

Pollution Havens: An Analysis of Policy Options for Dealing With an Elusive Phenomenon

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One cannot expect developing countries to have the same environmental standards as developed ones. Standards can be at their efficiency levels and yet lower than in developed countries due to differences in emissions, the pollution absorptive capacity, and the intensity of environmental preferences. However, developing countries can be said to provide a "pollution haven" if their environmental standards are below their efficiency levels or if they fail to enforce their standards in order to attract foreign investment. This article analyses which factors can give rise to pollution havens. The evidence pertaining to pollution havens is reviewed. It is argued that in spite of the rather limited evidence for the existence of pollution havens, it is nevertheless important to evaluate policy options for tackling them. A comprehensive range of options are evaluated according to whether they appear to be effective, politically realistic, development friendly, closed to abuse, and not unnecessarily restrictive.

In spite of the popularity of the pollution haven hypothesis, it is rarely defined what exactly is meant by a pollution haven. Public opinion seems to have it that any country with less strict environmental standards than one's own country is guilty of providing a pollution haven. Such a definition, however, would be misleading because countries cannot, in general, be expected to have the same environmental standards all over the world—regardless of whether they want to attract foreign capital. A more sophisticated definition, but one inspired by the same kind of reasoning, is provided by Eskeland and Harrison (1997, p. 4):

The pollution haven hypothesis is, perhaps, best seen as a corollary to the theory of comparative advantage: as pollution control costs begin to matter for some industries in some countries, other countries should gain comparative advantage in those industries, if pollution control costs are lower there (for whatever reason).

Again, in focusing on cost differentials as such and ignoring the reasons for those differentials, this definition does not capture what seems to be the essence of the pollution haven hypothesis: that countries set inefficiently low environmental standards or set efficient standards but fail to enforce them to attract foreign capital.

In this article I will therefore employ the following definition: A country provides a pollution haven if it sets its environmental standards below the socially efficient level or fails to enforce its standards in order to attract foreign investment from countries with higher standards or countries that better enforce their standards. In formal economic terms, environmental standards are at their socially efficient level if for each different pollutant the standard is set such that the marginal social benefit of an increase in pollution is just equal to the marginal social cost of such an increase. Avoiding economic jargon, this broadly translates into the requirement that the pollution levels are in accordance with the preferences of people living in a political community (here, country). Hence, if environmental standards are inefficiently low, then there is excessive pollution relative to people's preferences.

There has been much academic debate on the pollution haven phenomenon (see, e.g., Birdsall & Wheeler, 1993; Lucas, Wheeler, & Hettige, 1992; Porter, 1999; Thompson & Strohm, 1996). This article differs from most others on two major accounts. First, it aspires to provide a more comprehensive analysis of which factors might give rise to pollution havens and what systematic empirical evidence tells us of their existence. As we will see, pollution havens are an elusive phenomenon in the sense that their existence is difficult to demonstrate both theoretically and empirically. Second, and more important, this article aspires to move forward the debate in providing an analysis of policy options for dealing with this elusive phenomenon. What options do policy makers have for dealing with pollution havens and how would one evaluate those options?

Structure and Outline of Argument

The next section argues that even if environmental standards were at their efficiency levels everywhere, there would still likely be international differences in those environmental standards. This is because of potential differences in the amount of existing emissions, differences in the pollution absorptive capacity of the environment in different countries, and differences in the intensity of environmental preferences of the people living in a country. However, apart from differences in the amount of existing pollution, none of these factors would suggest systematically lower environmental standards in developing as opposed to developed countries. Next, a number of factors are examined that could lead to pollution havens as defined above. Of these, by far the most important one is that developing countries might suffer from political-institutional deficiencies that could create a bias against environmental

preferences such that their environmental standards are set inefficiently low or are not enforced.

These theory-oriented considerations are important in the sense that they help to clarify analytically when international differences in environmental standards are justified by international differences in the efficiency level of standards and when they are not. However, the question is whether such a distinction is useful for empirical analysis, which, after all, represents the only way of knowing whether and to what extent pollution havens exist in actual reality. Ideally, one would try to assess environmental standards internationally, compare the actually existing standards to what would constitute the efficient standards, and then evaluate whether developing countries' standards are further away from their efficiency standards than is the case in developed countries. If so, then they would provide a pollution haven relative to developed countries. Unfortunately, such an empirical analysis is next to impossible, mainly because it is extremely difficult to say what the efficient environmental standards for each country would be. Studies analyzing the pollution haven phenomenon empirically have therefore invariably taken recourse to testing one of three proxy propositions or hypotheses that would need to hold if pollution havens did exist:

1. Differences in environmental standards affect the allocation of investment flows.
2. Developing countries' production and exports have become increasingly pollution intensive.
3. Pollution-intensive industries flee the high-standards countries.

Reviewing the available empirical literature leads to the conclusion that there is very limited evidence in favor of either of these three propositions, and several reasons are presented for why there might be such limited evidence for pollution havens.

It follows from both theoretical considerations and a review of the empirical evidence that pollution havens represent an elusive phenomenon. Although their existence is difficult to demonstrate, it would be overhasty to dismiss them completely, however. Maybe insufficient data availability prevents our empirical methods from tracing them better. Also, policy makers and environmental activists alike seem to be concerned about pollution havens independent of the weak empirical evidence for their actual existence. In times of globalization and increasing flows of capital to developing countries, this concern is even likely to become stronger. If one is concerned about policy, then it is simply not enough to refer to the weak statistical evidence for pollution havens found in empirical studies. Rather, one needs to take these concerns seriously and offer policy options to address them.

This article therefore goes one important step beyond the existing literature. Because the existence of pollution havens is likely to remain a hotly debated issue, it seems more than pertinent to evaluate policy options for tackling potential or actually existing pollution havens. The last section of this article therefore examines a wide range of policy options according to a number of clearly specified criteria. It argues that assistance for political-institutional capacity building and local empowerment of people represent the best policy option.

Theoretical Considerations and Evidence Regarding Factors Causing Pollution Havens

EFFICIENT INTERNATIONAL DIFFERENCES IN ENVIRONMENTAL STANDARDS

As mentioned earlier, countries might have different environmental standards even if those standards are set at their efficient level. Environmental standards can differ because of at least three reasons, detailed below.

Differences in Emissions of Pollutants

All other things equal, a country with higher emissions should have stricter environmental standards than a country with lower emissions. Unfortunately, data on international differences in emissions of pollutants are not directly available on an aggregate basis. However, one can use differences in energy consumption per capita as a first proxy to differences in emissions of pollutants.¹ According to the World Bank (1999, Table 3.7), low- and middle-income countries had a commercial energy use per capita of 1,766 kg of oil equivalent in 1996, whereas high-income countries used 5,259 kg of oil equivalent per capita. *Ceteris paribus*, we would therefore, on average, expect developing countries to have laxer environmental standards due to lower emissions.

Differences in Pollution Absorptive Capacity

In principle, different environments can have different capacities to absorb or assimilate, and therefore to cope with, pollution. This much is undisputed. Going one step further, it is sometimes tentatively suggested that the environment in developing countries might be characterized by higher pollution absorptive capacity (see, e.g., Snape, 1992, p. 88). However, from a natural science perspective, there is no justification for such a presumption, because the pollution absorptive capacity

1. Eskeland and Harrison (1997) provide statistical evidence from U.S. data that energy use is highly correlated with different measures of emissions.

depends on the meteorological and topographical conditions of the local environment and also on the relevant pollutant.

Differences in the Intensity of Environmental Preferences

It is often presumed that the intensity of environmental preferences is lower in developing countries. Kriström and Riera (1996, p. 45) suggest that "most economists would argue intuitively that environmental quality is a luxury good." Such a presumption is in conflict with the available evidence, however. In Gallup, Gallup, and Dunlap (1993), a cross-national survey encompassing 24 developed as well as developing countries showed no statistically significant correlation between expressed personal concern about the environment and real GDP per capita in purchasing power parity in 1992 (GDP data taken from United Nations Development Programme [UNDP], 1995, Table 1). There is a correlation, statistically significant at the .01 level, between support for stronger environmental laws for business and industry and for citizens. However, it contradicts the common view because individuals in poor countries actually express stronger support for these laws than do individuals in rich countries (Pearson correlation = $-.550$ for laws for business/industry, $-.744$ for laws for citizens).² These findings are not confined to the Gallup et al. (1993) survey.³ In the World Values Survey (Inglehart, Basanez, & Moreno, 1998), another cross-national environmental survey conducted in 43 developed and developing countries, there is no statistically significant correlation between income levels and individuals' support for environmental protection, as measured in various formulations asking for people's willingness to accept price, tax, or cost increases for the reduction of environmental pollution. More systematically, Kriström and Riera (1996) have surveyed available evidence from contingent valuation studies—all, however, coming from European countries. Somewhat to their own surprise, they found that individuals in lower income brackets express a higher willingness-to-pay as a share of their income than individuals in higher income brackets. It seems fair to say, therefore, that there is no strong evidence showing that environmental preferences of individuals in poor countries are less intense than those of individuals in rich countries.

**INEFFICIENT INTERNATIONAL DIFFERENCES
IN ENVIRONMENTAL STANDARDS**

International differences in environmental standards need not be in accordance with differences in the efficiency of environmental

2. Spearman's r is $-.506$, significant at the .05 level, and $-.689$, significant at the .01 level, respectively.

3. See also Neumayer (2001, in press-b).

standards. There are a number of reasons that could cause such standards to inefficiently differ internationally:

Transboundary Pollution

So far, we have assumed that environmental pollution does not cross national boundaries. If it does, then incentives to provide a pollution haven exist as some of the burden connected to low or badly enforced environmental standards is borne by other countries. What evidence do we have on pollution spillover effects? To my knowledge, there is no evidence that pollution spillover effects are more prevalent in the developing world per se. However, we do have evidence on whether affected countries have found an agreement and have tried to internalize the pollution externality. On this account, developing countries fare worse than developed countries. According to Sand (1992), de facto participation of developing countries in international legally binding environmental agreements is in general (but not in each and every case) much less than that of developed countries. Similarly, in cross-country statistical analysis, Roberts (1996) found that wealthy countries are much more likely to sign and ratify international environmental treaties than are poor countries. *Ceteris paribus*, we would therefore expect developing countries' pollution spillovers to be less internalized via international environmental agreement than developed countries' spillovers.

Bias Against Environmental Preferences

Pollution havens can also arise if a country's standard-setting institution (i.e., its government or its national environmental authority) is biased against environmental preferences. Why might this be the case? First, the agents causing and therefore benefiting from environmental pollution might be less in number than the victims of pollution. There is a whole strand of public choice theory going back to Olson (1965) arguing that small groups find it easier to organize themselves and therefore to lobby the political process than big-number groups. Business groups from pollution-intensive industries, for example, are usually much better lobbyists with much more money and influence available than environmental pressure or consumer groups. However, there is a drawback to this argument. If the number of pollution beneficiaries is much smaller than the number of pollution victims, then at democratic elections the victims have a comparative advantage over the former group. Presumably, therefore, this first argument is not sufficient in explaining political bias against environmental preferences. Of course, many, especially developing, countries do not hold democratic elections in the full sense, hence the beneficiaries of pollution need not fear losing out at the ballot box. Freedom House (1999) publishes an annual index of political freedom measured on a 1-to-7 scale covering the existence and fairness of elections, existence of opposition, and the possibility of taking over

power via elections. For a selection of the 52 most important developed and developing countries, the 1996-1997 index is highly correlated with real 1997 GDP per capita in purchasing power parity (Pearson correlation = .865, significant at the .01 level; Spearman's $r = .847$, significant at the .01 level; GDP figures taken from UNDP, 1999, Table 1): Developed countries tend to have higher political freedoms than do developing countries.

Second, and connected to the last point, if the political system is characterized by corruption and is easily amenable to manipulation by powerful and wealthy special interest groups, then the beneficiaries of pollution are likely to be more influential than the comparatively less wealthy environmental pressure or consumer groups. "Regulatory capture" becomes easier if lobbyists from pollution-intensive industries can bribe officials from environmental agencies. Porter (1999) argues forcefully that developing countries are much more likely to suffer from this kind of failure of political system than developed ones. Transparency International (1999) publishes an index of perceived corruption, defined as the perceived corruption in the public sector in terms of abuse of public office for private gain, measured on a 0-to-10 scale. For the same 52 developed and developing countries as above, the 1996 index is highly negatively correlated with real 1997 GDP per capita in purchasing power parity (Pearson correlation = $-.638$, Spearman's $r = -.743$, both significant at the .01 level; GDP figures taken from UNDP, 1999, Table 1): Developing countries tend to be perceived as being more corrupt than developed countries.

Third, whereas the benefits of pollution are present, tangible, and highly visible in terms of the goods and services that are produced and the jobs that are created or secured, the costs of pollution are often invisible, intangible, uncertain, and occur in the future. Myopic policy makers whose interests might primarily center on the prospects of reelection in the near future might therefore tend to focus on the benefits of pollution at the expense of its costs. They might be encouraged to do so if because of economic hardship, the electorate regards other problems than environmental pollution to be the more pressing ones. It may be surprising that there is no systematic evidence demonstrating that individuals in developing countries regard other problems as more pressing relative to environmental problems. In the already mentioned Gallup et al. (1993) study, the percentage of respondents volunteering to state environmental problems as the most important problem facing the nation is not statistically significantly correlated with GDP per capita. Similarly, in the World Values Survey (Inglehart et al., 1998), approval rates for the statement "If we want to combat unemployment in this country, we shall just have to accept environmental problems" are not significantly negatively correlated with GDP per capita.

Fourth, bias against environmental preferences can stem from political-institutional failure of a country. Even if policy makers are not biased against environmental preferences *per se* and try to satisfy the true preferences of their citizenship, a country, especially a developing country, might not have the advanced political, legal, administrative, and regulatory capacity to provide environmental protection at the efficient level. Political-institutional failure might either lead to inefficiently low environmental standards or to nonenforcement of standards. Birdsall and Wheeler (1993) suggest that

the relative costs of monitoring and enforcing pollution standards are higher in developing countries, given scarcity of trained personnel, difficulty of acquiring sophisticated equipment, and the high marginal costs of undertaking any new governmental activity when the policy focus is on reducing fiscal burdens. (p. 138)

In using a multidimensional survey analysis of national environmental reports to the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992, Dasgupta, Mody, Roy, and Wheeler (1995) found that a country's overall institutional environmental performance as measured by environmental awareness, scope of policies adopted, scope of legislation enacted, control mechanisms in place, and the degree of success in implementation is positively correlated with its income per capita and the development of its legal and regulatory system.

Fifth, policy makers can be biased against environmental preferences if this allows domestic firms to reap profits from international imperfectly competitive markets. Barrett (1994) shows that if firms in these markets compete with each other in quantities (so-called Cournot competition), then lowering environmental standards allows domestic firms to expand their output and increase their profit share at the expense of foreign firms. This is often called "ecological dumping" and, insofar as countries do not tax away all the additional firm profit, foreign investors will find it attractive to invest in low-standards countries. However, whether ecological dumping can explain the provision of pollution havens is rather dubious for two reasons. First, Barrett shows as well that if companies compete with each other in prices rather than in quantities (so-called Bertrand competition), then governments have an incentive to actually raise environmental standards because this will allow domestic firms to raise their prices and increase their profit share at the expense of foreign firms. In other words, instead of ecological dumping there can as well be "ecological overpricing," depending on the form of competition. Second, even if firms compete in quantities, all countries have an incentive to lower their environmental standards. Hence, all countries will have inefficiently low environmental standards, but there is no reason to

expect that developing countries provide pollution havens relative to developed countries.

Dependency on Capital Tax Revenue

Oates and Schwab (1988) and Chao and Yu (1997) show that countries have an incentive to set environmental standards inefficiently low if their government's tax revenue depends in part on capital taxation. Lowering environmental standards is a means of attracting foreign capital and keeping domestic capital that raises tax revenue. The International Monetary Fund (IMF, 1998, pp. 4-5) provides evidence on the types of governmental revenue as percentages of total revenue in general and on corporate taxation as a proxy to capital taxation in particular. Although the percentage of total revenue stemming from corporate taxation obviously varies a lot from country to country, it is striking that quite a few developing countries derive above 15% of their total revenue from corporate taxation, whereas in developed countries the dependency ratio is usually below 15% (with the exception of Australia, which has a rate of almost 17%). *Ceteris paribus*, we would therefore expect that some developing countries might have lower environmental standards.

Jurisdictional Market Power in the Market for Capital

Van Long and Siebert (1991) and Rauscher (1994) have shown that if countries are large enough to exercise market power in the capital market (a possibility we have implicitly excluded so far), then a capital-exporting country has an incentive to lower its environmental standards to restrict its capital export and raise its rate of return on its foreign investment. A capital-importing country with market power has the opposite incentives. This argument can hardly give rise to developing countries providing pollution havens, however. First, there is hardly a developing country large enough to raise or lower the rate of return on capital. If at all, then developing countries could merely exercise market power in a concerted joint effort, which is not occurring at the moment. Second, and more important, developing countries are net capital importers so that instead of having an incentive to provide pollution havens they would have an incentive to set inefficiently strict environmental standards!

Summary of Findings

Table 1 sums up the findings on how we would expect developing countries' environmental standards to be relative to developed countries' standards under efficiency conditions. Only the lower emissions in

Table 1
Developing Countries' Environmental Standards Relative to Developed Countries' Standards Under Efficiency Conditions

<i>Factor</i>	<i>Evidence</i>
Emissions	Laxer
Pollution-absorptive capacity	Indeterminate
Intensity of environmental preferences	Indeterminate

Table 2
Developing Countries' Environmental Standards Relative to Developed Countries' Standards Under Nonefficiency Conditions

<i>Factor</i>	<i>Evidence</i>
Pollution spillovers	Laxer
Bias against environmental preferences	Laxer
Dependency on revenue from capital taxation	Laxer
Jurisdictional market power	Stricter

developing countries would clearly prompt us to expect them to have laxer environmental standards. The evidence on the pollution absorptive capacity of the environment and the intensity of environmental preferences is indeterminate.

Table 2 sums up the findings on factors that could give rise to pollution havens. The higher prevalence of pollution spillovers, the more pronounced bias against environmental preferences, and the greater dependency of government revenue on capital taxation are all factors that could give rise to developing countries having inefficiently lax or badly enforced environmental standards relative to developed countries. Jurisdictional market power in the capital market is a potentially counteracting factor, but its practical relevance is highly questionable.

As can be seen from Tables 1 and 2, the existence of laxer or badly enforced environmental standards in the developing countries might, but need not, represent the provision of a pollution haven. Next, I move to a review of the more systematic empirical evidence related to pollution havens.

Systematic Empirical Evidence

How does one detect pollution havens? Ideally, following from the definition of pollution havens, one would want to compare existing

environmental standards to their efficiency levels. In practice, providing a reliable estimate of these efficiency levels would be next to impossible for most countries due to lack of reliable data and valuation studies. Invariably, therefore, empirical studies have simply examined whether countries with low environmental standards manage to attract capital from countries with high standards. If pollution havens exist, then we would expect to find such evidence. Note, however, that such evidence is only a necessary, not a sufficient, condition for proving the existence of pollution havens because, although the environmental standards in countries attracting investment are lower than in other countries, they need not be inefficiently low.

Practically all relevant empirical studies have examined one of three questions: First, whether differences in environmental standards affect the allocation of investment flows; second, whether production and exports in developing countries (the supposed pollution havens) are becoming increasingly more pollution intensive; and, third, whether pollution-intensive industries leave high-standards countries at any significant level.

DO DIFFERENCES IN ENVIRONMENTAL STANDARDS AFFECT THE ALLOCATION OF INVESTMENT FLOWS?

Pollution havens only matter if differences in environmental standards affect the allocation of investment flows. Although there are not many studies on the international level, there are a few more studies examining the effects of environmental regulation on investment flows within a nation, mainly in the United States. Mani, Pargal, and Huq (1996) find that differences in the stringency of environmental enforcement in different states of India did not have a significant impact on the location of new manufacturing plants in 1994. Similarly, for the United States, Bartik (1988) does not find any statistically significant effect of variations in the stringency of state environmental standards on the location decisions of new manufacturing plants owned by the Fortune 500 companies throughout the 1970s. Levinson (1996) examines locational choice encompassing all the manufacturing industry. He finds that the investment decisions of only very few industries were significantly affected by differences in environmental standards and that the effect is rather small. McConnell and Schwab (1990) look at the impact of environmental regulation on location decisions for new plants of just one industry, the motor vehicle industry, during 1973 through 1982. Their results are ambiguous. Depending on the definition of environmental stringency, they find either no statistically significant evidence or weak evidence that some firms may be deterred at the margin from investing in regions with high environmental compliance costs.

In contrast to the last three studies, Keller and Levinson (1999) look specifically at foreign direct investment (FDI) inflows to the United States and examine whether states with low environmental standards attract a higher share of this investment inflow than other states. Keller and Levinson find that they do but estimate the effect to be small. Their results stand in marked contrast to List and Co (2000), who also look at the effects of environmental regulations on FDI inflows to the United States. Using measures of environmental stringency different from those of Keller and Levinson, List and Co find quite large effects of stringent environmental standards lowering a state's share of receiving FDI.

In moving to the international level, the first thing to note is that the empirical evidence from the national level, even if it was unambiguous, need not carry over because nation-states are much more diverse in many respects than the states of the United States. Before looking at two studies that employed systematic statistical analysis, it is interesting to note that environmental compliance costs do not figure in the 49 competitiveness indicators published by the World Bank (1998a). It also plays no role in the competitiveness ranking of 59 countries provided by the World Economic Forum (1999). Insofar as competitiveness is a metaphor for the attractiveness to invest in a country, then, in the World Bank's and World Economic Forum's view, at least, environmental factors do not seem to play a role. In the International Institute for Management Development's (1999) "World Competitiveness" rankings, the extent to which existing laws to protect the environment hinder businesses is one of the criteria, but it is merely one out of 288, and four other criteria reward countries for good environmental performance.

More systematically, Xing and Kolstad (1998) find that countries with low environmental standards tend to attract a higher share of U.S. FDI outflows than do countries with high standards. However, they admit that this result might not be robust because their number of observations is quite low. Eskeland and Harrison (1997) examine how the pattern of foreign investment in four developing countries (Mexico, Morocco, the Ivory Coast, and Venezuela) is affected by environmental regulation. They find two things: first, differences in pollution abatement costs are insignificant in determining FDI flows to these countries; second, high-polluting sectors do not attract more FDI than cleaner sectors—sometimes even the opposite effect is statistically significant.

ARE DEVELOPING COUNTRIES' PRODUCTION AND EXPORTS BECOMING INCREASINGLY POLLUTION INTENSIVE?

If developing countries provide pollution havens, then we would expect that, *ceteris paribus*, their production, and possibly their exports as well, become more pollution intensive over time as dirty industries

migrate to these havens. Lucas et al. (1992) and Birdsall and Wheeler (1993) provide evidence that developing countries had high growth rates of pollution intensity of industrial production in the 1970s and 1980s, whereas the pollution intensity has decreased in developed countries. Similarly, Abimanyu (1996) finds that pollution-intensive sectors have expanded faster than average in some developing countries in East and Southeast Asia. However, it is not clear whether this relative change is due to relocation of pollution-intensive industries toward developing countries or represents the environmental consequences of the industrialization process (Thompson & Strohm, 1996). It is also not clear whether, even if this relative change was due to migration of pollution-intensive industries toward developing countries, relocated industries increased the exports of goods from pollution-intensive production to countries with high environmental standards. First, Lucas et al. and Birdsall and Wheeler find that closed developing countries had much higher growth in pollution-intensity of industrial production than export-oriented countries—a finding that is disputed by Rock (1996), however, who claims that this result is due to statistical misspecification. Second, Mani and Wheeler (1997) provide evidence suggesting that the consumption of pollution-intensive goods in the developed world has decreased hand in hand with their decreasing pollution intensity of production so that the “consumption/production ratios of dirty-sector products in the developing world have remained close to unity” (p. 20).

Tobey (1990) analyses directly the effects of differences in environmental standards on patterns of world trade and finds that developed countries’ stringent standards have not significantly affected international trade patterns in the most polluting industries. He uses data from the late 1960s and early 1970s, that is, before the major wave of raising environmental standards in developed countries. However, his result is confirmed by a similar analysis by Beers and van den Bergh (1997) for 1992. Whereas they find no significantly negative impact of the stringency of environmental standards on exports of pollution-intensive industries as a whole, they do find such an impact with respect to the subset of “non-resource based” pollution-intensive industries.

The World Bank (1998b, p. 113) also provides more recent evidence on the pollution intensity of exports from developed and developing countries. It computes the export-import ratio for six heavily polluting sectors—iron and steel, nonferrous metals, industrial chemicals, petroleum refineries, nonmetallic mineral products, and pulp and paper products—for 53 countries. The export-import ratio of low-income countries increased by 71% to about 0.3 between 1986 and 1995, that of both lower and higher middle-income countries decreased, and the ratio of high-income countries increased by 29% to 1.32.⁴ The result for

4. The World Bank does not control for differentials in export-import ratios in overall goods and services, which, strictly speaking, it should do. As this ratio is 0.9 for low-

low-income countries leaves open the possibility that these countries provided pollution havens in the 1980s and early 1990s (and possibly before). It is notable, however, that the lower the income group of countries the lower as well the export-import ratio. Production of dirty industries still takes place predominantly in the richer countries. What is true for income groups holds true on a disaggregated level as well: The World Bank (p. 113) finds that with very few exceptions, developed countries export more goods from highly polluting sectors than they import from developing countries both in 1986 and in 1995. A possible explanation for this rather striking result might be that dirty sectors are about twice as capital intensive as clean sectors, which in turn are about 40% more labor intensive (Mani & Wheeler, 1997, p. 6), and developed countries are more capital abundant and less labor abundant than developing countries.

For the United States only, Kahn (2000) looks at the pollution intensity of exports and imports in 1972, 1982, and 1992, where pollution intensity is measured according to information provided by the U.S. Toxic Release Inventory Data. He finds that the growth in pollution-intensive imports is mainly due to growth in trade with rich nations not with developing countries. However, he also finds that "when poorer nations engage in trade liberalization dirty trade with the United States grows faster than clean trade with the United States" (pp. 3-4).

DO POLLUTION-INTENSIVE INDUSTRIES FLEE THE HIGH STANDARDS COUNTRIES?

Pollution havens, if existent, will attract foreign investment from countries with higher standards. Do we observe pollution-intensive industries leaving high-standard countries? Evidence on this aspect exists mainly for the United States only. Leonard (1988), in one of the earliest comprehensive qualitative studies, did not find evidence of pollution-intensive U.S. industries moving to Ireland, Spain, Mexico, or Romania. More systematic and very strong evidence against the hypothesis that pollution-intensive industries migrate toward lower-standard countries is provided by Albrecht (1998): He looks at the U.S. inflows and outflows of investment from clean, medium-polluting, and dirty industries between 1991 and 1995. He finds that dirty industries are the only ones for which more investment comes to than leaves the United States, whereas there is a massive net outflow of investment in clean industries. As this result is not due to dirty industries growing faster than other U.S.

income and 1.03 for high-income countries in 1995 (data taken from World Bank, 1997), the World Bank's (1998a, p. 113) conclusions remain valid, however; even after taking into account differences in the overall export-import ratio, low-income countries import many more goods from dirty industries than they export.

industries, Albrecht concludes that “dirty industries are not at all leaving the USA en masse” (p. 191).

The period of Albrecht’s analysis is quite small. More important, it is for the United States only. Unfortunately, FDI data are not available for the other G7 countries on a detailed industry basis.⁵ The exception is Germany, for which there is available data on FDI flows of eight pollution-intensive manufacturing sectors over the period 1989 to 1997 (Deutsche Bundesbank, 1994, 1997, 1999).⁶ Whereas the cumulative direct investment of foreigners into Germany in these sectors amounts to approximately 224 billion DM, the cumulative flow of direct investment out of Germany amounts to 376 billion DM. It would be wrong, however, to regard this as evidence for a massive flight of pollution-intensive industries out of high-environmental-standards Germany. This is because these industries simply follow the general trend of the overall German manufacturing sector, which is characterized by massive net outflows of direct investment. Indeed, the share of pollution-intensive FDI among all German manufacturing-sector FDI has remained relatively close to its average share of about 41% between 1989 and 1997. That there is a net outflow of investment in pollution-intensive sectors is therefore in itself no evidence for this flight being induced by high environmental standards. However, the same average share of pollution-intensive sectors among all manufacturing sectors is about 39% for FDI into Germany. The difference of two percentage points could be tentatively interpreted as evidence for a net outflow of investment in these sectors even after taking into account that there is a net outflow of investment of the overall manufacturing sector. It is weak evidence at best, however, because this rather small difference of two percentage points might be caused by many other factors besides high environmental compliance costs in Germany.

In Search of Explanation: Why Is There So Little Evidence for Pollution Havens?

It follows from this overview of empirical studies that the evidence for pollution havens is relatively weak at best and inconclusive or even negative at worst. As a next step, one might ask why low-standard countries do not manage to attract more capital from high-standard countries.

5. This conclusion is based on an analysis of the sources provided in the technical notes to the Organization for Economic Cooperation and Development (OECD) (1998).

6. These cover the chemical industry; petroleum refining without extraction; production of synthetics and rubber wares; iron and metal mining and founding; and paper and pulp production and processing.

The first and perhaps most obvious explanation is that some of the dirtiest industries cannot migrate as they are dependent on being close to their product market. This explanation applies, for example, to electricity generation but does not apply to the majority of industries in the manufacturing sector.

Second, the costs of environmental compliance might be too low to play a significant role in investment decisions. According to the Organization for Economic Cooperation and Development (OECD, 1996, Table 1), although pollution abatement expenditures as a percentage of GDP have been slightly increasing between 1985 and 1992, they are estimated at well below 2% in most countries in 1992. Potential cost savings of that order might very well be too small to induce foreign investors to move to pollution havens for two reasons.⁷ First, migration itself is costly because of dismantling, transportation, and new establishment costs. Second, factors other than differences in environmental compliance costs are likely to be much more important in determining international investment location decisions (Wheeler & Mody, 1992). Potential pollution havens might have disadvantages with respect to these other factors. For example, they might have a badly trained workforce, a poor infrastructure, and political as well as economic instability. Doing business carries many more risks in developing as opposed to developed countries. Even if industries move to developing countries, factors such as proximity to natural resources and financial as well as tax incentives might play a more important role than potential savings on environmental compliance costs.

However, there are two caveats to keep in mind. First, how high pollution abatement expenditures are depends on what the point of reference is and varies substantially from sector to sector. If we look at pollution abatement capital expenditures as a percentage of total new capital expenditures in 1993 in the United States, these can be as low as 1.52% for rubber and miscellaneous plastics products but as high as 42.39% for petroleum and coal products and 13.31% for chemicals and allied products (U.S. Bureau of the Census, 1996, Table 1). Second, if environmental compliance costs in high-standard countries rise further in the future, then things could dramatically change from what they were before. Markusen, Morey, and Olewiler (1995) show that in industries with increasing returns to scale, costs can rise up to a certain threshold without causing any major relocation. However, because increasing-returns industries tend to make discrete rather than marginal location decisions, if costs rise beyond this threshold, industries might shut down and transfer their operations to lower-standard countries.

7. As these figures include public environmental expenditures as well, which do not directly represent costs to the private sector, they tend to overestimate the true cost of compliance with environmental standards for the private sector.

The third reason low-standard countries do not manage to attract more capital from high-standard countries is that, even where environmental compliance costs are significant, international investors might not be deterred as long as the environmental standards provide clear and reliable rules that apply equally to everybody. What investors dislike most is uncertainty about the future and unreliability of policy makers.

Fourth, and connected to the last point, rational, forward-looking investors might anticipate that environmental standards in currently low-standard countries might very well increase over time. It might therefore be cheaper to establish in the present production facilities that already comply with these potential future higher standards.

Fifth, if pollution abatement is characterized by scale economies, then increasing environmental standards need not induce migration. Eskeland and Harrison (1997) argue that "if abatement costs fall with the scale of output, then the home country firm may find it more advantageous to expand locally when facing tougher environmental regulations" (p. 28).

Sixth, if multinational corporations have similar plants in both high-standard and low-standard countries, then it might be cheaper to install the same pollution abatement technology as in the high-standard countries everywhere. This is because the costs of dismantling the already established technology might outweigh the benefits from saving on abatement costs. This will be especially true if the abatement technology is an integral part of the production process. If, instead, the abatement technology is of the add-on end-of-pipe type, it will be quite cheap to get rid of it to save on abatement costs.

Seventh, foreign investors might fear for their international reputation if they are perceived as environmental villains exploiting low standards in poor countries. In migrating to these poor countries, it might therefore be worthwhile to voluntarily exceed local environmental standards. It is sometimes argued by economists that foreign investors not only tend to apply better environmental management than required by the host country, but they also tend to demand compliance with higher environmental standards from their domestic suppliers. This positive effect on the environmental standards of the recipient country has been coined the "pollution halo" effect, and it stands in stark contrast to the pollution haven hypothesis: Instead of exploiting low environmental standards, foreign investment leads to a rise in environmental standards. Anecdotal evidence supports this hypothesis (Gentry, 1999; Leonard, 1988; Zarsky, 1999). More systematic testing provides more ambiguous evidence. Whereas Eskeland and Harrison (1997) find that foreign-owned plants in the Ivory Coast, Mexico, and Venezuela are more energy efficient than domestically owned plants and therefore as a first approximation also less pollution intensive, Dasgupta, Hettige, and

Wheeler (1997) and Hettige, Huq, Pargal, and Wheeler (1996) find no evidence that foreign ownership has a significant influence on environmental performance in Mexico and South and Southeast Asia.

Eighth, investors might fear negative effects on their capital market value if information about poor environmental performance becomes available. Hamilton (1995) demonstrates negative stock market reactions for U.S. companies that had to report toxics release inventory data to the U.S. Environmental Protection Agency (EPA). Dasgupta, Laplante, and Mamingi (1997) show that negative capital market reactions are not confined to the developed world in examining how firm-specific environmental information affected capital markets in Mexico, Chile, Argentina, and the Philippines. More generally, Gentry (1999) refers to a recent review of 70 studies exploring the link between environmental and financial performance that found that "companies with the environmental practices were rewarded with higher stock market returns than their peers, by up to two percentage points. Moreover, positive environmental performance *never* translated into negative returns" (p. 16).

Evaluating Policy Options

In considering theoretical issues concerning pollution havens, we have seen that several factors can give rise to their existence in developing countries. Of these, bias against environmental preferences is probably the most important one. In examining the empirical evidence, we have also seen, however, that there is only weak statistical evidence for the existence of such a bias. Pollution havens therefore represent a rather elusive phenomenon. Although environmentalists insist on the existence and relevance of the phenomenon, their claim is not convincingly backed by available empirical evidence, at least not so far.

Should analysis stop here? No, I would submit that it is important to take the analysis one step further and evaluate policy options for tackling (potential) pollution haven problems. Why? First of all, in spite of the relatively weak systematic evidence, pollution havens might very well exist. For example, limits to data availability might prevent us from detecting pollution havens. Besides, we have seen that some empirical studies do lend some support in favor of their existence. Second, and more important, no matter what systematic empirical evidence tells us, as a matter of fact, both policy makers and environmentalists are unimpressed and remain concerned about the phenomenon. If anything, the ongoing trend toward increased foreign investment in developing countries will strengthen those concerns. There exists and is bound to remain

a wide gap between those who strongly believe in the pollution haven phenomenon and others, among them many economists, who believe that pollution havens are either irrelevant or simply nonexistent.

Given the limitations of our current empirical knowledge and the strength of concern, it seems to me that an evaluation of policy options for dealing with (potential) pollution haven problems is indispensable. This section therefore goes one step further than most other papers and engages in an analysis of available policy options. I briefly list a fairly comprehensive range of policy options available and provide some examples for existing policies. I then introduce five criteria with which those policy options become evaluated. Three out of these criteria—namely, that options should be development friendly, closed to abuse, and not unnecessarily restrictive—are heavily influenced by the fact that the evidence with respect to pollution havens is rather shaky. This is because these criteria are likely to ensure that policy options are chosen that are favorable to developing countries, which should not become punished for something that might either not exist or be of little relevance. The inclusion of these criteria should also help in reconciling those who strongly disagree with the relevance of the pollution haven phenomenon with such an analysis. As we will see below, the policy option that fares best on our five criteria—namely, assistance for capacity building and local empowerment—is also the one to which those who regard pollution havens as irrelevant could subscribe to, because it would help overcome many more general problems in environmental policy making in the developing world.

POLICY OPTIONS AND CRITERIA OF EVALUATION

I will examine the following policy options:

Harmonization of environmental standards and minimum standards. An existing example for this on a regional level is Articles 130r to 130t of the treaty establishing the European Community (the Maastricht Treaty). The reader should note, however, that Article 130t of the Maastricht Treaty allows EU member countries to exceed harmonized standards if such “more stringent protective measures” are compatible with the treaty. Porter (1999) calls for a minimum standards agreement exclusively negotiated and concluded among developing countries.

Enforcement agreements. An existing example is Articles 3 and 5 of the North American Agreement on Environmental Cooperation, the environmental side agreement to NAFTA, which requires each party to “effectively enforce its environmental laws and regulations through appropriate governmental action” (Article 5:1).

Trade and capital restrictions. These encompass direct restrictions such as import bans as well as tariffs and quotas and "voluntary" export restraints. The most popular form of these restrictions is so-called eco-tariffs, which are imposed on foreign countries with lower than domestic environmental standards. Daly (1993, p. 26), for example, demands that "whoever sells in a nation's market should play by that nation's rules or pay a tariff sufficient to remove the competitive advantages of lower standards." Arden-Clarke (1993, p. 81) from the World Wide Fund for Nature (WWF) wants "environmental leaders" to be able to "take trade measures that 'level the playing field' between environmentally sound and unsound goods." The International Pollution Deterrence Act, unsuccessfully introduced into the 102nd U.S. Congress as motion S.984 by Senator Boren (a Democrat from Oklahoma), called for countervailing duties equivalent to the cost that it would take a foreign firm to comply with U.S. domestic environmental standards (U.S. Congress, Office of Technology Assessment [OTA], 1992, p. 92).

Ecolabels. Existing examples include the German Blue Angel, the Nordic Swan, the EU ecolabel award scheme, the Canadian environmental choice program, and the Forest Stewardship Council's and Marine Stewardship Council's ecolabelling scheme.

Nonbinding declarations. Existing examples include the OECD Guidelines on Multinational Enterprises, the OECD Statement of Intent on Officially Supported Export Credits, and the Environment and the International Chamber of Commerce's Business Charter for Sustainable Development.

Assistance for political-institutional capacity building and local empowerment. This encompasses first assistance aimed at building the capacity to formulate effective environmental policies with a long-term vision and strategy and to implement, monitor, and successfully manage these policies.⁸ Existing examples are the World Bank's assistance for National Environmental Action Plans, the Global Environment Facility, and the United Nations Environment Program (UNEP) and United Nations Conference on Trade and Development (UNCTAD) joint capacity building task force for assisting developing countries in integrating their trade, environment, and development policies (UNEP and UNCTAD, 2000). Second, and equally important, is a strengthening of democratic citizenship and political accountability of policy makers as well as improving access of local communities to information about environ-

8. Research by Laplante and Rilstone (1995) shows that both inspections and the threat of inspections are important determinants in enhancing compliance of firms with environmental regulations.

mental pollution, to political decision making, and to the legal system. There is ample evidence from developing countries that active and empowered citizens can play a significant role in improving local environmental conditions (Pargal & Mani, 2000; World Bank, 2000).

I propose to apply the following set of criteria in assessing these options. They are not meant to be hierarchical, and, of course, they could conflict with each other for any given policy option:

Options should be effective: A policy option should achieve its objective of improving environmental standards in low-standard countries.

Options should be politically realistic: A policy option should be politically realistic, otherwise it has no chance of being realized.

Options should be development friendly: A policy option should be friendly toward the economic development prospects of developing countries. Given the huge inequalities between rich and poor countries, policies that come about at the expense of developing countries should be discouraged.

Options should be closed to abuse: A policy option should not be open to abuse by protectionist factions in high-standard countries under flimsy environmental pretexts.

Options should not be unnecessarily restrictive: A policy option should not restrict international flows of capital and trade beyond the necessary extent.

Policy Options Should Be Effective

Harmonization of international environmental standards would be clearly ineffective. Although it would raise inefficiently low environmental standards in developing countries, it would also either raise them to inefficiently high standards or would lower standards in developed countries below their efficiency level. The simple lesson is that one single standard does not fit all—except, perhaps, in the case of life-threatening toxics, which should be banned everywhere (witness the concluded negotiations on an international agreement banning persistent organic pollutants worldwide).

Minimum standards fare somewhat better than harmonization of standards because they do not imply a lowering of standards in developed countries below their efficiency level. There remains the danger, however, that minimum standards are set inefficiently high for developing countries. This danger is significantly lessened if minimum standards are set in an agreement exclusively concluded among developing countries. To be effective, harmonized as well as minimum standards would need to include certain monitoring and enforcement requirements.

Enforcement agreements address an important point in the pollution haven debate. A country that wants to attract foreign capital by setting inefficiently low environmental standards might not even set low nominal standards. Instead, it might set standards that appear to be high on

paper, with the understanding that they will not be enforced. Without ascribing the intention to attract foreign capital, it is often correctly pointed out that the former communist countries in Eastern Europe often had environmental standards that looked strict on paper but that were all but nonexistent in reality (Ahlander, 1994). Inasmuch as an enforcement agreement could itself be enforced, it could lead to an avoidance of this phenomenon. Of course, it could have the rather perverse consequence that pollution haven countries might then lower their standards or at least fail to raise them in the future.

Trade and capital restrictions are very crude measures to employ for raising environmental standards in developing countries, but they could be effective. If pollution havens are threatened with import bans or ecological tariffs against the products produced in their location, or if they find it hard to attract foreign investment due to capital restrictions, then those countries might very well abstain from setting inefficiently low standards or failing to enforce their standards.

Ecolabels are unlikely to be effective in raising general environmental standards in developing countries. Past evidence of effectiveness of ecolabels is usually confined to specific environmental aspects, such as whether tuna is caught with dolphin-safe nets and whether forests and marine fish stocks are managed and harvested sustainably. Otherwise, it is most doubtful whether the various existent ecolabels had any significant effect so far (OECD, 1997).

Nonbinding declarations would be ineffective if not backed up by some backdrop threat. It is a common experience that these declarations often create no more than hot air. If pollution havens exist, they do so because of economic interests that do not simply vanish because of some nonbinding declaration. Mabey and McNally (1999, p. 43) suggest that "all OECD governments admit" that the OECD guidelines on multinational enterprises "have not greatly influenced companies." However, voluntary company codes can become somewhat more effective if they are linked to mandatory information disclosure rules in their country of origin, as proposed by Mabey and McNally.

Whether assistance for political-institutional capacity building and local empowerment would be effective depends on the factors that gave rise to pollution havens in the first instance. If they are due to bias against environmental preferences, then this option could be very effective in helping to overcome the political-institutional failures that prevent countries from setting efficient standards.

Policy Options Should Be Politically Realistic

Harmonization of international environmental standards is utterly unrealistic. There is no political support for such an option, especially not among the developing countries but also not among the developed countries (International Centre for Trade and Sustainable Development

[ICTSD], 1999; Neumayer, 2000). The same is true to a large extent for the introduction of minimum standards, which would fail due to resistance from developing countries. Even for an agreement exclusively concluded among developing countries, there currently seems to be no significant political momentum.

An enforcement agreement could be politically easier to realize, even though doubts remain whether developing countries would consent. The reason is that they would feel stigmatized as countries in need of an international agreement to enforce their own laws and regulations. In this respect, it is pertinent to note that the enforcement clause in NAFTA had to be pushed through by the United States and Canada against the explicit opposition of the Mexican government. It was one of the prices it had to pay to gain access to the North American markets.

Trade restrictions and eco-tariffs might find political support in developed countries among some protectionist factions and environmentalists, but they may prove to be unrealistic because the World Trade Organization (WTO) currently puts very stringent conditions on the imposition of trade restrictions aimed at so-called process and production measures (PPMs) outside a country's jurisdiction (see Neumayer, *in press-b*). A reform of WTO to allow these measures is utterly unrealistic because, according to Article X:3 of the agreement establishing the WTO, it would require a two-thirds majority and, therefore, the consent of developing countries, which are strictly opposed to it (ICTSD, 1999).⁹ Capital restrictions are not necessarily dependent on developing countries' consent, because they are a rather one-sided game: Developed countries invest in developing countries, but developing countries do not invest in developed ones to any significant extent. However, it is doubtful whether there is significant support for capital restrictions in developed countries. The (failed) attempt to conclude a Multilateral Agreement on Investment (MAI; see Neumayer, 1999) and the European Union's and Japan's insistence to include liberalization of the international investment regime in any potential new round of WTO trade negotiations shows that developed countries want to derestrict rather than restrict capital flows. Also, capital restrictions could possibly clash with the bilateral investment agreements between developed and developing countries (United Nations Conference on Trade and Development, 1998).

Establishing ecolabels relating to the environmental impacts of PPMs could find political support in developed countries, but such labels are generally resisted by the developing world (WTO, 1996). Whether such ecolabels would clash with existing WTO rules has not been tested so far. However, if ecolabels became more than fringe measures in dealing with international differences in environmental standards, developing

9. The amendment would only be binding on the parties accepting it.

countries would likely start a dispute under WTO rules. If the WTO panel and appellate body decided against the general use of ecolabels with respect to PPMs, as seems most likely, then their use would be dependent on WTO reform, which would face the same resistance from developing countries as the changes referred to above concerning trade restrictions.

Nonbinding declarations are politically realistic because they seem to be an easy option. At the time of writing, the OECD had just finished revising its *Guidelines on Multinational Enterprises*, with a somewhat strengthened environmental chapter in calling for environmental management systems and a precautionary approach toward environmental uncertainty (OECD, 2000).

Assistance for political-institutional capacity building and local empowerment is not particularly realistic because it would cost the developed countries money and their willingness to provide aid has substantially decreased over the past years (OECD, 1999, Statistical Annex, Table 1). If capacity building was to effectively address inefficiently low environmental standard setting in developing countries, then developed countries would need to be much more willing to provide help either bilaterally or through intergovernmental institutions such as the World Bank or WTO. Inasmuch as developing country governments might resist local empowerment, developed countries would also need to use their political influence on those governments. This influence might be rather limited, however, and developed countries might be unwilling to use whatever influence they have.

Policy Options Should Be Development Friendly

Whether harmonization of international environmental standards or international minimum standards would be development friendly depends on whether any assistance for developing countries to raise their standards would be provided. The same holds true for an enforcement agreement. This is so because often the failure of enforcement is likely to be caused not by a lack of will but by the absence of an adequate political, legal, and administrative infrastructure for enforcement. If assistance for developing countries was not given, as seems most likely, then these three options would be rather unfriendly to developing countries as they would have to shoulder all the burden alone. Trade and capital restrictions are clearly development unfriendly. They are inspired by a desire to punish developing countries for what is perceived as undesirable behavior on their part. The same applies, but to a lesser extent, to ecolabels as well, at least if their imposition is not accompanied by assistance for developing countries to comply with the ecolabelling requirements. Nonbinding declarations are relatively neutral with respect to development friendliness. Assistance for political-institutional capacity

building almost by definition beats all other options on this criterion. To overcome the failures that gave rise to pollution havens would potentially help developing countries to rid themselves of other inefficiencies as well and would thus strengthen their overall developmental capacity.

Policy Options Should Be Closed To Abuse

International harmonization of standards or international minimum standards are not very open to abuse as they would need the consent of lower-standard countries. The same holds true for an international enforcement agreement. Capital and trade restrictions clearly are open to abuse by protectionist factions in high-standard countries under green disguise, given the fundamental uncertainty about whether existing environmental standards are efficient. The severe information difficulties (i.e., "Are standards inefficiently low and if so by how much? Are standards not enforced and if so to what extent?") give countries imposing trade or capital restrictions substantial scope for abuse. Developing countries rightly fear an unholy alliance between "baptists" (environmentalists) and "bootleggers" (protectionists) in the trade arena (DeSombre, 1995). Ecolabels can represent barriers to market access for developing countries and are therefore open to abuse. Many developing countries fear that they do not have adequate information and capacity to comply with ecolabels, which mainly affect goods such as textiles, leather, footwear, and forestry and food products that developing countries have a comparative advantage in producing and exporting (WTO, 1996). Nonbinding declarations can in principle be abused as well but, in general, seem to be fairly neutral on this criterion. Assistance for political-institutional capacity building and local empowerment clearly is the policy option least open to abuse.

Policy Options Should Not Be Unnecessarily Restrictive

At first sight, harmonization of international environmental standards or international minimum standards does not appear to restrict international trade and capital flows. However, if developing countries' standards were to rise above their efficient levels, these countries would face implicit restrictions toward their exports of goods and services and their import of capital. An international enforcement agreement would not be restrictive, because it would merely aspire to ensure that a country's laws and regulations have more bite than paper tigers. Trade and capital restrictions are by definition restrictive, and unnecessarily so, inasmuch as their objective can be achieved with other less restrictive measures—for example, with assistance for political-institutional capacity building and local empowerment or, if effective, with ecolabels and nonbinding declarations, none of which are very restrictive.

Table 3
Evaluation of Policy Options

<i>Policy Options</i>	<i>Criteria of Evaluation</i>				
	<i>Effective</i>	<i>Politically Realistic</i>	<i>Development Friendly</i>	<i>Closed to Abuse</i>	<i>Not Unnecessarily Restrictive</i>
Harmonization of standards	—	—	—	+	—
Minimum standards	+/-	—	—	+	+/-
Enforcement agreement	+	—	—	+	++
Trade and capital sanctions	++	—	—	—	—
Ecolabels	—	+/-	—	—	+
Nonbinding declarations	—	++	+/-	+/-	+
Assistance for capacity building and local empowerment	+	—	++	++	++

Note: ++ = very good; + = good; +/- = neutral; - = poor; — = very poor.

Summary of Evaluation

Table 3 provides a summary of the findings on policy options. Although no option fares unambiguously better than all other ones, assistance for political-institutional capacity building and local empowerment seems to be the best option. It has only two drawbacks: It might not be very effective if pollution havens are not due to political-institutional failure but due to other factors, and it is doubtful whether developed countries are ready to provide such assistance.

Conclusion

Developing countries might set low environmental standards for a number of reasons. Some, but by far not all, of these reasons will mean that their standards are not only low but inefficiently so. In a world of imperfect information, it is hard to detect when this is the case. Given that discrimination between efficiently low environmental standards and real pollution havens is rather difficult to achieve, the more important it becomes that policy options dealing with (potential) pollution havens are development friendly, closed to abuse, and not unnecessarily

restrictive—exactly the criteria on which assistance for political-institutional capacity building and local empowerment fares best.

In concluding this article, it is important to point out that even if the systematic evidence for pollution havens is relatively weak, this does not contradict the more anecdotal evidence purporting to demonstrate that at times environmental conditions in developing countries can be abhorrent and that specific industries might migrate out of high-standard countries into nearby low-standard areas, as for example with the so-called Maquiladora region along the U.S.-Mexican border (for good documentation and referencing, see Mabey & McNally, 1999; OTA, 1992, Appendix E). Especially in the mining and other resource-extraction sectors, multinational corporations also at times do take advantage of low environmental standards in the host country—an impact on the environment that is outside the pollution haven hypothesis proper and has not been covered by this article.

Furthermore, an important limitation of the analysis above is that I have looked at whether and under what conditions developing countries have incentives to set inefficiently low environmental standards. I have not analyzed whether international capital mobility might deter all countries from setting higher environmental standards for fear of losing capital to one's competitors. This hypothesized phenomenon is sometimes called "regulatory chill" (see Neumayer, in press-a). More generally, while examining whether developing countries provide pollution havens relative to developed countries, I have not examined whether all countries set low environmental standards compared to their respective efficiency levels. Such an analysis would be outside the reach of the present article (see Neumayer, in press-c).

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