

# **An Asian Perspective on a World Environmental Organization<sup>1</sup>**

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## **1. Introduction:**

The growing consciousness about global environmental problems around the world has led to a patchwork quilt of two hundred multilateral environmental agreements (MEA) between various groups of nations. These agreements range from non-binding ones to ones with binding commitments on instruments and emission levels, from regional to global agreements, and from property rights type agreements to joint emission reduction. Most reflect a lowest common denominator outcome of a narrow area negotiation without side payments for those adversely affected. Most treaties reflect environmental concerns of developed, rather than developing countries; there are few if any inter developing country treaties. Some have detailed provision for positive and negative sanctions. The problem areas covered are quite diverse and include global and transnational pollutants, process and product standards and bio-diversity. The sovereign states remain units of signing or negotiations, although often environmental concerns transcend nation states boundaries, or also often apply to undefined jurisdictions (such as international waters or airspace).

It is striking to note that many of the MEA have features that directly or indirectly contradict existing international agreements on trade and capital flows. The WTO itself admits this in a document prepared for the recently completed High Level Symposium on Trade and the Environment (WTO (1999, page 7)) wherein it states that "Lack of coordination (between trade and environmental agreements) has, in the past, contributed to the negotiation of conflicting agreements in trade and environment fora." However, the document argues that MEA remain the best vehicle for resolving transboundary and global environmental problems. Two points need to be mentioned here. First, the existing patchwork quilt of MEA does not exploit cross-MEA indivisibilities. Moreover, the existing MEA have failed to incorporate bargaining opportunities, wherein some side payments to some parties could have been used in

exchange for enhanced bargaining opportunities and greater compliance. The failure to include such opportunities can be attributed to a generalized “prisoners’ dilemma” phenomenon, since who pays and who benefits might not fully coincide. Another notable feature of many environmental agreements is the almost universal lack of issue linkages such as linking trade sanctions and environmental sanctions<sup>2</sup> or linking trade and environmental concessions. It is clear that there is a role for an international institution that would address these shortcomings<sup>3</sup>.

The economic interdependence of nations and global nature of trade and capital flows gave rise to institutions such as IMF, World Bank and now the WTO, whose design took care of the interdependencies and coordination tasks involved in rationalizing trade and capital flows. However since these institutions evolved in an era when environmental interdependencies were not seen as important, there were hardly any provisions to handle global environmental concerns. Recent rounds of negotiations of the GATT put in provisions, which permitted actions of nations to depart from free trade principles on the basis of environmental and other concerns<sup>4</sup>. However, there is some disquiet about this, particularly among developing countries, who view the imposition of such requirements as another way of imposing non tariff barriers on their exports.

An awareness of “environmental interdependence” among nations is relatively recent, and, therefore, addressing this interdependence may call for new institutional design. This is what we call the World Environmental Organization (WEO). The purpose of this paper is to

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<sup>2</sup> Some provision is present in Article XX of GATT, now in force through WTO.

<sup>3</sup> The Committee on Trade and Environment (CTE) of the WTO has noted that of the 200 MEA currently in force, only 20 contain trade provisions. In addition, no disputes have thus far come to the WTO regarding a trade provision in an MEA. The CTE at the Singapore Ministerial Conference stated that it fully supported multilateral solutions to global and transboundary environmental problems. See WTO (1999).

<sup>4</sup> These other concerns include the social clauses on labor standards, use of child labor, protection, health and safety of plant, animal and human life, and so on.

sketch the likely response to the idea of a WEO from Asian developing countries (ADC). The analysis is carried out by considering the socioeconomic profiles of ADC, and examining the pressing environmental concerns in an overall context of developmental priorities. It should be noted that our analysis does not imply a “uniform” or non-differentiated Asian view on environmental management and global environmental concerns. Indeed the continent includes OECD members such as Japan, fast growing East Asian economies and poorer countries of South Asia. It is still possible, however, to sketch the broad contours of a developing country perspective on WEO.

An opportunity exists now, for some developing countries to exploit their relative bargaining strengths in environmental treaties. This is because the bulk of the “environmental assets” of the world, in terms of forest cover (sinks for CO<sub>2</sub> emissions) and biodiversity lie within the sovereign boundaries of these nations, whereas the pressing concern for a global treaty comes from the OECD countries. Secondly, the developing countries can demand side payments to compensate them for slower economic growth in exchange of complying with global environmental practices. Finally an opportunity also exists for using environmental leverage for other concessions including those for tackling local environmental problems.

As mentioned above, the existing institutions and global and regional environmental treaties have failed in (a) using side payment mechanisms for internalizing cross border externalities, (b) using issue linkage i.e. non-environmental incentives along with environmental negotiations, and (c) have not used global mechanisms to underpin and reinforce domestic policies on the environment. Any design of the WEO needs to address these deficiencies explicitly.

This paper is organized as follows. Section 2 contains an overview of environmental concerns in ADC. Section 3, the heart of the paper discusses various factors that we think will

ultimately determine the developing country stance toward WEO. It lays down the reasons why, at first sight, the ADC enthusiasm for a WEO might be lacking. We then explore the steps that can be taken to address these concerns so that there is widespread public support for a WEO within ADC. Section 4 concludes. A brief review of the environmental policies and management in some ADC is given in the Appendix.

## **2: Socioeconomic and Environmental Concerns in Asian Developing Countries**

ADC stance and response toward the idea of a WEO would be determined by current (status quo) factors and future (expectations) factors. Some of these are (a) how joining WEO fits in with their current environmental priorities of ADC; (b) what are the real and perceived tradeoffs in joining vis-à-vis not joining in terms of current assessment; (c) what is the credibility of the institution of WEO, i.e. expectations in light of past records of other UN and MEA initiatives, and the evolving path of WEO credibility.

We examine in detail the reasons as to why the initial response by ADC's to WEO is likely to be lukewarm in Section 3.1. Concomitantly in section 3.2 we also examine the process and factors by which an initial ADC skepticism might be tempered or mitigated. In the present section we describe briefly the socioeconomic and environmental profile of ADCs.

### ***2.1 Socioeconomic Profile of ADC***

The current socioeconomic state and also the ranking of various environmental priorities will to a large extent determine whether ADC would be willing to be "outward looking" to join forces with other countries to deal with international externalities. ADCs account for about half of the world's population. Although the ADC urbanization rate of 35 per cent is compared to the world average, it is increasing rapidly. At present Asia contains 13 of the 25 largest cities in the world. About 90 per cent of the people in Asia live in the low-income category in

the classification of countries by per capita income (see Table 1). Two countries, China and India, together account for about a third of world population with per capita income of about one-tenth of the world average. A majority of the world's estimated 1.2 billion poor (with per capita income less than US \$1 per day) live in this region. The ADC economies are mostly agrarian, deriving between 30 to 70 per cent of their GDP from agriculture, forestry and other primary activities. They rank low in terms of human development indices like life expectancy, infant mortality and literacy (see Table 2). There is, of course, wide variation in level of living among the ADCs. Some the ADCs, the so-called East Asian Tigers, outperformed the rest of the world in terms of income growth rate in recent decades. These were the economies that adopted a strategy of trade-led growth<sup>5</sup>. Accounting for only about 10 per cent of ADC population, they moved up from low-income to middle-income category. During 1997-98 the East Asia economies faced currency crises (the so-called Asian contagion) which led to negative growth rates in countries like Indonesia and South Korea.

## ***2.2 Pressing Environmental Concerns of ADC***

Protection of the environment has traditionally been a part of Asian culture and as such, there has been concern about degradation of the environment. However the most pressing environmental concerns are consequences economic growth, of urbanization and pressure of population growth. Thus the issues of soil degradation, deforestation and inadequate arrangement for potable water are common to all countries in the region. Other issues such as air and water pollution are environmental problems in urban areas. Desertification is of prime concern in some parts of the region (see Table 3). The ADC priorities are clearly in favor of economic development and alleviation of mass poverty. Such a priority has obviously been

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<sup>5</sup> The CTE of the WTO has provided evidence that export led industrialization and freer trade is not necessarily associated with a degradation of the environment.

more pressing at the end of the twentieth century when it is well recognized that the problem of poverty could indeed be solved within a few decades with right kind of growth strategy. As elsewhere in the world, growth would further degrade the environment, at least in its initial stages. The costs of air and water pollution could be large in the absence of adoption of clean (and costly) technology. This leads to a dilemma in preferences for the ADCs: environmental preservation versus economic development and poverty alleviation.

The ADCs also face a second stage trade-off. How would they spend the limited resources they could on environment? Would they expend these funds on their local environmental problems or keep them for global problems? The general perception at present in ADCs is to view several local environmental problems as more urgent than the ones causing global damages. This appears to be a natural process to them for even the developed world turned attention to global problems after solving their local problems. A survey conducted by Asian Development Bank and Harvard Institute of International Development (ADB 1997) reports that among environmental issues ranked in order of importance by Asian environmental policy makers, air and water pollution, fresh water depletion, solid waste and soil erosion ranked much higher than global issues of climate change and biodiversity loss. This shows that pressing concerns are indeed local rather than global. We discuss the implications of this later in section 3.1 (ranking in Box 1).

Notwithstanding this tradeoff, the ADC are signatories to a large number of MEA. This is reported in Table 4. This might be indicative of three factors: (i) The ADC consider these MEA to be non intrusive in their development strategies, (ii) the costs of adhering to the terms of the agreements are not unduly high for them, or (iii) as in the case of the Montreal Protocol, a coalition of OECD countries offered enough incentives for joining and enough penalties for not joining that the ADC found it in their best interest to sign on.

Box 1

Ranking of Environmental Priorities of ADC

- (i) Water pollution and fresh water depletion
- (ii) Air pollution
- (iii) Deforestation
- (iv) Solid waste
- (v) Soil erosion
- (vi) Biodiversity loss
- (vii) Wildlife loss
- (viii) Fish depletion
- (ix) Desertification
- (x) Climate Change

Source: ADB (1997)

### ***2.3 The Evidence on ADCs role in Global Environmental Problems***

The global environmental concerns of CO<sub>2</sub>, ozone depletion, global warming and climate change, biodiversity loss and deforestation are of concern to ADC too. As mentioned above ADC policy makers have placed these concerns on a lower priority. However it must be noted that among these global issues, those which have immediate local consequences are of utmost concern to domestic policy makers. Thus for example, the consequence of global warming leading to increase in sea levels, and consequently submerging many island states in the Asia Pacific, or much greater flooding in Bangladesh, has meant that these countries are

enthusiastic supporters of any global initiative in this direction<sup>6</sup>. Similarly climate change which threatens agriculture would be of immediate interest to many ADC's. The benefits of such initiative are however quite indeterminate, and non-individualized. We have already shown in Table 3 that the pressing environmental concerns of ADC are mostly local or bilateral in nature. However, there is reason to believe that CO<sub>2</sub> emissions and other global environmental problems could become important for ADC in the future.

The contribution of the ADC to the CO<sub>2</sub> problem can be viewed in twin forms. On the one hand, we can document the direct contribution of the ADC to CO<sub>2</sub> emissions. In addition, we can examine the rate of deforestation in ADC and comment on the implied reduction of the earth's capacity to absorb CO<sub>2</sub>. We take up the second issue first. In section 2.3.3 we comment briefly on the problem of biodiversity loss in this region.

### ***2.3.i. Deforestation***

Table 5 illustrates the dimensions of the problem of deforestation in ADC. It can be seen that the average annual rates of deforestation in Asia are disturbingly high in several countries. With the exception of Thailand, the percentage of nationally protected areas is relatively low in these countries as compared to others where deforestation is still within reasonable limits. Further, Table 6 lists the types of forests that are under threat worldwide. This only goes to reemphasize the fact that the Asian contribution to this problem, although not highly significant at this point in time, is expected to grow in the future<sup>7</sup>. In addition, deforestation contributes very significantly to the problem of land degradation in ADC. According to the Global Assessment of Human-Induced Soil Degradation, of the world's 1.9 billion hectares affected by soil degradation, the largest area (850 million hectares) is in Asia and the Pacific

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<sup>6</sup> As illustrated in Table 17 we show that such countries would be rather keen to join any global initiative whether or not there are any additional and separate side payments, incentives etc.

<sup>7</sup> This would be particularly true for a country like Indonesia that must export its way out of its current economic crisis. One of Indonesia's most important exports is, of course, lumber.

and accounts for 24 % of the land in the region. (See WRI/UNEP/UNDP/WB (1996)). Deforestation directly leads to water erosion of soil (which according to FAO/UNDP/UNEP (1994)) is the most significant reason for land degradation (accounting for well over 61 % of the actual land degradation in the region). Given that this region is home to such a huge and rapidly growing population, existing levels of land degradation are ominous for the future of food security in the area. In addition, deforestation is an important contributor to the loss of biodiversity in the region (section 2.4 below).

### ***2.3.ii. CO2 Emissions***

The role of ADC contribution to the level of direct CO<sub>2</sub> emissions is low at present. This is whether it is measured as per capita or on a cumulative basis. Nevertheless, it does appear that most of Asia is likely to suffer ultimately from the global environmental problems of deforestation and CO<sub>2</sub> emissions. The dimensions of the problem of CO<sub>2</sub> emissions across the world are indicated in the seven tables from Table 7 to 13. Tables 7 to 9 show the dimensions of the problem in Asian countries according to the criteria of kg of emissions per 1987 US\$ of GDP, industrial emissions in kt and metric tons per capita. Tables 10 to 12 show the same information by country groups. Table 13 summarizes the share of different country groups in total world CO<sub>2</sub> emission. It is clear that although the richer countries are still primarily responsible for CO<sub>2</sub> emissions, the countries of Asia (especially the fast growing economies of China, South East Asia and India) are also making fairly large contributions as a total (not per capita). Their contributions are only likely to rise in the future. Thus, while exploring the possibility of reducing CO<sub>2</sub> emissions in ADC through appropriate institutional design is an imperative for the developed countries, it is not without significance for the ADC themselves<sup>8</sup>.

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<sup>8</sup> It should be noted that transboundary air pollution has accompanied economic growth and high energy consumption in ADC. The effects of coal burning (mainly for power generation in thermal power plants) tends to spread over a large area, resulting in acid deposition in areas near the coal burning plants and further away. The accumulation of fly ash adds suspended particulate matter into the air and lead to air quality deterioration.

### ***2.3.iii. Biodiversity Loss***

The continent of Asia contains three of the world's eight biogeographic realms and includes the world's highest (and longest) mountain system, the second largest rainforest complex, and more than half of the world's coral reefs. According to McNeeley et. al. (1990) five of the twelve "mega diversity" countries are in this region. The rainforests of South-East Asia contain 10 per cent of the flora of the world. Asia, as a whole, encompasses two thirds of the world's flora. Almost all the nations in the region (with the exception of Singapore and Brunei Darussalam) depend heavily on direct harvesting from nature. Thus rapid destruction of biodiversity in this region will adversely affect employment opportunities in this region.

This veritable treasure house of flora and fauna is under great threat. This is illustrated in Table 14. The most important reason for this is the drive for increased agricultural production. This has resulted in the loss of genetic diversity. For example, land under rice cultivation rose between 1960 and 1970 by only 25 per cent but production rose by over 77 per cent due to the replacement of traditional varieties with higher-yielding, semi-dwarf varieties. India, for instance, is expected to produce 75 per cent of its rice from just 10 varieties in 2005 as compared to more than 30,000 varieties traditionally cultivated. Terrestrial biodiversity loss in various ecosystems is severe, but is not well quantified. ESCAP (1995) notes that overall habitat losses have been most acute in the Indian sub-continent, China, Vietnam and Thailand. The major contributors to this loss are identified as deforestation, population growth (leading to accelerated rates of land use change), poverty (in conjunction with demand leading to unsustainable consumptive use of "common access resources), the introduction of non-native species (leading to destruction of predator/prey equilibrium) and

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Furthermore, slash-and-burn agriculture leads to haze problems that extend beyond national boundaries. Unfortunately, these phenomena have not been well understood quantitatively so far.

the improper use of agrochemicals (which leads to loss of aquatic species). For instance, fertilizer use rose 74 per cent during 1982-92 from 33.3 million tons to 57.8 million tons (ESCAP (1995)). Use of pesticides, which contribute to enhanced agricultural productivity is increasing rapidly. Holmgren (1994) estimates that 1,800 tone of pesticides enter the Bay of Bengal every year. This has also resulted in contamination of shell and fin fish.

#### ***2.3.iv. A Summing Up***

It appears to be the case that the ADC do not consider international environmental problems such as CO<sub>2</sub> emission, deforestation and biodiversity loss very high on their list of priorities. Rapid economic growth and the environmental problems that have been associated with it seem more important. There is also the perception that since the OECD countries have turned their attention to global environmental problems only after attaining high levels of consumption per capita and solved most of their domestic environmental problems and, are in any case, primarily responsible for global environmental problems. However, as has been outlined above, this view may not persist for long. It is becoming increasingly clear that "global environmental problems" are assuming difficult proportions in ADC as well. CO<sub>2</sub> emissions continue to grow at ever increasing rates in ADC. Deforestation is contributing to soil erosion and, therefore, to a difficult future food situation. The loss of biodiversity will lead to a loss of employment opportunities and so on.

It appears, therefore, that notwithstanding first appearances there exists a window of opportunity to get the ADC interested in a proposal for a WEO. It also appear to be the case that this would best be possible through a mix of making some proposals of the WEO relevant to the interests of ADC and giving them economic incentives to join in. We comment on these possibilities in the next section.

### **3. An Asian Perspective on the WEO**

Our analysis so far indicates that a homogenous undifferentiated view of Asia toward a World Environmental Organization cannot be assumed. Evidently the responsiveness of Asian nations to the idea of a WEO will depend, to a large extent, on the perceived gains and associated costs of participating in such an international agreement. Since the precise nature of these costs and benefits are not precisely known at this point in time, an exercise in determining an Asian perspective on WEO is necessarily speculative. Additionally such perceptions are likely to be tempered by some skepticism from past experience of existing MEA and their failures, outlined in section 3.1.

We first discuss several factors that we think will determine the Asian stance toward the WEO. Surely this would be related to the form of the WEO. A weak version of the WEO that acts as a clearing house for deals on cash transfers from rich countries to ADC in exchange for the latter promising increased protection to their forests and biodiversity would be agreements between two willing partners and the WEO would do no more than facilitating them. Clearly, such an arrangement would not be objected to by the ADC<sup>9</sup>. However, it might be the case that these types of environmental deals, by themselves, would not be able to make much of a dent on global environmental problems. In particular, the questions of issue-linkage and the internalizing of externalities from one such deal to another may not be optimally achieved within such an arrangement. A stronger version of the WEO would, on the other hand, be more effective in addressing pressing global environmental problems. In this context, we argue that there are several reasons (discussed below) why the ADC enthusiasm toward a stronger version of the WEO might be weak. It would then be apparent that if the proposal for such a version of the WEO is to succeed it must address these concerns. The possible contours

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<sup>9</sup> This is what Newell and Whalley (1999) call WEO I.

of the design of a WEO that might satisfactorily address these concerns are then discussed.

### **3.1 Reasons for Lukewarm response of ADC to the proposal for a WEO**

Any proposal for a version of the WEO that goes beyond being merely a clearing house for deals between willing parties, would have to address the following reasons for lack of adequate support from developing countries, particularly ADC. Only when these are satisfactorily addressed can one hope to make sufficient progress in this direction.

#### **3.1. i. *Relevance of WEO to Asian Megacities***

The WEO, as an environmental organization, would have to be seen to be of relevance to the environmental problems of the ADC. By the year 2020, more than half of Asia's population will be in cities. High population density, heavy traffic congestion, and high levels of air pollution and slum proliferation characterize these cities. The traffic related problems range from inadequate infrastructure, low fuel emission standards leading to excessive lead and CO levels and loss of man-hours in slow moving traffic. Since the WEO would be dealing with environmental issues, it would need to demonstrate that it would be able to help ameliorate these problems, either directly or indirectly. Public support<sup>10</sup> for the notion of a WEO within the ADC would be easier to obtain if it can be demonstrated that this organization is addressing not only global environmental problems but also (even indirectly) those that are of more immediate concern for the population in the ADC.

#### **3.1. ii. *A Differentiated Asian View***

In dealing with an Asian response, the WEO would have to address the fact that Asia includes

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<sup>10</sup> It is important to emphasize that public support is essential for the success of the WEO. The essential reason for this can be appreciated by contrasting this with trade policy. Whereas trade policies immediately affect certain groups, there are easily predictable lobbying efforts by exporters, for example. A program of slowing deforestation will have more diffused benefits and will, therefore, need to be supported by a much larger section of the population. The people living around such forests should be willing partners in this process, policing by the state is probably not going to be adequate.

countries that span climatically from tropical to temperate zones, from the poverty stricken economies of South Asia to the high per capita income OECD countries such as Japan and fast growing economies of South-East Asia with well developed domestic environmental management, and from population sizes of a few thousands to more than one billion. Thus it would be incorrect to attribute an undifferentiated and homogenous Asian view on the WEO. In the organization of a WEO room would have to be found to accommodate different points of view and the notion of a WEO would have to be found relevant by countries with very different environmental problems and conflicting interests (for example in international trade) in the global arena.

In operational terms this means that the WEO, with its primary focus on global environmental issues, would have to accommodate the legitimate environmental/economic concerns of a very differentiated continent. Thus issue-linkage in the area of trade and environmental negotiations, for example, would have to be quite detailed and encompass many products and services if it is to appeal to the ADC.

### ***3.1. iii. Non Global Concerns and Relevance to the Failure of Policy Regime in ADC***

The addressing of the perceived environmental problems of ADC is made more complex by the fact that many of these environmental problems are really failures of policy operative in other sectors. For example subsidies in the use of fertilizers and pesticides lead to problems of soil degradation and salinity due to excessive use. Similarly water subsidies lead to depletion of the water table and desertification. Fuel subsidies, especially on diesel, lead to overuse and traffic-related problems. Policies and laws regarding management and ownership of forests, land, water and fisheries have led to very severe manifestations of the problem of the commons. Many laws have a colonial legacy, wherein the ruling government had the sole

rights to the produce of the forests and fisheries, and to that extent their management suffered from inadequate personnel, lax implementation of laws, and a generally anti-people stance. In fact it would not be too much of an exaggeration to suggest that some of the major environmental problems of ADC need to be tackled not as environmental problems but as problems of wrong pricing, tariff and tax policies, failure of urban planning and so on<sup>11</sup>.

Ideally these problems should be dealt with at their point of origin. This may require harmonization of tax and subsidy policies, better urban planning, the use of pricing to reflect environmental priorities and relative scarcities through say full marginal cost pricing and so on. The pursuit of such policies might entail some hardships most notably for the poor in the short run. It should be remembered that, in many ADC, direct tampering with the price mechanism is one of the most significant ways of redistributing incomes. Examples include food subsidies for the poor and input subsidies to farmers. These policies would require funds in the short run and may involve some costs (for example, when subsidies are reduced) especially for poorer sections of society. If the WEO is to carry credibility in the ADC, it must be seen to be addressing some environmental problems that are of more immediate concern than CO2 emissions. In other words, it must find some way of making the aforementioned transition in tax/pricing and other policies relatively easy. This may require transfer of technology and expertise, credit on easy terms, help in the design and targeting of direct subsidies to the poor to replace tampering with the price mechanism and so on. Since it is being argued that the design of a successful WEO would involve cash transfers to developing countries in lieu of their lowering CO2 emissions or deforestation rates, these transfers could ideally be tied to the

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<sup>11</sup> In a background paper the CTE has itself argued that in well-functioning market-based economies, prices register the relative scarcity of resources and consumer preferences and help allocate resources efficiently. This resource allocation role is undermined if prices do not reflect environmental concerns as they do not in the context of many ADC. "Distorted prices obscures the abundance of underutilized environmental resources, contribute to the excessive depletion of exhaustible resources, generate new environmental problems, and contribute to the excessive use of environmentally damaging inputs". See WTO (1999).

price and tax reforms of the type discussed above. Such a policy package would involve reduction of global and local environmental problems as well as increased efficiency through price and tax reforms as well as more effective redistribution in favor of the poor in the ADC<sup>12</sup>. Hence, there would be direct and indirect benefits both to the global community as well as to the poor in the developing countries. This would substantially improve the appeal of the WEO.

Most environmental problems of ADC would fall in the category of local, or at best, bilateral problems. These include urban congestion and air pollution from industrial effluents and vehicle emissions; soil erosion; overgrazing; desertification; water pollution from raw sewage and runoff of agricultural pesticides since tap water is not potable in many countries; huge and rapidly growing population overstraining natural resources. Even in the relatively affluent East Asian economies, urban congestion and air pollution remain as pressing concerns. Thus global concerns such as CO<sub>2</sub>, deforestation, ozone and biodiversity do not seem to have manifested as much in these countries. Thus their enthusiasm about a WEO purely focused on global issues, seen as a primarily OECD concern is expected to be muted. If however some of the local concerns are also bundled in the WEO agenda, this agenda is likely to garner some support within ADC.

### **3.1. iv. *Asymmetric Treatment Under GATT and WTO***

There is a general perception among ADCs, especially the South Asian economies, that provisions of Uruguay round of GATT, (which had an unprecedented bigger agenda than mere tariff reductions as in earlier GATT rounds), and which allowed departures from free trade principles were applied asymmetrically to developing countries including the ADCs. In

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<sup>12</sup> A number of studies have found that direct and targeted subsidies are better ways of subsidizing the poor than tampering with the price mechanism. See, for example, Stuijvenberg (1996).

particular the environmentally motivated exceptions, which earlier GATT rulings had either declared illegal or outside its jurisdictions, were being applied and amounted to de facto nontariff barriers (NTBs).

A case in point is Article XX, although to date there is not much evidence that it has been applied substantially against ADCs. Article XX defines environmental exceptions to GATT principles, as (quoted directly):

"Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures:

- (b) necessary to protect human, animal or plant life or health;
- (g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption. . ."

The ADC are aware that Article XX under GATT and its subsequent inclusion in the WTO charter allows a country to depart from the principle of free trade to protect domestic human, animal and plant life, health and safety. This has led to considerable pressure from the developed countries to bring the environment more directly into the WTO's agenda. They have advanced the following reasons in support of this. First, there is the argument that discrimination against products that harm the environment should be allowed. Second, it is argued that the use of low environmental standards to improve a country's competitive advantage constitutes eco-dumping amounting to unfair trade practices and should be prohibited. Third, there is the argument that if trade restrictions are imposed to enforce environmental goals, these trade restrictions should not be challenged under multilateral rules.

Since developing countries perceive themselves at the receiving end of GATT XX, they feel that inclusion of environmental concerns into GATT/WTO has served the cause of

the developed countries largely. If the WEO is to succeed it must carry the conviction that it will not be used for partisan purposes by the developed countries<sup>13</sup>. This would be particularly important in view of the fact that the environmental assets that the WEO would try to protect lie predominantly within the geographical boundaries of developing countries, some of them in Asia.

In some cases the Trade Related Intellectual Property Rights (TRIPS) Agreement has also become an important bone of contention. For example, with respect to technology transfer, patents are perceived as increasing the difficulty as well as the costs of obtaining new technologies. Such technologies may be required either due to changes agreed under certain MEA (such as the Montreal Protocol) or to meet environmental requirements in export markets. Further, there has been an increasing concern for the conservation and sustainable use of biodiversity. The rapid progress in the area of biotechnology has meant that greater importance is attached (by the richer countries) to easy access to genetic resources. Developing countries (many of them ADC) are the depositories of such resources. They may view the patenting agreements on genetic processes initiated by the richer countries as infringements upon their natural resources if sufficient compensation is not given them.

### **3.1. v. *The Matter of Precedent***

In light of the arguments in the previous section, skepticism about WEO would appear to grow if one were to judge matters on the basis of the precedents set by earlier MEA. Some of the MEA had provision of “aid in exchange for compliance”. A notable example is that of the

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<sup>13</sup> Having said this, however, it should be recognized that most of the cases that have so far been considered within the ambit of Article XX have involved only developed countries. Three cases have involved developing countries. In the case of the Mexican tuna (1991) and the India-Malaysia-Pakistan-Thailand shrimp case (1997) the WTO appellate ruled in favour of the developing countries and against the developed country (the US in both cases). Only in the case of Thai cigarettes (1990) has the appellate ruled against a developing country. But the developing country harbour the feeling, justified or not, that Article XX has the potential of being used against them. Part of this arises from the US unilaterally taking action in all three cases without going through the WTO.

Montreal Protocol. The Montreal Protocol on substances that deplete the ozone layer is an international agreement that is being enforced since January 1, 1989, binding more than 70 countries to a timetable for phasing out the production and consumption of controlled substances known to damage the earth's ozone layer. Developing countries whose per capita consumption of the CFCs remains below .3 kgs (the so-called Article 5 countries), are granted a grace period of 10 years for the phasing out. For a developing country such as India, almost 75% of its production are for exports, mainly to LDC's. The growing use of refrigerants, and an expanding middle class (estimated to be around 200 million) means that even domestic demand for CFC using products is increasing. There does not seem to be any large-scale switch over to ODS substitutes, especially in refrigeration and air conditioning. Unlike OECD countries there is also no evidence of pressure from consumers on producers of refrigeration appliances to switch to "greener" technologies. The so-called "positive incentives" of the Montreal Protocol, i.e. technology transfer and aid is also not forthcoming in a big way. Hence, developing countries would be wary of yet another environmental agreement, even if it is a mega agreement.

### **3.1. vi. *The Costs of Compliance***

It is pertinent to inquire about the costs to the ADC of complying with the strictures of a potential WEO. The most immediate costs would be felt in terms of loss in economic growth. Economic growth, however, is of the most pressing concern to these countries for poverty reduction. The ADC face an environment growth tradeoff within their boundaries. With a WEO in place, *ceteris paribus*, this tradeoff will get further biased against growth.

Estimating even the potential loss due to reduction in CO<sub>2</sub> emission in Asia is hard. A complete answer to this would depend upon the policy measures to be adopted in future to

switch among alternative sources of energy. For example, coal based energy source is more carbon intensive than oil based source. A recent study by Xepapadeas and Yiannanka (1997) estimate CO<sub>2</sub> benefit functions as long run equilibrium relationships using cointegration methods. They find the elasticity of GDP with respect to carbon emission to be 0.468 for India and 0.201 for China<sup>14</sup>. Thus, for a 20 per cent reduction in CO<sub>2</sub>, the GDP loss might be about 9 percent for India and about 4 per cent for China. These might be taken as the maximum possible loss since this calculation assumes that CO<sub>2</sub> reduction is possible only through reduction in level of economic activity. Options to adopt energy efficiency measures as well as to switch to other sources of energy would be available in practice with the introduction of emission constraint in the design of development policy. These would clearly not be reflected in the past data. Another study for India that allows for switching between alternative sources of energy has estimated that transfers amounting to about 3 per cent of India's GDP would be sufficient to compensate the loss arising from a 20 per cent reduction in CO<sub>2</sub> from a business as usual scenario<sup>15</sup>. Zhang (1998) develops a dynamic, recursive computable general equilibrium model for China to analyze the implications of reductions in CO<sub>2</sub> emission. First, he comes to the important conclusion that with business as usual CO<sub>2</sub> emissions for China in 2010 would be 2.46 times the level in 1990. If one wants a 20 to 30 per cent reduction in this

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<sup>14</sup> The elasticity estimates for other regions in this study are 0.678 for Western Europe, 0.496 for Latin America and 0.581 for North America.

<sup>15</sup> Parikh, Panda and Murthy (1995) examine the impact of CO<sub>2</sub> reduction for India in an activity analysis based framework that permits choice of technique among various sources of energy production with different carbon emission implications. In one set of the experiments, they examine impact on Indian economy of imposition of CO<sub>2</sub> constraints over the business-as-usual scenario spreading over 25 years starting with 1990. They find that India's GDP loss would be of the order of 2.3% for the terminal year of the 25-year period if the CO<sub>2</sub> constraint of 20% reduction operates on a cumulative basis. On the other hand, if CO<sub>2</sub> constraint of 20% operates on an annual basis, GDP loss rises to 3.6%. Moreover, the effects are nonlinear: GDP loss nearly doubles for 30% reduction in CO<sub>2</sub> over the business-as-usual run. They then find out the level of compensation required in the form of additional capital flows to neutralize the loss in welfare due to carbon reduction of 20% on a cumulative basis. The results indicate that foreign inflows ranging between 1.7 and 2.8% of India's GDP could meet the cumulative CO<sub>2</sub> reduction of 20% without sacrificing welfare (in terms of consumption profile ) over the business-as-usual scenario.

level (relative to the predicted emission in 2010 (not 1990)) the loss would be 1.5 per cent to 2.8 per cent of the GDP in 2010 (not 1990)). The welfare loss in Hicksian terms would be comparable. This loss rises at a rising non-linear rate as emission cuts are increased. Thus, at a conservative level, the extent of compensation could be expected to vary approximately between 3 to 9 per cent of GDP for the major developing countries of Asia: China and India. This is a huge amount and calling for sacrifices of this magnitude, without compensation, from such poor countries seems not only wrong but also impractical.

It should be remembered, however, that most countries would suffer in the long run to some extent by global warming of green house gases. Thus, there would in general be a cost of not joining a coalition aimed at controlling carbon emission. A country would resort to long term free riding only when the benefit-cost ratio of remaining outside a coalition is higher compared to the ratio for joining it. Xepapadeas and Yiannaka (1997) thus note that even China and India would gain by voluntarily joining a coalition that aims at controlling carbon emission at 1990 level over a 100-year time horizon, while Latin America needs to be persuaded through compensation. For several developing Asian economies, the compensation mechanism we touched upon earlier might be needed for a shorter duration of one generation or so, assuming, of course, that the earth can wait for so long to control CO<sub>2</sub> emissions.

### **3.1.vii. Existing Trade and Environment Linkages**

It is apparent that, from the viewpoint of the developing countries, the inclusion of environmental clause, labor and social clause and technical barriers to trade under the GATT rules are all applied to protecting the interests of OECD countries and used to justify non-tariff barriers against developing countries. Furthermore there are hardly any provision for positive sanctions as a reward for greater compliance. For example granting of most-preferred-nation

status, or preferential access for export markets is not automatically granted, but negative sanctions are put into effect automatically and immediately. For developing countries, which are dependent on exports of textiles, leather and timber products, a trade-environment linkage with both positive and negative sanctions is important. If the WEO takes on the responsibility of implementing these sanctions, and is authorized to co-ordinate with WTO, its chances of acceptance by the developing countries would be enhanced.

### **3.1.viii. *Problems of Implementation***

A significant part of success in the environmental initiatives has come because of the pressure of "user groups". Examples include Greenpeace, eco labeling in Germany because of peer group pressure and so on. At the present point in time, the pressure for an organization to deal with global environmental problems comes essentially from groups within the OECD groups. Since the benefits of initiatives in this regard will accrue throughout the world, it is important that public opinion be built in its favor in ADC as well. There will have to be considerable education of the public in this regard in these countries, moreover any proposed WEO must establish its credibility as an organization genuinely interested in the problems and welfare of the people in developing countries.

This burden of the WEO may be made somewhat easier by the fact that, once the ADC sign on, adhering to the terms of the WEO would become an international commitment for them. This would add pressure on ADC governments to comply. In addition if the WEO can align itself with NGOs within the ADC it can help monitor progress made by ADC governments in regard to adhering the international standards set as well as making progress in ameliorating domestic environmental problems. This could be one way of keeping a check on progress made on the domestic environment front by recalcitrant ADC governments<sup>16</sup>.

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<sup>16</sup> It is interesting to note that the CTE of the WTO has not favored the participation of NGO in their

In sum, then, it appears that in the case of ADC it would be difficult to separate the environmental and development agendas. An organization like the WEO would have to be relevant to addressing this indivisibility if it is to be successful. It has to recognize that there are costs and benefits of the ADC joining an international environmental protection program. In the section below we sketch the broad contours of how the WEO might go about addressing this issue.

### **3.2 Toward the Design of an Acceptable WEO**

In the previous section we have highlighted various factors which reduce the incentives of ADC to join a proposed WEO. In some ways the fundamental hurdle in the formation of an organization such as WEO, is that the benefits of such a coalition formation are global in nature, whereas the costs are borne individually. Thus the appropriate design of a WEO is essential to its eventual success. In this section we address the issue of the reasons that might well make a WEO feasible.

#### **3.2.i. Demand for WEO in ADC**

What would be response of ADC to an arrangement like WEO? Will there be demand for it by these countries? The demand for WEO by ADC will surely depend upon its design and an assessment by the ADC of potential gains and losses from the WEO.

The case for environmental agreements among sovereign countries has been argued and debated widely, particularly during the 1990s following the 1992 Rio conference and 1994 Montreal Protocol on CFC. International agreements by large number of countries on sole consideration of emission reduction lack precise quantitative targets and deadlines, as in case of the Climate Change Convention. Precise commitments by small group of like minded

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deliberations. The main argument in favor of this is the primary responsibility for informing the public and establishing relations with NGO lies at the national level. In the case of trade agreements, there are well known pressure groups which would pressurize national governments. In the case of environmental agreements the benefits would be much more diffused. Hence the NGO could play a more important role in garnering public support and monitoring the progress in policy formulation of national governments.

countries would run into the problem of free riding by many countries on a global externality. Reluctant countries could be persuaded to join global agreements provided some kind of compensation mechanism is built into environmental preservation targets. Obviously, the basic condition for a country to sign an agreement like WEO is that its overall welfare must increase with participation than with nonparticipation. The participation cost could be compensated in several forms: (a) side payments through financial transfer, (b) welfare increasing trade concessions, (c) enhancing investment flows, (d) technology transfer.

We need to discuss the strength and weakness of each of these alternative mechanisms in the ADC context. Some of these mechanisms, i.e., (a) and (d) above could well be directed towards local pollutants which occupy priority in developing countries in lieu of action in the global environment front.

Well-designed transfer mechanism can guarantee that no country refuses to sign the agreement because the loss of net benefit of not signing the agreement. However, it is not sufficient to guarantee net gain by transfers to induce the participants to sign an international agreement. Incentives to free ride must also be offset to make the agreement stable. Stability would require that there is no incentive for either the developed or developing countries to leave the WEO. Such an arrangement would be self-enforcing. The presence of asymmetries across countries and the incentive to free ride makes it difficult for self-enforcing treaties to exist. In any case, more than one instrument needs to be used to tackle multiple objectives. Hence, the need for issue linkage agreements in addition to transfers.

### ***3.2.ii. Importance of Incentives***

The WEO must be based on the following principles, if it has any serious chance of acceptance:

1. It must be a voluntary coalition
2. There must be incentives not only to join, but also to stay
3. There must be a mechanism for binding commitments from all the signatories. This is related to the issue of enforcement of the charter of WEO.
4. There must be a good monitoring mechanism, even in the absence of conflicts.

### **3.2.iii. Issue Linkage**

The analysis above is predicated upon the assumption of the rather extreme option of the cuts in CO<sub>2</sub> emission being implemented all at once and immediately and also that a more demanding versions of the WEO is in place. It might well be the case that the above calculations may somewhat exaggerate the inducement needed by ADC countries to participate in the WEO. The following arguments can be made in support of this.

(i) Once some major countries have joined, there will be pressures on others to join. These pressures could be of several forms - both positive as well as negative. First, the members of WEO can apply pressure through trade and other means on the countries outside the purview of the WEO in order to induce them to join. Hence, the question of the viability of the WEO does not mean the design of mechanisms whereby *all* or even *most* countries in Asia are induced to join. As a matter of fact if any two of China, India and ASEAN join, it is hard to see how the rest of ADC can stay out of the WEO.

(ii) Second, countries outside the WEO would be identified as those that are responsible for a crisis. This would imply moral and international pressure on them to reconsider.

(iii) Third, one can appeal to some principle of common but differentiated responsibility. Under the WEO all countries would have a common responsibility to defend the global environment from collapse. However, poorer countries or countries that would stand to lose a considerable amount in terms of lost growth from joining the WEO, could be given longer

time horizons to comply. Also pollution quotas could be made tradable across time.

(iv) Furthermore, most countries would suffer in the long run to some extent by global warming of green house gases. Thus, there would in general be a cost of not joining a coalition aimed at controlling carbon emission. A country would resort to long term free riding only when the benefit-cost ratio of remaining outside a coalition is higher compared to the ratio for joining it.

### ***3.2.iv. Types of Issue Linkage***

Issue linkage in negotiations on the international environment can take various forms. These may include tariff concessions by developed countries in response to reduced carbon emission by LDC supplemented, when necessary, by cash side payments; the threat by the LDC to increase their rate of deforestation unless tariff concessions are made and the rewarding of environmental protection by LDC by developed countries by tariff concessions, the reduction of non tariff barriers in developed countries in response to reduced carbon emission by LDC, writing off of some international debt of LDC by developed countries, targeting FDI flows in response to environmental action taken by the LDC and so on.

In each of these cases, there are two pertinent questions: first, what is the scale of inducement that is possible to developing countries; and, second what is the room for action in these areas (within the aegis of a WEO) over and above what is already promised in the context of other international agreements such as the WTO?

Spagnolo (1996) has argued that when international policy issues are linked together then there is room for positive gains in the case of some linked negotiations, but not all. Clearly this would be possible when the government's objective function is separable in the various targets since the slack in one policy objective can be transferred to another. When policy objectives are substitutes for each other in the government's objective function (say

trade and environment policies) then even when no slack is present linkage might be helpful. However, this would not be the case when policy objectives are complementary (e.g. monetary and fiscal policies).

Bargaining in trade and environment negotiations could be linked so that developing countries can threaten to over exploit their forest cover to induce trade concessions from developed countries whereas developed countries can reward compliance with environmental standards in negotiations on international trade. In a recent paper Abrego, Perroni, Whalley and Wigle (1997) use a global numerical simulation model to show that this kind of linkage is inferior, from the point of view of developing countries, to a situation in which bargaining is accompanied by cash side payments. Hence, we need to pursue the possibility of actual trade concessions (with side payments, if necessary).

Clearly one important issue linkage is with respect to exports from ADC. As ADC grow export expansion is becoming an ever more important requirement. Hence, a tying in of tariff concessions to performance on the global environment front would be one way of inducing participation by ADC. Table 15 below shows the major exports of ADC in the nineties. Table 16 indicates the destination of these exports (and some other characteristics). This table clearly indicates that the developed market economies provide the market for much of the major exports of the ADC. Hence, if tariff concessions are granted by the developed market economies in respect of ADC exports, there is likely to be a favorable impact on growth prospects of the ADC.

It is clear that that while new items like machinery and electronic products have emerged as dominant items in the export basket of several ADC, traditional items like textiles and leather products continue to be major items for several countries. We further learn that textiles exports as a proportion of GDP turns out to be about 7-8 per cent of GDP in ADC

and developed market economies account for about half of the total textile exports from ADC Asia. Thus, the potential gain from textile import liberalization in OECD and other developed market economies could be substantial for ADC Asia. If textile trade is liberalized, the list of countries likely to have large gains includes China, Hong Kong, Korea, India, Bangladesh, Indonesia and Pakistan. In case of liberalization of leather and leather products, Myanmar gets added to this list though Hong Kong would get excluded. Fish and fish preparation is another area where tariff reductions could benefit several ADC Asian.

In Table 17 below we propose a set of countries in Asia that could (hypothetically) join the WEO if trade concessions by the OECD are made in the mentioned areas. As a matter of fact, on the basis of existing trade patterns, it is possible to say that they are likely to join. Since Bangladesh and Maldives are currently under the threat of rising sea levels because of global warming (itself a result of CO<sub>2</sub> emissions) and do not have much forest cover, they could be expected to participate in an international agreement to cut down CO<sub>2</sub> emissions. However, the picture would change in case of other countries in Asia as Table 17 shows.

The quantum of trade concessions in respect of the above areas would be an important ingredient of any package designed to ensure ADC support for a WEO. How much tariff concessions would actually be needed would depend upon form that the WEO might take (Newell and Whalley (1998)). A WEO that performs only the minimal role for coordinating all international environmental agreements may not be difficult to agree to. However, such an organization would have only limited effect. If the WEO is to be at all able act as a conduit for ameliorating global environmental problems, it will have to make trade and environmental linkages to address the concerns of developing countries. The question that arises at this point is, then, in the current WTO era is there enough scope for trade concessions from OECD countries to adequately compensate the developing countries for the loss in their potential

output as a sequel to their joining the WEO.

Some authors have argued that developed countries, at present, have very restrictive import regimes for agricultural products and some agro-based manufacturing like textiles. If trade in items like textiles is liberalized, is it likely to help South and East Asia sufficiently?

Table 17 indicates the possible areas where trade concessions might be used to induce developing countries of Asia to join a WEO. Two other steps are needed however. First, we need to know the magnitude of the concessions that would be required to ensure participation by ADC. Second, we would need to know whether concessions of this magnitude are available in the post Uruguay round era. We have already touched upon the magnitude of GDP loss in case of cutting CO<sub>2</sub> emissions by 20 % in the case of India and China in section 2. We now turn to the question of extent of tariff concessions possible in the post Uruguay Round era.

Our answer to this question must necessarily be taken as tentative. Safadi and Hecht (1996) present some interesting evidence which may shed light on this issue. First, the share of non-energy primary imports from LDCs to the OECD has been declining over time (from above 70 per cent in 1980 to a little above 50 per cent in 1994). This trend may be expected to continue in the future. In any case, the share of ADC in this group may be smaller still.

Two points then become relevant at this stage. First, has the phenomenon of tariff escalation (higher tariffs as we go downstream in the chain of production) in the past hurt developing country exports of processed goods so much that trade patterns are biased so overwhelmingly toward primary goods? Second, if yes, has the Uruguay Round been able to make a dent on this problem? If yes, then is there sufficient scope for tariff reduction for processed goods which might give adequate compensation to LDCs for cutting down on carbon emissions?

The evidence seems to suggest that most post-Uruguay Round nominal tariffs do not

seem to constitute a major constraint against the further processing and exports of LDC commodities in the aggregate. As a matter of fact, only five commodity processing chains display applied tariff rates of 10 per cent or above for the post Uruguay Round duty. The highest incidence of applied tariffs affected tobacco products, followed by sulphur and manganese, fruits and cocoa. For 31 major categories the post Uruguay Round tariff is less than 5 per cent. This is indicated in Table 18.

It is also worth noting that focusing exclusively on the structure of MFN tariff rates may give a misleading picture. Import duties have declined significantly once account is taken of the preferences LDCs receive in OECD markets through GSP, CBI, Lome Convention and other schemes.

However, the above applies only to nominal tariffs. As is well known, even with low nominal tariffs at the end product stage in a vertical production change, the effective rate of protection may be quite high. Estimates of this for the OECD country imports from LDCs need to be collected to assess the possibility of tariff reduction being enough of an inducement for LDCs to join in and stay in a WEO.

### **3.2.v. Nontariff Barriers**

It might well be argued that under the aegis of the WTO tariff concessions would be available anyway. Hence, the WEO would have to go beyond this, in particular to non-tariff barriers. At present, it may be argued, under the WTO regulations environmental and other arguments are being used as *de facto* non-tariff barriers. It might well be important for the WEO to develop a standardized approach to non tariff barriers and balance genuine social and other concerns of developed countries with the need to provide an incentive to developing countries to use the reduction in non tariff barriers as an inducement for complying with regulations of the WEO concerning global externalities.

The analysis in this section affirms that the scope for tariff reduction as a method of compensating the ADC for reducing CO<sub>2</sub> emissions, except in the two areas of agricultural products and textiles, is rather limited. Furthermore, the point to be focused on is the scope for reduction in tariffs over and above what has already been agreed to within the WTO. Hence, other avenues for compensation to the ADC would have to be contemplated. One such area is nontariff barriers (NTB) to international trade which are pervasive in almost all countries. NTB consist of all barriers to international trade except tariffs and take a wide range of forms. These range from import quotas, licensing of import/export, antidumping and countervailing duties, sanctions and voluntary export restraints to less familiar ones like preference procurement of domestic goods, customs valuation and clearance procedures, copyrights and intellectual property rights. At a broader level, at times any nontariff policy that has a distortionary or discretionary impact on trade and foreign investment could be classified under NTB; for example, immigration policy, foreign investment policy, employment and social security policy and even industrial and taxation policy. There might also be informal barriers associated with administrative procedures, market structures and social institutions. A comprehensive list of major categories of NTBs based on Deardorff and Stern (1998) is given below in Table19.

Because of the wide range of coverage, quantification of NTBs becomes a difficult task. There is no suitable single method of estimation to deal with the entire spectrum of NBTs. Researchers have normally tried to study potentially measurable effects of NTBs.

### **3.2.vi. *Size of NTBs***

Tables 20 and 21 give the frequency ratios calculated as product categories that were subject to NTB expressed as a percentage of total number of product categories in corresponding group. Import coverage ratio in Table 20 is calculated by determining the value of imports

subject to NTB as a percentage of total imports. The NTBs covered in this table include price control measures, finance measures, automatic licensing measures, quantity control measures and monopolistic measures. Table 21 covers only what has been called "core" NTBs, i.e., all NTBs in Table 20 except finance measures and monopolistic measures. The magnitudes of NTBs are large. NTBs, in one form or another, are present in about 23 percent of commodities in USA and European Union. Proportion of imports affected by NTBs are 17% for the USA and 11% for EU. NTBs are not as wide in Japan and Canada with only about 8 and 5 % of respective total imports getting affected.

So far as ADC are concerned the only items 3a to 3d in Table 21 may be relevant. From the perspective of ADCs, there is obviously large scope for negotiations in food and textile products. This opens up the possibility of the WEO exploring the possibility of using phased reductions in NTB to elicit support. To begin with, it could attempt to develop a unified approach to NTB. It could delineate what could and what could not be construed as a NTB and could define the conditions under which a country would be allowed to impose NTB and how tradeoffs between phased reductions in NTB and in CO2 emissions, for example, could be exploited.

### **3.2.vii. *Reductions in International Debt***

Another possibility is to tie reductions in international debt obligations of ADC to their record of compliance with respect to international environment agreements. As Table 22 indicates since many of the poorest countries of the world remain severely indebted, there is some room for this policy initiative. However, this program could involve problems of moral hazard as countries that can count on debt reductions through the process of international environment negotiations, may pursue imprudent monetary and fiscal policies. Similarly, it is hard to see what can be built into the international environment negotiations to stimulate FDI flows into

countries that are complying with international environment standards. It seems to be the case that targeting tariff and non tariff barriers to ADC exports, cash paid as side payments, technology transfer and aid in ameliorating the domestic environment problems of ADC offer the best hope for negotiations on a WEO and building goodwill toward it among the population of the ADC.

#### **4. Conclusions**

Transboundary and international environmental problems are a pressing concern for the global community and call for innovative institutional design to address them. Whereas the developed countries value the international environmental highly they realize that some of the solutions must originate within the geographic boundaries of developing countries, including ADC. The ADC, on the other hand, do not appear to have these problems high on their agendas at least at first glance. More important appear to be economic growth and domestic environmental concerns. However, it is also true that not addressing global environmental problems could hurt, in specific areas, ADC economic growth and their domestic environmental problems. But, the fundamental fact of the indivisibility of the growth and environmental agendas in the ADC has to be faced.

Since the developed countries seem to consider global environmental problems as an emergent issue and since ADC will soon become major contributors to this problem, it would be necessary to have the foresight to conclude a treaty at an early date. This would mean that ADC would have to be persuaded and provided enough incentives to enter into international environmental negotiations and remain committed to this process.

The paper has argued that since ADC have considerable environmental assets, these countries would probably look for linking slowing down the depletion of these assets to other areas of linkage to the developed countries. In particular, this would include international

trade, transfer of technology and, perhaps, direct transfers. Since this linkage would be very wide ranging, it would be necessary to exploit any positive external effects that might flow from some treaties and avoid duplication and conflicts in others. It makes sense, therefore, to have a WEO to coordinate these efforts.

But what version of a WEO is to be opted for is, at this point in time, an open question. Clearly a mild version of a WEO that brings all environmental treaties under one umbrella, provides technical know-how and facilitates negotiations would be innocuous enough and, therefore, acceptable. However, such a WEO would also not be very effective in controlling the problem of global externalities, assuming that this problem is of an emergent nature. Stronger versions of a WEO would not be acceptable to ADC unless issue linkage of the sort discussed here becomes a reality. Before that is achieved, given the past experience of ADC with MEA, the WEO would have to build considerable credibility as an organization that is truly interested in global environmental problems, is sensitive to the needs of the ADC and is not acting as a mechanism for imposing the will of the developed countries on the ADC.

This is a challenging task. But there seems scope for achieving it.

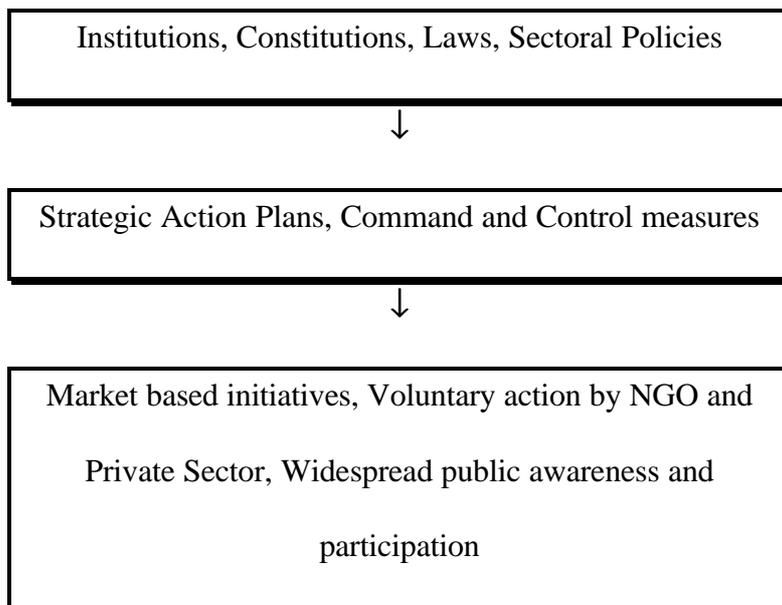
## Appendix

### Environmental Policies and Management in Asia

The policy response to environmental concerns can be said to consist of the following increasingly comprehensive strategic components.

1. setting up of constitution, laws and institutions
2. devising command and control measures
3. enforcement of laws and monitoring compliance
4. drafting a national action plan
5. initiating market based initiatives
6. emergence of voluntary (self interested) action by private sector
7. widespread public awareness and participation
8. regional environmental co-operation

These can be portrayed diagrammatically as:



The policy responses to environmental issues in different countries and regions of the world can be visualized to have proceeded in three stages as per the above diagram. These stages essentially also reflect stages of economic development and could be seen as the path traced by countries and regions as they move from being underdeveloped and agrarian economies to more affluent and industrialized economies. The evolution of these policies reflects a greater awareness of the role of incentives, and a greater acceptance of international mandates and standards.

Typically these responses focus first on institutional and constitutional issues and then on the implementation issues which sometimes means enforcement of often disjointed sectoral environmental legislation and regulations. Subsequent actions concentrate on developing comprehensive strategic and integrated plans for the protection of the environment, such as National Environmental Action Plans, and an array of concerted command-and-control measures. Later, attention is given to introducing market-based incentives research, creating conducive environments for voluntary, flexible and innovative actions and stimulating increased participation and commitment by all sectors of society.

The progression through the various stages of policy responses is often constrained in developing countries by weak institutions, insufficient human and financial resources, ineffective legislation, and a lack of compliance monitoring and enforcement capabilities. In other instances, environmental institutions and regulations have been introduced at the request of external forces, such as international conventions and strategies, donor requirements, and structural adjustment programs and are only later internalized by the countries involved.

### *Typical Institutional Arrangements and Features of Current Typical Institutional Setting*

The apex body in charge of economic planning in various countries is typically a Ministry or a Planning Commission or Board. The institutions responsible for implementing the plan, and also environmental policies may be at the central, state or provincial level. The typical institutional setting can be described as:

- a. Highly differentiated and compartmentalized
- b. Centralized, Dependence on command and control
- c. Proliferation of laws and lax monitoring
- d. Poor human resources
- e. Administrative and Ecological boundaries do not overlap

In the context of South Asia, while there has been increased awareness about the environmental consequences of economic and developmental activity, actual policy, legal and institutional responses have been relatively recent. Policy responses to environmental issues in different countries and regions of the world have proceeded in three stages. These responses focus first on institutional and constitutional issues, and then on the implementation issues, which sometimes means enforcement of often disjointed sectoral environmental legislation and regulations. Subsequent actions concentrate on developing comprehensive strategic and integrated plans for the protection of the environment, such as National Environmental Action Plans, and an array of concerted command-and-control measures. Later, attention is given to introducing market-based incentives, creating conducive environments for voluntary, flexible, and innovative actions, and stimulating increased participation and commitment by all sections of society.

We can reach the following broad conclusions about the environmental regime of the

ADC.

1. Environment policy-making institutions are typically Ministries, Departments or specially designated Commissions, whereas these policies are executed by separate agencies or departments who report to the policy-making bodies.
2. Participation of non-or semi governmental bodies in environmental planning is relatively recent and relatively rare.
3. In many countries the Environment Ministry is on par with other line ministries, and historically the "environment" has been treated as a "paper" in Plan documents. However the emergence of entities such as Inter Ministerial Coordination Committees (Sri Lanka), or Environment Protection Council (Nepal), or Environment Protection Agency (Pakistan), has meant that a more integrated and comprehensive treatment is now given to incorporating environment in economic planning and decision making. In many countries recently, there have been initiatives of a National Environment Action Plans (e.g. Nepal, Bangladesh), that have been supported by often-omnibus legislative acts. Environmental considerations in policy making now have both a proactive as well as reactive element. The proactive element consists of an environmental impact assessment (EIA) which is required for all major economic projects. Thus environmental clearance is now required for a very broad range of economic activity. There is an increased effort to involve stakeholders, and greater public participation in the EIA process in many countries (e.g. Sri Lanka, India).
4. Another instrument of the proactive element is the use of economic incentives in environmental policy. This may take the form of tax credits for pollution abatements, markets for pollution permits, encouraging recycling and so on. It may also include incentives for economic activity to shift to environmentally and ecologically less vulnerable

and fragile areas.

5. The reactive element of environmental policies take the form of implementation of laws aimed at curbing environmentally damaging activity. By reactive is meant that these policies get triggered *after the fact*. Success of reactive policies require effective implementation of laws which in many countries may have been on the books for several decades.
6. There is increasing evidence of imposition of environment penalties, taxes and a move toward "polluter pays" principle.
7. Environmentally motivated judicial activism is evident in some countries. Also there is willingness to accept "clean environment" as embodied in the constitutionally granted fundamental rights (e.g. Bangladesh).
8. There is considerable linkage between trade and the environment in many countries in this region. The impact of trade on the environment is mainly due to increased export activity leading to toxic effluents and diminished air and water quality. Examples of these are from the leather, paper and cotton textile industry. The impact of environmental legislation on trade occurs mainly due to restrictions and standards imposed by the importing country. There is also considerable influence of multilateral environmental agreements to which most countries in the region are already signatories. Some of these agreements which have had some impact are the Montreal Protocol, the Convention on Trade in Endangered Species (CITES) and Convention on Trade in Hazardous Wastes. Success of monitoring and enforcement of environmental policy has depended on factors such as the availability of trained personnel and appropriate technologies; participation of NGO's as watchdogs, presence of an activist judiciary (India); concentrating on only the most acute and critical areas for monitoring. Effective monitoring also calls for greater decentralization.

9. Weak enforcement of laws and statutes is a characteristic of the region. Empowering the judiciary, greater stakeholder participation in matters of environmental concern and greater monitoring by concerned NGOs are three recent requirements that would seem essential on an examination of some environmental issues in the region.

### ***Strengths and Weaknesses of Existing Institutional Arrangements***

The integration of environment and economic development has been an important agenda for most international agencies and inter-government bodies since the 1980's. Countries in the Asia region make use of national development plans, prepared by their respective economic planning authorities to take environmental dimensions into account. National plans now typically incorporate environmental policies and resource management principles in an effort to reach sustainable development.

Environmental problems are linked with population and economic growth, although it has been argued that long term economic growth actually improves environmental quality. Environmental planning is an important component of socio-economic development and makes use of environmental laws and institutions, education and training, public information, awareness and participation and the continually evolving (green) environmental technologies.

### ***Planning and Coordination at the National Level***

Incorporating environmental concerns in economic planning and decision making means acknowledging the fact that maintenance of quality of the environment and sustainable development is one of the objectives of the planning process. In fact a national action plan which takes cognizance of environmental concerns is becoming a norm in many countries.

Key national and provincial level institutions have been set up in almost all countries of the region. These provide an input into the planning process. For example in

Nepal, the Environmental Protection Council headed by the Prime Minister acts in concert with the Ministry of Planning and Environment. Pakistan's National Conservation Strategy gets inputs from Conservation Strategies devised for the provinces. In India, the preparation of the National Plan by the Planning Commission entails a significant Environment Component. This plan receives inputs from various Ministries. The environmental inputs of various Ministries are coordinated by the Ministry of Environment and Forests (MOEF). In Bangladesh a National Environment Management Action Plan (NEMAP) was launched. Also a National Environment Committee was convened under the Prime Minister. There is also an attempt to co-ordinate policy making and regulatory functions in NEMAP.

Techniques and components of environmental management and planning, in ADC include the following: (a) Environmental Impact Assessment (EIA) (b) Environmental Risk Assessment, and (c) Environmental Audit and Accounting. EIA has become the single most widely used requirement in the Philippines, Thailand and all countries of South Asia. The size and nature of the project and the environmental sensitivity of the surrounding area are important determinants of the necessity of EIA in these countries and is usually required for projects which are likely to cause significant effects on the environment. An important question is who is to decide whether EIA is necessary, and if an EIA is submitted, whether it has been done competently, and if so done, whether the project can be cleared? Such a competent body could be at the central level, or regional/provincial level or could be sector specific. Different countries in the region have adopted different strategies for EIA.

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**Table 1:**  
**Economic Indicators of ADC**

Country	Popn (mil)	Popn growth rate**	GNP per capita*	GNP/c PPP adjusted*	Exports (USD bn)‡	Imports (USD bn)‡	Level of income
Afghanistan	.	.	.	.	.	.	L
Bangladesh	120	2.2	240	1380	3.9	6.9	L
Cambodia	10	2.9	270	.	.	.	L
China	1200	1.3	620	2920	182.7	142.4	L
Hong Kong	6	1.4	22990	22950	180.7	198.6	H
India	929	2	340	1400	33.9	39.7	L
Indonesia	193	1.8	980	3800	53.4	41.6	M
Japan	125	0.5	39640	22110	421	339	H
North Korea	24	1.8	.	.	0.91	1.95	M
South Korea	45	1.1	9700	11450	129.8	150.2	H
Lao PDR	5	2.8	350	.	.	.	L
Malaysia	20	2.5	3890	9020	78.2	78.4	M
Mongolia	2	2.6	310	1950	.	.	L
Myanmar	45	1.9	.	.	.	.	L
Nepal	21	2.5	200	1170	0.42	1.6	L
Pakistan	130	3	460	2230	8.2	11.4	L
Papua N. Guinea	4	2.2	1160	2420	.	.	M
Phillippines	69	2.3	1050	2850	25	34	M
Singapore	3	1.8	26730	22770	125.6	133.9	H
Sri Lanka	18	1.4	700	3250	4.1	5.4	L
Thailand	58	1.5	2740	7540	51.6	73.5	M
Vietnam	73	2.1	240	.	7.1	11.1	L
Taiwan	.	.	.	.	122.1	114.4	.

Key: \*\* growth rate 1980-1985; \* in 1995 USD; † expressed as percentage of population; L, M, H are levels of income of country; ‡ data on exports and imports from World Factbook, CIA

Source: World Bank

**Table 2:**  
**Social Indicators of ADC**

Country	Life Expectancy ‡	Infant Mortality‡	Literacy‡	Access to safe water†	Access to sanitation†	Level of income	Human Dev. Index (HDI)
Afghanistan				.	.	L	
Bangladesh	56.66	97.67	38.1	83	30	L	0.371
Cambodia				13	.	L	0.422
China	69.59	45.46	81.5	46	.	L	0.65
Hong Kong	78.8	5.24	92.2	.	.	H	0.909
India	62.9	63.14	52	63	29	L	0.451
Indonesia	62.49	59.23	83.8	63	55	M	0.679
Japan	80	4.1	99	95	85	H	0.94
North Korea	51.32	87.83	99	100	100	M	0.766
South Korea	73.95	7.79	98	89	100	H	0.894
Lao PDR				41	30	L	0.465
Malaysia	70.36	22.45	83.5	90	94	M	0.834
Mongolia				54	.	L	0.669
Myanmar				39	42	L	0.481
Nepal	57.89	75.98	27.5	48	22	L	0.351
Pakistan	59.07	93.48	37.8	60	30	L	0.453
Papua New Guinea				31	26	M	0.507
Phillippines	66.35	34.56	94.6	84	75	M	0.677
Singapore	78.49	3.87	91.1	100	100	H	0.896
Sri Lanka	72.55	16.33	90.2	57	66	L	0.716
Thailand	69	30.82	93.8	81	87	M	0.838
Vietnam	67.74	36.02	93.7	38	21	L	0.56
Taiwan	76.82	6.34	86				

Key: ‡ Data from World Factbook, CIA; † expressed as percentage of population; L, M, H are levels of income of country; HDI data from Human Development Report

Source: World Bank

**Table 3:**  
**Pressing Environmental Concerns of ADC**

<b>South Asia</b>	
Afghanistan	soil degradation; overgrazing; deforestation (much of the remaining forests are being cut down for fuel and building materials); desertification
India	deforestation; soil erosion; overgrazing; desertification; air pollution from industrial effluents and vehicle emissions; water pollution from raw sewage and runoff of agricultural pesticides; tap water is not potable throughout the country; huge and rapidly growing population is overstraining natural resources
Iran	air pollution, especially in urban areas, from vehicle emissions, refinery operations, and industrial effluents; deforestation; overgrazing; desertification; oil pollution in the Persian Gulf; inadequate supplies of potable water natural hazards: periodic droughts, floods; dust storms, sandstorms; earthquakes along the Western border
Pakistan	water pollution from raw sewage, industrial wastes, and agricultural runoff; limited natural fresh water resources; a majority of the population does not have access to potable water; deforestation; soil erosion; desertification natural hazards: frequent earthquakes, occasionally severe especially in north and west; flooding along the Indus after heavy rains (July and August)
Bangladesh	many people are landless and forced to live on and cultivate flood-prone land; limited access to potable water; water-borne diseases prevalent; water pollution especially of fishing areas results from the use of commercial pesticides; intermittent water shortages because of falling water tables in the northern and central parts of the country; soil degradation; deforestation; severe overpopulation
Bhutan	soil erosion; limited access to potable water
Sri Lanka	deforestation; soil erosion; wildlife populations threatened by poaching; coastal degradation from mining activities and increased pollution; freshwater resources being polluted by industrial wastes and sewage runoff natural hazards: occasional cyclones and tornadoes
Nepal	the almost total dependence on wood for fuel and cutting down trees to expand agricultural land without replanting has resulted in widespread deforestation; soil erosion; water pollution (use of contaminated water presents human health risks)
<b>East and South East Asia</b>	
Hong Kong	air and water pollution from rapid urbanization
Singapore	industrial pollution; limited natural fresh water resources; limited land availability presents waste disposal problems; seasonal smoke/haze resulting from forest fires in Indonesia
Taiwan	air pollution; water pollution from industrial emissions, raw sewage; contamination of drinking water supplies; trade in endangered species; low-level radioactive waste disposal
South Korea	air pollution in large cities; water pollution from the discharge of sewage and industrial effluents; drift net fishing
North Korea	localized air pollution attributable to inadequate industrial controls; water pollution; inadequate supplies of potable water
Thailand	air pollution from vehicle emissions; water pollution from organic and factory wastes; deforestation; soil erosion; wildlife populations threatened by illegal hunting
Malaysia	air pollution from industrial and vehicular emissions; water pollution from raw sewage; deforestation; smoke/haze from Indonesian forest fires
Indonesia	deforestation; water pollution from industrial wastes, sewage; air pollution in urban areas
Vietnam	logging and slash-and-burn agricultural practices contribute to deforestation and soil degradation; water pollution and overfishing threaten marine life populations; groundwater contamination limits potable water supply; growing urban industrialization and population migration are rapidly degrading environment in Hanoi and Ho Chi Minh City

Philippines	uncontrolled deforestation in watershed areas; soil erosion; air and water pollution in Manila; increasing pollution of coastal mangrove swamps which are important fish breeding grounds
Japan	air pollution from power plant emissions results in acid rain; acidification of lakes and reservoirs degrading water quality and threatening aquatic life; Japan's appetite for fish and tropical timber is contributing to the depletion of these resources in Asia and elsewhere
China	air pollution (greenhouse gases, particulates) from the overwhelming use of high-sulfur coal as a fuel, produces acid rain which is damaging forests; water shortages experienced throughout the country, particularly in urban areas and in the north; future growth in water usage threatens to outpace supplies; water pollution from industrial effluents; much of the population does not have access to potable water; less than 10% of sewage receives treatment; deforestation; estimated loss of one-fifth of agricultural land since 1949 to soil erosion and economic development; desertification; trade in endangered species.

Source: World Factbook 1997, CIA

**Table 4**  
**Selected Multilateral Environmental Agreements (MEA's)**  
**Signed and/or Ratified by Asian Developing Countries.**

Antarctic-Environmental Protocol  
Antarctic Treaty  
Biodiversity  
Climate Change  
Endangered Species (CITES)  
Environmental Modification  
Hazardous Wastes  
Law of the Sea  
Marine Dumping  
Nuclear Test Ban  
Ozone Layer Protection (Montreal Protocol)  
Ship Pollution  
Tropical Timber 83  
Tropical Timber 94  
Wetlands  
Desertification

**Table 5:**  
**The Problem of Deforestation in Asia**

Countries with annual deforestation above 300,00 ha	Total forest Land (1,000 ha)	Annual Deforestation 1981-90		Plantations		
		Area 1000 ha	Deforestation as per cent of total forest land	Up to 1980 (1000 ha)	1981-90 area (1000 ha)	Plantations as percentage of total forests.
India	51,729	399	0.6	18,900	1441.4	2.8
Indonesia	109,549	1,212	1.1	8,750	474.0	0.4
Malaysia	17,583	396	2.0	116	9.0	
Myanmar	28,856	401	1.3	335	27.9	0.1
Philippines	7,831	316	4.0	290	-1.0	-0.3
Thailand	12,735	515	4.0	756	42.0	0.3
Countries with annual deforestation between 100,000 ha and 300,000 ha						
Cambodia	12,163	131	1.0	0	0	0
Lao, PDR	12,173	129	0.9	6	0.2	0
Papua, New Guinea	36,000	113	0.3	43	2.1	0
Vietnam	8,312	137	1.6	2,100	70.0	0.8
Countries with annual deforestation rates less than 100,000 ha						
Bangladesh	769	38	4.9	335	17.5	2.3
Bhutan	2,809	7	0.6	5	0.3	0
Nepal	5,023	54	1.0	80	6.1	0.1
Pakistan	1,855	77	4.1	240	6.0	0.3
Sri Lanka	1,746	27	1.5	198	8.6	0.5

Source: FAO (1993)

**Table 6:****Percentage Of Threatened Frontier Forests At Risk From Various Sources**

Region	Percent of Frontier Forest Under Moderate or High Threat (a)	Logging	Mining, Roads and Other Infrastructure	Agricultural Clearing	Excessive Vegetation Removal	Other (b)
Africa	77	79	12	17	8	41
Asia	60	50	10	20	9	24
North and Central America	29	83	27	3	1	14
Central America	87	54	17	23	29	13
North America	26	84	27	2	0	14
South America	54	69	53	32	14	5
Russia & Europe	19	86	51	4	29	18
Europe	100	80	0	0	20	0
Russia	19	86	51	4	29	18
Oceania (c)	76	42	25	15	38	27
World	39	72	38	20	14	13

Source: Bryant, Nielsen, and Tangle, (1997), p. 17.

Notes: (a) Frontier forests considered under immediate threat, as a percent of all frontier forest assessed for threat. Threatened frontier forests are places where ongoing or planned human activities are likely, if continued over coming decades, to result in the significant loss of natural qualities associated with all or part of these areas (for example, causing declines in, or local extinctions of, wildlife and plant populations, or large-scale changes in the age and structure of these forests). (b) "Other" includes such activities as overhunting, introduction of harmful exotic species, isolation of smaller frontier forest islands' through development of surrounding lands, changes in fire regimes and plantation establishment. (c) Oceania consists of Papua New Guinea, Australia and New Zealand.

**Table 7:****Asian CO2 emissions, industrial (kg per 1987 US\$ of GDP)**

<b>Country</b>	<b>1988</b>	<b>1989</b>	<b>1990</b>	<b>1991</b>	<b>1992</b>	<b>1993</b>	<b>1994</b>	<b>1995</b>
Australia	1.10	1.13	1.14	1.15	1.12	1.13	1.09	1.10
Bangladesh	0.74	0.71	0.80	0.78	0.76	0.77	0.80	0.87
Bhutan	0.38	0.21	0.41	0.57	0.55	0.53	0.56	0.60
Brunei	1.84	2.01	2.66	2.92	3.12	3.12	3.30	2.65
Cambodia	0.49	0.47	0.47	0.44	0.42	0.40	0.40	0.37
China	7.84	7.47	7.17	7.07	6.52	5.95	5.79	5.53
Fiji	0.46	0.47	0.60	0.53	0.49	0.48	0.47	0.47
Hong Kong, China	0.53	0.50	0.46	0.46	0.50	0.53	0.41	0.42
India	2.12	2.16	2.12	2.21	2.26	2.27	2.27	2.23
Indonesia	1.56	1.37	2.23	2.06	2.19	2.15	2.17	2.13
Japan	0.38	0.36	0.37	0.36	0.37	0.36	0.37	0.37
Korea, Rep.	1.34	1.34	1.37	1.39	1.41	1.42	1.43	1.47
Lao PDR	0.19	0.19	0.18	0.19	0.19	0.18	0.18	0.17
Macao	0.39	0.39	0.37	0.40	0.34	0.35	0.36	0.34
Malaysia	1.22	1.29	1.33	1.53	1.62	1.72	1.60	1.70
Maldives	0.77	0.77	0.70	0.78	1.01	1.15	1.03	1.04
Nepal	0.31	0.29	0.20	0.28	0.35	0.35	0.35	0.34
New Zealand	0.68	0.71	0.66	0.71	0.74	0.66	0.66	0.66
Pakistan	1.61	1.61	1.72	1.64	1.62	1.70	1.78	1.71
Papua New Guinea	0.68	0.71	0.79	0.76	0.66	0.56	0.53	0.54
Philippines	1.12	1.10	1.12	1.21	1.28	1.20	1.17	1.42
Samoa	1.12	1.15	1.24	1.25	1.33	1.28	1.29	1.28
Singapore	1.43	1.43	1.45	1.47	1.51	1.46	2.07	1.53
Solomon Islands	0.90	0.88	0.86	0.83	0.76	0.73	0.68	0.65
Sri Lanka	0.51	0.49	0.51	0.57	0.67	0.62	0.64	0.63
Thailand	1.17	1.22	1.33	1.49	1.50	1.56	1.61	1.62
Vanuatu	0.51	0.46	0.49	0.54	0.50	0.47	0.46	0.45
Vietnam	0.65	0.45	0.57	0.48	0.49	0.50	0.55	0.53

Source: World Bank

**Table 8:****Asian CO2 emissions, industrial (kt)**

Country Name	1988	1989	1990	1991	1992	1993	1994	1995
Afghanistan	2770.00	2682.00	2586.80	2407.20	1352.00	1304.40	1253.10	1238.40
Australia	240633.20	255179.30	253329.00	256736.50	259645.70	275093.10	275324.00	289807.70
Bangladesh	13406.60	13197.70	15810.20	16030.00	16249.80	17162.20	18477.60	20932.40
Bhutan	109.90	62.30	128.20	186.90	186.90	186.90	208.80	238.20
Brunei	5162.60	5609.60	7646.80	8720.30	9284.60	9343.20	10072.30	8233.00
Cambodia	450.70	450.70	450.70	461.70	476.30	476.30	487.30	498.30
China	2345055.30	2324793.30	2317326.10	2499862.90	2644191.60	2744706.10	3018465.50	3192483.50
Fiji	549.60	637.50	828.10	729.10	707.20	710.80	718.10	736.50
Hong Kong	28443.60	27531.30	25831.20	27201.50	31210.00	35328.30	28854.00	30993.80
India	598906.40	649440.30	675678.20	707837.20	762723.90	801173.90	862952.60	908734.30
Indonesia	125693.50	120611.60	213175.20	214377.00	244275.20	257337.40	279215.10	296131.80
Japan	976250.80	981992.30	1051883.10	1071199.70	1089508.70	1059053.60	1107847.00	1126753.30
Korea, Dem. Rep.	220675.40	234228.50	244634.30	250940.00	255204.90	261924.70	259429.50	256985.60
Korea, Rep.	203018.60	216560.70	242131.80	267886.00	287407.80	304661.60	334351.00	373592.40
Lao PDR	205.20	230.80	230.80	252.80	271.10	271.10	293.10	307.80
Macao	960.00	1025.90	1007.60	1135.80	1084.50	1172.50	1242.10	1231.10
Malaysia	42095.70	48229.20	54901.40	68612.10	78043.20	89991.50	91600.00	106604.10
Maldives	76.90	84.30	87.90	106.30	146.60	175.90	168.50	183.20
Mongolia	11490.30	10493.70	9980.70	12146.20	10545.00	9416.50	8471.20	8456.50
Myanmar	4118.30	4517.70	4004.80	4008.40	5228.50	5653.60	6613.50	7031.20
Nepal	992.90	974.60	685.20	1047.90	1359.30	1392.30	1509.60	1531.60
New Caledonia	1535.20	1681.80	1612.20	1777.00	1758.70	1758.70	1711.10	1714.80
New Zealand	24622.10	25714.00	24054.20	25277.90	26816.80	25351.20	26827.80	27439.70
Pakistan	58045.10	60697.80	67871.90	67882.90	72660.80	77735.40	84429.60	85356.50
Papua New Guinea	2198.40	2249.70	2429.20	2586.80	2528.20	2524.50	2502.50	2480.50
Philippines	39523.60	41392.20	43194.90	46686.70	49504.30	47313.20	48328.20	61159.50
Samoa	113.60	120.90	124.60	124.60	128.20	128.20	120.90	131.90
Singapore	33129.90	36207.60	40102.50	43444.00	47566.00	50735.40	79505.10	63669.30
Solomon Islands	153.90	161.20	161.20	161.20	161.20	157.60	153.90	161.20
Sri Lanka	3477.10	3433.20	3762.90	4253.90	5195.60	5136.90	5635.20	5888.00
Thailand	66930.30	78142.10	95524.10	115547.90	125895.00	141562.30	158816.10	175040.30
Vanuatu	62.30	58.60	66.00	66.00	62.30	62.30	62.30	62.30
Vietnam	23196.80	17378.40	23211.40	20756.60	22812.10	25072.80	29828.60	31708.30

Source: World Bank

**Table 9:****Asian CO2 emissions, industrial (metric tons per capita)**

Country Name	1988	1989	1990	1991	1992	1993	1994	1995	2005
Afghanistan	0.14	0.13	0.13	0.11	0.06	0.06	0.06	0.05	0.05
American Samoa	..	..	..	..	..	..	..	..	..
Australia	14.56	15.18	14.84	14.85	14.84	15.58	15.43	16.04	
Bangladesh	0.13	0.12	0.14	0.14	0.14	0.15	0.16	0.17	
Bhutan	0.19	0.11	0.21	0.30	0.29	0.29	0.31	0.34	
Brunei	21.31	22.49	29.75	33.03	34.34	33.85	35.85	28.89	
Cambodia	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	
China	2.13	2.08	2.04	2.17	2.27	2.33	2.53	2.65	
Fiji	0.76	0.88	1.13	0.98	0.93	0.92	0.92	0.93	
French Polynesia	..	..	..	..	..	..	..	..	
Guam	..	..	..	..	..	..	..	..	
Hong Kong, China	5.06	4.84	4.53	4.73	5.37	5.97	4.78	5.03	
India	0.73	0.78	0.80	0.82	0.86	0.89	0.94	0.98	
Indonesia	0.73	0.69	1.20	1.18	1.32	1.37	1.46	1.53	
Japan	7.96	7.98	8.51	8.64	8.77	8.50	8.87	8.98	
Kiribati	..	..	..	..	..	..	..	..	
Korea, Dem. Rep.	11.16	11.67	12.01	12.14	12.15	12.27	11.95	11.63	
Korea, Rep.	4.84	5.11	5.65	6.19	6.58	6.92	7.52	8.30	
Lao PDR	0.05	0.06	0.06	0.06	0.06	0.06	0.07	0.07	
Macao	2.88	2.93	2.71	2.90	2.66	2.77	2.84	2.74	
Malaysia	2.48	2.77	3.07	3.74	4.16	4.69	4.66	5.30	
Maldives	0.38	0.40	0.41	0.48	0.64	0.75	0.70	0.74	
Marshall Islands	..	..	..	..	..	..	..	..	
Micronesia, Fed. Sts.	..	..	..	..	..	..	..	..	
Mongolia	5.48	4.86	4.50	5.37	4.56	3.99	3.51	3.43	
Myanmar	0.10	0.11	0.10	0.10	0.12	0.13	0.15	0.16	
Nepal	0.06	0.05	0.04	0.05	0.07	0.07	0.07	0.07	
New Caledonia	9.57	10.24	9.60	10.32	9.96	9.70	9.15	8.93	
New Zealand	7.42	7.72	7.15	7.42	7.79	7.32	7.56	7.64	
Northern Mariana Islands	..	..	..	..	..	..	..	..	
Pakistan	0.55	0.56	0.60	0.59	0.61	0.63	0.67	0.66	
Palau	..	..	..	..	..	..	..	..	
Papua New Guinea	0.60	0.60	0.63	0.66	0.63	0.61	0.60	0.58	
Philippines	0.67	0.68	0.69	0.73	0.76	0.71	0.70	0.87	
Samoa	0.72	0.76	0.78	0.77	0.78	0.77	0.72	0.78	
Singapore	12.75	13.67	14.83	15.72	16.88	17.65	27.13	21.32	
Solomon Islands	0.51	0.52	0.50	0.48	0.47	0.44	0.42	0.43	
Sri Lanka	0.21	0.20	0.22	0.25	0.30	0.29	0.32	0.33	
Thailand	1.25	1.43	1.72	2.05	2.20	2.44	2.70	2.95	
Tonga	..	..	..	..	..	..	..	..	
Vanuatu	0.45	0.41	0.45	0.44	0.40	0.39	0.38	0.37	
Vietnam	0.37	0.27	0.35	0.31	0.33	0.35	0.41	0.43	

Source:World Bank

**Table 10:**

**CO2 emissions, industrial (kg per 1987 US\$ of GDP) (by country groups)**

Country Group	1988	1989	1990	1991	1992	1993	1994	1995
[East Asia & Pacific]	4.82	4.51	4.45	4.44	4.27	4.02	3.98	3.87
[Europe & Central Asia] ..	..	..	..	..	4.99	5.04	4.82	5.13
[High income: nonOECD]	..	..	..	..	..	..	..	..
[High income: OECD]	..	..	..	..	..	..	..	..
[High income]	0.74	0.73	0.70	0.71	0.70	0.69	0.71	0.72
[Latin America & Caribbean]	1.18	1.18	1.21	1.22	1.24	1.23	1.30	1.33
[Least developed countries: UN classification]	..	..	..	..	..	..	..	..
[Low & middle income]	2.42	2.37	2.34	2.39	2.94	2.88	2.83	2.88
[Low income, excl. China & India]	0.96	0.92	1.04	0.97	1.31	1.27	1.20	1.16
[Low income]	3.79	3.65	3.57	3.63	3.63	3.50	3.49	3.43
[Lower middle income] ..	..	..	..	..	3.19	3.16	3.01	3.15
[Middle East & North Africa]	1.54	1.53	1.48	1.62	1.60	1.61	1.72	1.73
[Middle income]	1.76	1.75	1.72	1.74	2.65	2.59	2.51	2.60
[South Asia]	1.95	1.98	1.97	2.03	2.07	2.08	2.10	2.06
[Sub-Saharan Africa]	1.85	1.83	1.87	1.83	1.93	1.85	1.87	1.88
[Upper middle income]	1.87	1.83	1.77	1.81	1.90	1.83	1.87	1.87
[World]	1.03	1.02	0.99	1.00	1.17	1.15	1.16	1.17

Source:World Bank

**Table 11:****CO2 emissions, industrial (kt) (by country groups)**

Country Group	1988	1989	1990	1991	1992	1993	1994	1995
[East Asia & Pacific]	2882513	2883696	3010244	3237320	3440034	3587309	3905106	4139979
[Europe & Central Asia]	938258.7	935833.2	799495.8	759668.2	4206115	4013091	3525728	3733667
[High income: nonOECD]	203634.1	218312.2	239383.9	223958.2	246147.4	278431.1	315202.9	309553
[High income: OECD]	8854624	9083558	8927105	9980608	10043288	10000012	10522832	10813113
[High income]	9058258	9301870	9166489	10204566	10289435	10278444	10838035	11122666
[Latin America & Caribbean]	952885.6	964595.7	983022	1025008	1065180	1096283	1191163	1219761
[Least developed countries: UN classification]	62478.6	61360.8	62731.5	58972.4	59228.6	60976.6	62984	66487
[Low & middle income]	6590389	6674690	6723279	7071070	10906190	10946501	11047352	11577485
[Low income, excl. China & India]	274400.9	274147.6	313217.1	297304.8	444326	434224.5	420817.8	402468.2
[Low income]	3218363	3248381	3306221	3505005	3851242	3980105	4302236	4503686
[Lower middle income]	1619895	1669370	1737062	1783859	5034439	4953940	4643335	4942546
[Middle East & North Africa]	688282.4	699508.9	689308.2	782190.6	843793.7	867803.7	958007.8	982890.1
[Middle income]	3372027	3426309	3417058	3566065	7054948	6966396	6745116	7073799
[South Asia]	677784.9	730572.2	766611.3	799752.3	859874.9	904267.9	974635	1024103
[Sub-Saharan Africa]	450664.8	460484	474598.1	467131.1	491192.2	477745.4	492712.5	477085.8
[Upper middle income]	1752132	1756939	1679996	1782206	2020509	2012456	2101781	2131254
[World]	15648647	15976560	15889768	17275636	21195625	21224944	21885387	22700151

Source: World Bank

**Table 12:****CO2 emissions, industrial (metric tons per capita) (by country groups)**

Country Group	1988	1989	1990	1991	1992	1993	1994	1995
[East Asia & Pacific]	1.93	1.90	1.95	2.07	2.17	2.23	2.40	2.51
[Europe & Central Asia]	..	..	..	..	8.92	8.48	7.43	7.85
[High income: nonOECD]	..	..	..	..	..	..	..	..
[High income: OECD]	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
[High income]	11.78	12.00	11.74	11.78	11.79	11.69	12.25	12.49
[Latin America & Caribbean]	2.26	2.25	2.25	2.30	2.35	2.38	2.54	2.56
[Least developed countries: UN classification]	..	..	..	..	..	..	..	..
[Low & middle income]	1.72	1.71	1.69	1.75	2.45	2.42	2.40	2.48
[Low income, excl. China & India]	0.32	0.32	0.35	0.33	0.47	0.45	0.42	0.39
[Low income]	1.18	1.17	1.17	1.22	1.30	1.32	1.41	1.45
[Lower middle income]	2.24	2.26	2.31	2.32	4.75	4.61	4.26	4.47
[Middle East & North Africa]	3.10	3.07	2.94	3.42	3.59	3.60	3.88	3.89
[Middle income]	3.01	3.00	2.94	3.01	4.68	4.56	4.35	4.50
[South Asia]	0.63	0.66	0.68	0.69	0.73	0.75	0.80	0.82
[Sub-Saharan Africa]	0.95	0.94	0.95	0.91	0.93	0.88	0.88	0.83
[Upper middle income]	4.42	4.36	4.09	4.27	4.53	4.45	4.57	4.57
[World]	3.41	3.42	3.34	3.52	3.98	3.93	4.00	4.09

Source: World Bank

**Table 13**  
**Share of Country Groups in World CO2 emissions**

	1988	1989	1990	1991	1992	1993	1994	1995
[East Asia & Pacific]	0.18	0.18	0.18	0.18	0.18	0.18	0.18	0.18
[Europe & Central Asia]	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
[High income: nonOECD]	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
[High income: OECD]	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57
[High income]	0.58	0.58	0.58	0.58	0.58	0.58	0.58	0.58
[Latin America & Caribbean]	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
[Least developed countries: UN classification]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
[Low & middle income]	0.42	0.42	0.42	0.42	0.42	0.42	0.42	0.42
[Low income, excl. China & India]	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
[Low income]	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20
[Lower middle income]	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.10
[Middle East & North Africa]	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
[Middle income]	0.21	0.21	0.21	0.21	0.21	0.21	0.21	0.21
[South Asia]	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
[Sub-Saharan Africa]	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
[Upper middle income]	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
[World]	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Source: World Bank

**Table 14:**

Total Numbers of Known and Endangered Species in the 1990s										
Country	Mammals (known)	Mammals (threatened)	Birds (known)	Birds (threatened)	Reptiles (known)	Reptiles (threatened)	Amphibians (known)	Amphibians (threatened)	Fish (known)	Fish (threatened)
Afghanistan	123	10	460	15	103	3	6	2	84	4
Australia	252	45	751	50	748	43	205	18	216	54
Bangladesh	109	18	684	27	119	17	19	2	x	x
Bhutan	99	20	543	15	19	5	24	3	x	x
Cambodia	123	18	429	16	82	10	28	2	>215	5
China	394	45	1244	88	340	9	263	4	686	11
India	316	42	1219	75	389	20	197	3	x	x
Indonesia	436	58	1531	105	511	17	270	2	x	x
Japan	132	16	583	31	66	12	52	14	186	12
Lao, PDR	172	27	651	25	66	3	37	2	244	4
Malaysia	286	21	736	32	268	14	158	2	449	3
Pakistan	151	12	671	18	172	10	17	2	156	2
Papua, New Guinea	214	32	708	31	280	8	197	2	282	45
Thailand	265	25	915	45	298	18	107	2	>600	18

Source: IUCN (1993). The number of threatened species listed includes full species that are classified as endangered, vulnerable, rare and indeterminate by the World Conservation Union, but excludes introduced species whose status is insufficiently known or those known to be extinct. x = not available.

**Table 15:****Major Exports of ADC in the 1990s**

<b>Country</b>	<b>Major Exports</b>
Bangladesh	Garments, leather products, textiles, jute products
China	Garments, footwear, toys and sports goods, fabrics, telecom equipment
Fiji	Sugar and honey, gold, garments, fish and fish preparation
Hong Kong	Garments, office accessories, watch and clock, telecom equipment, transistors, fabric
India	Pearl and precious stones, textiles, fabrics, fish and fish preparation, carpets, medical equipment, software
Indonesia	Crude petroleum, veneer and plywood, natural gas, footwear, textiles, fish and fish preparation
Korea	Transistors, fabric, ships and boats, motor vehicles, telecom equipment, computers, heavy machinery, footwear
Malaysia	Transistors, office accessories, crude petroleum, telecom equipment, radio and television receivers, veneer and plywood
Maldives	Fish and fish preparation, garments
Myanmar	Wood products, pearl and precious stones, garments, fish and preparation, rubber, rice
Nepal	Carpet, garment, leather and products
Pakistan	Textiles, fabric, garment, rice, leather and products
Philippines	Transistors, telecom equipment, fruits and nuts, copper, furniture
Singapore	Computers, transistors, petroleum products, office accessories, telecom equipment, radio and television receivers
Sri Lanka	Garment, tea, pearl and precious stones, rubber
Thailand	Fish and fish preparation, transistors, office accessories, computers, rice, rubber, footwear, telecom equipment.

Source: UNCTAD (1997): Handbook of International Trade and Development Statistics

**Table 16:****Destination of Exports of ADC (Million US\$) (including China but excluding Japan):  
1994**

	World (1)	Developed Market Economies (2)	(2)/(1) (percent)	(1) as percent of ADC GDP*	(2) as percent of ADC GDP*
ADC					
All goods	896845	464763	51.8	39.7	20.6
Food	69780	34839	49.9	3.1	1.5
Machinery & trans. Eqpt	286507	153346	53.5	12.7	6.8
Textiles	183586	93470	50.9	8.1	4.1
Primary goods	152132	69487	45.7	6.7	3.1
Manufactured goods	734558	389698	53.1	32.5	17.2
World total exports	4208149	2819809	67.0	16.5†	11.0†
Dev Mkt Eco.				14.4‡	14.0‡

GDP in 1994 was for ADC was USD 2261 bilion, and for developed market economies' was USD 20083 billion; † Proportion of world GDP; ‡ Proportion of developed market economies' GDP

Source: UNCTAD (1997): Handbook of International Trade and Development Statistics

**Table 17:****List of Countries likely to participate in WEO under alternative trade concessions**

<b>Trade Concessions</b>	<b>Countries likely to gain/participate</b>
No concessions	Maldives, Bangladesh
Textiles	China, Hong Kong, Korea, India, Fiji, Bangladesh, Indonesia, Maldives and Pakistan
Leather products	China, Korea, India, Myanmar, Bangladesh, Maldives, Indonesia, Pakistan, Thailand
Fish and fish preparation	Fiji, India, Indonesia, Maldives, Myanmar, Bangladesh, Thailand
Rice	Thailand, Vietnam, India, Bangladesh, Maldives.

**Table 18:**  
**MFN average tariff rates**  
**(for imports from developing countries)**

<b>Product group</b>	<b>United States</b>		<b>European Union</b>		<b>Japan</b>		<b>Canada</b>	
	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>	<b>A</b>	<b>B</b>
<b>Agricultural products (non-tropical)</b>	9.1	7.0	23.5	16.8	19.5	14.9	7.6	4.9
<b>Agricultural products (tropical)</b>	2.1	1.2	17.4	10.0	17.4	10.9	1.2	0.6
<b>Other tropical products</b>	3.2	1.4	3.0	1.5	4.5	1.9	7.2	3.6
<b>Natural resource based products</b>	2.6	2.0	6.0	4.8	3.8	2.2	3.3	1.9
<b>Textiles and clothing</b>	18.7	16.9	11.9	10.1	11.7	7.9	22.1	15.6
<b>Leather and footwear</b>	9.6	9.1	9.1	7.8	13.3	11.5	19.8	15.0
<b>Other industrial products#</b>	3.3	1.7	3.5	2.0	3.9	2.3	6.8	3.1
<b>All imports#</b>	7.6	5.5	9.8	6.9	7.4	4.7	12.4	7.4

A = Pre-Uruguay Round ; B = Post-Uruguay Round

# excluding fuel

Source: UNCTAD (1994): Trade and Development Report, 1994

**Table 19:**

**Categories of NTBs**

**I. Quantitative restrictions and similar specifications**

1. Import quotas
2. Export limitations
3. Licensing
4. Voluntary export restraint
5. Exchange and other financial control
6. Prohibition
7. Domestic content and mixing requirements
8. Countertrade

**II. Nontariff charges and related policies**

1. Variable levies
2. Advance deposit requirements
3. Antidumping duties
4. Countervailing duties
5. Border tax adjustments

**III. Government participation in trade, restrictive practices and more general government policies**

1. Subsidies and other aid
2. Government procurement policies
3. State trading, government monopolies, and exclusive franchises
4. Government industrial policy and regional development measures
5. Government financed research and development and other technology policies
6. National system of taxation and social insurance
7. Macroeconomic policies
8. Competition policies
9. Foreign investment policies
10. Foreign corruption policies
11. Immigration policies

**IV. Customs procedures and administrative practices**

1. Customs valuation procedure
2. Customs classification procedures
3. Customs clearance procedures

**V. Technical barriers to trade**

1. Health sanitary regulations and quality standards
2. Safety and industrial standards and regulations
3. Packaging and labelling regulations, including trade marks
4. Advertising and media regulations

Source: Compiled from Deardorff and Stern (1998).

### Frequency Ratio of NTBs in 1993

	<i>USA</i>		<i>EU</i>		<i>Japan</i>		<i>Canada</i>	
	<i>Frequency Ratio</i>	<i>Import Ratio</i>						
1. All NTBs	22.9	17.0	23.7	11.1	7.7	8.0	11.0	4.5
2. Quantitative Restrictions	18.1	10.2	17.2	7.1	6.7	2.8	6.8	1.7
2a. Export restraints	13.1	10.1	13.9	5.6	0.3	0.2	5.8	1.4
2b. Non-automatic licensing	0.0	0.0	3.5	1.7	5.7	1.0	0.2	0.0
Price Control Measures	10.8	7.3	8.4	3.5	0.3	0.8	1.4	0.8

Source: OECD (1995) as quoted by Deardorff and Stern (1998)

**Table 21:**

### Frequency Ratio of NTBs by commodity groups 1993

	<i>United States</i>	<i>European Union</i>	<i>Japan</i>	<i>Canada</i>
1. Agriculture and allied products	3.6	14.9	5.2	4.1
2. Mining and quarrying	2.3	3.5	0.4	0.7
3. Manufacturing	24.7	22.8	7.4	8.8
3a. Food, beverage & tobacco	12.1	44.2	6.7	11.4
3b. Textiles and apparel	69.9	76.8	21.4	41.5
3c. Wood & wood products	0.6	0.0	0.0	3.2
3d. Paper & paper products	1.3	0.4	0.0	1.2
3e. Chemicals	5.8	5.1	0.7	0.3
3f. Non-metallic mineral products	5.3	0.2	0.0	0.4
3g. Basic-metal industries	57.1	19.0	0.9	4.6
3h. Fabricated metal products	13.8	2.3	0.0	1.4
3i. Other manufacturing	1.1	2.0	0.0	1.2
All products	23.0	22.1	7.1	8.3

Source: OECD (1995) as quoted by Deardorff and Stern (1998)

**Table 22:  
Total Debt to GDP (percent)**

Country Group	1990	1991	1992	1993	1994	1995	1996
[East Asia & Pacific]	36.89932	38.28007	38.11479	40.17203	38.85905	36.0517	
[Europe & Central Asia]	18.00662	20.45733	23.36708	32.50427	40.52218	39.64382	36.78164
[High income: nonOECD]							
[High income: OECD]							
[High income]							
[Latin America & Caribbean]	46.14925	48.62495	46.32624	45.41109	42.44345	44.30765	41.75519
[Least developed countries: UN classification]	106.4029	113.7377	120.8909	122.5361	138.9471	124.1492	
[Low & middle income]	36.27835	39.06413	39.8574	43.29321	44.45842	43.06545	40.13449
[Low income, excl. China & India]	96.8545	99.77182	98.11534	110.1275	120.2106	110.8527	97.82672
[Low income]	46.82225	49.98172	49.92799	52.741	49.24651	42.90714	
[Lower middle income]	33.10009	35.78096	38.79028	44.86296	51.3713	49.37133	45.60467
[Middle East & North Africa]							
[Middle income]	32.9192	35.5828	36.56216	40.16756	42.75343	43.25117	40.64118
[South Asia]	38.25524	44.57315	47.39076	46.03295	44.40202	39.45561	35.37688
[Sub-Saharan Africa]	69.86659	72.33762	70.5595	80.68004	90.73497	87.19169	82.14916
[Upper middle income]							
[World]							

Source: World Bank