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**Beyond WTO: Meeting the Challenges of the New
Trade and Environment Regime
Perspectives from the Philippines and the ASEAN¹**

Ponciano S. Intal, Jr.²

The paper reviews the current discussion in the WTO on reconciling environment-related trade measures and trade-related environment measures with the rules of the multilateral trading system, using the principle of subsidiarity and the general rule of optimal intervention. It presents the view that while the debate at the WTO CTE is critical, the most far-reaching trade and environment issues go beyond the current concerns of the WTO. These issues involve domestic economic and environmental reforms, institutional capacity building, and technical cooperation among countries which would enable the developing countries to minimize the trade off between economic growth and environment protection as well as allow them to adjust to the ongoing "greening" of the international trading environment. In the end, the contribution of setting the framework on the relationship between trade-related environmental measures and multilateral trade disciplines is that the WTO can facilitate, complement and encourage the needed domestic policy reforms and institutional capacity building efforts primarily in the developing countries as well as encourage joint international cooperative activities among countries in the light of the "greening" of the international trading system.

The paper consists of three main sections. Section One looks into the debate on key issues at the Committee on Trade and Environment of the

¹Paper presented at the Asia Conference on Competitiveness, Trade and the Environment, Singapore on 27 June 1996.

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World Trade Organization, drawing from the implications of the subsidiarity principle and the general rule of optimal intervention. Section Two discusses economic growth, environment protection and international competitiveness in the context of the Philippines and the other ASEAN countries. Section Three discusses the "greening" of the international trading system and the ASEAN response. The paper ends with a brief concluding remarks.

Framing The Debate in WTO

The Committee on Trade and Environment (CTE) of the World Trade Organization spent a great deal of its efforts on the relationship between the provisions of the multilateral trading system and the trade provisions in multilateral environmental agreements (MEAs) as well as on the issues of PPM standards and ecolabelling. This is not surprising because these issues have been the heart of the debate on the trade and environment nexus at the international level. However, it appears that very little consensus has emerged so far from the discussions on these contentious issues in the CTE.

The *ex post* "waiver approach" and the *ex ante* "environmental window approach" are the two contrasting approaches of accommodating and clarifying the trade provisions in MEAs vis-a-vis the WTO rules. The latter, preferred by the European Union and developed countries in general, requires an amendment of GATT's Article XX. However, most developing countries, including the ASEAN countries, oppose it because the "window" can become the means for reintroducing protectionist measures under the guise of environmentalism ("green protectionism"). The *ex post* "waiver approach" is favored by developing countries. It also has its drawbacks, however, because

waivers are meant to be granted "exceptionally" for a limited period only and have to be approved by two-thirds majority (GATT, 1992). That is, the ex post waiver approach is ponderous and does not provide clear guidelines to negotiators of multilateral environmental agreements. It also suggests that WTO holds precedence over the MEAs (Scholz, 1995).

Clearly, the stalemate needs to be resolved, perhaps by negotiating a separate "understanding" that sets out the conditions under which trade measures may be taken under an MEA, including sanctions against nonparties (Scholz, 1995) or specifying binding guidelines for MEA negotiations (Canadian proposal), and/or setting criteria for the prima facie compatibility of MEA-based trade measures with the WTO but allowing for *after the fact* evaluation of each MEA on whether the criteria have been satisfied. There is merit to compromise proposals such as those stated above because they make the WTO a positive force in the formulation and implementation of MEAs.

It may be noted that the principle of subsidiarity applies to international environmental policy and its linkage with trade policy. The subsidiarity principle suggests that environmental problems that are local or national in scope are best dealt with at the local or national level using domestic laws and regulations, as long as these laws and regulations follow GATT principles and such laws and regulations do not create unnecessary obstacles to international trade. Where the environmental problem is transborder, then bilateral or regional agreements are in order. Just as for national laws and regulations, bilateral agreements would need to follow GATT principles vis-a-vis nonparticipants. Finally, where the environmental problem

is global (e.g., ozone depletion), then an MEA is called for (e.g., the Montreal Protocol). For MEAs, the trade provisions provide teeth to the agreements or prevent free rider problems which would otherwise dilute the effectiveness of the MEAs. The fact that MEA trade measures have not yet been brought to a WTO panel indicates the de facto compatibility of the use of trade measures in MEAs with WTO rules, in the sense that member economies accommodate such MEA- mandated trade restrictions as part of their joint efforts to address a global environmental problem.

Nevertheless, environmental problems and issues are preponderantly local or national in character despite the high profile in international media and discourse of global environmental issues like global warming and ozone depletion. Even some global environmental issues like global warming have greater immediacy at the local or national level in terms of the local environmental damage arising from economic activities that contribute to the global environmental problem. For example, extensive deforestation, which contributes to global warming, has greater resonance to local people and the national economy in terms of its effect on soil erosion, siltation of coastal areas and destruction of coral reefs, flooding in the lowlands during heavy rainfall and inadequacy of irrigation water during the dry season. When the local populace understand better and experience the adverse effects of unwarranted resource degradation, it is likely that there would be increased calls for action by the national government or relevant private or local entities or institutions to address the worsening environmental problem.

An important insight from the general rule of optimal interventions in the economic literature is that in the case where there is a distortion in the economy or there are externalities in production or consumption, the ideal approach is for the government to intervene directly at the source in order to prevent or minimize unwanted and distortionary side effects of the government intervention. Considering that environmental degradation is essentially related to either production or consumption activities, the general rule of optimal intervention suggests that the best way of strengthening domestic environmental protection is **not** through the imposition of international trade sanctions or barriers (e.g., tariffs, antidumping) but through direct policy interventions addressing the root causes of the environmental problems. For example, where there is a production pollution problem, the best course of action is to address it directly at the source through, say, the imposition of a pollution tax instead of a change in tariff which will have an unnecessary side effect on domestic consumption and hence on national welfare.

The general rule of optimal intervention has implications also on the design of MEAs to address a global environment problem. The framework suggests that even in the case of global commons, the use of trade measures is still a second-best option compared to an international agreement that enjoins all concerned countries to address the global environment problem through an internationally coordinated program of domestic interventions using production-related or consumption-related measures like taxes, more appropriate user charges in the use of natural resources, etc. The role of international trade measures (e.g., sanctions, tariffs) is primarily to prevent

or minimize shirking or free riding among governments, rather than as the primary means of addressing the problem of global commons.

A related but more complex and issue concerns the problem of how to treat production and processing methods (PPM) standards in the multilateral trading system. The WTO allows member countries to impose product standards and technical regulations for health and safety purposes as well as for domestic environment protection, as long as the MFN and nondiscrimination principles are respected and the standards and technical regulations are not unnecessary barriers to trade. The WTO also allows member countries to impose product related production and processing methods or PRPPMs (production and processing methods standards where such standards affect the physical characteristics of the final product) to protect their domestic environments and the health and safety of their citizens, as long as the implementation of the PRPPMs follows WTO principles and does not create unnecessary obstacles to trade.

The contentious issue is with respect to nonproduct related production and processing methods (NPRPPMs). A proposal in the WTO Committee on Trade and Environment to put voluntary ecolabelling schemes using life cycle analysis (usually containing NPRPPMs) under the ambit of the WTO Agreement on Technical Barriers to Trade (TBT) has been strongly opposed by developing countries, including the ASEAN countries. The strong opposition of the developing countries stems primarily from their fear that putting NPRPPMs under the TBT Agreement could lead to the use of

"green protectionism" as well as to unwanted linkages such as the linkage of trade and labor standards (which developing countries strongly oppose).

There are also compelling economic, political and environmental reasons against the use of NPRPPM-based trade restrictions. Differences in factor endowments and production and processing methods are the very basis of comparative advantage and international trade. Countries differ in their environment attributes and carrying capacities, thereby leading to the use of different production and processing methods compatible with their respective environments. (See Stevens 1994.) Nations do not want interference from other countries and foreign groups in the design of their own laws and regulations.

The only case wherein there is merit in the use of trade restrictions based on NPRPPMs is when the trade restrictions are part of an MEA that is meant to address a global environmental problem (e.g., ozone depletion). In effect, in this circumstance nations are willing to diminish their "sovereignty" over their laws and regulations in order to contribute to the successful implementation of a global joint cooperative effort among nations in addressing the global environment problem.

Because of the sharp conflicting positions of WTO member countries, the issue of PPMs is likely to be addressed through the market place. Specifically, voluntary ecolabelling and the use of environment management systems as part of international business practice (e.g., the ISO 14000) could determine the cost and opportunities facing firms and countries in the international trading

arena. For example, where there is significant premium to ecolabels, it is likely that firms at home and abroad would invest time, resources and effort to meet the requirements of ecolabelling. Nevertheless, Rubik (1995) reports that there are significant barriers to the intensive use of ecolabels in Europe at present; these barriers include awareness barriers, information barriers, economic barriers, legal barriers, organizational barriers, and technical barriers. Thus, the spread of ecolabelling is likely to be a gradual process. Similarly, it is also likely that the incorporation of environmental management as part of good business practice and a requirement of international trading will take time to take root because of the significant costs involved in meeting the requirements of ISO 14000.

Figure 1 presents a summary framework for looking at the relationship between the geographic scope of an environment problem and the appropriate trade measures and standards, drawing from Stevens (1994) and the principle of subsidiarity. Where the environment problem is national, countries are allowed to impose PRPPM-based trade restrictions as long as the WTO principles are respected and the standards are not unnecessary obstacles to international trade. With respect to transborder environment problems, Figure 1 states that the participating countries in a regional or bilateral agreement addressing the transborder environment problem can agree not only on PRPPMs, but also, for their firms, NPRPPMs, on the proviso that the WTO principles are respected in the bilateral or regional agreement(s) for nonparticipants. Figure 1 indicates that it is only with respect to global environmental problems that the use of NPRPPMs is warranted under the context of MEAs.

In sum, the challenge facing the WTO is how to be vigilant against "protectionism garbed in green" but at the same time be more open and flexible in accommodating environmental objectives within its framework. The long discussions and the lack of consensus in the Committee of Trade and Environment of the WTO so far indicates that it is difficult to strike a happy balance between the need to control the danger of "green protectionism" and the need to integrate environmental objectives in the WTO. Nevertheless, the discussions and debate have increasingly clarified the issues leading towards a possible resolution in the future. Specifically, the discussions appear to increasingly affirm the current GATT/WTO rules against the use of unilateral measures by an importing country whereby access to its market depends on the domestic environmental policies or practices of the exporting country, and hence influencing the environmental policies or practices of the exporting country (GATT, 1992). Also, there appears to be a growing consensus on the need for greater transparency in ecolabelling practices and procedures in order that such efforts do not become unnecessary obstacles to, or a discriminatory practice in, international trade. Finally, analysts have increasingly brought out that, in many instances, trade measures are not the most efficient means of pursuing environmental objectives. They are at best supplementary measures primarily to address global environmental problems or concerns. With respect to the MEAs, the fundamental issue facing the WTO is whether the reconciliation between the trade provisions in MEAs and the GATT/WTO rules should be done *ex ante* through the amendment of pertinent existing GATT/WTO rules or *ex post* through the current practice of waivers but perhaps with clearer guidelines, either binding or nonbinding, to help future negotiations on multilateral environmental agreements.

The stalemate in the discussions in the WTO CTE reflects the essentially second best nature of the use of international trade measures for environmental purposes; i.e., trade measures are not the ideal and most effective means of protecting the environment. Considering that much of environmental problems are local or national in scope, improving the environment and generating economic growth especially in developing countries is best tackled in these countries through domestic socioeconomic and environmental policy reforms, as well as by strengthening the capacity of the bureaucracy and the private sector in environmental management in order to meet the demands of an increasingly competitive and environmentally conscious international trading system. These issues are not at the center of the discussions in the WTO as they go beyond the current concerns of the WTO.

Economic Growth, Environment and International Competitiveness

Recent researches have shown the inverted U shape pattern of the relationship between per capita income and measures of environment degradation. Many pollutant levels tend to increase at first with rising per capita, then level off to eventually decline as per capita incomes increase further. This pattern reflects the varied effects of the scale of production, shifts in pattern of production, shifts in demand for goods and services, technological change, demand for environmental amenities and the capability of the government to enforce increasingly more stringent environmental regulations (O' Connor, 1994).

The inverted U pattern has one important implication: the reversibility of many sources of pollution. Thus, development and economic growth are

needed to ensure that countries attain the level of per capita income that allows for secular decline in pollution levels. Nevertheless, for developing countries, given the better understanding of the social and economic cost of environmental degradation, the challenge is in reducing the amplitude of the inverted U pattern by reducing the environment cost of production and consumption at each level of per capita production and income. Thus, the cumulative level of environmental degradation can be lower than the historical experience. In this regard, the developing countries, which are the industrial latecomers, can draw from both product and process innovations primarily in the developed countries. These innovations are increasingly concerned with greater energy efficiency, higher material recovery and lower waste generation, thereby providing the technological basis for reducing the trade off between economic growth and environmental protection. The challenge is in instituting the policy and institutional environment and mechanisms that encourage and support higher capital accumulation of machines with better environmental attributes, stronger incentives for resource regeneration and environmental protection, and more robust and sustainable growth (Intal 1995).

Growth, exports and the environment in East and Southeast Asia. The historical experience of East Asian countries like Japan and Taiwan followed the inverted U pattern. Japan's pattern of production in manufacturing shifted from the less pollutive food and light manufacturing industries in the 1950s to the more pollutive chemicals, oil, pulp and paper, and primary metals industries in the 1960s and then to the less pollutive electronics and electrical manufacturing industries as well as to the service industries. The shift to the more pollutive industries in the 1960s in Japan brought such infamous

incidents of pollution as the Minamata mercury poisoning case. Taiwan followed the same pattern of rising then falling pollution intensity of manufacturing production during the past four decades, as the composition of output changed from food, textiles and garments during the 1950s and 1960s to industries like chemicals, petroleum and steel during the 1970s and then to less pollutive industries like electronics and electrical industries during the 1980s (O' Connor, 1994).

During the past two decades, the middle income ASEAN countries have been experiencing growing environmental stress arising from either fast economic growth or, in the case of the Philippines, sluggish growth. The decline in environmental quality is significant and occurs in various dimensions, ranging from fast drawdown of natural resource stocks to water resource use problems and to pollution problems (see Table 1). For example, particulate matter levels are higher than ambient standards in the capital cities of the Philippines, Indonesia, Thailand and Malaysia while sulfur dioxide level is highest in Metro Manila (Table 2). Much of Thailand's land surface is degraded because of overexploitation (Phantumvanit, *et. al.*, 1994); similarly, nearly 50 percent of the agricultural land in the Philippines is subject to moderate to severe erosion (Intal, *et.al.*, 1994).

In many cases, there is a linkage between export expansion and environmental stress in the ASEAN. For example, the expansion of shrimp exports from Thailand, Indonesia and the Philippines has been accompanied to some extent by the shift of mangrove forests into aquaculture farms, thereby contributing substantially to the decline in the hectarage of mangrove forests

in the three countries. (In the case of Indonesia, it is logging and shift to agriculture which are the two most important reasons for the decline in mangrove forest area; see CSIS, 1995.) Both the Philippines and Thailand, former major exporters of forest products until the 1970s have now largely become net importers because of massive deforestation.

The textile industry is a major export industry in both Indonesia and Thailand. In Thailand, textiles account for 45 percent of total BOD loading in Bangkok and between 32% to 38% in Samut Prakarn and Samut Sakhon (Phantumvanit, *et. al.*, 1994). Similarly, the textile industry accounts for about 70 percent of the total pollution load of the West Java rivers that are included in the Indonesian government's Clean Rivers Program (CSIS, 1995). In contrast, the textile industry accounts for only 9 percent of the total BOD loading in Metro Manila (Intal, *et.al.*, 1994); to some extent, this reflects the moribund state of the textile industry in the Philippines.

In Malaysia, the Philippines and Thailand, the semiconductors and electronics industry constitute the largest share to total exports in recent years. Although the industry (which is dominated by multinationals in the three countries) is probably the most environment conscious among the major export industries in the ASEAN, the industry is a major user of highly toxic substances, thereby raising the issue of proper waste disposal facilities. There are substantial health risks to improper utilization and disposal of the toxic materials in electronics manufacturing. For example, lead levels in the blood and urine of electronic factory workers in Thailand in 1987 were

multiples of the levels in rural residents and Bangkok residents (Phantumvanit, *et.al.*, 1994).

The above examples indicate that to some extent the ASEAN countries have incurred environmental costs for their export success. This is consistent with the inverted U relationship between per capita income and environmental degradation. The environmental costs to the ASEAN countries are also, in effect, subsidies to the consumers (primarily in developed countries) of the exports from the ASEAN countries. The environmental cost of the export expansion in the ASEAN countries is partly unintended rather than predeterminate because information on the true social cost of production and exporting are being quantified only now and the government institutions tasked to deal with pollution and the environment are generally recent creations and not adequately staffed. Similarly, the legal framework for stronger environmental surveillance and management (e.g., environment laws) have been formulated only in recent years in the ASEAN countries.

Cost internalization and international competitiveness. The standard economic welfare analysis of trade and environmental policies in a small and open economy suggests that the drive for open trade needs to be complemented with improved environment management such that domestic market prices reflect as much as possible the social cost of pollution or environmental damages from domestic production and consumption. Otherwise, where there are environmental damages from production, export expansion would lead to environmental stress if the industry is an export industry. Similarly, if the environmental damage comes from the consumption of an import product,

then reduction in tariffs and nontariff barriers would increase imports and consumption thereby worsening the environment further.

An important concern however is whether a country loses its revealed comparative advantage in an industry as a result of the internalization of the environmental costs of the industry. Of course, from a social point of view, this concern is probably a nonissue in the sense that there is no compelling reason for continuing to export a product if in fact the social cost of producing and exporting it is even higher than the social benefit (or returns) from exports. A more likely scenario is that an industry consists of many firms with varying efficiencies and environmental externality effects. In this case, cost internalization could hurt the international competitiveness of some of the firms but not the more efficient producers.

Estimation of the impact of cost internalization on the international competitiveness of a country's export industry has been attempted for the Philippines (see Intal *et.al.*, 1994). Drawing from the results of the Environment and Natural Resource Accounting Project for the Philippines, the Intal, *et. al.* study and a subsequent update (Medalla, 1995) indicate that pollution abatement cost as a ratio of the total value of industry output is mostly less than 0.5 percent for manufacturing industries (except for wood manufactures at about 1.2 percent, nonmetallic mining at 0.8 percent and nonelectrical machinery, beverages and paper products at about 0.6 percent) but significantly high for logging (at about 29 percent), metallic mining (ranging from about 10 percent for copper mining to 33 percent for metallic mining other than copper and gold) and agricultural crops (at 2.3 percent).

Simulations of alternative levels of "pollution taxes" given domestic resource costs of earning or saving foreign exchange in selected export industries (e.g., coconut, garments) suggest that in most cases (with the principal exception of logging) internalization of the environmental cost of production would not unduly jeopardize the international competitiveness of the selected industries.

The results should be considered as approximate because they are based on national averages and gloss over the variations in efficiencies among firms. Moreover, the simulations need to be extended to more industries, including the new export sectors. Of course, countries differ in their areas of comparative advantage. Nevertheless, assuming the simulation results are indicative for other countries, then worries on the impact of internalization of the environmental cost of production on the international competitiveness of export industries may have been overblown.

International competitiveness is a multidimensional concept. Various cost factors impinge on the international competitiveness of an industry or firm in a country. It is clear that from a social point of view, it is important that the environmental cost be internalized by export producers because there is no compelling reason why foreign consumers should be implicitly subsidized. Given that it is important that the negative environmental impact of production is minimized, then it is better to look into the other cost factors for cost cutting; that is, improve efficiency. The most promising areas for the Philippines and the other ASEAN countries are the reduction in the transactions cost of doing business with the government as well as in the (transport, communications, and customs transactions) cost of exporting or

importing. In effect, it is better to improve efficiency of production and government infrastructure and administrative support systems than to resort to environmental degradation as a way of ensuring the international competitiveness of an industry.

Indeed, with the growing "greening" of the international trading system, it is likely that one attribute of international competitiveness in the future would be the adoption of environment management systems at the firm or industry level.

The "Greening" of the International Trading System and the ASEAN Countries

Despite the controversies raised by the advent of "green protectionism," the more enduring impact of environmentalism on the international trading system is the intrusion of "green" considerations in consumers' preferences. This is best exemplified by the rise in ecolabelling, which puts the burden of influencing production processes and product standards on the consumers. Product standards in developed countries have also toughened in view of environmental considerations. The greening of the international trading environment will push ahead forcefully further when the ISO 14000 under the International Organization for Standardization (ISO) is adopted and implemented. The ISO 14000 is a series of environmental standards. With the adoption of the ISO 14000, there is a possibility that purchasers, contractors, and businesses may require conformance to ISO 14000, thereby significantly influencing the parameters of international trading.

The ASEAN economies have become markedly outward-oriented which makes them vulnerable to the integration of environment concerns in the international trading system. The shares of exports and imports to the Gross Domestic Product rose substantially during the past two and a half decades. Singapore and Malaysia are now two of the most open economies in the world, with export to GDP ratio of 158 percent and 77 percent, respectively, in 1990. Even the previously inward-oriented Indonesia and the Philippines experienced sharp rise in export shares, from 13 percent in 1970 to 26 percent in 1990 for Indonesia, and from 19 percent in 1970 to 28 percent in 1990 for the Philippines. Thailand's export share more than doubled during 1970 - 1990, from 15 percent in 1970 to 34 percent in 1990 (Table 3).

The vulnerability and need to be responsive to the changing consumer preferences in key export markets is exemplified by the case of the tuna dolphin issue. Although primarily aimed against Mexico's exports, Thailand's tuna exporters were nevertheless heavily affected by it. The tuna processors endeavored to source their tuna fish requirements from "dolphin friendly" sources in order to prevent consumer boycott. A leading tuna exporter even launched an expensive advertising campaign to assure its American customers that it uses tuna caught through "dolphin friendly" techniques. (See Phantumvanit, *et.al.*, 1994.) The response of the Thailand tuna processors reflects the heavy dependence of the industry on the US export market.

In view of the growing indications toward the "greening" of the international trading system, the ASEAN countries have started to adjust institutionally to the challenge. For example, given the growing popularity of

ecolabelling, Singapore and Indonesia have instituted ecolabelling schemes in their countries. Thus, Singapore has already instituted a Green Label program. Indonesia has started to set up an ecolabelling program, with two institutions designated to develop criteria and standards for an ecolabel for timber products (LEI) as well as for nontimber products (BADEPAL); the ecolabelling program for timber, or timber certification, is partly in response to pressures from European markets and partly from the desire of the Indonesian government to establish an independent inspection system to improve forest management in response to domestic pressures (CSIS, 1995).

Similarly, the toughening of product standards and the possible implementation of ISO 14000 by 1997 highlights the importance of improving the facilitation process at home for certification and the need for mutual recognition of certifications. Among the middle income ASEAN countries, Malaysia has particularly strengthened its institutional support mechanism for product certification. The Standards and Industrial Research Institute of Malaysia (SIRIM) is tasked to set Malaysia's product standards following an elaborate procedure and drawing the participation of all sectors of the economy. SIRIM also undertakes product certifications with regular spot checks on factories to ensure that they follow strictly the requirements of SIRIM's certification scheme. SIRIM also has agreements of mutual recognition of certification schemes with the standards agencies of Canada, Australia and New Zealand for selected products. Mutual recognition of certification schemes between countries helps facilitate trade and minimizes the use of standards as nontariff barriers. Finally, Malaysia has established a National Committee on Environmental Standards to study the impact on Malaysia of the adoption of

ISO 14000; it is likely to recommend the adoption of ISO 14000 series standard as provisional Malaysian Standards, with a pilot certification scheme to be launched in 1996. (See ISIS, 1996.)

ASEAN countries have also been assiduous in implementing the provisions of multilateral environmental agreements, especially the Montreal Protocol. For example, Singapore set a schedule of progressive prohibition of the import and use of controlled CFCs and halons beginning in 1989; it encouraged the electronics industry (the major user of CFCs in Singapore) to shift to non-ODS or CFC-free processes (i.e., aqueous, semi-aqueous and non-clean technologies); and provided financial assistance to help domestic firms modify or retrofit their machines and production processes in order to conserve CFCs or shift to new substitutes for CFCs. Singapore succeeded to reduce significantly its use of CFCs and halons so much so that the country, which was denied classification as an Article 5 country upon its accession to the Montreal Protocol in 1989 because of its high per capita use of ozone depleting substances, has been reclassified as an Article 5 country since 1994. (See Institute of Policy Studies, 1996.)

Similarly, Malaysia, Thailand, the Philippines and Indonesia have instituted policies and programs to reduce the use of controlled ODS to meet the objectives of the Montreal Protocol. All four countries are Article 5 countries and have used the grants provided under the Montreal Protocol scheme to help local firms to shift to CFC-free substitutes. Indonesia contracted a World Bank loan to help provide financing to affected local firms to be able to shift to CFC-free substitutes. The export-oriented electronics

industries in Malaysia, Thailand and the Philippines, which are dominated by multinationals, have also been shifting to new technologies either because of corporate policy of their headquarters or in response to the imposition of import quotas of controlled substances by the ASEAN countries pursuant to the objectives of the Montreal Protocol.

Finally, it is worth noting that the drive for improved industrial environmental management partly in response to the "greening" of the international trading system has encouraged rethinking in the Philippines with respect to the government's approach to industrial environmental management. Presently, in the Philippines the government bureau charged with industrial environmental management is understaffed and with inadequate skills; there are delays in required environmental impact assessment and the monitoring of environmental violations is hampered by the lack of laboratory facilities especially in the regions. In view of the above, the Philippines is exploring the adoption of an alternative approach to industrial environmental management consisting of a) the use of programmatic environmental impact assessments especially for industrial estates in order to reduce the cost of EIAs to individual private investors, b) encouragement of the use by firms of pollution management appraisals (PMAs) which emphasize waste minimization approaches rather than end of the pipe investments, c) the use of private laboratories and non-government organizations in monitoring industrial pollution and violations and d) the development of market based instruments.

In sum, the ASEAN countries have tried to adjust to the "greening" of the international trading system in a forward looking manner, consistent with the

heavy export orientation of the economies, by strengthening their support institutions to international trade and to environmental management as well as by instituting policies that encourage the integration of the environment in the domestic production and consumption decisions of firms and consumers; i.e., the start of the "greening" of the domestic economies themselves.

Concluding Remarks

In the run up to the Singapore WTO Ministerial Meeting, the debate on the interrelationship between trade and environment has increasingly become less shrill and ideologically based, which bodes well towards a successful resolution of the issues. This paper takes the view that with respect to trade-related environmental measures to address purely domestic environmental concerns, the current GATT/WTO principles and rules remain robust. With a little modification concerning the mutual agreements of participating countries in bilateral or regional environmental agreements, GATT/WTO principles and rules similarly apply with respect to nonparticipants. It is only the case of the trade provisions of multilateral environment agreements addressing global environmental problems which need to be accommodated in the GATT/WTO, either directly through the amendment of Article XX or indirectly through the continuation of the current waiver system (but perhaps with less stringent rules for the case of MEAs) together possibly with at least a nonbinding set of guidelines that negotiators of MEAs need to consider in forging the trade provisions of the MEAs.

With the hoped-for resolution of the current trade and environment issues in the WTO, greater attention can then be given to the more important

issues of policy and institutional reforms and capacity building particularly in the developing countries as well as the strengthening of cooperative efforts among countries to reduce the adjustment costs toward a "greener" international trading system.

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Table 1
RELATIVE SIGNIFICANCE OF RESOURCE AND ENVIRONMENT ISSUES IN ASEAN

	Indonesia	Malaysia	Philippines	Thailand
Deforestation	High	High	High	High
Water Resource Problems	High	Low	Medium	High
Land/Soil Resource Problems	Medium	Low	High	Medium
Pesticides/Fertilizers	Medium	Low	Medium	Medium
Urban Congestion/Pollution	High	Medium	High	High
Industrial Pollution	Medium	Medium	Medium	Medium
Marine/Coastal Resource Degradation	Medium	Medium	Medium	Medium
Waste Disposal	Low		Low	Low
Acid Rain				Low
Rising Sea Level	Medium	Low	Medium	Medium

Source: ADB ADO 1991 pp. 212-213

Table 2
SELECTED INDICATORS,
ASEAN COUNTRIES

	Indonesia	Malaysia	Philippines	Thailand
Suspended Particulate Matter (SPM)				
Mean Daily (90 mg/ cu.m.)	243	101	100	198
Peak Levels (230 mg/ cu.m.)	551	259	276	386
No. of days over 230 mg/ cu.m.	173	37	14	97
Sulfur Dioxide				
Mean Daily (40 mg/cu.m.)		4	83	18
Peak Levels (150 mg/cu.m.)		16	161	48
No. of days over 150 mg/cu.m.		0	24	0
Annual Rate of Deforestation (%)	0.5	1.2	1.0	2.4
Percent of Population Living in Coastal Zone	70	60	67	60
Urban Population (% of total)	29	42	42	23

Note: Capital cities for SPM and SO₂; numbers in parentheses indicate ambient standards.

Sources: WRI 1988-89; ADB ADO 1991; Soegiarto (1994) in Intal, de los Angeles and Medalla

Table 3
RATIO OF EXPORTS AND IMPORTS OF GOODS AND SERVICES TO GDP
(at current prices), SELECTED COUNTRIES

	Exports (%)			Imports (%)		
	1970	1980	1990	1970	1980	1990
Japan	10.8	13.7	10.7	9.5	14.6	10.7
United States	5.6	10.2	9.9	5.5	10.7	11.2
Hongkong	92.9	87.8	113.0	89.4	95.4	113.4
Korea	14.0	34.0	31.6	23.6	41.5	32.2
Singapore	81.9	165.2	157.5	129.8	204.6	175.1
Taiwan	30.3	52.5	47.7	30.4	53.7	42.2
Indonesia	12.8	30.5	26.4	15.8	22.2	25.9
Malaysia	46.1	57.5	77.3	44.4	55.0	76.8
Philippines	19.1	20.2	27.9	19.3	26.0	33.5
Thailand	15.0	24.3	34.2	19.4	30.6	41.7
China	3.9	7.4	14.8	3.0	8.1	16.6

Note: The 1990 data for Hongkong, Indonesia, Malaysia, Philippines and Thailand were computed from data from ADB Key Indicators 1993.

Source: W. James, M. Kreinin and M. Plummer (1993).