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## Does Trade Lead to a Race to the Bottom in Environmental Standards? Another Look at the Issues

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Philippine Institute for Development Studies  
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## Does Trade Lead to a Race to the Bottom in Environmental Standards? Another Look at the Issues

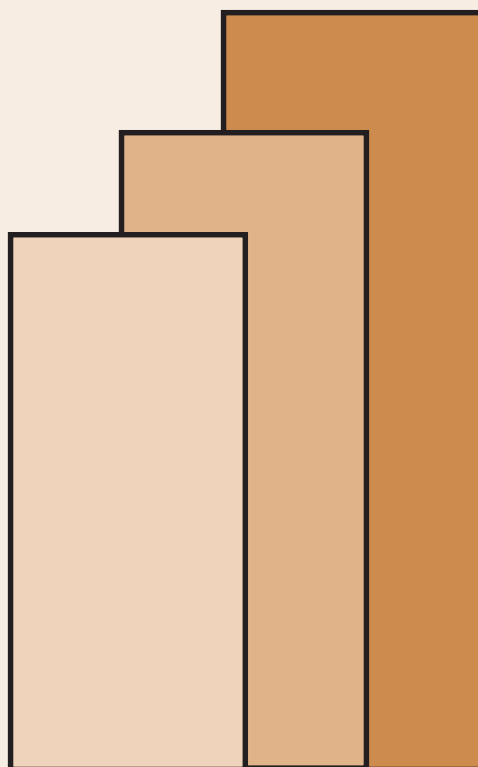
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## Abstract

With rising globalization and advances in technology, the interrelationship between trade and the environment has increasingly become a pressing issue across the globe. This paper seeks to contribute to the discussion, mainly by looking at some theoretical underpinnings, learning from some findings in the literature and offering additional empirical evidence in relation to what is happening in the globalized world. For example, is there evidence that international trade encourages a "race to the bottom" in environmental regulations? Are developing countries more likely to export polluting products? On the other hand, are calls for environmental protection no more than disguised protectionism? What is the state of the global/multilateral regime dealing with trade and environment? Accordingly, the paper looks at some theoretical underpinnings and findings on trade and environment linkage. This is followed by a discussion on the current trade structure of products by pollution-intensity classification between developed and developing countries. The paper also contains two sections dealing respectively with some observations on environmental regulations and the treatment of environment in the multilateral agenda. Finally, the paper concludes by highlighting the need to pursue trade and environment policies in tandem.

**Keywords:** trade and environment linkages, race-to-the-bottom, pollution haven, Kyoto Protocol

# Does Trade Lead to a Race to the Bottom in Environmental Standards? Another Look at the Issues\*

Erlinda M. Medalla and Dorothea C. Lazaro\*\*

*“Economic growth is not a panacea for environmental quality; indeed, it is not even the main issue. What matters is the content of growth— the composition of inputs (including environmental resources) and outputs (including waste products).” –Arrow et al. (1995)*

## I. Introduction

With no let-up in the pace of globalization and advances in technology, the interrelationship between trade and the environment has become an even more pressing issue across the globe. Heated discussions continue to abound in various fora involving all sectors--from the streets to the civil society, the government, academic and business community; be it at the national, bilateral, regional and multilateral levels. And certainly, it is crucial to understand and address environmental and sustainability issues that could accompany the escalating trend in trade and globalization.

The issues between trade and environment are found in various areas of concerns. One is in the area of *governance*. The debate here focused on how international trade influenced environmental regulations. Has it encouraged a “race to the bottom” in environmental standards, or “a race to the top,” leading to a convergence of standards at a higher level. Another set of issues relate to *competitiveness*. This is of course linked to the first, with governance affecting competitiveness, and competitiveness issues affecting or influencing the manner of governance. Strict environmental regulation will affect a country’s competitive advantage. The question arises whether environmental protection has been more of a disguised form of protectionism. On the other hand, it is also argued that increased trade and growth could eventually lead to better environmental protection. Then, the questions have turned into *North-South issues*--the debate over the disparate implications for the developed and developing countries--whether globalization will lead to “industrial flight” from the North and the growth of “pollution havens” (or “pollution haloes”) in the South. Another major concern is with regards to *corporate strategy*, specifically the issues of transboundary environmental management and corporate standards applied by TNCs in their subsidiaries located in the developing countries. (Jenkins et al. 2002). Finally, we go back to the issue of governance—at the global level. What is the state of the global environmental regime that could govern these issues in trade and environment linkages?

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This paper aims to contribute further to the discussion on trade and environmental linkages, mainly by looking at some theoretical underpinnings, learning from some findings in the literature and offering additional empirical evidence in relation to what is happening in the global environment. Hopefully, it could shed light on some of the key questions arising from trade and environmental issues. For example, is there evidence that international trade encourages a "race to the bottom" in environmental regulations? Are developing countries more likely to export polluting products? On the other hand, are calls for environmental protection no more than disguised protectionism? What is the state of the global/ multilateral regime dealing with trade and environment? Towards this end, the paper has five main sections. The next section looks at some theoretical underpinnings and findings on trade and environment linkage. This is followed by a discussion on the current trade structure of products by pollution-intensity classification between developed and developing countries. The next two sections deal respectively with some observations on environmental regulations and the environment in the multilateral agenda. Finally, the concluding section reiterates the need to pursue trade and environment policies in tandem.

## **II. Trade and Environment Linkage: Some Theoretical Underpinnings and Literature Findings**

The trade and environment linkage has already been a subject of a number of academic discussions and notable empirical analyses. Various works attempt to provide empirical evidence about the nature and impact of these linkages. And not surprisingly, findings are mixed.<sup>1</sup> Birdsall and Wheeler (1993 cited in Busse 2004) find that pollution intensity in developing countries grew fastest when environmental regulations in high-income countries were toughened, suggesting that different environmental standards could create pollution havens. However, Mani and Wheeler (1998 in Busse 2004) later indicate that these havens may exist only temporarily if at all from analyzing import-export ratios for five heavily polluting industries. Regressing measures of environmental regulations (in addition to other control variables) on dirty exports of 24 OECD and non-OECD countries, Wilson et al. (2002 in Busse 2004) find a significant negative linkage from some industries. On the other hand, there are various other studies finding very little or no evidence that differences in environmental regulations across countries are a significant determinant of trade flows.<sup>2</sup>

In these attempts as well as other existing empirical studies however, the data limitation remains a hindrance to making a comprehensive conclusion or even close statistical relationship of both areas.<sup>3</sup> What is certain however is the debate over the

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<sup>1</sup> See Busse (2004).

<sup>2</sup> These include, for example, Tobey (1990), Low and Yeats (1992), Van Beers and Van den Bergh (1997), Jänicke et al. (1997), Xu (2000), Xu and Song (2000), Harris et al. (2002), Grether and De Melo (2003) and Kahn (2003). All cited in Busse (2004).

<sup>3</sup> Example is the lack of adequate and comprehensive data on the stringency of regulations across countries. To address this, multilateral initiatives and environmental data collection activities are currently being done by OECD, EUROSTAT, Blue Plan Medstat, European Environment Agency, World Conservation Union, WHO and other organizations from various MEAs or conventions.

linkages between trade and environment will remain and could become more intense in the future arising from increased global and regional integration.

Nonetheless, while empirical results from different studies might vary, the basic theoretical hypothesis underlying the policy interrelationship is more definite--**that there should be no conflict between good economic policy and good environmental policy. A good economic policy should not prevent the adoption and implementation of good environmental policy, and vice versa.**<sup>4</sup> Indeed, ideally both should be present.

In general, there is a consensus that a relatively open trade policy is good economic policy. Trade theory suggests that for a small country, in the absence of market imperfections (e.g., the case of externalities), the use of trade barriers (whether in the form of tariffs or in the form of quantitative restrictions) creates market distortions that reduce overall welfare. On the other hand, environmental concerns almost invariably involve externalities that cannot be captured by market forces alone. And so, in general, a good environmental policy is one that leads to the internalization of these externalities, whether through command-and-control measures or market-based instruments.

Hence, translating the above-stated basic hypothesis, **there should be no conflict between an open trade policy and good environmental policy. A liberal trade policy should not prevent the adoption and implementation of good environmental policy, and vice versa. Ideally, both should be present.** This is when goods and resources are properly priced and the market would work more efficiently, leading to optimum welfare.

However, this does not imply that there are no possible trade-offs between trade and environment policy. Too restrictive environmental regulations could unduly penalize real comparative advantage. On the other hand, lax environmental policy would provide unintended (and unjustified) subsidies. In the real world, there is often lack in policy or policy administration which could lead to either outcome. In many instances, there is a tendency to mix and match policy tools in an attempt to make up for this deficiency. When nothing is done about the level and quality of environmental protection, there is fear that unrestrained international trade could lead to environmental degradation. In addition, there is worry that competition for trade and investment itself could encourage a “race to the bottom” in environmental standards, or the creation of pollution havens in developing countries. Conversely, there is the apprehension that environmental protection can be no more than disguised protectionism. These are certainly legitimate considerations that should be addressed.

The question is what is good-enough policy in the first place. What does a good environmental policy imply? Generally, it is one that leads to correct pricing of environmental resources, i.e. one that reflects relative scarcities and value to society. Hence, as in the case of capital and labor, the relative price of environmental resources depends on relative factor endowments. If one country has a lower environmental standard than another, it could simply be a true reflection of the country’s absorptive capacity and not necessarily evidence of a “race to the bottom” or existence of pollution

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<sup>4</sup> Of course, good environmental policy is basically good economic policy as well. This is especially with regards to the use of market-based instruments. However, to aid in the discussion for this paper, we separate environment policy from other economic policy areas.

havens. Indeed there is a growing recognition that environmental standards should not necessarily be harmonized across locations, whether nationally or internationally. This is true even across locations where the same conditions apply, since different nations may have different valuation of environmental resources. (WTO 1999; see also Dion et al. 1997)

Then again, there could be synergy between trade and environmental regulation. Openness to trade could lead to better environmental regulation (this is on top of the possible positive income effects). Alternatively, good environmental regulation could benefit trade. (The paper returns to these points later.) Hence, more in-depth analysis and empirical evidence is necessary to draw clear conclusions.

### ***Race to the Bottom and Pollution Haven***

The “race-to-the-bottom” hypothesis<sup>5</sup> was initially formulated in the context of local competition for investments and jobs within federal states, where the decentralized environmental responsibilities gave each state independence in setting their environmental standards in line with their priorities (WTO 1999). Most critics argue that increased competition for trade and foreign direct investment could lead to lowering of environmental standards and regulations (WB 2000). Furthermore, governments which attempt to maintain high standards will see their efforts undermined by the existence of less stringent regulations elsewhere. This will then lead to an overall lowering of environmental standards internationally (Jenkins et al. 2002).

In the case of developing countries in particular, the arguments for the race-to-the-bottom and pollution haven hypotheses lead to the contention that growth in these countries must necessarily be accompanied by severe environmental degradation. Busse (2004) finds some evidence suggesting that the level of environmental regulations is influenced by income level and that the primary effect appears to come via income itself. This more or less supports the environmental Kuznets curve<sup>6</sup> which posits that growth harms the environment at low levels of income and helps at high levels (Frankel and Rose 2001).

In the same way, as real income rises, the demand for environmental quality also rises. This translates into environmental progress given the right conditions, effective regulation, and externalities, which are largely confined within national borders and therefore amenable to national regulation (Frankel 2003). Recent evidence however suggests that even at the lower income level, there already exists a more subtle and complex relationship between economic development and environmental protection. It appears that many developing countries are becoming more environmentally aware and have started the fight against pollution at much lower levels of income ahead that of the rich countries (WB 2000).

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<sup>5</sup> A less extreme version of this is the “Race to the Bottom” hypothesis is the “*stuck-in-the-mud*” hypothesis that competition while not necessarily leading to a reduction in environmental standards, does discourage governments from raising standards – sometimes also referred to as the “chilling” effect of globalization on environmental regulation.

<sup>6</sup> The Environmental Kuznets curve refers to the predicted relationship whereby environmental quality first deteriorates and then improves as per capita income level rise.

At the time that Japan began to reduce its exports of products of highly polluting products some time in the 1970's, the fast growing East Asia "Tigers" namely, Korea, Taiwan (China), Singapore and Hong Kong, then began to export more of these products. However, this trend diminished in the 1980s, where a stable pattern emerged with the Tigers importing somewhat more than they export in the highly-polluting sectors. In China for instance, the share of the five dirtiest industries in total industrial output has fallen, while imports of pollution intensive products have actually increased (WB 2000).

There is also some evidence of a positive correlation between openness to trade and some measures of environmental quality. Although this may be due to endogeneity of trade rather than causality, trade may indeed have a generally beneficial (although not very significant) effect on certain measures of environmental quality.<sup>7</sup> At the very least, there is no evidence that trade has the detrimental effect on the environment which the race-to-the-bottom theory would lead one to expect (Frankel and Rose 2001). In addition, openness can indeed provide developing countries with both the incentive to adopt, and the access to, new technologies, which may provide a cleaner or greener way of producing the good concerned. In the case of the companies with foreign market clienteles as well as foreign investors in the offshore countries, their environmental standards are made at par with that of the developed countries. The quality requirements in those markets encourage use of the latest technology, which is typically cleaner than old technologies (WB 2000).

In general, existing studies show positive results on the impact of trade on environmental outcomes and indirectly on the impact on environmental regulation. Is there more direct evidence of a "*race to the bottom*" in environmental standards as countries fight to attract foreign capital, and the creation of pollution havens? This hypothesis is analogous to tax havens which apply low rates in order to attract financial capital. It implies a deliberate strategy on the part of host governments to purposely "undervalue" the environment in order to attract new investment (Jenkins et al. 2002). Again there are some mixed findings.

In the case of China, there is a difference between internally generated and foreign investments. A recent study shows FDIs originating from Hong Kong, Macao and Taiwan are attracted to provinces with a relative abundance of low-skilled labor and relatively weak environmental controls. In contrast, FDIs from non-Chinese sources are attracted by high levels of skilled labor and by high pollution levies. This shows the reverse of the pollution haven hypothesis (Dean et al. 2004).

A similar pattern occurred in trade of pollution intensive products between North America and Latin America (WB 2000). Particularly for the United States, there appears to be some evidence for the hypothesis that stringency of environmental regulation is a source of comparative disadvantage in dirty industries (Mulatu et al. 2004). There are also some findings supporting the "pollution haven" hypothesis, but the overall evidence is relatively weak and does not survive numerous robustness checks (Smarzynska and Shang-Jin Wei 2001). In terms of trade, there is an increasing trend towards cleaner industries among U.S. imports without evidence that pollution-intensive industries have been disproportionately affected by the tariff changes (Ederington et al. 2004).

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<sup>7</sup> Favourable "gains from trade" effects dominate for measures of air and water pollution such as SO<sub>2</sub> concentrations (Frankel 2003).



There is also almost no evidence that investors in developing countries are fleeing environmental costs at home. For instance, pattern of US outbound foreign investment between 1982 and 1994 at least in the case of four developing countries--Cote d'Ivoire, Mexico, Morocco, and Venezuela, reject the hypothesis that investment skewed toward industries in which the cost of pollution abatement is high (Eskeland and Harrison 1997). In the case of Mexico, however, there is some indication of a "pollution haven" effect albeit limited to only a few industries. Depending on the empirical specification, they account for anywhere between five and forty per cent of total FDI and between five and thirty percent of output over the sample period. For other pollutants that are less regulated or come largely from non-industry sources, no systematic relationship between FDI and pollution is detected (Walckirch and Gopinath 2004).

A more extensive study however<sup>8</sup> finds no evidence to support the pollution-haven hypothesis that industries facing above-average abatement costs with environmental regulations would relocate their activities in pollution havens. The exception is iron and steel products, where a negative and statistically significant link is established, implying that higher compliance with international treaties and conventions and more stringent regulations are associated with reduced net exports<sup>9</sup> (Busse 2004). Earlier analysis also did not find likely evidence that the Kyoto Protocol will drive industry to developing countries (Baumert and Kete 2002).

Hence, for the most part, studies find no evidence that the cost of environmental protection has been the determining factor in foreign investment decisions. Environmental regulations do not seem to pose as the determining factor in international location decisions. (WTO 1999) Factors such as labor and raw material costs, transparent regulation and protection of property rights are likely to be much more important investment considerations. This is true even for polluting industries. In fact, countries do not become permanent pollution havens because along with increases in income go increased demands for environmental quality and a better institutional capacity to supply environmental regulation (WB 2000). Furthermore, these polluting industries (including such industries as chemical industries, ferrous and non-ferrous metals, pulp and paper, and oil refining) are more likely to conglomerate in capital-abundant developed countries, and to a lesser extent, in economies in transition and newly industrialized countries (WTO 1999).

### ***The Case of the Global Commons***

The discussion above becomes more complicated in the case of global commons are concerned, where environmental impacts (costs) cross borders. Local environmental problems are best addressed by local environmental regulations, those that are targeted to deal with the specific local conditions. Transboundary and global problems would need regional or multilateral collective action (from countries and regions affected). Some

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<sup>8</sup> This study based on a Hecksher-Ohlin model used comprehensive new database for environmental regulations across 119 countries and five-high polluting industries.

<sup>9</sup> High-income countries, where environmental regulations are usually more stringent in comparison to middle or low-income countries, have experienced a considerable decline in the export-import ratio of iron and steel products since the late 1970s.

trade measures may be called for and some policy harmonization and collective management of common resources may be required. The problem, in various aspects—including policy and implementation—thus becomes much more complex.

In the first place, there needs to be critical mass of supporters (globally or in the affected region). This presupposes an awareness of costs, which implies, in the absence of more tangible evidence, a strong and clear scientific basis. Otherwise, it would be difficult, if not impossible to gather commitment and support from the affected countries. Even when there is consensus about the nature and the costs, there is the problem and questions about what would be the equitable sharing of responsibilities.

In these lie the major differences between the case of the Montreal Protocol (protection of the ozone layer) for example, and the Kyoto Protocol (on carbon emissions). In the case of the Montreal Protocol, enough scientific evidence has been gathered, and mechanisms were threshed out to come up with an agreement more or less acceptable to all parties. In the case of the Kyoto Protocol, the United States is not a signatory. It chooses to conduct its own scientific research, and it has a problem with developing countries like India and China, who are among the major carbon polluter but are in effect exempted from the adjustments. This is also relevant with respect to Kyoto party-countries specifically Canada which is a major source of US energy imports which would entail higher carbon emissions and more difficulty in complying with the Kyoto emission target. (See Zhang and Baranzini 2004 for estimates of carbon emissions across selected OECD countries.)<sup>10</sup> From these arise many issues, including implications on competitiveness, which are very difficult to deal with. First of all, there is the problem of how to work out the initial allocation of permits and emission targets. In connection with this, how are member subsidiaries of non-member multinational companies to be treated? These problems are magnified for neighboring Kyoto and non-Kyoto parties. Can trade measures be invoked and what are the mechanisms and consequently, what are the implications for WTO? (See Zhang 2004; Zhang and Assuncao 2004; and Zhang and Baranzani 2004 for more discussions.)

The bottom line is that equitable solutions are extremely difficult to find.

### **III. Current Trade Structure of Pollution Intensive Products**

This section attempts to look for further evidence about the impact of trade on the environment. Although there are many environmental indicators, this paper uses pollution index or pollution intensity in the analysis, primarily because of the relatively comprehensive nature of environmental regulations addressing pollution. The other reason is more practical-- the availability of comparative data across the countries.

Specifically, this paper looks at the trends in the share of pollution-intensive industries (as most commonly used) for developed and developing countries. This paper takes as given that all these countries have more or less become more open, with the

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<sup>10</sup> Estimates of OECD countries' (total energy-intensive industries) cost increase from a tax of \$100/tonne of carbon as percentage of production value are as follows: USA (2.8); Canada (4.1); Japan (1.2); Australia (5.2); France (1.4); Germany (1.6); UK (1.6); Italy (1.4) and Belgium (1.3). Source: Zhang and Baranzini (2004).

removal of trade barriers around the globe, especially the Asia-Pacific region. There are, of course, other factors that determine the share in exports of these industries, most importantly, the level of environmental regulations. However, this is difficult to quantify, with little or no available comparative data. Hence, the conclusion we could derive would be limited to more intuitive interpretation of findings.

- *Is there evidence that developing countries are more likely to export polluting products?*

Table 1 shows the structure of exports and imports trade for developing and developed countries (see Appendix Table 1 for the complete list) by pollution classification.<sup>11</sup> The exports and imports of hazardous and/or pollutive products comprise around 69% and 68% of total exports and imports respectively. These are highly concentrated in the developed countries. This is, of course to be expected as developed countries dominate world exports. What is more striking is that it is only in the non-hazardous/non-pollutive exports where the average share of developing countries comes close to that of the developed countries (42% to 55% respectively). Thus, there appears to be no evidence that developing countries are more likely to export polluting products. On the contrary, these results would tend to indicate that developing countries are less likely to export polluting products. Indeed, developing countries has a higher revealed comparative advantage index (RCA) for these non-pollutive and non-hazardous exports at around 2, compared to that of around 0.7 for the developed country. In contrast, developed countries have a higher RCA index on pollutive products than developing countries although not by as much (1.02 versus 0.91). Table 2 shows the RCA index per specific product classification.

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<sup>11</sup> Based on Philippine Environmental Management Bureau classification. Actual pollution intensity of each product may differ from one country to another.

**Table 1. Average share of trade products, per country group, by pollution classification, % (1996-2000)**

Pollution Classification	Country Group	Average Share	
		Export	Imports
<i>Extremely Hazardous/Highly Pollutive</i>			
	Developed	61.56	73.34
	Developing	29.36	23.45
<i>Hazardous/ Highly Pollutive</i>			
	Developed	72.29	66.96
	Developing	19.79	28.82
<i>Non-Hazardous/ Highly Pollutive</i>			
	Developed	72.99	82.05
	Developing	24.45	14.96
<i>Extremely Hazardous/ Pollutive</i>			
	Developed	77.76	63.93
	Developing	18.87	31.79
<i>Hazardous/ Pollutive</i>			
	Developed	80.69	82.44
	Developing	16.76	30.86
<i>Non-hazardous/ Pollutive</i>			
	Developed	78.19	74.27
	Developing	19.58	21.47
<i>Hazardous/ Non-pollutive</i>			
	Developed	83.58	73.29
	Developing	13.44	22.57
<i>Non-Hazardous/Non-pollutive</i>			
	Developed	54.63	76.87
	Developing	42.1	21.51

Notes: 1. Classification based from Environment Management Bureau (EMB) based on Medalla (2001).

2. Shares of developed and developing may not add to up to 100% since trade data of least developed countries (LDCs) et al are not classified/included as developing.

Source of Data: PC-TAS (SITC)

**Table 2. Revealed Comparative Advantage Index**

Pollution Classification	Country Group	RCA Index	
		1996	2000
<i>Extremely Hazardous/Highly Pollutive</i>			
	Developed	0.82	0.78
	Developing	1.37	1.44
<i>Hazardous/ Highly Pollutive</i>			
	Developed	0.97	0.98
	Developing	0.91	0.90
<i>Non-Hazardous/ Highly Pollutive</i>			
	Developed	0.97	1.00
	Developing	1.15	1.08
<i>Extremely Hazardous/ Pollutive</i>			
	Developed	1.03	1.05
	Developing	0.90	0.88
<i>Hazardous/ Pollutive</i>			
	Developed	1.08	1.08
	Developing	0.77	0.81
<i>Non-hazardous/ Pollutive</i>			
	Developed	1.04	1.09
	Developing	0.93	0.81
<b>Total for All Pollutive</b>			
	<b>Developed</b>	1.02	1.03
	<b>Developing</b>	0.91	0.93
<b>All Non-Pollutive</b>			
<i>Hazardous/ Non-pollutive</i>			
	Developed	1.12	1.13
	Developing	0.59	0.63
<i>Non-Hazardous/Non-pollutive</i>			
	Developed	0.74	0.74
	Developing	2.00	1.84

Notes: 1. Classification based from Environment Management Bureau (EMB) based on Medalla (2001).

2. Total export is the sum of developed and developing countries exports. This excludes data from least developed countries (LDCs).

Source of basic data: PC-TAS (SITC).

Table 3 provides additional information on the share of the product group by pollution classification for developed and developing countries. Consistent with their revealed comparative advantage, developed countries export a larger share of pollutive industries at around 70 percent of their total exports, compared to around 57 percent for developing countries. In contrast, developing countries export a larger share of non-pollutive industries at around 16 percent, compared to around only 9 percent for developed countries.

**Table 3. Share of product group by pollution classification in total exports, per country group (1996-2000)**

Pollution Classification		1996	share	1997	share	1998	share	1999	share	2000	share	average share
Total Exports	World											
	Developed	3,318	100	3,412	100	3,407	100	3,462	100	3,713	100	100
	Developing	983	100	1,067	100	1,024	100	1,107	100	1,349	100	100
All Pollutive	World	3,044		3,155		3,131		3,208		3,522		
	Developed	2,368	71	2,426	71	2,436	72	2,466	71	2,604	70	71
	Developing	562	57	608	57	576	56	624	56	770	57	56.6
All Hazardous	World	1,873		1,952		1,980		2,002		2,142		
	Developed	1,516	46	1,563	46	1,589	47	1,590	46	1,649	44	45.8
	Developing	302	31	328	31	325	32	344	31	415	31	31.2
Extremely Hazardous	World	611		628		573		614		770		
	Developed	415	13	423	12	404	12	415	12	481	13	12.4
	Developing	150	15	158	15	131	13	160	14	230	17	14.8
All Non-Pollutive	World	470		491		484		478		508		
	Developed	302	9	308	9	300	9	297	9	308	8	8.8
	Developing	154	16	168	16	168	16	164	15	183	14	15.4

Notes: 1. Classification based from Environment Management Bureau (EMB) based on Medalla (2001).

2. Value in billion US\$ and Share in %

3. Shares of developed and developing may not add to up to 100% since trade data of least developed countries (LDCs) et al are not classified/included as developing.

Source of basic data: PC-TAS (SITC).

### *Trade performance of selected pollution intensive products*

The analysis above lumped industries together under the major categories of pollution classification. To get a better picture of exports of pollution intensive products, an attempt is made below to look at more specific sectors. Pollution intensive industries are defined as industries characterized by high levels of toxic release after efforts have been made to control the pollution and/or high levels of pollution abatement costs, compared with other industries<sup>12</sup> (Jenkins et al. 2002). Accordingly, pollution-intensive industries were selected to include those with above-average pollution abatement costs as a percentage of total costs. Table 4 shows the industries and corresponding SITC trade categories with the highest abatement costs (calculated by Low for United States industries with at least 1.8%).

The findings are generally the same. Figures 1-5 show that over the past decade, exports and imports of pollution-intensive products are dominated by developed countries. A much larger share of these products are exported by developed countries. Similarly, imports of these products are concentrated in the developed countries. With respect to developing countries, the general pattern is that they import more than export these pollution intensive products with the exception of minerals both non-metallic and non-ferrous. Indeed, data seem to reject the assertion that polluting industries have migrated from developed to developing countries, although there are of course exceptions.

<sup>12</sup> The most common approach towards identifying pollution intensive-industries are those industries which have a relatively high share of pollution abatement costs in total costs or relative to their turnover. Another approach considers the volume of pollution generated by an industry per dollar of output or value added, or per person employed.

Table 4. Classification of Pollution-Intensive Industries

Industry	SITC No.	Description
Industrial chemicals	51	Organic chemicals
	52	Inorganic chemicals
	562	Manufactured fertilisers
	59	Other chemical material and products
Paper and pulp	251	Pulp and waste paper
	641	Paper and paperboard
	642	Articles of cut paper and board
Non-metallic minerals	66	Non-metallic mineral manufactures
Iron and steel	67	Iron and steel
Non-ferrous metals	681	Silver and platinum
	682	Copper
	683	Nickel
	685	Lead
	686	Zinc
	687	Tin
	689	Other non-ferrous base metal

Notes: SITC Rev. 3. Selection of industries based on Low's (1992) classifications.  
Adopted from Busse (2004).

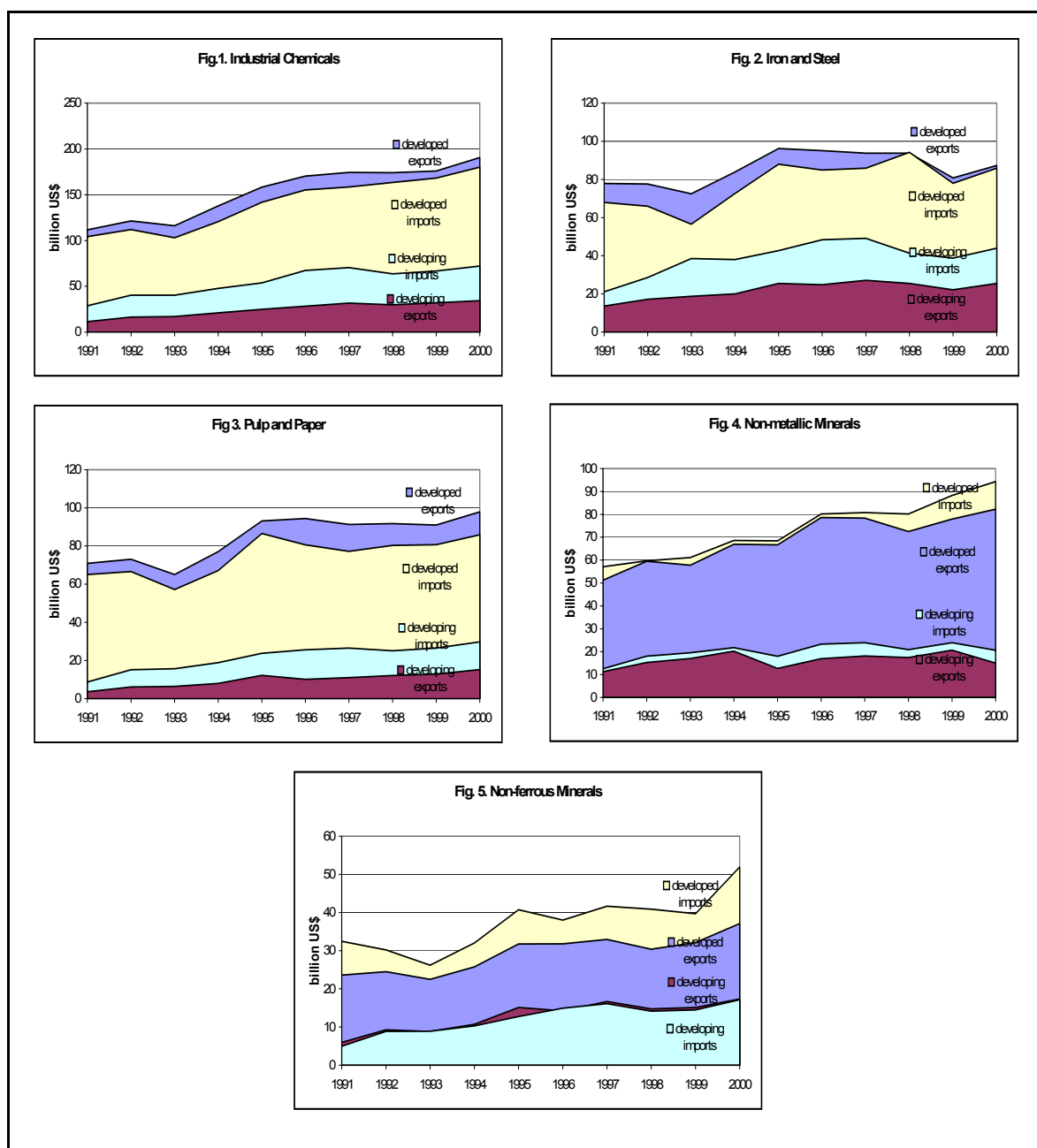
For almost all of these industries, the shares for developed countries did not change significantly during the last decade. However, the share in trade of pollution-intensive products from 1991 to 2000 has grown somewhat for developing countries. Nevertheless, the share is much higher for imports compared to exports (Table 5). This again follows the revealed comparative advantage index to the country groups. Although relative RCA index is increasing in favor of developing countries, developed countries have generally a higher RCAS index in the industry-levels with the exception of iron and steel<sup>13</sup> and non-ferrous metals (Table 6).

➤ *Is there evidence of international competition in attracting polluting industries?*

The evidence based on the pollution-intensity of trade does not seem to support the perception that developing countries are gaining a comparative advantage in pollution-intensive production because of lax environmental regulations. The tendency, at least in the last decade, is rather that developed countries are dominating in polluting industries, which suggests that classical factors of comparative advantages predominate over differential environmental standards. This can be explained by the fact that typically, polluting industries are very capital intensive and abatement costs usually represent only a small percentage of production costs (WTO 1999).

<sup>13</sup> This has the same findings with Busse (2004).

Figures 1-5. Trade Structure of Pollution-Intensive Products



source of basic data: PC-TAS



**Table 5. Trade share of selected pollution-intensity products, per country group 1991-2000 (%)**

Reporter	1991		1994		1997		2000	
	Export	Import	Export	Import	Export	Import	Export	Import
<i>Industrial Chemicals</i>								
Developed	90.65	78.39	86.77	71.68	81.41	67.19	81.74	69.47
Developing	9.35	21.61	13.23	28.32	14.85	29.88	14.74	27.84
<i>Iron and Steel</i>								
Developed	85.03	76.29	80.73	65.66	69.88	60.93	69.86	62.58
Developing	14.97	23.71	19.27	34.34	20.25	34.86	20.42	32.03
<i>Non-ferrous Metals</i>								
Developed	79.81	86.74	70.62	75.63	60.02	70.77	62.16	73.8
Developing	20.19	13.26	29.38	24.37	30.43	27.35	29.07	24.35
<i>Non-metallic Metals</i>								
Developed	82.05	82.02	76.77	75.94	78.68	74.94	81.62	79.77
Developing	17.95	17.98	23.23	24.06	18.23	22.22	14.88	17.43
<i>Paper and Pulp</i>								
Developed	95.19	88.21	90.62	78.04	86.69	71.32	83.61	71.24
Developing	4.81	11.79	9.38	21.96	10.45	24.52	12.97	24.64
<i>Total</i>								
Developed	87.94	81.13	83.04	72.55	77.4	68.13	77.89	70.59
Developing	12.06	18.87	16.96	27.45	17.24	28.57	16.9	26.02

Notes: For 1991-1994, share is computed from the sum of developed and developing countries. For 1997-2000, share may not tally because actual world trade data is used.

Source of data: PC-TAS (SITC)

**Table 6. Revealed Comparative Advantage per product classification**

Reporter	1991	2000
<i>Industrial Chemicals</i>		
Developed	1.08	1.00
Developing	0.59	0.98
<i>Iron and Steel</i>		
Developed	1.01	0.92
Developing	0.95	1.45
<i>Non-ferrous Metals</i>		
Developed	0.95	0.81
Developing	1.28	2.04
<i>Non-metallic Minerals</i>		
Developed	0.97	1.00
Developing	1.14	0.99
<i>Paper and Pulp</i>		
Developed	1.13	1.03
Developing	0.31	0.86

Notes: classification based from Low. Total trade is the sum of developing and developing countries exports.

source of basic data: PC-TAS (SITC)

#### IV. Some Observations on Environmental Regulations and International Trade

The potential impacts of trade and trade policy on the environment are well-recognized. The effects are reflected on several levels: mainly in terms of scale, structure, product, technology and regulation (Box 1). The effects may be positive or negative. Indeed, studies have shown that on the whole, the impact of trade liberalization on the environment is generally positive, especially if it is accompanied by effective environmental policies. As trade liberalization improves the efficient allocation of resources, promotes economic growth and increases general welfare, it increasingly acts as a positive agent, which could provide resources for environmental improvement.

##### Box 1. Five Main Environmental Effects of Trade Liberalization

**Scale effects** : these are associated with the overall level of economic activity resulting from trade liberalization. Positive scale effects may result from higher economic growth particularly when appropriate environmental policies are present. Negative scale effects may occur when higher economic growth bring increased pollution and faster draw-down of resources due to the absence of appropriate environmental policies.

**Structural effects** : these are associated with changes in the patterns of economic activity resulting from trade liberalization. Positive structural effects may result when trade liberalization promotes an efficient allocation of resources and efficient patterns of consumption. Negative structural effects may occur when appropriate environmental policies do not accompany changes in patterns of economic activity.

**Product effects** : These are associated with trade in specific products which can enhance or harm the environment. Positive product effects may result from increased trade in goods which are environmentally-beneficial like energy-efficient machinery while negative product effects may result from increased trade in goods which are environmentally-sensitive like hazardous wastes.

**Technology effects** : These are associated with changes in the way products are made depending on the technology used. Positive technology effects may result when the output of pollution per unit of economic product is reduced.

**Regulatory effects** : These are associated with the legal and policy effects of trade liberalization on environmental regulations, standards and other measures.

Source: OECD 1994/1995 from Aldaba and Cororaton 2001.

At the same time, environmental regulation would also have effects on trade, both positive and negative. The most common negative implication of a national environmental regulation would be increased costs (from complying with environmental regulations) as well as market access restrictions or limitations.

Nevertheless, good environmental regulation could also have a positive impact on trade. An increased burden of environmental taxation would generally spur innovation in order to be competitive. A restrictive environmental policy affects economic growth through two channels of transmission that operate in two opposite directions: the *first channel* lowers the marginal impact of innovation on productivity growth, while the *second channel* spurs innovation. The latter requires some research and development initiatives for reduction of pollution intensity (Ricci 2004).

Trade consideration has also become apparent in the growing development of environmental policy, which even to some extent make use of market instruments. While

pollution control policies are currently enforced using the traditional *command and control* principle, a paradigm shift to a market-based approach is gaining acceptance and policy instruments are already being put in place. Examples of market-based instruments (MBIs) include pollution charges, environmental subsidies, deposit-refund systems and tradable permits. In the best of all worlds, governments would use proper environmental policies to "internalize" the full environmental costs of production and consumption--the "Polluter Pays Principle" (Box 2).

Box 2. Differentiating government environmental regulation approaches	
<p><i>Command and control principle</i></p> <p>In a "command and control regime," the government enforces regulatory measures and permit requirements to control activities causing environmental pollution.</p> <p>Environmental quality standards prescribe the allowable and acceptable level of pollutants with fine and penalties for noncompliance. Policies are now shifting from this dominant approach to more market-based instruments for economic and technical arguments.</p>	<p><i>"Polluter pays" principle</i></p> <p>The "polluter pays" principle aims at ensuring that the costs of environmental control fall in the first place on the polluters, thereby ensuring that market forces take these costs into account and that resources would be allocated accordingly in production and consumption.</p> <p><i>Source: PIDS website.</i></p>

Table 7 shows the summary of environmental laws/regulations of selected developing countries within the APEC region. Environmental concern remains one of the top priorities in the overall planning of developing countries. There appears to be adequacy of laws in these countries, belying fears of trend toward a race to the bottom in environmental regulations. (Future studies could look into the standards use, whether low or high and the extent of implementation and/or enforcements of these laws.)

Even where there is the lack of law, community and civil society involvement appears to be of increasing influence pushing for environmental concerns. In the case of Indonesia, the price of pollution is determined by the intersection of *plant level* demand and a *local environmental* supply function, enforced by community pressure or informal regulation. The results also suggest that the price of pollution is higher when plants are particularly visible and is far lower in poorer, less educated communities. Although these cannot be generalized, it can nevertheless be shown that environmental considerations are imbedded and promoted through community-factory interactions<sup>14</sup> (Pargal and Wheller 1995).

Second, even if no regulations are imposed, whether formally or informally, there are at least some firm-level efforts to control pollution if only to create a good reputation especially to environmentally conscious (export) markets as well as to reduce the risk of legal liabilities, should a major environmental accident occur.

Lastly, the rapid adoption of voluntary environmental management standards (ISO 14000) promulgated by the International Organization for Standardization (ISO) have prompted many corporations to assume greater environmental responsibilities. In addition the financial community sees to it that firms do not have a poor environmental profile (WTO 1999).

<sup>14</sup> Evidence from developing countries suggests that local communities can sometimes exert effective pressure on firms to clean up their act even without the backing of formal regulations and laws.

Table 7. Existing Environmental Regulations of Selected (APEC) Developing Countries							
Country	National Policy on Environment	EIA	Agency	Existing Legislations/ Government Regulations			
				Air Pollution	Ambient Air Standards/ Emission Standards	Water Pollution	Hazardous Waste
Chile	Seven Principles: Basic Law for the Environment (1994)	Environmental Impact Assessment System described.	National Commission on the Environment (CONAMA)	Supreme Decree 4 regulating stationary sources, Supreme Decree 185 regulating SO <sub>2</sub> , arsenic and particles from large sources, Supreme Decree 211 regulating vehicular sources	Resolution No1215, Ministry of Health, SD, No59, SD, 185	Water Code, Mining Code	Sanitary Code, Municipal Ordinance; Low No3133 (1916)
China	Environmental planning in the Ninth Five years (namely the 2010 long term planning)	National laws and regulations related with EIA; Managing ordinances on protecting environments of construction project	State Environmental Resource Committee (SERC); State environmental protection administration (SEPA)	The prevention and cure law of the People's Republic of China on air pollution (amended), adopted by the National People's Congress on 29th April 2000	Air environment quality standard GB 3095-1982, promulgated by the State Environmental Protection Administration (SEPA) Ambient air quality standard GB 3095-1996, promulgated by SEPA	Law of the People's Republic of China on prevention and cure of Water Pollution (amended), promulgated by the National People's Congress in May 1996	
Indonesia	Indonesia Agenda 21 (1997)	Various activities required EIA	Ministry of Environment (MenLH); Environmental Impact Management Agency (BAPEDAL)	Standard Air Pollution Index; Blue Sky Program	Emission Standards for motorized vehicle	Water Pollution Control	Hazardous and Toxic Waste Management
Malaysia	National Environmental Action Plan (NEAP); Local Agenda 21 for Malaysia (2002)	Environmental Quality (Prescribed Activities) (Environmental Impact Assessment) Order, 1987	Department of Environment, Ministry of Science, Technology and Environment (MOSTE)	Environmental Quality (Clean Air) Regulations / 1978 Environmental Quality (Control of Lead Concentration in Motor Gasoline) Regulations / 1985 Motor Vehicle (Control of Smoke and Gas Emission) Rules / 1978	Environmental Quality (Control of Lead Concentration in Motor Gasoline) Regulations, 1985	Environmental Quality (Sewage and Industrial Effluents) Regulations, 1979	Environmental Quality (Prescribed Premises) (Scheduled Wastes Treatment and Disposal Facilities) Order, 1989.
Mexico	Programa del Medio Ambiente (Environment Program) 1995-2000	Regulation for the implementation of General Law for Ecological Equilibrium and Environmental Protection	Ministry of Environment, Natural Resources and Fishery	Regulation on Environmental Impact Regulation on Prevention and Management of Pollution from Vehicles in the Federal District and the Metropolitan Area	Mexican Official Standards (NOM)	National Water Resource Law	General Law for Ecological Equilibrium and Environmental Protection Regulation on Hazardous Waste, Mexican Official Standards (NOM)
Papua New Guinea	Managing Papua New Guinea's Unique Environment Strategic Directions 1996-1998	EIA is essentially a preventive process. EIA and resource planning are together a total approach to environmental management.	Department of Environment and Conservation (DEC)	Summary Offences Act; Environment Act/2000	Environment Planning Act	Water Resource Act	Environment Contaminant Act
Peru	Environmental Code and Natural Resources	Environmental Protection Standards for Industry - Supreme Decree No. 011-97-ITIBCI, January 5, 1997	There is no governmental office exclusively in charge of environmental management.	Environmental Code and Natural Resources (Legislative Decree No. 613); Electricity Regulation (Supreme Decree No. 29-94-EM); Hydrocarbon Regulation (Supreme Decree No. 046-93-EM); Mining Regulation (Supreme Decree No. 016-93-EM)	Environmental Code and Natural Resources (Legislative Decree No. 613)	Environmental Code and Natural Resources (Legislative Decree No. 613); Mining Regulation (Supreme Decree No. 016-93-EM); Environmental Protection from Mining (Supreme Decree No. 016-93-EM)	Environmental Protection Standards for Industry (Supreme Decree No. 011-97-ITIBCI, January 5, 1997) Regulations for Environmental Protection from Mining Activities (Supreme Decree No. 016-93-EM, enacted May 1, 1993)
Philippines	National Action Plan for Sustainable Development, Philippine Agenda 21 (PA21) 1996, Medium-Term Development Plan	Environmental Impact Statement System. of P.D. 1586. The System requires proponents of environmentally critical projects (ECPs) in environmentally critical areas (ECAs) to secure an Environmental Clearance Certificate (ECC) prior to construction.	Department of Natural Resources and Environment - Environment Management Bureau	R.A. No. 8749 - Philippine Clean Air Act of 1999; P.D. 984 - Pollution Control Law	P.D. 1152 - Establishing Air Quality to Protect Public Health and Damage to Living Things and Property; P.D. 1181 - Air Pollution from Motor Vehicles DAO 14 AND 14-A of 1993	PD 1067, Water Code of the Philippines (1976); PD 984, Pollution Control Law	R.A. 6969, Toxic Substances and Hazardous and Nuclear Wastes Control Act of 1990
Thailand	Policy and Prospective Plan for Enhancement and Conservation of National Environmental Quality, B.E. 2543-2559 (1997 - 2016)	Office of Environmental Policy and Planning announce regulations (on EIA Expert qualification and EIA licensing) of Section 19 and Section 28 of the Enhancement and Conservation of National Environmental Quality Act (NEQA), 1975, which was supplemented	National Environmental Board; Office of Environmental Policy and Planning, MOSTE	National Environmental Quality Act, 1992	Notification of the National Environmental Board, No. 10, 1995; Notification of the Ministry of Industry	National Environmental Quality Act, 1992	National Environmental Quality Act, 1992; Hazardous Substances Act, 1992

Source: JICA Country Profile on Environment, 1999-2000, various reports.

## V. Environment in the Multilateral Trade Agenda

Countries act individually through their national policies and implementation to solve environmental problems. However, because of the linkage between trade and environment, environmental effects and issues spill across border. In addition, there are cases of global commons as previously noted. Hence, there is a need for multilateral institutions.

When the international trading system was reconstructed after the Second World War, the environmental consequence of economic integration was not a primary concern.<sup>15</sup> Nevertheless, if environmental issues had a low priority during the first four decades of the GATT, they came back with a vengeance in the early 1990s. The starting point of the current debate was a series of contentious environmentally-related trade disputes, especially the “tuna-dolphin” dispute between Mexico and the United States.<sup>16</sup> With the formation of the WTO in 1995, environmental issues, as they relate to trade, are now firmly anchored in the multilateral trading system (Box 3). The Doha Round will be the first WTO round to deal with environmental concerns as an official issue (WTO 1999). Whether or not to include the environmental agenda in the already organized and structured multilateral WTO has become a relevant and controversial question.

### Box 3. The Green provisions in the WTO

Examples of provisions in the WTO agreements dealing with environmental issues are as follows:

**GATT Article 20:** policies affecting trade in goods for protecting human, animal or plant life or health are exempt from normal GATT disciplines under certain conditions.

**Technical Barriers to Trade** (i.e. product and industrial standards), and **Sanitary and Phytosanitary Measures** (animal and plant health and hygiene): explicit recognition of environmental objectives.

**Agriculture:** environmental programmes exempt from cuts in subsidies

**Subsidies and Countervail:** allows subsidies, up to 20% of firms’ costs, for adapting to new environmental laws.

**Intellectual property:** governments can refuse to issue patents that threaten human, animal or plant life or health, or risk serious damage to the environment (TRIPS Article 27).

**GATS Article 14:** policies affecting trade in services for protecting human, animal or plant life or health are exempt from normal GATS disciplines under certain conditions.

## Recurring Issues

- *Are calls for environmental protection a disguised form of protectionism?*

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<sup>15</sup> Only indirect references to the environment were included in the exception clause of GATT 1947, Article XX, which allows countries to sidestep the normal trading rules if necessary to protect human, animal plant life or health, or to conserve exhaustible natural resources, provided that such measures do not discriminate between sources of imports or constitute a disguised restriction on international trade.

<sup>16</sup> While this ruling in this case was never adopted by the GATT Council, and hence is not legally binding on the parties, it was viewed by the environmental community as a threat to environmental policy making in general, and the use of trade measures to support environmental objectives in particular, including the legal status of trade-provisions in multilateral environmental agreements (MEAs).

While trade measures are rarely, if ever, the first-best policy for addressing environmental problems, governments have found trade measures a useful mechanism for encouraging participation in and enforcement of multilateral environmental agreements in some instances, and for attempting to modify the behaviour of foreign governments in others. At present, the WTO has the burden of resolving the relationship between environmental regulation and trade in the middle of a highly controversial trade battle on the subject of genetically modified organisms between the European Union and the United States (Busse 2004).

Moreover, as among the member-states, the WTO have become the focal point for environmental disputes (Box 4) inspite of the fact that environmental issues, with the exception of trade-related aspects, are by and large outside its mandate. This is primarily owing the fact that the WTO compared to other international institutions has a well-structured and formal arbitration body backed by trade sanctions as the ultimate enforcement tool (WTO 1999).

**Box 4. A disguised restriction on international trade? - A note from WTO dispute settlement decisions**

The question of whether a measure constitutes a disguised restriction on international trade has been studied by several panel and Appellate Body reports, and in particular detail by the panel in the *EC – Asbestos* case. Three criteria have been progressively introduced in order to determine whether a measure is a disguised restriction on international trade: (i) the publicity test, (ii) the consideration of whether the application of a measure also amounts to arbitrary or unjustifiable discrimination, and (iii) the examination of "the design, architecture and revealing structure" of the measure at issue.

(i) In the *US – Canadian Tuna* case, the panel adopted a literal interpretation of the concept of "disguised restriction on international trade" only based on a publicity test. It felt that "the United States' action should not be considered to be a disguised restriction on international trade, noting that the United States' prohibition of imports of tuna and tuna products from Canada had been taken as a trade measure and publicly announced as such".

In the *US – Gasoline* case, the Appellate Body considered however that it was "clear that *concealed* or *unannounced* restriction or discrimination in international trade does *not* exhaust the meaning of 'disguised restriction'". The panel in the *EC – Asbestos* case interpreted this sentence as implying that a measure that was not published would not satisfy the requirements of the second proposition of the introductory clause of Article XX. The panel noted that the French decree applies unequivocally to international trade, since as far as asbestos is concerned both importation and exportation are prohibited. In this sense, the criteria developed in *United States – Tuna (1982)* and in *United States – Automotive Springs* have already been satisfied. The panel further observed that this remark also suggests that the expression "disguised restriction on international trade" covers others requirements than the sole publicity test.

(ii) In the *US – Gasoline* case, the Appellate Body also considered that the kinds of considerations pertinent in deciding whether the application of a particular measure amounts to "arbitrary or unjustifiable discrimination" may also be taken into account in determining the presence of a "disguised restriction on international trade":

"Arbitrary discrimination', 'unjustifiable discrimination' and 'disguised restriction' on international trade may, accordingly, be read side-by-side; they impart meaning to one another. It is clear to us that 'disguised restriction' includes disguised *discrimination* in international trade (...). We consider that 'disguised restriction', whatever else it covers, may properly be read as embracing restrictions amounting to arbitrary or unjustifiable discrimination in international trade taken under the guise of a measure formally within

the terms of an exception listed in Article XX".

(iii) Another requirement was taken into account by the Appellate Body in *US – Shrimp* and by the panel in the *EC – Asbestos* case. In *EC – Asbestos*, after finding that the measure at issue met the publicity criterion, the panel examined as an additional requirement the "design, architecture and revealing structure" of the measure as it had already been introduced in *Japan – Alcoholic Beverages* in order to discern the protective application of a measure.

The panel then concluded that "[a]s far as the design, architecture and revealing structure of the Decree are concerned, we find nothing that might lead us to conclude that the Decree has protectionist objectives". Similarly in the *US – Shrimp* case, the panel demonstrated that the measure at issue did not constitute a disguised restriction on international trade by examining the "design, architecture and revealing structure" of the measure.

Note: Footnotes omitted for brevity.

Source: WTO (2002)

Contrary to the general impression that WTO Panel rulings have interfered with the ability of individual countries to pursue environmental goals, recent rulings have in fact confirmed otherwise. In fact countries can enact environmental measures even if they affect trade and even if they concern others' Processes and Production Methods (PPMs), as long as the measures do not discriminate among producer countries (Frankel 2003).

➤ *Is there a conflict between development and commonly proposed global environmental measures?*

### *Setting Multilateral Trade Standards*

First of all, negotiations in multilateral trade agreements will have to be characterized by more balanced and equitable participation of developed and developing countries (IISD 2000). The development of the environmental agenda in trade negotiations would depend on the interest and motivations of each Member state and hence the need to examine the driving forces behind it. For instance, the aim of the European Union in securing agreement to include environment is to legitimize trade sanctions to impose environmental policies *extraterritorially*. This reflects the disposition of the EU's institutions of government to prefer centralized command and control rather than the free market policies and the *subsidiarity* principle as a means of improving the environment. This brings about the fear of a weakening of the WTO's free market structures in the pursuit of still a poor environmental policy (Oxley 2002).

Although in general, economists recognize four fundamental principles<sup>17</sup> when pondering the negotiation of a set of multilateral standards to restrain government action on the environmental issues, it is presumed that only in the first principle will the WTO necessarily become involved, as any direct impact on trade favors (or implicates) an

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<sup>17</sup> (1) The issue is clearly trade related such that trade flows are distorted; (2) there are international externalities, such as environmental spillovers, involved that limit the attainment of global optimality, and multilateral rules are an appropriate way to internalize those externalities; (3) in the case of no multilateral rules, national governments would choose sub-optimal policies that result in insufficient regulations or a "race to the bottom" on regulations; and (4) any damages from not complying with international regulations can be assessed in financial terms and, thus, allow the dispute settlement to function.

agreement at the multilateral level. In particular, a meaningful trade dispute resolution for environmental issues is very difficult to implement (Maskus 2000 in Busse 2004).

The need for a multilateral trade environmental standard however, does not necessarily entail harmonization of all environmental standards in general. In fact, there is a growing consensus that environmental standards should not necessarily be harmonized across locations, whether nationally or internationally. In addition, although national standards (as defined by laws and regulations) are uniform, their implementation is a function of local authorities in cooperation with the community. The “price of pollution” in each area is determined by the way national standards are monitored and enforced. Ignoring the trade-offs taking place locally could undermine and render ineffective national regulatory and policy reform (Dion et al. 1997).

In sum, local pollution problems are arguably best addressed by standards targeted to the specificities of the local conditions. The case is different for transboundary and global problems where there would be a need for some policy harmonization and collective management of common resources (WTO 1999). And this is where the linkages or conflict in jurisdiction comes in as a defining issue.

➤ *The WTO and MEAs conflict*

There are approximately 200 multilateral environmental agreements (MEAs) in place today. Only about 20 of these contain trade provisions. For example, the Montreal Protocol for the protection of the ozone layer applies restrictions on the production, consumption and export of aerosols containing chlorofluorocarbons (CFCs). The Basel Convention, which controls trade or transportation of hazardous waste across international borders, and the Convention on International Trade in Endangered Species (CITES) are other multilateral environmental agreements containing trade provisions (see Appendix Table 2).

Although the WTO has always held sustainable development to be a principle of trade liberalization, it has had to face a rising number of MEAs that often conflict with WTO principles. Several significant MEAs provide that parties are obliged to use trade bans to enforce the environmental objectives of the treaties, and are even required to ban trade with countries which are not parties to the MEAs. On the other hand, the WTO however does not permit any member to impose its own policies extraterritorially under the threat of trade bans (the MEAs say we will not trade with you unless you apply our policies and standards) and it does not permit members of the WTO to discriminate amongst each other in their trade policies (Oxley 2002). So also in the case of MEAs, the proliferation of amendments, protocols or annexes to various MEAs not only keeps the Party – non-Party nexus alive, but also might make it more subtle and confusing (Hoffman 2003).

Another important issue is that concern of the developing countries. The prevailing discussions on environmental issues have so far been largely focused on the need to accommodate *trade measures* pursuant to multilateral environmental agreements (MEAs) as well as *eco-labelling* based on non-product related PPMs (Box 5). “Developing country issues” such as safeguarding and further improving market access,



controlling export of domestically prohibited goods and promoting technology transfer have been pushed on the side. Thus, while in the developed countries there is pressure to accommodate the use of trade measures for environmental purposes within the framework of WTO rules, it appears that there is no concomitant effort to actually control exports of environmentally harmful products and obsolete technologies to developing countries. Overall, there seems to be a lack of balance in the discussions on trade and environment and this has led developing countries to adopt defensive postures in international debates (Jha and Vossenaar 1999).

#### Box 5. WTO and multilateral environmental agreements

At Doha, Members agreed to launch negotiations on the linkage between trade and environment. However, these negotiations are circumscribed to four issues: the need to clarify the relationship between existing WTO rules and specific trade obligations set out in multilateral environmental agreements (MEAs); the exchange of information between the WTO and MEA secretariats; the criteria for granting observer status to other international organizations; and the liberalization of trade in environmental goods and services.

How do WTO rules apply to WTO members that have also signed environmental agreements outside the WTO? Suppose a WTO member government puts into place a trade measure to protect its environment that is provided for in an environmental agreement that it has signed. Should it fear being challenged in the WTO dispute settlement procedure? The new negotiations aim to clarify the relationship between trade measures taken under the environmental agreements and WTO rules.

Focus on actual obligations, or broader principles? Some members advocate identifying individual “specific trade obligations” that the WTO should examine. Others prefer a more general approach that would look at the principles governing the relationship between the WTO and the environmental agreements, and how the environmental agreements’ trade measures might be accommodated in the WTO. For example, some advocate the principle that there should be no “hierarchical” relationship between the two legal regimes—neither the WTO nor the environmental agreements should be dominant.

In the meantime, proposals to grant observer status in the WTO to other international governmental organizations are currently blocked for political reasons. In the Trade and Environment Committee’s special sessions, eight requests are pending, including four from multilateral environmental agreements. The negotiations aim at developing criteria for allowing these organizations to be observers in the WTO.

Source: Abridged from WTO Briefing Notes on Trade and Environment. WTO website.

#### Perceived Solution

Apart from WTO provisions or MEAs, probably the best way to address environmental issues is to remove obstacles to incomplete markets. The vast majority of environmental degradation can be attributed to situations in which environmental resources are not properly valued, leading to so-called positive or negative externalities. Above all, these arise due to inefficient property rights systems, imperfect or asymmetric information, and government failure, where government policy focuses more on special interest groups rather than the general public (Busse 2004).

Technical cooperation is also the key to achieving the objectives of these existing multilateral agreements. This should start with the integration of tested-environmental

programmes say from developed countries to developing countries at a gradual rate that would not be hurtful in the adjustment of the industries. Coordination can be had among the donors-government-private sector and civil society groups (Audley and Ulmer 2003).

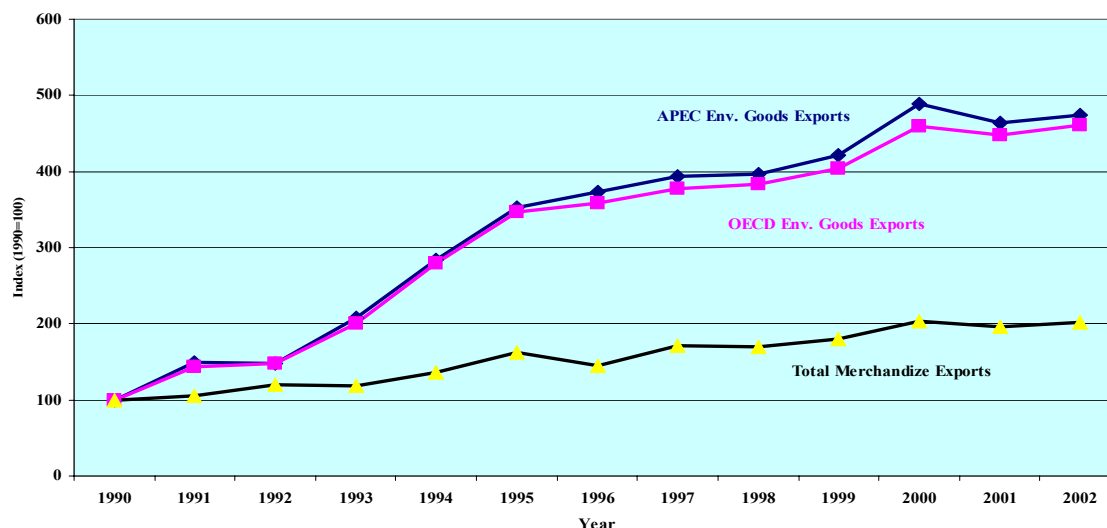
Developing countries also lack capacity to build credible certification bodies with the result that their firms often encounter problems in certifying compliance with international standards. Enforcing environmental standards and norms and monitoring them is also an enormous problem for developing countries and thus requires the continued assistance from developed countries (Jha and Vossenaar 1999).

## Other Prospects

- *Advent of Environmental Goods*

During the more recent decades, environmental goods have found a growing niche in the market. In a recent study, Bora and Teh (2004) estimated that in 2002, total exports of environmental goods reached about \$ 238.4 billion (using OECD defined list or \$215.3 using APEC defined list) representing between 3.6 to 4.0 per cent of world exports. From 1990-2002, trade in environmental goods has grown more than twice as fast (14%) as total merchandise trade (6%). In terms of shares, developed countries make up 79% of environmental goods exports, developing countries about 20%, and LDCs less than 1%. Developed countries make up 60% of environmental goods imports, developed countries 39%, and LDCs less than 1%.<sup>18</sup>

Figure 6. Growth of environmental goods trade, 1990-2002



Source: (Bora and Teh 2004)

<sup>18</sup> Western Europe alone accounted for almost half of environmental goods exports and is a net exporter whether the APEC or OECD definition is used. Asia is the second largest trader of environmental goods and is a net importer whether the APEC or OECD definition is used. North America is a net exporter only if the APEC definition is used. All the other regions are net importers of environmental goods, whichever definition is used.

Borah and Teh (2004) attempt to investigate their impact. Their results show a statistically significant and negative correlation between trade in environmental goods and environment resource costs. It appears that countries which trade more environmental goods have less pollution or consume energy more efficiently. They argue that the factors fuelling this dynamism include the greater awareness of the value of the environment and concern about pollution as well as institutionalization of environmental protection in countries around the globe. However, as a precaution in analyzing the trend in the industry, there is the risk of primarily focusing trade liberalization on products integrated in “end of pipe” equipment (Drouet 2004).

What remains to be a problem is that on environmental goods, there is no clear agreement among WTO Members on definitions and coverage of such goods despite reference to definition of environment industry by the OECD as “activities which produce goods and services to measure, prevent, limit, or minimise or correct environmental damage to water, air and soil, as well as problems related to waste, noise and ecosystems” (Sugathan 2004).

- *Environmental Service*

Environmental services cover one segment of the environmental industry. Trade in environmental services appears to be relatively free of restrictions in comparison with other service sectors. The current GATS classification of environmental services fails to account for the present regulatory reality and for how business operates in this sector. A new possible classification of the sector would therefore have to address the issue of the so-called “non-core” environmental services or services with “dual use”.

Nearly 50 member countries of the WTO have made commitments on environmental services in the context of GATS, but they include those that are the major players in the international markets. The majority of commitments (around 20) have been made by developed and East European countries. Only two commitments are scheduled by countries from the Asian region and two from Latin America. The remaining commitments have been made by countries from Africa. Notably, no limitations on foreign investment have been included in the specific commitments (Butkeviciene 2004).

- *Eco-labeling*

Another approach that has been discussed to address environmental degradation of individual firms or countries is eco-labeling schemes. An eco-label is a form of legally protected label that is applied to (or certification awarded to) a product or service, warranting that it complies with certain pre-determined environmental and (sometimes) social criteria. Eco-labels are policy instruments that attempt to communicate distinctions in similar products based on their relative environmental impact (Naumann 2001).

There are a number of national and private eco-labeling schemes in existence worldwide (Table 8). Most eco-labeling schemes were developed in the early 1990s, and new product categories are being added continuously.

Product labeling requires that (imported) goods be correctly distinguished by labels that state, for instance, that the product has been produced without, or with very

little, environmental degradation. Consumers in industrial countries might be ready to pay a higher price for improved standards. This approach could also lessen concerns about low standards expressed by trade unions (in high-income countries) and non-governmental organizations and could provide an incentive for firms in the exporting nations to upgrade their standards without binding rules. In particular the voluntary participation of all parties involved is the most appealing argument for labeling, as it allows the willingness-to-pay rule to decide the level of harmonization of environmental standards and avoids internationally binding trade restrictions (Busse 2004).

Table 8. Overview of National Eco-Labeling Programs and Dates of Creation

<b>Country / Group</b>	<b>Name of Eco-Labeling Programme</b>	<b>Date of Creation</b>
Germany	Blue Angel	1977
Canada	Environmental Choice Programme	1988
Japan	Eco Mark	1989
Nordic Countries	Nordic Swan	1989
United States	Green Seal	1989
Sweden	Good Environmental Choice	1990
India	Ecomark	1991
Austria	Austrian Eco-Label	1991
Australia	Environmental Choice	1991
Rep. of Korea	Ecomark	1992
Singapore	Green Label Singapore	1992
France	NF-Environnement	1992
Netherlands	Stichting Milieukeur	1992
<b>European Union</b>	<b>European Flower</b>	<b>1992</b>
Croatia	Environmentally Friendly	1993
Thailand	Thai Green Label	1994

Source: Table 2, Naumann 2001.

Notwithstanding these clear advantages, there are also important problems involved with labeling: First, due to the likely premium on commodities with higher standards, labeling might create incentives for private firms to overstate the standards by which they abide. Second, it might be doubtful whether eco-labeling for iron and steel products, is an appropriate way to deal with the negative linkages between environmental regulations and comparative advantage (Busse 2004).

One important inquiry is the implications of eco-labeling for developing countries. There is a concern that eco-labels are complex schemes developed by national authorities to limit foreign competition as labeling product groups often favours domestic products over foreign products and are not always compatible with many of the products in developing countries. To many developing countries, the current debate involving eco-labelling represents another form of industrialised countries blocking out developing country exports. Developing countries fear that stricter product standards relating to environmental criteria are increasingly being used as a trade barrier for their exports and that these environment-based restrictions are used as an indirect means of protecting "northern" industries (Naumann 2001).

In the medium to long-term, eco-labeling may thus have important consequences for market access in foreign countries where eco-labeling standards are well developed and have captured significant market share. Countries thus have the option of developing their own eco-labels, or their industries can focus on obtaining foreign eco-labels that are relevant in their current (or future) export markets (Naumann 2001).

## **VI. Trade and Environment Policies in Tandem: the way forward**

We go back to our fundamental hypothesis: there is no inherent conflict between adopting an open trade policy and good environmental policy. Indeed, it is ideal to have both. The conflict arises as a result of the failure of political institutions to address environmental problems, especially those of a global nature which require a concerted effort to solve (WTO 1999). It is not trade *per se* which would lead to the “race to bottom” in the environmental regulations. It is more of the lack of awareness or prioritization of the environment as well as the laxity and incapability in the implementation of existing mechanisms which would have detrimental effects on the environment, no matter what kind of trade policy regime exists. Then again, as earlier pointed out, openness to trade could even be positively related to environmental quality. In addition, developing countries may even be able to achieve higher levels of environmental performance even long before they reach the income levels of the industrialized countries.

This is not to say that there are no trade-offs between trade and environment. Too little and lax environmental regulations could bring about false comparative advantage, while too stringent regulations could erode real comparative advantage. There are no perfect policies, but these should at least be guided by sound principles.

There should be efforts to reduce the cost of environmental regulations through special adjustment provisions as well as infrastructural support. There is a strong need for trade-related capacity building not only for environmental protection but to support sustainable development as a whole. Moreover, any environmental policy or capability-building program should reflect a country’s absorptive capacity. It is only in this case that general welfare is optimized.

Aside from formal regulations, informal regulatory mechanisms coupled with local community education would prove to be effective and beneficial. Community pressure is one effective source of compliance and cooperation.

Finally, trade measures are seldom the *first best* policy tools to achieve environmental objectives, be it in the multilateral or regional context. What could be done is to promote a “Race to the Top” like the so called “California Effect”<sup>19</sup> such that companies would be willing to meet the country’s higher standards not only to avoid losing the hold in the market but such that they could also easily meet the standards in the international arena.

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<sup>19</sup> After the passage of the US 1970 Clean Air Act Amendments, California repeatedly adopted stricter emissions standards than other US states. Instead of a flight of investment and jobs from California, however, other states began adopting similar, tougher emissions standards. A self-reinforcing “race to the top” was thus put in place in which California helped lift standards throughout the US. Vogel (1995) attributes this largely to the “lure of green markets” (WB 2000).

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**Appendix Table 1. List of Developed and Developing Countries**

<i><b>Developed</b></i>		<i><b>Developing</b></i>
Australia	Algeria	Kenya
Austria	Argentina	Korea Rep.
Belgium	Armenia	Kuwait
Belgium-Lux	Azerbaijan	Kyrgyzstan
Canada	Bahrain	Macau
Denmark	Bangladesh	Madagascar
Finland	Barbados	Malaysia
France	Benin	Maldives
Germany	Bhutan	Mali
Greece	Bolivia	Mauritius
Iceland	Brazil	Mexico
Ireland	Brunei Dar.	Morocco
Israel	Burundi	Mozambique
Italy	Cameroon	Nepal
Japan	Chile	Nicaragua
Malta	China	Niger
Netherlands	Colombia	Nigeria
New Zealand	Comoros	Oman
Norway	Costa Rica	Pakistan
Portugal	Cote Divoire	Panama
S.Afr.Cus.Un	Croatia	Papua N.Guin
South Africa	Cyprus	Paraguay
Spain	Dominica	Peru
Sweden	Dominican Rp	Philippines
Switz.Liecht	Ecuador	Qatar
Untd Kingdom	Egypt	Senegal
USA,Pr,Usvi	El Salvador	Singapore
	Ethiopia	Slovenia
	Gambia	Sri Lanka
	Georgia	Sudan
	Ghana	Suriname
	Grenada	Syria A. R.
	Guatemala	Tajikistan
	Guinea	Tanzania, U.R
	Haiti	Thailand
	Honduras	Trinidad Tbg
	Hong Kong	Tunisia
	India	Turkey
	Indonesia	Turkmenistan
	Iran (Islm.R)	Uganda
	Jamaica	Uruguay
	Jordan	Venezuela
	Kazakstan	Yugoslavia
		Zimbabwe

**Appendix Table 2. MEAs with Trade Implications**

<b>MEA</b>	<b>Date in Force</b>	<b>Eligible Signatories</b>	<b>No of Signatories</b>	<b>Products affected</b>
Wildlife Preservation	05/01/42	Americas	22	Migratory birds National Parks
Whaling Convention	11/10/48	All Countries	49	Whales
Bird Protection	05/03/50	All Countries	15	Birds and bird eggs
Plant Protection	04/18/51	Europe, Mediterranean	34	Plants
Protection	07/02/56	SE Asia, Pacific	24	Plants, containers, soil, etc.
Quarantine of Plants	10/19/60	All Countries	8	Plants and weeds
Atlantic Tuna/ICCAT	03/21/69	All Countries	28	Tuna and tuna-like fish
Natural Resources	06/16/69	Africa	43	Soil water, flora and fauna resources
Animal Transport	02/20/71	Europe	22	Animals
Benelux Birds	07/01/72	Benelux	3	Birds
CITES	07/01/75	All Countries	152	Plants, animals threatened by trade
Polar Bears	05/26/76	Arctic Countries	5	Polar Bears
Atlantic Fish	01/01/79	All Countries	19	Fish
Vicuna Convention	03/19/82	Andes	4	Vicuna
CCAMLR	04/07/82	All Countries	27	Antarctic Marine Living Resources
Tropical Timber	04/01/85	All Countries	54	Non-Coniferous tropical woods
Montreal Ozone Protocol	01/01/89	All Countries	175	Controlled substances that deplete ozone layer
Drift Nets	05/17/91	All Countries	15	Marine Living Resources
Basel Convention	05/05/92	All Countries	147	Hazardous waste production
Biological Diversity/CBD	12/29/93	All Countries	168	Conservation of biological diversity
Climate Change	03/21/94	All Countries	176	Six greenhouse gasses
Bluefin Tuna	05/20/94	Australia, Japan, NZ	3	Bluefin Tuna

Source: Annex 15. International Trade Centre (2004).