First, if A is not a very big market for B's cement, trade restrictions may not be very effective in A, and may even be counterproductive.\textsuperscript{125} Second, the use of a ban may well be disproportionate to the underlying harm, although a carefully calculated eco-duty might not be. Third, there exists a risk that A's policy process will be open to "capture" by protectionist interests.

\textsuperscript{120} Several authors have examined whether GATT would allow duties to be imposed on products manufactured under lax environmental standards. Their studies were, however, published before the adoption of the WTO Agreement. Nevertheless, their conclusion was that regulatory subsidies were unlikely to be countervailable under the GATT. See J.P. Trachtman, as note 36, above, at 81; and K.S. Komoroski (1988) \textit{The Failure of Governments to Regulate Industry: A Subsidy under GATT}, 10 Houston Journal of International Law 189.


\textsuperscript{122} As note 121, above.

\textsuperscript{123} Although the concept of "State subsidy" contained in the EC Treaty is very flexible, it does not go so far as to include regulatory subsidies. See Case C-72 and 73/91, Sloman Neprun (1993) E.C.R. 1-887 (holding a State subsidy under art. 92 necessarily presents a budgetary expenditure or a loss of public revenues); See also M. Slotboom (1995) \textit{State Aid in Community Law: A Broad or Narrow Definition?}, 20 European Law Review 289.

\textsuperscript{124} See Arden-Clarke, as note 5, above.

\textsuperscript{125} Indeed, foreign producers targeted by eco-duties may decide to cut prices in third-country markets to make up for lost sales in the country adopting them, thereby hurting the regulating country's exports in such markets. See Eady, as note 28, above, at 165.
who will restrict B’s imports so as to give advantage to domestic competitors. At best, trade measures will be a second- or third-best policy which should be used only selectively.

Other less aggressive forms of response may be more appropriate. Making the preferential treatment granted to developing countries under the EU and US General System of Preferences conditional on the enforcement of proper environmental standards by such nations would, for example, provide a clear incentive for environmental care. 126 However, attempts to link preferential trade agreements with environmental issues have been criticized as a form of eco-imperialism, by which rich nations dictate to developing countries the environmental policies they must adopt. 127

2. Subsidies

Differences in environmental standards might also be addressed through environmental subsidies. 128 Specifically, governments which fear that their producers will be disadvantaged in markets where they face competitors with less strict pollution control obligations could subsidize the environmental investments made by their companies, thereby mitigating or eliminating any pollution control cost differentials. 129 The use of subsidies to offset pollution control costs borne by one own’s industries may appear less offensive and less disruptive than comparable eco-duties, but the effect may be identical. 130

For the same reasons mentioned in the analysis of trade bans and eco-duties, eliminating cost differentials through government subsidies will often be inappropriate and inefficient. Again, equalizing environmental cost differentials eliminates the potential for gains from trade and would not make sense unless the differentials are themselves illegitimate. Moreover, subsidizing polluters violates the Polluter Pays

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126 See R.E. Hudec (1995) Differences in National Environmental Standards: The Level Playing Field Dimension, 5 Minnesota Journal of Global Trade 1, at 5 (discussing various proposals put forward in the US Congress that would make eligibility for trade preferences under the GSP conditional to the adoption of proper environmental protection regimes); European Commission Press Release 1997/923 of 29 October 1997 (announcing the Commission’s decision to grant additional benefits under the GSP scheme to developing countries that improve their environmental performance). Of course, although such an approach would be less confrontational than the imposition of trade bans or eco-duties on foreign products, it may still be contrary to GATT’s most favoured nation (MFN) clause, which requires that any favourable treatment that a Member grants to another Member should automatically be extended to all Members. See J. Jackson and W. Davey (1986) Legal Problems of International Economic Relations, West Publishing Co., St. Paul, Minn. at 293 et seq. On the other hand, it has been suggested that such provisions could be compatible with the GATT because “the United States may, but is not required to, grant and deny nonreciprocal benefits to developing countries”. See T.A. Amato (1990) Labour Rights Conditionality: United States Trade Legislation and the International Trade Order, 65 New York University Law Review, 79, at 101.


128 See Esy, as note 28, above, at 169-171.


130 As note 129, above.
Principle (PPP), an accepted standard of good environmental policy. Environmental subsidies tend, furthermore, to discourage domestic innovation. By subsidizing the purchase of pollution control equipment, governments lower the cost of production and the price of the product, thereby dulling the incentive for producers and consumers to look for substitute processes or products which are environmentally less damaging. Worse yet, attracted by the prospect of collecting lucrative government subsidies, new firms could enter polluting industries, aggravating the environmental degradation.

Environmental subsidies can easily become a trade problem as well. Governments looking for clever ways to advance the competitive position of their industries in the global marketplace may find eco-subsidies attractive. Indeed, subsidies are increasingly the tools of choice for governments seeking to lure industry. However, the financial packages offered in one jurisdiction may be matched by others, starting another form of the race-to-the-bottom. The end result of such a process may be that governments give away whatever benefits might have been produced by the new project, especially tax revenues. As a result of the adverse effects that may be created by subsidies, the EC has instituted strict controls on the type of subsidies that Member States can offer in an attempt to influence a company’s locational decision.

3. Border Tax Adjustments

Adjusting prices of imports or exports at the border to reflect differences in

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133 Unless, of course, the subsidies expressly intended to encourage the development of cleaner technologies. As a result of its character as a “public good”, research and development on pollution control technology may require government assistance and thus provide a valid exception to the PPP. See Pearson, as note 40, above, at 564.

134 Dean, as note 23, above, at 20. (“Government subsidies which compensate firms for the cost of meeting regulations inhibit the optimal shift of resources away from pollution-intensive industries.”)


136 It is often hard to tell whether upgrading particular facilities is really about environmental protection or competitive positioning. This is true, for example, in the context of upgrading steel mills with modern, less polluting furnaces. Although the GATT permits limited green subsidies, the government funds must be “directly linked and proportionate” to the environmental goals at stake. See art. 8.2(c) of the WTO Agreement on Subsidies and Countervailing Measures, as note 121, above.


138 See A.R. Myerson and O. Governor (1996) Won’t You Buy Me a Mercedes Plant?, N.Y. Times, 1 September, at C1. Of course, if the subsidies all go to environmental investments, the result might not be sub-optimal but instead simply represent a reallocation of public resources towards environmental protection.

139 See M. Taylor (1994) A Proposal to Prohibit Industrial Relocation Subsidies, 72 Texas Law Review 669 (examining the problems created by industrial relocation subsidies).

environmental taxes or fees is another approach that has been proposed to address competitiveness issues. A BTA involves the application to imported products of a charge corresponding to taxes borne by like domestic products and/or the remission of domestic taxes on products to be exported. In theory, BTAs ensure that, while each country remains free to implement its own taxation regime, goods from all nations are able to compete on equal competitive terms, neither suffering double taxation nor deriving an advantage from more favourable taxation regimes in their country of origin.

In practice, the usefulness of BTAs as a tool to address competitiveness concerns is limited by the fact that the current GATT rules only allow adjustments for environmental taxes or charges on products (e.g. taxes on ozone-depleting chemicals, vehicle fuel efficiency taxes and non-recyclable packaging) or on "physically incorporated" inputs (e.g. chemical feedstocks incorporated into plastic products). In contrast, the GATT rules do not allow BTAs for environmental charges imposed on production processes (e.g. taxes on carbon dioxide and sulphur dioxide emissions, waste disposal and water effluent) or on "non-physically incorporated" inputs (e.g. taxes on energy used during the manufacturing process). Thus, in the current interpretation of the GATT rules, the environmental taxes affecting most directly the competitiveness of industry cannot be offset through BTAs.

Whether the GATT should broaden the scope for BTAs aimed at compensating for differences in production process taxes and taxes on "non-physically incorporated" inputs (collectively referred to hereafter as "process-related taxes") is a matter of considerable controversy. On the one hand, allowing BTAs for process-related taxes would be attractive as a matter of environmental policy. First, the adoption of process-related taxes—no matter how justified as a mechanism for internalizing environmental costs—is made extremely difficult by the opposition of business and labour interests, who argue that such taxes penalize domestic industry and result in job losses. Allowing BTAs for process-related taxes should reduce such opposition by placing domestic

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112 See art. II:2(a) and III:2 of the GATT.
113 See art. VI:4 of the GATT.
114 See Demaret and Stewardson, as note 141, above, at 6.
115 Environmental product taxes are eligible for BTA as long as they are consistent with the national treatment principle contained in the GATT, art. III. See GATT Dispute Settlement Panel Report on United States Taxes on Automobiles, 33 I.L.M. 1397, 1994 (upholding a luxury car tax and a gas guzzler tax as in compliance with the national treatment principle of the GATT).
116 In the GATT context, a distinction is generally drawn between taxes on inputs that are physically incorporated into the final product and taxes on inputs that are entirely consumed during the production process. The former category of tax is eligible for a BTA. See US: Taxes on Petroleum and Certain Imported Substances, 17 June 1987, GATT BISD, 34th Suppl., 136, paras. 5.2.7 et seq. In contrast, it is generally considered that the latter category of tax is not eligible for BTA. See M. Duerkop (1994) Trade and Environment: International Trade Law Aspects of the Proposed EC Directive Introducing a Tax on Carbon Dioxide Emissions and Energy, 31 Common Market Law Review 807, at 822.
manufacturers and foreign importers on an equal competitive footing.\textsuperscript{148} Second, by limiting BTAs to product taxes, the GATT rules encourage countries to opt for such taxes instead of more efficient process-related taxes, which would be levied on polluting activities directly.\textsuperscript{149} Allowing BTAs for process-related taxes would remove this environmental policy distortion. In sum, extending the application of BTAs to process-related taxes should both reduce competitiveness concerns and promote sound environmental policies.

Allowing BTAs for process-related taxes would, however, lead to other problems. First, the remission of process-related taxes on exports would partly or totally undermine the environmental objective of the tax.\textsuperscript{150} The higher the percentage of a production run that is exported, the greater the effect of the BTA in undermining the incentive for sound environmental practices. For instance, in countries exporting the majority of their industrial production (such as many South East Asian nations) a process-related tax on “dirty” steel production would have little practical effect as the fees would be automatically rebated on the large portion of the product that is exported. Thus, although BTAs may encourage, or at least facilitate, the adoption of process-related taxes by neutralizing their effects on competitiveness, they may also considerably reduce their effectiveness.

Second, to be applied fairly and effectively, BTAs would require extensive knowledge of the production techniques and the pollution generated by such techniques in all exporter countries.\textsuperscript{151} In practice, this would involve high information costs and complex evaluations.\textsuperscript{152} Yet, even in situations where such information problems can be overcome, issues of fairness remain with respect to imports from countries that do not apply process-related taxes, but enforce strict process-related regulations, such as air and water emissions standards.\textsuperscript{153} In practice, these countries would either have to suffer a competitive disadvantage in foreign markets (because their producers would face both the costs of complying with domestic regulatory requirements, a burden which cannot be adjusted on export, and the tax adjustments

\textsuperscript{148} For instance, when competitiveness concerns were raised in opposition to President Clinton’s 1993 BTU Tax, a number of policy-makers called for a border tax adjustment based on the energy content of imported goods. Such a tax would have maintained the competitive status quo for US manufacturers. This proposal was, however, dropped after the Office of the US Trade Representative advised the White House that a tax adjustment on energy content would violate GATT. See Esty, as note 28, at 168.

\textsuperscript{149} See International Implications of Environmental Taxes in \textit{OECD Papers, Implementation Strategies for Environmental Taxes}, OECD Paris, 1996 (observing that “[w]here tax adjustments on BTAs are not allowed, some have expressed concerns that countries may be inclined to shift environmental taxes onto products, even where environmental objectives can be achieved more efficiently through taxes on emissions”). See also C.S. Pearson and R. Repetto (1993) \textit{Recycling Trade and the Environment: The Next Steps in The Greening of World Trade}, Washington, D.C.: U.S. EPA National Environmental Policy Committee for Environmental Policy and Technology.

\textsuperscript{150} See Demaret and Stewardson, as note 141, above, at 63.

\textsuperscript{151} See \textit{OECD Papers}, as note 31, above, at 44 (observing that it is difficult to ascertain how a product has been produced or what share of production taxes it bears).

\textsuperscript{152} See A.C. Christan (1992) \textit{Designing a Carbon Tax: The Introduction of the Carbon-Burned Tax (CBT), 10 UCLA Journal of Environmental Law and Policy} 221, at 263–266 (arguing that the establishment of a comprehensive system of BTAs for energy taxes would be “prohibitively expensive from an administrative standpoint”).

\textsuperscript{153} See Demaret and Stewardson, as note 141, above, at 63.
imposed by the importing country) or switch to fiscal measures (process-related taxes) in place of their existing regulations, a regulatory reform which may not be desirable.\textsuperscript{154}

Finally, and perhaps more fundamentally, there may be countries that do not apply any process taxes or regulations because their pollution preferences, level of development or geographical circumstances render such measures inappropriate. Although attractive from a competitiveness standpoint, taxes adjusting the imports from such countries would artificially deprive them of legitimate elements of comparative advantage and thus would be economically inefficient. An economically sound system of BTAs would have to take into account the local circumstances of each exporting country, creating a huge administrative burden.

The above problems suggest that BTAs on process-related taxes may be very difficult to apply in practice. To be fair and efficient, such adjustments would require complex evaluations and sophisticated administrative mechanisms.\textsuperscript{155} Given the high transaction costs associated with BTAs, it might be preferable to develop some form of harmonization of environmental taxes at the international level.\textsuperscript{156} Tax harmonization is, itself, an extremely complex matter, as illustrated by the unsuccessful attempts of the European Commission to adopt common environmental taxes across the EU.\textsuperscript{157} Moreover, taxation is seen by many nations as a core element of national sovereignty.\textsuperscript{158} Therefore, it seems unlikely that in the near future nations will agree to common levels of environmental taxation within their jurisdictions.

C. Redirecting inefficient and unnecessarily costly environmental policies

Most of those calling for the adoption of trade measures to equalize environmental production costs base their claim on the assumption that standards in less environmentally-sophisticated nations are "too low" and that, therefore, policy intervention is needed to level the playing field. Another approach to the competitiveness issue is to argue that, although there are circumstances in which the environmental policies of low-standard nations may be inadequate, high-standard nations' environmental policies may also be sub-optimally stringent or, more often, inefficient and unnecessarily costly. The core of the argument is that environmental cost differentials and resulting competitiveness tensions do not arise only, or necessarily, from

\textsuperscript{154} As note 153, above.
\textsuperscript{155} See Christian, as note 152, above.
\textsuperscript{156} In fact, harmonization of environmental taxation raises problems quite similar to those encountered in the context of BTAs. For instance, States may have extremely different levels of taxation on energy products and it may be very difficult to find a common ground. Moreover, whereas environmental taxes are popular in some countries, other nations may prefer to continue to rely on command-and-control regulations. In such context, harmonization of environmental taxes may require important modifications in the regulatory philosophies of some jurisdictions and/or complex adjustments.
\textsuperscript{158} This is why harmonization of environmental taxes is one of the few matters for which the unanimity voting-procedure is still required by the EC Treaty. See art. 130 S(2) of the EC Treaty.
sub-optimal standards in low-standard nations, but may also result from poorly structured, self-penalizing environmental policy tools in high-standard countries.

During the 1970s and 1980s, most industrialized nations adopted comprehensive “command and control” environmental programmes regulating almost every aspect of industrial production. Although admitting that such programmes have generated environmental progress, many analysts observe that the gains have often been achieved at a high cost to society. Stavins and Whitehead argue, for example, that, because they “align the financial incentives of companies with environmental objectives”, market-based mechanisms (such as pollution charge systems and tradable permits) offer more efficient and cost-effective solutions to environmental problems. Other observers, thinking particularly about the United States, suggest that litigation costs burden environmental progress. Industry officials often argue in favour of voluntary agreements between industry and governments instead of compulsory regulations as a way to lower the cost of environmental protection.

Such efficiency-oriented regulatory reforms should generally be welcomed by those concerned about competitiveness. By lowering the costs of pollution controls, market-based systems should reduce environmental production costs and help to improve the competitive position of environmentally demanding nations and environmentally sensitive industries. Well-tailored, market-based environmental policies would also promote economic growth, generating resources, some portion of which could be invested in environmental protection. It would be naïve, however,

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159 See R. Stavins and B. Whitehead (1997) *Market-Based Environmental Policies in M.R. Chertow and D.C. Esty (Eds) Thinking Ecologically: The Next Generation of Environmental Policy, New Haven: Yale University Press, at 106 (arguing that “although [the command and control] approach has often succeeded in limiting emissions, it frequently does so in an unduly expensive way”). More studies have analysed the reasons why command and control legislation are inefficient. One of the most common reasons is that, because they are usually based on uniform technology-based requirements imposed on all companies in one segment of industry, command-and-control regulations may lead to overregulation or underregulation of certain facilities. Uniform technology-based standards also fail to generate strong incentives for pollution prevention and investment in innovative pollution control technologies. Moreover, command-and-control regulations require considerable enforcement efforts and, depending on the legal system in which they are applied, may lead to costly and time-consuming litigation. See Stewart, as note 16, above, at 2086–2097.

160 Stavins and Whitehead, as note 159, above, at 106.


164 The main advantage of such agreements, which are used increasingly as an environmental policy tool in Europe, is their flexibility. Pursuant to such agreements, the methodology and degree of comprehensiveness of which vary considerably, government officials negotiate reduction targets with industry association representatives. In exchange for voluntary commitments on the part of industry, the government agrees not to regulate the matter subject to the agreement. Thus, voluntary agreements provide two kinds of benefits. First, they allow industry the flexibility to achieve pollution reduction in a more flexible, cost-effective fashion than in command-and-control regimes. They also reduce the information, implementation and enforcement costs which governments traditionally bear when they use more centralized forms of regulation. For an evaluation of voluntary industry agreements as environmental policy tools, see European Commission Communication to the Council and the European Parliament on Environmental Agreements, O.J. 1996, C 140/5.


166 See Stavins and Whitehead, as note 159, above, at 106.
to think that market-based regulatory reforms will necessarily provide the solution to competitiveness concerns. Although they may reduce the cost of pollution controls, market-based instruments are not cost-free. Changing the form of the regulatory system may arouse suspicions in some business quarters that the end result will be not a more efficient regulatory system but a higher-cost one. To the extent that some producers or consumers have not historically borne the full cost of the pollution harms they generate, a shift to cost-internalizing market mechanisms will also raise their costs. To the extent, moreover, that environmental taxes and other market-based pollution control mechanisms are more visible than the costs of command and control regulation—and much more evident than the highly diffuse and invisible costs of uncontrolled pollution—they will generate political opposition.

The asymmetry of interests in the environmental domain is well documented. Thus, we must anticipate significant public-choice-failure-induced faltering on the path to full cost internalization.

D. Anti-Pollution Haven Commitments

Instead of looking at the stringency and adequacy of environmental process standards (be they too low, too high or unnecessarily costly), another approach to the competitiveness issue is to focus on the geographical scope of the standards. Countries fearing that their industries will decamp for lower-cost locales might seek to enforce their domestic laws extraterritorially, for instance, by imposing their domestic standards either on their own companies operating internationally or on foreign companies. Others have suggested that competitiveness fears can be addressed by setting up mechanisms to ensure that each nation effectively enforces its own national environmental rules. These two approaches, which appear contradictory, have one common characteristic: neither of them involves changing the environmental laws of any country.

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167 P. Birch Sorensen (1993) Pollution Taxes and International Competitiveness: Some Selected Policy Issues in OECD Papers on Competitiveness, OECD, at 63, 675 (observing that "[w]hile emission charges tend to minimize the social cost of pollution control, they will typically raise the private cost of the polluting firms, compared to pollution control through the conventional method of standard setting").

168 Those industries bearing new costs and facing new competitive challenges are especially likely to object. See H. Verburg (1993) The Trade Effects of Economic Instruments in OECD Papers on Competitiveness, OECD, at 55, 56 (arguing that, although command and control regulations are generally more costly to implement, the "use of [such] instruments generally disperses the cost of environmental protection and mitigates the direct impact of international competitiveness"). See also B.A. Ackerman and W.T. Hasler (1981) Clean Coal/Dirty Air, Yale University Press, New Haven (documenting how the US Clean Air Act became a "multimillion dollar bail out" for high sulphur coal producers).


ENVIROMENTAL PROTECTION AND INTERNATIONAL COMPETITIVENESS

1. The External Application of High-standard Country Laws

The external application of domestic law is a long-standing technique used by
nations to address the economic spillovers arising from the (alleged) inadequacies of
foreign legal regimes. For instance, to combat lax competition policies in foreign
countries, the US government sometimes seeks to apply US antitrust laws abroad. Most
recently, this threat has been raised against the Japanese Keiretsu. In the
environmental domain, the United States has blocked Mexican tuna imports because
Mexican fishermen did not comply with the dolphin-protection requirements of the
US Marine Mammal Protection Act, no matter that the Mexican fishing occurred in
international waters. However, attempts to apply domestic law to foreign company
activities beyond one's own jurisdiction is regarded by many observers as a fundamental
violation of national sovereignty and as a deeply offensive form of "eco-imperialism".

A more acceptable response to fears of industrial migration to pollution havens
advanced by Jagdish Bhagwati among others, would be for high-standard countries to
apply their domestic environmental standards to their own companies' activities
everywhere in the world. The logic of this proposal is that if companies are forced to
adhere to the same standards wherever they operate, they lose the incentive to shift
production to lax-standard jurisdictions.

The Bhagwati proposal raises the question of whether attempting to prevent
industrial relocation of pollution-intensive industries from high- to low-standard
countries through external application of the high-standard nations' environmental laws
is good policy. From an efficiency standpoint, the response to this question essentially
depends on whether the existence of lax standards in low-standard nations is based on
legitimate advantages or, instead, reflects market failures. If such standards are based on
greater assimilative capacities or differences in values, then, other things being equal,
efficiency argues against intervention to prevent industrial relocation. Acknowledging
that welfare-enhancing industrial relocations will be obstructed, Bhagwati argues for the
external application of high-standard nations' environmental laws to their multinational
companies only as a second-best policy option—preferable to severely trade disruptive
measures such as bans and eco-duites, but inferior to a laissez faire approach.

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171 The author describe this activity as "external" rather than "extraterritorial" or "extrajurisdictional" because
the latter two terms have become a source of great confusion. See P. Demaret (1994) TREMIS, Multilateralism and the
GATT in Cameron et al. (Eds) Trade and Environment: The Search for Balance, Cameron, May, 1994. These terms,
moreover, have taken on a negative connotation, especially in the GATT jurisprudence.

172 See Trachtman, as note 36, above, at 55.

173 See J.A. Sheppard (1993) Using United States Antitrust Law Against the Keiretsu as a Wedge into the Japanese
Market, 6 Transnational Lawyer 345; and Antitrust: US Broadens Enforcement Posture on Foreign Application of the
Sherman Act, 9 International Trade Reporter, 8 April 1992, at 622.

1991, GATT BISD, 391 Supp., 1993 (finding the US ban violated the GATT); the EC has also threatened to enforce
its fur trapping standards against foreign fur makers. See European Union: EU Parliament Condemns Trapping Talks,

175 See Bhagwati and Srinivasan, as note 101, above, at 178; see also Ety, as note 28, at 185–188.

176 See Bhagwati and Srinivasan, as note 101, above, at 178.

177 See Bhagwati and Srinivasan, as note 101, above, at 178 (noting that one of the weaknesses of their proposal
was that it reduced the efficiency gains from a freer flow of cross-country investments today).

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Again, however, if the low standards abroad reflect market or regulatory failures, the application of high-standard nation laws to their companies worldwide may prevent inefficient cost-shifting or other externalities. However, although theoretically appropriate, the prospect of external application of high standards is unlikely to work in practice. Money is fungible and corporate relationships are easily restructured. Thus, companies from high-standard jurisdictions would end up creating joint ventures with overseas companies or otherwise restructuring their foreign activities so as to evade the reach of their home government’s domestic environmental standards.

Moreover, the external application of high-standard nation laws is an incomplete response to the competitiveness problem. Although it attempts to prevent industrial relocation induced by environmental control differences, this approach does little to address the impact such differences may have on the conditions of competition or on the environmental policy-making process.

2. National Enforcement of Domestic Laws with Cross-border Monitoring

Another response to competitiveness concerns is to ensure that each nation rigorously enforces its own national environmental requirements. This approach may be effective where pollution control cost differentials arise not from differences in the stringency of standards across nations, but from disparities in the enforcement of national standards.

Such an approach can be found, for example, in NAFTA’s Environmental Side Agreement, which contains a number of provisions designed to ensure that each NAFTA party adequately enforces its own environmental laws.178 These provisions apply to all three NAFTA parties, but the main rationale for their adoption was to prevent Mexico from becoming a “pollution haven”.179 Specifically, the Side Agreement sets up a complaint mechanisms, whereby parties, individuals or non-governmental organizations can turn to the trilateral North American Commission for Environmental Co-operation to convene consultations with a NAFTA government regarding any “persistent pattern of failure … to effectively enforce” environmental laws and regulations.180 If no agreement is reached, a NAFTA party may seek arbitration that could


180 See art. 24 of the North American Agreement on Environmental Co-operation, as note 178, above.
theoretically result in a "monetary enforcement assessment" against the non-enforcing nation.\footnote{As note 180, above, at arts 35–36. Some authors have observed that the numerous steps contained in the enforcement process weaken its effectiveness and make the imposition of financial penalties very unlikely. See D.C. Esty (1994) \textit{Making Trade and Environmental Protection Policies Work Together: Lessons from NAFTA}, 49 Aussenwirtschaft 1. In fact, in the three years since \textit{NAFTA} went into effect, no "lack of enforcement" dispute has even gone to arbitration, much less resulted in penalties. Note that Canada has not signed onto the "monetary assessments" provision.}{181}

Enforcement provisions such as those contained in the \textit{NAFTA} environmental accord represent an attractive solution to competitiveness concerns. First, this approach recognized that the implementation of standards is what matters, not their adoption. The Former Soviet Union had the highest environmental standards in the world, but very poor results.\footnote{See M. Ivanova (unpublished) "Economic Integration and Regulatory Harmonization: The Case of the Russian Environmental Standards", Yale Center for Environmental Law and Policy.}{182} Second, such a strategy is less likely to be opposed by nations on sovereignty grounds or claims of diverse circumstances. In fact, each nation retains the right to set its own standards and is simply asked to put into practice its own regulatory judgments.

This approach does, however, have some serious limitations. Enforcement-focused provisions presuppose the existence of adequate environmental laws in each country. In many developing nations, environmental regulations are non-existent or poorly tailored to local environmental needs. Therefore, adoption of effective regulatory regimes would have to be a pre-condition for the success of a national enforcement approach. More troublingly, the very existence of enforcement provisions, such as those contained in the \textit{NAFTA}, could provide a disincentive to countries considering whether to upgrade their environmental laws.\footnote{See Van Wezel Stone, as note 170, above, at 474 (arguing that enforcement provision in \textit{NAFTA}'s Labour Side Agreement would provide disincentives for Member States to legislate labour protection legislation and lead to a "race-to-the-bottom").}{183} As a nation can only be sanctioned for failing to enforce its environmental regulations, a serious moral hazard problem could be created. At the very least, a shift toward national enforcement provisions would make it unattractive to adopt high "aspirational" environmental standards. As a further practical matter, most environmental laws have some degree of "prosecutorial discretion" built into them. Determining whether a particular case of non-enforcement represents appropriate discretion or inappropriate standard-lowering would be difficult.

\section*{E. PROCEDURAL HARMONIZATION}

Another way to mitigate competitiveness concerns would be to ensure that nations involved in a trading relationship agree to ground their national environmental policies on basic principles of transparency and sound environmental management. The rationale for such an approach is that convergence around a core set of environmental practices should reduce policy divergences and, thus, competitiveness tensions.

This form of "procedural" harmonization could be achieved through several complementary approaches. First, environmental policy convergence could be achieved
through industry participation in environmental management systems, such as the International Standardization Organization (ISO) 14001. Another form of procedural harmonization might centre on information exchange and efforts to promote technical co-operation. Finally, environmental policy convergence could also be ensured through the use of eco-labels which, if used properly, encourage producers to adopt environmentally sound manufacturing techniques.

1. Environmental Management Systems

One form of procedural harmonization, which will be referred to here as “systems harmonization,” focuses on the adoption of environmental management systems and procedures.\(^{184}\) The common systems can derive from a number of sources.

ISO 14000, advanced by the ISO, provides an example of one form of systems harmonization.\(^{185}\) ISO 14000 spells out basic management standards for participating companies, such as environmental auditing and reporting requirements. But the ISO rules do not specify a strict set of substantive requirements and, thus, are subject to some criticism. Another example of systems harmonization is the EC Eco-Management and Audit Scheme (EMAS), which provides a set of environmental management requirements that must be fulfilled by the companies that want to participate in the scheme.\(^{186}\)

By guaranteeing that at least a rudimentary environmental management structure is in place in all companies, a systems approach might help to reduce the number of cases where divergent standards arise from total regulatory failure. Systems harmonization might also reduce the number of jurisdictions where “public choice” failures\(^ {187}\) (that is, where political decisions do not reflect the will of the people) distort the policy outcome and lead to illegitimate differences in standards. Moreover, by facilitating the collection of information from participating firms, environmental management systems may facilitate enforcement activities of administrative agencies and, hence, compliance with applicable laws and regulations.\(^ {188}\)

A disadvantage of relying on environmental management systems is that the existing regimes, including ISO 14000 and EMAS, are entirely voluntary. Therefore, participation rates vary considerably from country to country.\(^ {189}\) As time passes, however, a number

\(^{184}\) See Esty and Geradin, as note 6, above, at 293.


\(^{186}\) See Regulation No. 1836/93 allowing voluntary participation by companies in the industrial sector in a Community Eco-management and Audit scheme, 1993 O.J., L 168/1. For a good discussion of this regulation, see A. Graff-Buckens (1997) *Old and New EMAS: Challenges for the European Eco-Management and Audit Scheme*, 6 European Environmental Law Review 300.

\(^{187}\) See Esty as note 3, above, at 584–589 (providing a typology of regulatory failures).

\(^{188}\) See Rodgers, as note 185, above, at 187.

\(^{189}\) See EMAS Finds Few Takers in France, *Environment Watch*, 7 November 1997, at 12 (observing that at the end of 1997, two years after the EU regulation creating EMAS came into effect, Germany had almost 600 sites registered under the scheme; in contrast, the UK had only 34 registered sites, the Netherlands 14, and France only nine).
of factors, such as consumer pressure in publicity-sensitive industries, government procurement policies and supplier certification rules, may make compliance with such systems effectively mandatory. Another disadvantage of systems harmonization is that it focuses only on procedures. There may be little convergence in the substantive requirements that are imposed from jurisdiction to jurisdiction. As a result, wide variations in environmental compliance costs may persist and competitiveness tensions may endure. Even the strongest supporters of EMAS or ISO 14000 agree that, in the long run, a procedural, management systems approach will not be sufficient and that "[a] shift towards minimum substantive rules of environmental performance is inevitable".191

2. Information Exchange and Technical Co-operation

One way of ensuring greater policy convergence across nations is to encourage information exchange and technology transfers. The OECD, for example, provides an important forum for the study and exchange of information relating to the coordination of the environmental policies of its members. It negotiates "guidelines" and advises its members on "best practices". It conducts research and supports policy debates and technology sharing. Through regular conferences and publications, it disseminates its findings in ways that become hard for Member Countries to ignore. In fact, the OECD plays a powerful "uplifting" role among its least developed members.192

Environmental policy convergence can also be facilitated through technical assistance programmes between nations. For instance, in the wake of NAFTA and its environmental Side-Agreement, both the United States and Canada have established comprehensive technical assistance programmes with Mexico. The US Environmental Protection Agency and Mexican environmental authorities have developed an Integrated Border Environmental Plan and an action agenda of collaborative projects.193 Perhaps more dramatically, hundreds of enforcement officials have participated in training programmes in the United States. Canada and Mexico have also launched a series of joint environmental efforts.

In a similar fashion, the United States and the EU have launched an Eastern and Central European Environmental Centre in Budapest, known as the Regional Environment Centre, to share their policy and technology understandings with the former Eastern Bloc nations.194 The United States also has a US-Asia Environmental Partnership designed to promote information exchange throughout Asia.195

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190 See Roht-Ariaza, as note 185, above, at 515-516.
191 As note 190, above, at 534.
193 See Esty, as note 28, above, at 376-378.
3. Eco-labels

Another approach to procedural harmonization is through "eco-labels," which provide information to consumers about the environmental characteristics or effects of different products or of their production processes. Eco-labels enable consumers who wish to buy environmentally sound products to do so and, thereby, provide a market incentive to producers to manufacture "green" products.\textsuperscript{196}

Eco-labelling schemes do not link market access to compliance with specific standards and, therefore, are generally GATT-consistent.\textsuperscript{197} Anecdotal evidence suggests that eco-label schemes are nevertheless effective mechanisms for promoting environmental goals.\textsuperscript{198} For instance, at the time the US ban against Mexican tuna products was put in place, little Mexican tuna caught using dolphin-killing methods was being sold in the United States because the US tuna canners had begun a "dolphin safe" labelling programme that had made it nearly impossible to sell dolphin "unsafe" tuna in the United States.\textsuperscript{199} Process-related eco-labelling schemes could thus encourage producers to converge on the use of environmentally friendly manufacturing techniques to maintain the attractiveness of their products.

Eco-labelling schemes present some policy problems. First, the last few years have seen the development of a large number of labelling schemes, the diversity of which has created a great deal of confusion. In Europe, for instance, Germany employs the "Blue Angel" scheme and Scandinavian countries the "Nordic Swan".\textsuperscript{200} In 1992, the EC established its own eco-labelling programme.\textsuperscript{201} The diversity of eco-labelling regimes also makes the monitoring of claims by public authorities extremely difficult.\textsuperscript{202} Second, although eco-labels apply non-discriminatory in theory, there exists a perception that, in practice, they discriminate against imported products and, in particular, products originating from developing countries.\textsuperscript{203} For instance, the eco-labelling criteria recently adopted by the EC for paper products have been perceived by foreign

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\textsuperscript{196} See Stewart, as note 62, above, at 294.
\textsuperscript{197} See US: Restrictions on the Imports of Tuna, as note 174, above, at para. 5.42. ("[T]he labeling provisions of the [US Law] do not restrict the sale of tuna products; tuna products can be freely sold both with and without the "Dolphin Safe" label. Nor do these provisions establish requirements that have to be met in order to obtain an advantage from the government. Any advantage which might possibly result from access to this label depends on the free choice by consumers to give preference to tuna carrying the "Dolphin Safe" label.")
\textsuperscript{198} See Estry, as note 28, above, at 134.
\textsuperscript{199} As note 198, above.
producers as an attempt to protect European paper producers. Therefore, future mechanisms will have to be developed at the international level to ensure a greater degree of convergence among eco-labelling schemes, as well as strict compliance with the principle of non-discrimination.

F. SUBSTANTIVE HARMONIZATION

The final and perhaps most ambitious way to deal with competitiveness concerns is through substantive harmonization of environmental standards. In contrast to procedural harmonization, this approach does not seek to harmonize environmental management systems (such as auditing and reporting requirements), but the actual rules governing production methods and processes (such as ambient or effluent standards).

Trade theorists and economists often dismiss such “harmonization” as inefficient. This bold statement is usually based on the overly blunt, and incorrect, view that harmonization entails the adoption of uniform or identical standards across all jurisdictions. Harmonization, in fact can be a very subtle and flexible policy instrument. When properly applied, harmonization may allow the advantages of diversity, preserving the freedom of each nation to exploit its natural comparative advantages, and at the same time permit policy co-ordination to prevent market allocative inefficiencies resulting from externalization of costs or other market failures.

The following harmonization strategies have been used in a variety of legal orders to address environmental process standards. These approaches include:

- uniform standards;
- minimum standards;
- maximum standards;
- multi-tier requirements;
- convergence of standards;
- differentiated standards;
- goal harmonization; and
- standardization of options.

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205 This section draws on Esy and Geradin, as note 6, above, at 282–294.


207 See Bhagwati, as note 7, above.

208 In fact, as will be seen below, uniform or total harmonization is almost never used to regulate environmental process-related standards. For example, the EU and US legislators have almost always relied on strategies of minimum or differentiated harmonization to regulate such standards. See Geradin, as note 17, above, at 196.

209 See Kleverick, as note 10, above, at 18. (“The proposal that harmonizing is superior to racing them carries with it more freight than the term harmonization alone suggests. The idea must be that there should be not only uniformity among standards, but uniformity at the ‘appropriate’ or ‘correct’ level.”)

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1. Uniform Standards

Total harmonization suggests the adoption of uniform standards across all jurisdictions. Each regulating authority implements exactly the same environmental requirements. Neither higher nor lower standards are permitted. There are several advantages to total harmonization. First, it prevents confusion about which rules apply. As everyone must adhere to the same standards, any deviation can be detected easily.\textsuperscript{210} Second, this form of harmonization also facilitates regulatory economies of scale, allowing officials in different jurisdictions to share data, policy strategies and enforcement techniques.\textsuperscript{211} Finally, there may be some administrative gains from "network effects" that arise where adherence to a common standard generates scale economies in developing pollution control technologies, training programmes, legal systems or any other aspect of an environmental regime that would otherwise consume resources in each jurisdiction individually.\textsuperscript{212} These advantages, however, come at a high price. A single standard across jurisdictions does not allow governments to tailor requirements to local needs, circumstances or preferences. Thus absolute uniformity of environmental process standards is likely to be inefficient.\textsuperscript{213} Nevertheless, off-the-shelf uniform standards may be useful for countries at the earliest stage of development in their environmental regimes, when the alternative is the severe welfare losses entailed by having no standards at all. As countries evolve in their environmental sophistication, a shift away from uniform standards is likely to be beneficial.

2. Minimum Standards

In contrast to uniform rules, minimum process standards set a regulatory floor below which no jurisdiction can go. Such standards ensure that all governments require at least a baseline level of environmental protection from their industries. Under a programme of minimum standards, jurisdictions remain free to impose more stringent requirements. By reducing environmental compliance cost differentials across jurisdictions, minimum standards constrain the possibility of distortions of competition, industrial relocation, races-to-the-bottom and political drag.\textsuperscript{214} Indeed, game theory

\begin{footnotesize}
\begin{enumerate}
\item[210] See Esty, as note 28, above, at 173–174 (reviewing the advantages of total harmonization).
\item[211] As note 210, above.
\item[212] See Esty, as note 181, above, at 619–620 (explaining potential gains from network effects).
\end{enumerate}
\end{footnotesize}
suggests that mechanisms which promote co-operation, such as minimum standards, may diminish strategic behaviour and, thereby, reduce the risk that inter-jurisdictional competition will yield sub-optimal results. A regime of minimum standards allows for some tailoring to meet local conditions, but does not permit unlimited variations in environmental requirements. This approach provides some of the benefits of uniform standards, such as opportunities for scale economies in the administration of environmental regulations, without surrendering all the welfare gains of standards that match local requirements.

Some developing countries object even to minimum standards as an infringement on their sovereignty and more specifically on their "right" to pursue a development path of rapid industrialization without regard to pollution effects and then the clean up after they have become rich. This approach to development is demonstrably sub-optimal, as every country, no matter how poor, has some investments in environmental protection that show high returns from a benefit-cost perspective. Moreover, countries that allow themselves to become very "dirty" are, in fact, subsidizing those to whom they sell their products.

3. Maximum Standards

Adoption of maximum standards, imposing a ceiling on the stringency of environmental requirements, may offer an appropriate response to certain forms of strategic behaviour. Although it has been shown that States may have an incentive to decrease the stringency of environmental standards to attract certain industrial activities where the economic benefits (are perceived to) outweigh the environmental costs (the race-to-the-bottom), they may also decide to increase the stringency of process standards to drive out certain activities, such as the disposal of hazardous or nuclear waste, where the environmental consequences generally outweigh any economic benefits. This NIMBY syndrome represents the mirror image of the race-to-the-bottom problem. It can be seen as another form of "begging thy neighbour". It requires the opposite solution from the race-to-the-bottom, i.e. the adoption of maximum process standards constraining the ability of states to "export" environmentally damaging activities.

4. Multi-tier harmonization

Multi-tier harmonization regimes, in which standards vary across groups of States,

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205 See Abbott, as note 112, above, at 354.
208 See Revesz, as note 9, above, at 1219.
produce some of the benefits of standards tailored to local conditions without losing all
of the advantages of uniform requirements. As one of the most important variables
determining the optimum level of environmental protection is a State’s wealth and level
of economic development, a system of unified standards for those States at comparable
levels of development may prove quite valuable.219

One could imagine, for example, a set of environmental standards developed for
the most economically advanced States that would require quite a high degree of
environmental protection. A second set of standards, with more modest requirements,
might be established for industrializing countries that have a great need for
environmental protection but cannot afford high-level standards. Finally, a baseline set
of standards could be defined for the least developed nations whose economic positions
are so modest that they could not meet anything more than a limited set of
environmental goals, and whose capacity to develop their own regulatory regimes is
quite limited. Such a multi-tier system would provide for economies of scale and
network effects among the countries within each regulatory tier. At the same time, the
existence of multiple tiers would ensure that standards would at least roughly
correspond to countries’ individual needs.

Such a programme would also allow States to “graduate” into higher degrees of
environmental protection as they develop. As a result of their capacity to respond to
some degree of diversity in circumstances without losing all of the benefits of
harmonization, multi-tier standards offer particular promise as a tool for environmental
policy in the international domain.220 This model is already in use in a number of places.
The Montreal Protocol, for example, provides for two tiers of compliance. The OECD
countries phased out their production of CFCs in 1995, but developing countries have
an extra 10 years to complete their phase-out of ozone-layer-damaging chemicals.221
The EU has decided to rely on a similar multi-tier approach to address the difficult issue
of the allocation of reductions in the emissions of sulphur dioxide and nitrogen from
large combustion plants.222

5. The Convergence of Standards

Another response to unconstructive competitive pressures created by varying
environmental standards would be to promote a negotiated convergence of standards
across jurisdictions. Eliminating wide variations in environmental standards limits the

requirements to developed and developing countries).

220 See D. Geradin (1997) Trade and Environmental Protection in the Context of World Trade Rules: A View from the
European Union, 2 European Foreign Affairs Review 33, at 55 (discussing the advantages of the multi-tier
harmonization as a strategy to achieve policy convergence at the international level).

221 United Nations: Protocol on Substances that Deplete the Ozone Layer, 17 September 1987, reprinted in 26 I.L.M. 1541, 1987 (see art. 5 which sets differential phase-out requirements for developing countries).

222 Directive 88/608 on the limitation of certain pollutants into the air from large combustion plants, O.J. 1388,
L336/1, amended by Directive S4/66, O.J. 1334, L337/83. For a discussion of this regulation, see Geradin, as note
18, above, at 110–112.
risk of the race-to-the-bottom dynamic, because the capacity to lure investment with very low standards is constrained. This “convergence” of requirements—perhaps through a regime of both maximum and minimum standards—would provide for some administrative efficiency, while still permitting environmental programmes to be tailored to local conditions.223 For example, establishing minimum requirements on tuna fishing methods that prevent dolphin deaths, combined with a guarantee that countries will not insist on collateral dolphin death limits more stringent than the agreed international threshold, might offer a basis for resolving the long-standing tuna dolphin controversy.224

By narrowing the gap between environmental compliance costs in high-standard and low-standard jurisdictions, regulatory convergence minimizes distortions of competition, dulls any incentive to relocate and eases the competitiveness pressure on environmental standards, all of which can lead to sub-optimal policy choices.

6. Differentiated Standards

A regulatory programme that sets standards centrally but not uniformly represents another approach to the uniformity-versus-diversity dilemma. Under such a regime, authorities at the level of a free trade agreement would identify environmental targets common to all countries but would provide for different degrees of stringency (for example in timetables for achieving the target or in the level of accomplishment itself) depending on the circumstances present in each jurisdiction. The United States uses this sort of differentiated approach in its Clean Air Act.225 Metropolitan areas are ranked as extreme, severe, serious, moderate or marginal based on the severity of their air pollution problems.226 The more severe an area’s “non-attainment” problem, the more time the jurisdiction is given to comply with national clean air goals.227 The worst city (Los Angeles) has 17 years to meet the established National Ambient Air Quality Standards.228

Differential standards are more economically efficient than total harmonization because they better match regulatory requirements to localized needs.229 Yet the presence of common long-term goals ensures that wide variations in the rigor of environmental protection efforts do not persist over time as countries converge on the jointly defined goal. This mechanism serves to balance the advantages of regulatory diversity with the benefits of reduced competitiveness stresses obtained by more centralized standards.

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224 See text accompanying notes 118 and 174, above.
226 As note 225, above, at para. 7511.
227 As note 226, above.
228 As note 227, above, at para. 7511(2).

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7. Goal Harmonization

Harmonization can be limited to the environmental goals that must be achieved by each jurisdiction. Under this approach, States are free to choose the environmental strategies they deem most appropriate to attain the centrally defined goals. A team of Dutch and Belgian academics have proposed such a regulatory approach for the EU.\textsuperscript{230} They suggest that creating an “environmental margin”, within which standards may fluctuate, offers the best balance between the benefits of standards that are purely tailored to local conditions and the advantages of uniform controls. Specifically, van den Bergh and his co-authors argue for broad environmental quality standards and goals to be set up at the EU-wide level.\textsuperscript{231} Each Member State would determine for itself how to achieve the target. In effect, the goals are harmonized, but the implementation of specific environmental programmes and the identification of precise emission standards would be decentralized.

In the United States, goal harmonization takes the form of federal ambient standards. The National Ambient Air Quality Standards of the Clean Air Act specify the acceptable levels of various pollutants.\textsuperscript{232} If a certain level of exposure to a specified type of pollution is identified as the safe threshold, this standard can be established as the baseline requirement in all jurisdictions. Of course, the difficulty of attaining this standard will vary across jurisdictions, depending on local conditions.\textsuperscript{233}

One starting point for goal harmonization might be the PPP. A large number of authors have recognized the importance of the PPP as an instrument for reconciling trade and environmental issues.\textsuperscript{234} As has been noted, the PPP originally emerged as a cost-allocation principle designed to ensure that the costs of pollution abatement activities undertaken by industry would be borne by the private sector and not offset by government subsidies. However, more recently, the PPP has taken on a broader interpretation as a cost internalization principle pursuant to which the costs of pollution should be fully reflected in the costs of production.\textsuperscript{235} Thus, from a theoretical standpoint, the PPP offers an ideal response to competitiveness concerns. If all nations adopted measures designed to ensure that the costs of pollution were fully reflected in


\textsuperscript{232} 42 U.S.C. paras. 7408–7409.


\textsuperscript{234} See, Schoenbaum, as note 147, above, at 295; Pearson, as note 41, above; Stevens, as note 103, above; and Esty, as note 28, above, at 176.

\textsuperscript{235} Stevens, as note 103, above, at 585 (arguing that in the last 20 years, “the debate shifted from the Polluter Pays Principle as a guide to allocating costs for domestic pollution between the government and the private sector, to the Polluter Pays Principle as a guide for internalizing costs for domestic pollution by countries engaged in international trade”).
the production costs of their industries, environmental costs differentials among nations would exclusively and legitimately reflect differences in natural endowments (strong winds, fast rivers, etc.). Hence, there would be no more need or justification for costs equalization measures of other forms of competitiveness-driven policy intervention.

The PPP presents several additional advantages as a central policy goal. First, it has received widespread recognition. The PPP was adopted by the OECD in 1972, inserted in the EC Treaty by the Single European Act in 1986, and is a part of the 1992 Rio Declaration. In light of this wide degree of acceptance, some authors argue that the PPP should be recognized as customary international law. Second, the PPP is extremely flexible. As pointed out by Schoenbaum, it conforms with the fundamental economic principle that pollution reduction should vary on the basis of different geographic conditions. Moreover, as it does not mandate any specific method of pollution control, the PPP preserves regulatory diversity.

Despite these advantages, adherence to the PPP entails serious practical problems. First, although the PPP is widely accepted, many different interpretations have been advanced. As Pearson observes: "Although durable and widely referred, the [principle] is not without its ambiguities and idiosyncratic interpretations." He identifies a number of complex issues: who pays internalized costs, how much the polluter should pay, which economic instruments are compatible with the principle, and how equity and fairness are taken into consideration. Second, many nations may not have the technical and administrative resources to translate this policy principle into effective environmental action. Internalizing environmental costs generally requires complex technical and scientific calculations which may exceed the level of competence of most developing nations. Third, costs vary depending on the value placed on a harm. Whose values should be used? Valuation is, to some degree, an inescapably political exercise. Perhaps a principle could be established calling for local values to be used for local public goods or harms and global values for global ones. However, what about those cases where values diverge? What if one country thinks another's values are wrong? Despite these obstacles, the PPP remains a valuable starting point in the quest for generalizable goals.

8. The Standardization of Options

An alternative to goal harmonization is to limit policy co-ordination to the identification of a set of options from which jurisdictions can choose their own options.
regulatory approach.\textsuperscript{241} With respect to solid waste, for example, jurisdictions would select from such policy options as landfilling under specified conditions, incineration with defined controls or various recycling strategies. This approach offers two advantages. It facilitates consensus across jurisdictions with varying requirements and, hence, the adoption of harmonization legislation. Further, it allows a degree of experimentation that may yield improved results over time. The weakness of the "options" approach is that the implementation may suffer. In particular, environmental authorities may find it difficult to assess whether parties are in compliance because of the range of ways of meeting one's legal obligations.

IV. CONCLUSION

As has been demonstrated, competitiveness pressures cannot and should not be ignored in the context of trade liberalization. Although economists often dismiss the seriousness of such concerns, politicians, business people and environmentalists do not. Thus, if freer trade is to achieve the full measure of social welfare gains it promises and avoid the allocative inefficiency of environmental market failures, competitiveness concerns must be tackled head on. Moreover, continued public support for trade and investment liberalization in many parts of the world depends on public confidence that other values about which people care (including environmental protection) are not being sacrificed at the altar of freer trade. As this article has suggested, when externalities, contests over common resources, inter-temporal cost-shifting or other market failures generate competitiveness issues, the need for government intervention is well established. In these circumstances, any "competitive" advantage obtained must be seen as economically inefficient and potentially disruptive to the integrity of the international trading system.

The belief that "harmonization" and imposition of welfare-reducing uniform environmental standards are the only regulatory tools available to respond is plainly wrong. In fact, there are a wide variety of policy approaches that can be advanced to address competitive concerns. Some of these policy mechanisms are likely to be inappropriate or ineffective or both. Other strategies, if carefully developed, may be able to reduce competitiveness tensions without diminishing the opportunities that trade provides for countries to exploit their legitimate comparative advantages. Whether and under what circumstances a particular policy response is justified depends on the circumstances. Context-specific analysis is thus required in each and every case to determine whether a response to competitiveness concerns will be welfare-enhancing or -reducing.

\textsuperscript{241} To some extent, this approach can be found in EU Directive 76/464 on pollution caused by certain dangerous substances discharged into the aquatic environment, O.J. 1976, L 129/23 (setting up a system whereby Member States may opt for effluent standards or, in some circumstances, environmental quality standards). For a discussion on this directive, see D. Taylor, G. Diprose and M. Duffy (1983) \textit{EC Environmental Policy and the Control of Water Pollution: The Implementation of Directive 761464 in Perspective}, 24 Journal of Common Market Studies 225.