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EXPANDING TRADE CAN HELP SOLVE ENVIRONMENTAL PROBLEMS, SAYS REPORT

GATT rules are not an obstacle to environmental protection,
but trade weapon could be counterproductive

Increased world trade leads to higher per capita incomes, and with that the freedom and incentive to devote a growing proportion of national expenditure to the environment. "The opportunity for countries to trade in world markets for goods and technologies facilitates the implementation of needed environment-improving processes at home." The available evidence suggests that this is indeed happening.

GATT rules do not prevent governments adopting efficient policies to safeguard their own domestic environment, nor are the rules likely to block regional or global policies which command broad support within the world community. At the same time, trade measures are seldom likely to be the best way to secure environmental objectives and, indeed, could be counter-productive.

These are among the key conclusions in a study on Trade and the Environment released today. The study, by the GATT Secretariat, is part of the International Trade report* which will be published in full by GATT at the beginning of March.

*International Trade 1990-91 will be published by the GATT Secretariat in early March in two volumes. The report will be available in English, French and Spanish and may be ordered from the GATT Secretariat or through booksellers at a price of 30 Swiss francs per volume.

The Secretariat warns against the use of unilateral trade measures to offset the competitive effects of different environmental standards and sees a serious risk of environmental issues and concerns being exploited by trade protectionist interests.

The need for multilateral cooperation in the environmental field is another capital theme.

"It is no longer possible for a country to create an appropriate environmental policy on its own", says the study. If transborder physical spillovers are involved, "the only alternative to unilateral actions based on economic and political power is for countries to cooperate in the design, implementation and enforcement of an appropriate multilateral agreement for dealing with the problem at hand". Even when environmental problems are domestic (in the sense that no pollution is escaping across the border) attempts by countries to go it alone on environmental policies would sooner or later lead to frictions with trading partners ..."

The study recognises that promoting cooperation can be difficult but concludes that positive incentives for countries to join multilateral agreements - for instance, financial assistance and transfers of environmentally-friendly technology as well as action in the foreign aid, debt and market access areas - is likely to be far more effective than any negative approach, particularly one involving discriminatory trade restrictions.

With respect to GATT rules, the study says that they "place essentially no constraints on the ability of countries to use appropriate policies to protect their environment from damage from domestic production activities or from the consumption of domestically produced or imported products".

There can be a GATT constraint, however, when there is concern about production or consumption activities in another country. This is because the rules prohibit making market access dependent on changes in the domestic environmental policies or practices of the exporting country.

"What the rules do constrain is attempts by one or a small number of countries to influence environmental policies in other countries not by persuasion and negotiation but by unilateral reductions in access to their markets ... Countries are not clones of one another and will not wish to become so - and certainly not under the threat of unilateral trade measures."

In examining the issue of competitiveness, the study notes that firms which find their market shares and profits under competitive pressure are prone to label as unfair any source of cost advantage enjoyed by their foreign rivals. This is where the "level playing field" notion is often heard. However, the GATT study points out that "the existence of less strict environmental standards in a lower income country is not a sufficient basis for claiming that the environmental standards are "too low" or that the country is manipulating its environmental standards in order to improve the competitiveness of its producers."

The study also points out that in principle there is no difference between the competitiveness implications relating to different environmental standards and the competitiveness consequences of many other policy differences between countries - tax, immigration and education policies for instance.

"To allow each contracting party unilaterally to impose special duties against whatever it objects to among the domestic policies of other contracting parties would risk an eventual descent into chaotic trade conditions similar to those that plagued the 1930s."

The study examines the concern that reform of agricultural trade, through the Uruguay Round, might have a damaging effect on the environment. It finds quite the contrary to be true:

MORE

"Liberalizing protectionist agricultural policies in high-income countries is likely to (i) cause the world's food to be produced with fewer chemicals, which in turn would reduce chemical residues in food and the natural environment; and (ii) have at most a very modest impact on the rate of deforestation ... In all likelihood there would be a substantial increase in global environmental quality ... even if no new environmental policies were introduced."

The full text follows.

END

TRADE AND THE ENVIRONMENT

Interaction between international trade and the environment is as old as trade itself. Awareness that the interaction has implications in public policy terms is more recent. Nevertheless, it dates back at least to the trade provisions in the 1933 convention on fauna and flora.¹ In the late 1960s, environmental problems caused by the discharge of waste and other pollutants into the natural environment emerged seriously; and so did concerns over the implications for international competitiveness.

Over the past two decades, producers in countries with stricter environmental standards have worried increasingly about the impact of those standards on their competitiveness in world markets. At the same time, governments and firms in other countries have expressed concern about new barriers being erected against imports produced under less strict standards.

Most recently, there has been growing public concern with issues related to the pollution of the global commons (for example, ozone depletion and climate change), as well as with species diversity and the treatment of animals. This has raised important questions about the use of trade policies to influence environmental measures in other countries.

The objective of this chapter is to provide an initial analysis of these and other interactions between trade and the environment, especially as they affect the multilateral trading system.² **Part 1** provides, for easy reference, an overview of the main issues and a summary of the principal conclusions. **Part 2** explains, on the basis of existing experience and judgement, which environmentally-motivated trade policy actions are permitted by GATT rules, and which are not. This is done with the understanding that the authority to interpret the rules of the General Agreement ultimately rests with GATT's contracting parties, that is, with its member countries. **Part 3** examines issues which arise when environmental effects are wholly domestic. Issues which arise when there are transborder physical spillovers into another country or into the global commons are covered in **Part 4**. The focus shifts in **Part 5** to the risk that environmental concerns and policies could lead, wittingly or unwittingly, to inappropriate or even counter-productive restrictions on international trade.

1 The full title of the convention, which is still in force, is the Convention Relative to the Preservation of Fauna and Flora in their Natural State. See Appendix I for a summary of multilateral environmental treaties containing trade provisions.

2 There is no generally agreed definition of "environment". The moderately broad definition used in this report - which includes the full range of pollution-related problems, plus soil erosion and loss of fertility, deforestation, product safety (food, hazardous wastes), endangered species and the treatment of animals - reflects the range of environmental issues that have been raised in discussions of the linkages between trade and the environment. The inclusion of a particular environmental issue in the analysis reflects not a judgement about the actual or potential seriousness of the problem, but rather only that it is being widely debated and therefore that there is an interest in exploring its possible implications for trade and the trading system.

1. OVERVIEW AND SUMMARY

The main issues and principal conclusions can be grouped under five headings: the contribution of trade to a better environment, the need for multilateral cooperation, the role of trade policies, the political economy challenge, and risks and opportunities for the trading system.

The contribution of trade to a better environment

Views differ regarding the impact of international trade on the quality of the natural environment. For some, expanding trade is a source of increased wealth and diffusion of technology, both of which enhance societies' ability to protect and up-grade their environments. Others argue that unrestricted trade can be harmful to the environment, especially when a country's environmental policies are weak or non-existent.

While the latter view does draw attention to certain trade-related environmental risks, there is no reason to assume that growth of per capita income necessarily, or even on average, damages the environment. To begin with, the increases in per capita income - which are boosted by increased market access and expanding trade - provide more resources to contain environmental damage, helping to finance pollution control and remedial clean-up. A country with a stagnant economy, by contrast, will be under greater pressure to stint on improving the environment.

Furthermore, if the average citizen is convinced of the need to devote more material and human resources to achieve a better environment as his or her income rises, the growth of per capita income ultimately will lead to increased expenditure on the environment. The available evidence suggests that this is indeed happening.

The opportunity for countries to trade in world markets for goods and technology facilitates the implementation of needed environment-improving processes at home. These processes often first appear in countries at the frontier of environmental regulation, and products embodying them must be exported if other countries are to catch up. Similarly, trade can help consumers make environmentally beneficial choices - for instance, imports of low-sulphur coal can encourage them to abandon the use of polluting high-sulphur coal. Trade in recycled inputs can help countries economize on resource use.

While trade liberalization is likely to reduce some protectionist barriers which are encouraging environmentally harmful activities, it is also possible that trade liberalization could worsen particular environmental problems in the absence of appropriate domestic environmental policies. Conceivably, an expansion of trade could produce negative environmental effects so large that they outweigh the conventional benefits from open markets (increased specialization, more competition and so forth), resulting in an overall decline in national welfare. However, this is possible only if a country lacks a domestic environmental policy that reflects its environmental values and priorities.³ If that is the case, the most effective action is to concentrate on introducing appropriate environmental policies rather than trying to work

3 This proposition is demonstrated in Anderson (1992c).
Note: the full details of the references are provided in the list of references at the end of this chapter.

around had ones by foregoing trade liberalization or attempting to fine tune interventionist trade policies. A lack of appropriate environmental policies creates problems not just in the trade sector, but throughout every facet of a country's economic life. Manipulating trade policies is not only costly - in terms of a less efficient international division of labour - but also ineffective in dealing with the negative consequences elsewhere in the economy caused by the absence of appropriate environmental policies.

This is evident, for example, in efforts to promote sustainable development. Although that term means different things to different people, most definitions encompass two basic notions.⁴ First, there is a need to place much greater emphasis on assigning values or prices to environmental resources, with a view to identifying and valuing the environmental effects of economic activity. Second is the idea that each generation should pass on to the next at least as much capital - environmental and man-made - as it inherited.

Neither aspect of sustainable development is intrinsically linked to international trade. A failure to place a value on environmental resources would undermine sustainable development even in a completely closed economy. Trade is seen, rather, as a "magnifier". If the policies necessary for sustainable development are in place, trade promotes development that is sustainable. Alternatively, if such policies are lacking, the country's international trade may contribute to a skewing of the country's development in an environmentally damaging direction, but then so will most of the other economic activities in the country. Clearly the correct action in such cases is to work for the adoption of an appropriate overall domestic environmental policy, rather than focusing attention on problems that are allegedly trade-related.

The need for multilateral cooperation

Environmental issues can become internationalized in at least one of three ways. The first two, which can occur even when the issues are in principle purely domestic, are through concerns over the impact of environmental policies on international competitiveness, and through the assertion of jurisdiction over other nations' environmental priorities and practices. The third and most obvious way is through the transborder spillover of pollution into another country or the global commons (primarily the upper atmosphere and the oceans). Although current concerns with the environment encompass a wide range of issues, from water pollution to ozone depletion, and the treatment of animals to standards for pesticide residues in food, they all share a common need for multilateral cooperation, not only to minimize potential trade frictions, but especially to identify and implement workable and effective solutions to regional and global environmental problems.

As a result, it is no longer possible for a country to create an appropriate environmental policy entirely on its own. Even when environmental problems are domestic (in the sense that no pollution is escaping across the border), an attempt by countries to go it alone on environmental policies would sooner or later lead to frictions with trading partners and most likely to unilateral trade actions. What is needed is multilateral rules to guide countries in formulating their own environmental policies and in responding to domestic complaints about the impact of their own and other countries' policies on international competitiveness. To back up the

⁴ The Annex in Pearce, Barbier and Markandya (1989) contains a compendium of definitions employed by different authors. See also Dasgupta and Mäler (1990).

rules, a dispute settlement procedure is necessary for handling conflicts that cannot be resolved among the countries concerned. If existing rules and procedures are judged to be adequate for the task, fine. If not, some negotiated changes will be necessary.

When an environmental problem involves a transborder physical spillover, the only alternative to unilateral actions based on economic and political power is for countries to cooperate in the design, implementation and enforcement of an appropriate multilateral agreement for dealing with the problem at hand. This will often also be the case with assertions of jurisdiction over other countries' practices and policies, including the treatment of animals and endangered species.

Regardless of the nature of an environmental problem, the contribution of multilateral cooperation is to reduce the possibility that solutions are affected by differences in the economic and political strengths of the parties involved. Given the justifiable basis for a diversity of environmental standards among countries, it is important to minimize the risk of solutions being imposed by the larger or richer countries.

Negative incentives - in particular, the use of discriminatory trade restrictions on products unrelated to the environmental issue at hand - are not an effective way to promote multilateral cooperation. Alternatively, the use of positive incentives coupled with peer pressure can be a viable option - and all the more so since the likelihood of negative incentives being a workable and sustainable approach in the medium term and across a range of issues is open to serious doubt.

The role of trade policy

This chapter argues, and there is much support for this view, that unilateral restrictions on trade would never be the most efficient instrument for dealing with an environmental problem. Of course it is always possible to find an example, hypothetical or taken from the real world, which appears to contradict that conclusion. But always at the base of such an example would be a national environmental policy that is considered inappropriate.

If all countries participated in all international environmental agreements, there would be nothing more to add. However, it is often a challenge just to get a critical mass of countries - let alone all countries - to participate in an international environmental agreement. As soon as participation is less than universal, trade policy re-enters the picture, albeit in a different role. Trade measures could be used as one type of "carrot" - or, despite the arguments noted above, as one type of "stick" - to encourage participation.

Past experience suggests that the organizers of an environmental agreement are also likely to consider including trade provisions - that is, measures affecting trade only in the product or products covered by the agreement - designed to minimize the extent to which trade between participants and non-participants could undermine the agreement. Recalling that a country's trade in a particular product is nothing more than the difference between production and consumption, there is also the option of controlling both production and consumption in the participating countries. In this case there would be no need to have separate controls on trade flows.

The risk of protectionist responses

There is much evidence which points to a serious risk of environmental issues and concerns being exploited by protectionists for their own benefit. This can occur at any of several stages: by promoting policies that discriminate against imports as part of the solution to environmental problems, by biasing the choice between positive and negative incentives in favour of trade sanctions, by pushing for the inclusion of unnecessary trade provisions in multilateral agreements, or by deliberately promoting product standards that place a proportionately greater cost burden on foreign producers. These concerns are heightened by the efforts of protectionist groups to draw environmental groups into implicit or explicit alliances.

If the use of inefficient policies to achieve environmental goals were costless for environmental interests, then practical politics might argue for embracing such coalitions whenever possible. But it is not likely to be costless, and certainly not in the medium and long term. Biases that protectionist interests introduce into the environmental policy package increase the costs of environmental improvements. In the longer term, this can only reduce the amount of improvement the society will be willing to undertake. When that happens, the protectionist interests gain not only at the expense of the rest of the economy, but also at the expense of the natural environment.

Risks and opportunities for the trading system

There is a serious risk that the trading system could get badly bruised by a rush to deal with environmental issues which are viewed as urgent by important segments of the population in an increasing number of countries. To someone unfamiliar with, or indifferent to, the contribution of economic efficiency and the trading system to postwar economic prosperity, trade measures can too easily seem to be low cost and readily available tools for pursuing environmental goals.

As regards the design and implementation of environmental policies, GATT rules place essentially no constraints on the ability of countries to use appropriate policies to protect their environment from damage from domestic production activities or from the consumption of domestically produced or imported products. Concern over the possibility that technical or other kinds of regulations could create unnecessary obstacles to trade has led, it is true, to certain multilateral disciplines. But those disciplines contain qualified exceptions for actions related to protecting or improving the environment.

When the environmental problem is due to production or consumption activities in another country, the GATT rules are more of a constraint, since they prohibit making market access dependent on changes in the domestic policies or practices of the exporting country. The rationale for this is that to do otherwise would invite a flood of import restrictions as countries (especially those with large markets) either attempted to impose their own domestic environmental, economic and social policies on other countries, or used such an attempt as a pretext for reducing competition from imports.

Furthermore, the fact that GATT rules block the unilateral use of trade measures to dictate changes in the environmental policies of other nations does not mean that governments are powerless. They still have the possibility of negotiating a multilateral solution or,

failing that, of requesting a GATT waiver. These options offer the prospect of resolving environmental problems and conflicts, while at the same time effectively guarding against the excesses that would result from unilateralism.

In other words, GATT rules could never block the adoption of environmental policies which have broad support in the world community. This is because in most instances the support of two-thirds of GATT's membership - currently 69 out of 103 countries - is sufficient to amend the rules or grant a waiver. What the rules do constrain is attempts by one or a small number of countries to influence environmental policies in other countries not by persuasion and negotiation, but by unilateral reductions in access to their markets.

The real risk, therefore, is not that trade policies will be used, but that they will be used unilaterally. If the door were opened to use trade policies unilaterally to offset the competitiveness effects of different environmental standards, or to attempt to force other countries to adopt domestically-favoured practices and policies, the trading system would start down a very slippery slope. Countries are not clones of one another, and will not wish to become so - certainly not under the threat of unilateral trade measures.

The opportunities presented to the trading system consist mainly in exploiting the various ways in which open international trade can contribute, in conjunction with appropriate national environmental policies, to the improvement and protection of the environment. From an institutional standpoint there is a need for a careful examination of the existing rules to be certain that they do not hinder multilateral efforts to deal with environmental problems. This will be one of the important tasks of GATT's recently activated Group on Environmental Measures and International Trade.

More broadly, the economic growth stimulated by open trade policies increases wealth and spreads knowledge and information, which in turn increase the range of choices available to consumers, including the option of choosing to enjoy the services of a higher quality environment.

2. GATT LAW AND THE ENVIRONMENT

Within any nation the judicial system spends a good part of its time interpreting the country's laws. Experts can also differ on the applicability of certain laws to particular situations, over what is and is not permitted. It is not surprising, therefore, that GATT's rules and disciplines give rise to issues of interpretation, especially in a relatively new area of concern such as the interaction between trade policy and the environment.

It is possible, nonetheless, to be reasonably precise about what current GATT rules say regarding the use of trade policies to further environmental goals. The first point to stress is the central role of non-discrimination in GATT law.

The rules of the General Agreement are concerned primarily with preventing discrimination, that is, with limiting the extent to which countries can discriminate between home products and imports, between imports from different countries, and between goods sold in the home market and those exported. It is reasonable to conclude, therefore, that even though the General Agreement does not mention the environment explicitly, non-discriminatory environmental policies ordinarily would not be subject to any GATT constraints.

Protecting the nation's own environment

Under GATT's rules, governments can employ many different measures to protect and improve the local environment. Thus, sales taxes on products that can create pollution (those containing chlorofluorocarbons, for example), deposit refund schemes for recyclable waste (bottles, scrap cars), or favourable tax treatment of environmentally friendly products (lead-free gasoline, solar panels for home heating) and other nondiscriminatory measures ensuring a pattern of domestic consumption that minimizes pollution would not normally be open to challenge.

There is also nothing in the GATT that prevents contracting parties from taxing or regulating domestic producers who engage in polluting activities - even to the extent of prohibiting the production and sale of particular goods. For instance, ceilings on air pollution levels, and levies on companies that discharge pollutants into lakes and rivers, are fully consistent with GATT rules.

In certain cases, even a measure taken for environmental protection purposes which would otherwise violate GATT obligations not to discriminate may be permitted under Article XX of the GATT. The narrowly-defined exceptions in Article XX permit a contracting party to place health, safety or domestic resource conservation goals ahead of non-discrimination, but only when certain conditions are fulfilled.⁵

⁵ Article XX also contains the exception which allows countries to discriminate against imports produced by prison labour.

In general, these conditions ensure that trade measures **necessary** for the achievement of such goals - and that these goals are not used as a pretext for reducing competition from imports.⁶

GATT rules, therefore, place essentially no constraints on a country's right to protect its own environment against damage from either domestic production or the consumption of domestically produced or imported products. Generally speaking, a country can do anything to imports or exports that it does to its own products, and it can do anything it considers necessary to its own production processes.

There are, nevertheless, some points to add. It is accepted among GATT's member countries that technical regulations should not be formulated in such a way as to constitute unnecessary obstacles to trade. Among the agreements signed at the end of the Tokyo Round (which supplement the General Agreement) is the Agreement on Technical Barriers to Trade, whose rules oblige its Parties to use international standards whenever possible. However, it also explicitly allows its Parties to deviate from such standards if they "are inappropriate for the Parties concerned, for *inter alia* such reasons as ... protection for human health or safety, animal or plant life or health, or the environment; fundamental climatic or other geographical factors;" At the same time, any such derogation would be subject to the basic obligation that it does not result in an unnecessary obstacle to trade.

Under this same Agreement, it is also possible for an exporting country to challenge another country's ban on the sale of a particular product on the grounds that the ban is not based on scientific criteria and is thus an unnecessary obstacle to trade.

In a similar manner, the Subsidies Agreement (also from the Tokyo Round) discourages the use of trade-distorting subsidies, but then explicitly recognizes the right of signatories to use subsidies for "the redeployment of industry in order to avoid ... environmental problems".

These various provisions are an attempt to find a reasonable, good-faith balance between the desire to avoid distortions to competition and the desire to allow each country sovereignty over measures affecting its natural environment and the health and safety of its residents. This is not an easy task. The issues are among the most sensitive in any society, and the scientific understanding often is such that it comes down to a matter of subjective risk management (Box 1). Well-informed and fair-minded individuals can differ - sometimes substantially - on where to strike the balance.

When one country seeks to change another's environmental behaviour

Production and consumption activities in other countries can also be a source of domestic environmental concern. Pollution may be spilling over borders and harming either the regional environment (acid rain) or the global commons (ozone depletion). Or land development projects may be threatening the extinction of animal or plant species and uncontrolled

⁶ Answering the question of whether a particular trade measure is "necessary" involves one or both of two considerations: whether other measures consistent with the General Agreement are reasonably available to achieve the goal and, if not, whether it is the least trade distorting way of achieving the goal. For a more general discussion see, for example, Chamovitz (1991), McDorman (1991) and Petersmann (1991).

Box 1 - Sanitary and phytosanitary risk management

Countries often have elaborate programs for the assessment and management of risk to determine the measures needed to ensure safe food supplies for humans and animals, to protect plants and animals from pests or diseases, and to protect humans from diseases which may be carried by animals or by plants. The GATT recognizes the right of countries to maintain such measures subject to the requirement that the measures do not arbitrarily or unjustifiably discriminate between countries where the same conditions prevail, or are not a disguised restriction on international trade (Article XXb).

There are three principal steps in sanitary and phytosanitary risk management which give rise to opportunities for introducing restrictions on trade, inadvertently or otherwise.

First, risk assessment involves evaluation of either:

- the likelihood of a pest or disease becoming established or spreading and its potential consequences, or
- the potential adverse effects on human or animal health as a consequence of additives, contaminants or toxins in foods, feedstuffs or beverages.

The evaluation of plant and animal pests or diseases must be based not only on information about the pest or disease itself and its means of reproduction or contamination, but also on the ecological conditions (that is, climate, geography, and associated biota) which may foster or limit its spread, and the susceptibility of animal or plant populations (the zoosanitary and phytosanitary conditions). The evaluation of contaminants in foods requires information on chemical properties such as acute and chronic toxicity, carcinogenicity, and teratogenicity. Sanitary and phytosanitary measures are not limited to the protection of commercial species, but are applied also for the protection of wild flora and fauna. For pesticides, evaluation of the ways in which the pesticide affects the environment, particularly ground water, is also often required. Clearly, an improper assessment of risk, for example because of lack of information, misrepresentation of facts or the inclusion of inappropriate factors, may result in unwarranted barriers to trade.

Second, determining the acceptable level of risk - the appropriate level of health or sanitary protection - requires a judgement that reflects, among other things, a society's values. Uncontrollable and unknown factors often make it prohibitively expensive or impossible fully to guarantee safety. More generally, government authorities seek instead to determine levels of "no unreasonable risk" or "negligible risk" because of the excessive costs of approaching "zero risk" relative to other competing objectives such as ensuring adequate food production, efficient use of resources, and the economic benefits of production and trade. "Tolerance" levels may be set which indicate, for example, the maximum amount of a contaminant which will be permitted. In certain cases, where the consequences of acting otherwise could be severe, a zero tolerance, or no measurable level, may be set.

Third, perhaps the greatest potential for disruption of international trade occurs in the selection and application of health and sanitary risk management measures. Government authorities make risk management decisions which specify conditions or levels of use of particular products in order to limit associated risks to acceptable levels. These measures may include quarantine requirements, chemical use restrictions, vaccination policies, processing regulations, testing, inspection and certification requirements. Various measures may achieve equivalent results in terms of health protection, but have very different consequences with regard to trade. Where importing countries insist on their own testing or certification procedures, delays and uncertainty about results present further costs to traders. The manner by which requirements are administered may also pose unnecessary burdens on imported goods.

The degree of complexity in risk assessment, flexibility in setting the level of acceptable risk, and discretion in determining risk management measures all imply that countries may occasionally, perhaps under interest-group prodding, impose unwarranted, trade-inhibiting restrictions. One of the objectives of the Uruguay Round negotiations is to establish disciplines that will permit governments to provide the necessary protection for humans, animals and plants while minimizing the adverse effects that such measures may have on international trade.

fishing may be depleting fish stocks in the high seas. It is not unreasonable that the government of a country concerned by such practices would seek to see them changed - and that it would find it difficult to accept that this would not be possible.

There are various options for attempting to induce changes in the production or consumption behaviour of another country. However, unilateral increases in import barriers are not, *prima facie*, among them.

In principle, it is not possible under GATT's rules to make access to one's own market dependent on the domestic environmental policies or practices of the exporting country.

The requirement not to discriminate between different sources of imports - which of course applies to a much broader range of issues than just those related to the environment - is intended not only to prevent trade distortions. It exists also to protect each member of GATT from the unilateral imposition of domestic standards or policies by importing countries through the threat of market access restrictions. It protects trade relations from degenerating into anarchy through unilateral actions in pursuit of unilaterally-defined objectives, however valid they may appear.

If the goal is to influence environmental policies and practices in other countries, the option which is most consistent with orderly international relations is inter-governmental co-operation leading to a multilateral agreement (see Part 4 below). By offering each country the opportunity to explain and defend its view of the problem, the negotiating process increases the chances of uncovering solutions acceptable to all the affected parties. Cooperative efforts also offer the best chance of ensuring that the policy changes deal directly with the problem at hand and that they provide minimum scope for protectionist abuses.

Trade provisions in multilateral environmental agreements

One of the first tasks of the recently activated GATT Group on Environmental Measures and International Trade is to consider the trade provisions in environmental agreements vis-a-vis the obligations of contracting parties under the GATT.⁷ Of the 127 multilateral agreements in the area of the environment, 17 have trade provisions (Table 1)

The majority of environmental agreements with trade provisions are those concerned with the protection of fauna and flora. For example, the parties to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), including the producing states, have agreed to a ban on trade in ivory. Import bans are also applied, under CITES, by certain countries to whales, flying foxes, polar bears, North Pacific fur seals, migratory birds, and many others species.

The goals of such environmental agreements can probably be best achieved if the participating countries ban all sales of the endangered animals or plants, not just their importation or exportation. The GATT permits its contracting parties to ban the domestic sale of a product and to enforce such a ban at the point of importation or exportation provided, of

7 The Group has also been asked to examine the transparency of national environmental regulations which are likely to affect trade, and the trade effects of packaging and labelling requirements intended to protect the environment.

course, that the ban applies regardless of the origin or destination of the product. The most effective way of applying these environmental agreements is therefore likely to be also the one that would ensure consistency with the GATT.⁸

When foreign products are subjected to a more stringent treatment than domestic products, there is a potential source of conflict with the GATT's national treatment provision. As noted earlier, the GATT does, however, permit a difference in treatment as an exception under Article XX(b) for measures necessary to protect human, animal or plant health or life in the importing country. For example, phytosanitary regulations deal with the spread of pests and disease across borders through international trade in plant material. Various plant protection agreements permit rigorous inspection and even prohibition of imports.

Table 1
Multilateral environmental agreements by subject, 1933-1990
(Number of agreements)

	Total	With Trade Provisions
Marine pollution	41	0
Marine fishing and whaling	25	0
Protection of fauna and flora	19	10
Nuclear and air pollution	13	1
Antarctica	6	0
Phytosanitary regulation	5	4
Locust control	4	0
Boundary waters	4	0
Animal cruelty	3	1
Hazardous wastes	1	1
Other	6	0
Total	127	17

Another possible source of conflict with the GATT rules occurs when an environmental agreement specifies a difference in the trade measures affecting parties and non-parties. For example, the trade provisions of the Montreal Protocol, the Basel Convention, and CITES (for those species in which managed trade is permitted) require parties to apply more restrictive trade provisions to non-parties than to parties. GATT's member countries have not as yet been required to take a decision on whether such departures from the non-discrimination principle can be justified under Article XX.

It is not clear that such departures from the non-discrimination principle are always necessary to achieve the environmental goal of the environmental agreement. For example,

8 It should be noted that import duties and export taxes are consistent with the rules of the General Agreement, provided they do not exceed the bindings set out in a country's schedule of concessions. While most of the major trading nations as well as an increasing number of developing countries have bound nearly all of their import duties, they have not negotiated bindings on export taxes.

the parties to the Montreal Protocol on chlorofluorocarbons (CFCs) could have structured the Protocol in such a way that it reduced consumption of CFCs in the participating countries by the target amount, without the necessity of including provisions for special restrictions on trade with non-parties.⁹ Since, however, the drafters had other goals as well, including that of providing compensation to CFC producers in the participating countries (by allowing them to receive extra profits from selling the diminishing quantity of CFCs), trade provisions which discriminate against non-participants were included in the Protocol.¹⁰

Changing GATT's rules

Provided there was broad support for the idea, GATT's member countries could decide to allow the imposition of import restrictions on exports from countries whose environmental regulations were considered to be "inadequate". This could be done by amending or supplementing the provisions of the General Agreement, or by the granting of a waiver. Regardless of the way in which the change was made, it would be necessary to define inadequate environmental regulation and to develop procedures and criteria that would minimize the chances of abuse.

Under Article XXV, waivers of specific GATT obligations may be granted to individual contracting parties or to all contracting parties. They are adopted by a two-thirds majority of the votes cast, with the added requirement that the majority must comprise more than half of the contracting parties. Waivers are granted subject to conditions ensuring that the privileges accorded are used for the intended purpose.

If most of GATT's contracting parties agree to participate in a particular multilateral environmental agreement, the consistency of its trade provisions with GATT is not likely to be a problem since there would be enough votes to secure a waiver, if necessary. In situations where the environmental objective for which the agreement is to be negotiated is of interest to only a few countries, it would also be possible for the interested countries to request a waiver if the trade measures which they propose to adopt are not consistent with their GATT obligations. The success of their request would depend on their ability to convince enough contracting parties of the wisdom of granting the waiver.

In dealing with transborder environmental issues, use of the waiver approach would ensure that the proposed trade policy actions would be focused on the environmental problem in question, and that they would be transparent, multilaterally negotiated, have broad support among the GATT membership, and be subject to conditions designed to avoid abuse.

This is not to imply that waivers offer a ready way around GATT obligations. The prevailing view is that waivers are to be granted only exceptionally and for a limited period of time, and that they are not a substitute for revisions of the rules.

9 One way would be to impose taxes on the consumption of CFCs, or a quota on domestic consumption implemented by a system of auctioned domestic sales licenses which permitted the license holder to buy from all potential suppliers, regardless of whether they are in a participating country. In either case, the scarcity value of the reduced amount of CFCs would accrue to the government (in the form of tax or auction receipts). Production of CFCs in participating countries could then be regulated by quotas set at the projected level of consumption in those countries.

10 See Enders and Porges (1992).

Experience with the GATT dispute settlement process

The ways in which GATT rules operate in the environment area, including their role in preventing protectionist abuses and attempts to impose standards unilaterally on other countries, become more tangible in actual trade disputes. In the past decade, the GATT dispute settlement process has produced five panel reports that include relevant interpretations of GATT rules in the environmental area.¹¹

In two of those disputes a contracting party had banned imports or exports, and claimed the ban was justified under Article XX(g) as a measure relating to the conservation of exhaustible natural resources. One involved a United States ban on imports of tuna and tuna products from Canada. In 1982 the GATT Council adopted the panel's recommendations, which rejected the United States' claim that its embargo was justified on conservation grounds, the main basis for the rejection being that the United States had no catch limits for its own fishing fleets on most of the species of tuna it was embargoing.¹² In the second case, involving a Canadian ban on exports of unprocessed herring and salmon, the panel report adopted in 1988 found that because there were no limits on Canadian consumption of herring and salmon, there was no link between conservation of those species and the export prohibition.¹³

As the panel in the Canadian herring and salmon case said, the purpose of including Article XX(g) in the General Agreement was not to create a loophole for discriminatory or protectionist trade policy measures, but to ensure that GATT rules would not hinder conservation policies.

In a third case, Thailand sought to justify a virtual ban on imported cigarettes under Article XX(b) as a measure "necessary to protect human, animal or plant life or health". The panel's report, adopted in 1990, accepted that smoking endangers human health and that measures to reduce cigarette consumption were permissible.¹⁴ It agreed that Article XX(b) permitted a contracting party to put health goals above its trade obligations, but that the discrimination against imported cigarettes had to be "necessary". The panel did not see any reason why it was necessary to ban cigarette imports while leaving domestic production and sales of cigarettes unrestricted. The panel found that other, non-discriminatory measures could meet the health goal.

A panel report adopted in 1987 dealt with a complaint brought by Canada, the European Communities and Mexico against United States taxes on petroleum and certain imported substances, the proceeds of which were used to help finance a "Superfund" for cleaning up toxic waste sites.¹⁵ The European Communities had argued with respect to one of those taxes that special rules, including the OECD's "polluter pays principle" (PPP), had to be applied because the tax concerned pollution. The panel found, however, that the GATT rules on border tax adjustments apply regardless of the purpose of a tax, that the PPP had

11 The dispute between the United States and the European Communities over the use of growth hormones in beef production is not on this list because it has not entered the formal GATT dispute settlement process.

12 See GATT, Basic Instruments and Selected Documents, Twenty-ninth Supplement, p. 91.

13 See GATT, Basic Instruments and Selected Documents, Thirty-fifth Supplement, p. 98.

14 See GATT, Basic Instruments and Selected Documents, Thirty-seventh Supplement, p. 200.

15 See GATT, Basic Instruments and Selected Documents, Thirty-fourth Supplement, p. 136.

Trade and the Environment

never been adopted by the GATT, and that the tax in question was a legitimate border tax adjustment. On the other hand, the panel found that another tax, imposed on imported petroleum at a higher rate than domestic petroleum, was inconsistent with GATT rules on national treatment.

The most recent environment-related dispute involved Mexico's challenge to a United States embargo, under the Marine Mammal Protection Act, of imports of yellowfin tuna and tuna products from Mexico, and a United States law regulating labelling of tuna products as "Dolphin Safe", which Mexico claimed discriminated against its products. The dispute settlement panel found in Mexico's favour on the embargo, but upheld the United States labelling law (Box 2). This case differs, it should be added, from the other four cases in that the GATT Council has deferred consideration of the panel's report for formal adoption (this was done on the basis of a joint request from Mexico and the United States, which are trying bilaterally to resolve the dispute).

Box 2 Tuna and dolphins

Schools of yellowfin tuna often swim beneath schools of dolphins in the eastern tropical Pacific Ocean. As a result, when tuna are fished with purse seine nets, dolphins can be trapped in the nets and will die unless released. The United States' Marine Mammal Protection Act (MMPA) sets dolphin protection standards - involving a ceiling limit on dolphin catches - for the domestic fishing fleet and for countries whose fishing boats harvest yellowfin tuna in the eastern tropical Pacific Ocean. If a country exporting such tuna to the United States cannot prove to the United States authorities that its tuna fleets meet the dolphin protection standards set out in the law, the United States government must embargo all imports of yellowfin tuna and tuna products from that country and from "intermediary" countries that purchase tuna from the country subject to the direct embargo. Under this law, the United States government has prohibited imports of yellowfin tuna and tuna products from Mexico, Venezuela and Vanuatu, and from the intermediary countries of Costa Rica, France, Italy, Japan and Panama.

In February 1991, Mexico asked for a GATT dispute settlement panel, arguing that the United States' embargo on yellowfin tuna and tuna products was inconsistent with GATT provisions. The United States argued that the GATT's national treatment provision (Article III) permitted the enforcement at the border of dolphin protection standards set out in the MMPA. The Panel found that the standard of Article III — namely, that imported products be accorded no less favourable treatment than domestic products — required a comparison between products of the exporting and importing countries, and not a comparison between production regulations of the exporting and importing countries that had no effect on the product as such. Therefore, the United States could not embargo imports of tuna products from Mexico simply because Mexico's regulations affecting the production of tuna did not satisfy United States regulations.

The United States also argued that the import embargo could be justified under the Article XX exceptions clauses for measures otherwise inconsistent with GATT obligations, which protect animal health or exhaustible natural resources. However, the Panel found that Article XX does not permit a contracting party to take trade measures to enforce its own laws regarding animals or exhaustible natural resources outside its jurisdiction.

The reasoning behind these findings was as follows. If the United States' arguments were accepted, then any country could ban imports of a product from a country merely because the exporting country pursues environmental or health policies different from its own. This would create a very large loophole in the GATT for any country unilaterally to apply trade restrictions not for the purpose of enforcing its own laws within its jurisdiction, but to impose the standards set out in its laws on other countries. In such a situation, the potential for protectionist abuses would be very great. It would certainly work against the main objective of the multilateral trading system - to provide stable and predictable market access opportunities through agreed rules and disciplines.

The Panel's task was limited to examination of this matter in the light of existing GATT obligations. It was not asked whether either party's environmental policies as such were appropriate. In finding that a country may not restrict imports of a product solely because it originates in a country whose environmental policies are different, the Panel stressed the all-or-nothing choice which Article XX presents. If the GATT contracting parties wished to permit environmental trade restrictions such as those under the United States dolphin protection law, they would need to agree on limits to prevent abuse. Since Article XX does not provide such limits, the Panel stated that it would be better to amend or supplement the provisions of the General Agreement or to provide a waiver, since each of these alternatives would provide an opportunity for the contracting parties to develop and negotiate provisions to minimize the risk of excessive use and abuse.

Another issue Mexico had raised before the Panel concerned the United States' Dolphin Protection Consumer Information Act, which requires that if tuna products are labeled "Dolphin safe", they must meet certain dolphin protection standards. The Panel found that this labeling practice was not inconsistent with GATT provisions, because it was designed to prevent deceptive advertising practices on all tuna products, whether imported or domestically produced.

Copies of the panel report are available on request from the GATT Secretariat.

3. "DOMESTIC" ENVIRONMENTAL ISSUES AND WORLD TRADE

In principle, domestic environmental problems - that is, those which do not involve physical transborder spillovers - can be resolved by purely domestic policy choices. Such choices are made on the basis of various considerations. For instance, a government evaluates the costs of immediate environmental damage prevention as against the longer-term costs of eventual clean-up if prevention is foregone. It considers the standards of environmental protection in international conventions to which it is a signatory. And it assesses, by whatever measures are available, the nation's own priorities regarding the trade-off between income and environmental quality.¹⁶

This holds for pollution caused both by production activities (such as the dumping of waste by-products into a lake or river) and by consumption activities (for example, the disposal of household waste or smog caused by automobile emissions). Governments also set health and safety standards for goods and services consumed in the domestic economy, reflecting their own evaluation of the risks and the correct approach to risk management (Box 1 above), as well as domestic regulations regarding the humane treatment of animals and procedures to follow in situations in which a species is threatened with extinction.

Economic analysis strongly supports the view that effective solutions to problems involving purely domestic environmental problems are not likely to involve trade policies that discriminate against imports. That is, judged on the basis of economic efficiency, there are almost no practical circumstances in which such a trade policy measure would be the "first best" tool for dealing with such problems.¹⁷ There would appear to be, therefore, no implications for trade policy in general, or for the GATT in particular.

Nevertheless, despite the intrinsically domestic character of the problems and the policy choices to be made when pollution remains within borders, these issues have become internationalized. This has happened in two ways: one stems from a concern with the implications for firms' competitiveness, the other from attempts to assert jurisdiction over the environmental priorities of other countries.

THE COMPETITIVENESS ISSUE

In discussions about international competitiveness a catching metaphor from sports is often used: is there a "level playing field"? The change in the world economy that propels

16 The absence of official (written) environmental regulations is not evidence of a lack of national environmental standards. As long as the quality of the environment has not fallen below the society's implicit environmental standards, the society is not likely to feel a compelling need to make its standards explicit through formal legislated regulations.

17 See, for example, Anderson (1992c), Lloyd (1992) and Snape (1992), as well as Bhagwati (1971) and Corden (1974). This conclusion rests on a general approach based on the fact that the policy instruments available to achieve a particular goal generally can be ranked from the most efficient to the least efficient, with the most efficient policy instrument being the one which operates directly on the source of the problem. Instruments further down the list - and trade policy is typically far down it - are more costly for two related reasons: first, because they are further removed from the source of the problem, and second, because they generally create undesirable "by-product distortions" in other areas of the economy.

most forcefully the unfair trade crusade is the rise in the trade-to-GNP ratios of many countries and the associated dramatic increase in the criss-crossing of foreign investments. As the globalization process has reduced the "economic distance" between countries, everyone tends to be in everyone else's backyard. This has led to more intense import competition in domestic markets and ever-fiercer export competition in third markets.¹⁸

While these trends are signs of success for the international trading system they are also fertile ground for allegations that unfair advantages are accruing to rivals - especially so given the subjectivity of "fairness", as that term relates to international competition. Firms which find their market shares and profits under competitive pressure are prone to label as unfair any source of cost advantage enjoyed by their foreign rivals.

Environment enters the picture

When it comes to the impact of environmental policies on production costs, demands by domestic producers for a "level playing field" often find support among environmental groups. One reason is their fear that if "lower" standards abroad regarding industrial pollution are perceived at home to be detrimental to competitiveness, they could give rise to political pressures to lower the standards at home. The competitiveness argument thus tends to bring industry and environmental lobbies together in attacking lower standards abroad. One notion is that the lower standards lead to "ecological dumping" - a choice of words which evidently seeks to forge a link between environmental policies and the "fair trade" debate.

In practice, if a lowering of domestic environmental standards is ruled out, demands for a level playing field take one or more of three forms:

- that the countries with lower environmental standards harmonise up to the higher standards in the importing country;
- that the imports of foreign products considered to be produced in "environmentally dirty ways" be subjected to special duties designed to offset the "unfair cost advantage" from the less strict standards;¹⁹ or
- that the domestic industries be given subsidies to cover the added costs of meeting the higher standards.

¹⁸ See, for example, Bhagwati (1991) and Porter (1990).

¹⁹ On 25 April 1991 legislation was introduced in the United States Senate which would allow the imposition of special duties on imports produced under environmental standards that are less strict than those in the United States (*International Trade Reporter*, 1.5.91). More recently, the Chairman of the Finance Committee's International Trade Subcommittee proposed negotiating multilateral rules that would allow countries with high environmental standards to impose special tariffs on goods coming from countries with lower standards, in order to offset any unfair lower production costs (*Inside U.S. Trade*, 20.9.91).

Under existing GATT rules, to increase a country's tariffs on products originating in countries with less strict environmental policies is very difficult, for two reasons. First, if the tariffs in question are "bound" under the GATT - as is the case with nearly all tariffs of the industrial countries and with an increasing number of tariffs in developing countries - they cannot be raised except through an elaborate re-negotiation process. Second, and much more to the point, such tariff increases would violate GATT's "most favoured nation" (MFN) principle.

Box 3: Income and pollution

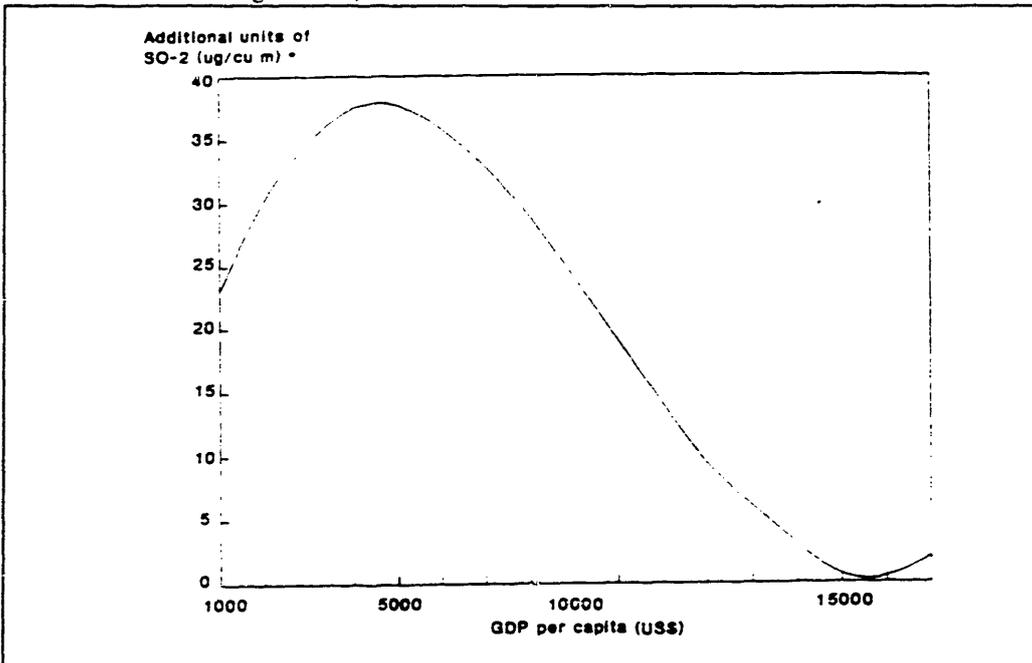
On a priori logic, economic growth need not worsen pollution. But, empirical evidence to prove the point is not always easy to find. A recent study suggests, however, that income growth has been associated with reduced pollution over significant ranges of per capita income.*

The study is based on data collected by the Global Environmental Monitoring System (GEMS). The GEMS project - a joint venture of the World Health Organization and the United Nations Environmental Programme - has monitored air quality in urban areas throughout the developed and developing world since 1976. Concentrations of sulphur dioxide and suspended particles are measured frequently by comparable methods in several different locations in each of the participating cities.

Analysis of the data related the levels of pollutants to various characteristics of the sites and cities (whether the site was situated in the city-centre or suburbs, whether the city was situated on a coast or not, its population density, and so forth) and to the level of per capita GDP in the country in which the city was located.

The Chart below - depicting the variation in sulphur dioxide pollution attributable to variation in per capita income across countries and time - is typical of the study's findings. Concentrations of SO₂ have risen with income at low levels of per capita GDP, fallen with income at higher levels of per capita GDP, and eventually leveled off in the most advanced economies. The estimated turning point comes at about \$5,000 (1988 US dollars). The conclusions for smoke pollution are much the same as those for SO₂ pollution.

*Grossman and Krueger (1991).



*The numbers on the vertical scale indicate the amount of additional SO₂ pollution a city located in a country with a given level of per capita GDP is likely to have relative to a city in a country with a per capita GDP of \$15,000-\$16,000 (holding constant the values of the other explanatory variables, such as population density). Noting that there are only two countries in the sample with per capita incomes in excess of \$16,000 (the United States and Canada), the authors observe that while the curve turns upward in this range, "this probably should not be viewed as strong evidence for a renewed positive relationship between national product and SO₂ pollution at high income levels". (p.15) The curve is based on 95th percentile figures (that is, 95 per cent of the observations during the year at each site recorded a lower level of SO₂ concentration, and 5 per cent a higher level of SO₂ concentration).

There are objective considerations which suggest that countries near the top of the development ladder are likely to have different priorities from countries further down the ladder, and that as a result they are likely to have and enforce stricter environmental standards. This appears to be borne out quite well in practical experience (see Box 3 for a specific example involving air pollution).²⁰

The existence of less strict environmental standards in a lower income country, therefore, is not a sufficient basis for claiming that the environmental standards are "too low" or that the country is manipulating its environmental standards in order to improve the competitiveness of its producers. To substantiate such a claim, it would be necessary at the very least to demonstrate that the standards are even lower than would be expected on the basis of such factors as the level of per capita income and the characteristics of the physical environment.

Clearly, that would be very difficult to do. Moreover, the charge might also be aimed at highly developed countries in which stringent environmental standards may have been adopted in some areas but where, because of competitiveness considerations, governments have shied away from high standards in others.²¹

In short, any move to impose unilaterally special duties on imports of goods and services produced in countries with less strict environmental standards is likely to be very divisive for the multilateral trading system in particular and international relations in general.

20 See, for example, Baumol and Oates (1979, pp.176-80; 1988, Chapter 15), Thompson (1973, p.73), Tucker (1982, Chapter 1), Bernstam (1991) and Anderson (1992 a,b). A 1978 study by Walter and Ugelow, based on questionnaires sent to national officials in developed and developing countries, found that while the strictness of environmental policies varied within each group, the level of strictness was nonetheless higher on average in the developed countries.

Judging from reports in the press, it is in the rapidly growing economies - such as the Republic of Korea, and Taiwan - that environmental awareness and concern is the greatest among developing economies. In a recent paper, Chung (1991) summarizes the results of surveys taken in the 1980s by the Republic of Korea's Ministry of Environment. These record a sharp increase in public concern with environmental quality, and Chung concludes that the "data suggest that the income elasticity of demand for environmental preservation is quite high in Korea".

This is not to say that the average person with a lower income is less sensitive to environmental pollution than the average person with a higher income, but simply that the evidence suggests his or her spending priorities are different. Nor does it mean that the level of per capita income is the only factor that matters. It seems plausible that the demand for a cleaner environment could also be stimulated by such factors as increases in education and information (both positively correlated with per capita income), as well as reductions in the cost of pollution control. Ideas and information can spread quickly and diffusion is not always fastest in countries with high per capita incomes (see, for example, Weiner (1990) on compulsory primary education and banning child labour). Moreover, the declining cost of information on health and environmental effects of economic activities by itself is contributing to the adoption of stricter environmental standards by an ever-larger number of countries.

21 For example, a recent article in the European edition of the *Wall Street Journal* (8 July 1991) described the concern among some United States legislators regarding the activities of the White House Council on Competitiveness in the environment area. According to the article,

Among other things, the council has been instrumental - either directly or through informal talks within the executive branch - in blocking a proposal to require recycling at municipal incinerators; putting off a plan to discourage the incineration of lead batteries, a source of toxic pollution; and softening a proposal to improve visibility in the Grand Canyon by sharply reducing sulphur-dioxide emissions from a nearby power plant.

The article also quotes the chairman of the House Environment Subcommittee as stating that "The Council on Competitiveness has taken on the task of helping polluters block (the) EPA's efforts to write clean-air regulations with the unabashed purpose of protecting industry from the cost of regulation." Other legislators, it should be added, strongly defended the activities of the Council.

There are other problems with proposals to neutralize the effects of environmental policies on competitiveness. When the environmental problems are strictly domestic (do not involve physical spillovers onto other nations), the differences in policies are properly regarded as domestic choices reflecting, among other factors, the domestic trade-offs between income and environment. Seen thus, the differences in costs of production due to differences in standards can well be an additional source of gainful trade among these nations - as are any number of other natural advantages.²²

It is also important to recognize that in principle there is no difference between the competitive implications of the type raised by different environmental standards and the competitive consequences of many other policy differences between countries. Differences between countries in tax and other policies toward savings and investment affect the capital stock, which means that countries encouraging capital formation may be enhancing their competitive advantage in capital-intensive industries. Large expenditures on education, and immigration policies which selectively encourage the immigration of skilled labour, will encourage competitive advantage in skill-intensive industries vis-à-vis countries whose policies do not favour the skilled. The extent of government support for science education can influence competitive advantage in high-tech industries.

The list is almost endless. Where is the line to be drawn if the competitive implications of differences in so many government policies are to become a source of demands for the neutralization of the consequences for trade?

It is time to look beyond the immediate context of each such demand - and environment is only the latest example - and to see the danger looming. Inevitably differences exist between countries stemming from their varying histories, social aspirations, political objectives and constraints, and economic circumstances. These are differences that cannot simply be ironed out to produce a generalized policy structure that is a clone of policies favoured by other countries. To allow each contracting party unilaterally to impose special duties against whatever it objects to among the domestic policies of other contracting parties would risk an eventual descent into chaotic trade conditions similar to those that plagued the 1930s.

Competitiveness has always been a major concern of the GATT. The rules and disciplines regarding non-discrimination and national treatment are part of a broader concern with the stability and predictability of market access and with the need to ensure that trade can take place in an undistorted manner. At the same time, the contracting parties have been careful to consider as trade distorting only a limited range of measures. The fact that most policies and regulations differ from country to country has not been considered trade distorting, even though it is recognized that those differences can affect international competitiveness. To do otherwise would most likely bring chaos to the conduct of international trade.

Keeping the competitiveness issue in perspective

Empirical studies generally suggest caution in asserting that cost differences due to differences in environmental regulations are substantial, or that the trade and investment effects within particular industries are large.²³ There is, it is true, limited evidence of cross-border

²² For more on the economics of this issue, see for example Anderson (1992c) and Bhagwati (1992).

²³ See, for example, Siebert (1977), McGuire (1982), Walter (1982), Tobey (1990), Grossman and Krueger (1991) and Low (1991). When considering the impact of pollution controls on firms'

der relocation by business firms in response to national differences in environmental policy climates.²⁴ A number of copper smelters, petroleum refineries, and asbestos, ferroalloy, and vinyl chloride plants reportedly were constructed abroad rather than in the United States for environmental reasons in the 1970s and early 1980s. Similarly, a number of petrochemical complexes and chemical plants originally slated for Germany and the Netherlands were evidently re-sited in Belgium, France, and Spain.²⁵ And some Japanese pollution-intensive investments were reportedly channelled to developing nations in Southeast Asia and Latin America. But the evidence, viewed on a world scale, certainly does not suggest massive relocation of investment.

Several factors may help explain why a significant redirection of foreign investment and trade in response to variations in environmental standards has not been observed. For example, site-shifting within countries was feasible and considered preferable in a number of instances. More importantly, reduced environmental costs from investing abroad almost certainly were often counterbalanced by other considerations, such as labour availability and quality, wage rates, supporting infrastructure, tax incentives, market size, transport costs, and country risk.

Firms are also finding that marketing their products to environmentally-conscious consumers as environmentally "safer" or "cleaner" can offset the impact of higher pollution abatement expenditures. The evident international diffusion of environment-consciousness suggests a ladder where those who incur the pollution abatement costs now are likely to be followed later by others. In turn, this means that investment expenditures in abating pollution, and technical changes and innovations induced by environmental policies (more stringent than elsewhere at any point of time), will position the leaders to compete more effectively in the future even if they reduce competitiveness now. In other words, for many sectors there is almost certainly a "J-curve" at work here: competitiveness declines initially but rises soon thereafter.²⁶

production and investment decisions, two points need to be kept in mind: first, recalling the insights offered by the "effective rate of protection of value added" approach to the analysis of trade barriers, the pollution control costs should be related - data permitting - to value added rather than to total output or sales; and second, because the products of polluting industries tend to be highly standardized intermediate goods which are purchased in bulk by other industries, the price elasticity of demand as between different sources is likely to be high.

24 Gladwin and Walter (1976), and Gray and Walter (1984).

25 See Rauscher (1992) for a general analysis of the impact of regional trade liberalization on the environment and welfare of countries within and outside the region. Environmental aspects of the proposed North American free trade agreement are examined in Chapter 7 of Hufbauer and Schott (1992).

26 Environmental policies clearly stimulate trade in new goods, services and technology. For example, a sample of titles of recent press articles includes: "IBM to Become Green Consultants", "U.S. Environmental Firms Expected to Prosper", "New Dutch Muckrakers Aim to Make Profit Not Pollution" and "Growing Array of Firms in Europe Are Starting to Play the Green Card: Even Arms Manufacturers See Profit in Goods and Services With Environmental Angle". (*Financial Times*, 6.2.91; *Journal of Commerce*, 27.5.91; *International Herald Tribune*, 2.7.91; and the European edition of the *Wall Street Journal*, 12.7.91, respectively). See also Cairncross (pp.158-59). This view receives strong support from Michael Porter in his recent book *The Competitive Advantage of Nations* (1990, pp.647-48):

"Stringent standards for product performance, product safety, and environmental impact contribute to creating and upgrading competitive advantage. They pressure firms to improve quality, upgrade technology, and provide features in areas of important customer (and social) concern. ... Particularly beneficial are stringent regulations that anticipate standards that will spread internationally."

Although this reasoning suggests that low income countries with less strict environmental standards are not likely to claim a big share of the expanding market for environmentally-related goods and services,

Competitiveness: objecting to higher standards

So far the discussion has focused on competitiveness concerns triggered by measures designed to deal with production-related pollution. Competitiveness concerns of a different kind arise in connection with measures in the areas of consumption pollution and health and safety standards. Here the issue takes the form of complaints by foreign producers that the importing country's regulations or standards are too strict, rather than - as with controls on production pollution - complaints by domestic producers that foreign standards are too lax.

Consumption pollution. Many countries have strict controls on pollution associated with consumption. Examples include emission control equipment on automobiles, packaging requirements to reduce solid waste, and limitations on the phosphate content of detergents. If any of the products which are causing pollution are imported, it is only reasonable that they be subjected to the same taxes or regulations as the domestic versions since the pollution stems from the consumption of the products (rather than their production) and therefore is independent of where they were produced.

In contrast to the production pollution case, where some producers have to comply with stricter environmental standards than others, in this case the domestic and foreign producers are on essentially equal footing - all of them have to equip their automobiles with catalytic converters, or supply their products in environmentally friendly packaging, or find benign alternatives to phosphates. The equality of treatment inherent in controls on consumption pollution substantially reduces, but does not eliminate, the potential for frictions over the impact on competitiveness.²⁷

Health and safety standards. As environmental awareness has increased, the use of health and safety standards has become more common (Box 4). From the viewpoint of competitiveness, health and safety standards for domestically consumed goods and services have much in common with policies for reducing consumption pollution. In both cases, for example, there is no dispute over the need for the standards to apply equally to domestic and imported versions.

There are, however, important differences that make trade disputes over health and safety standards more likely and more intense than disputes over policies dealing with con-

firms in those countries could have an edge in developing new goods and services geared to the environmental needs of low income countries. For example, the private Brazilian firm Heliodinamica S.A. is currently engaged in the development of solar energy, as well as participating in the growth of the microelectronic industry by producing monocrystalline silicon electronic grade wafers. It also has the capability to design complete photovoltaic as well as solar energy hot water generation systems for industrial, commercial and residential applications. The company is presently exporting to India and other developing countries (as well as to Australia, Spain, the United Kingdom and the United States) and has been approached by other developing nations, including India, Argentina, Kenya, Pakistan, Nigeria, Peru and Bangladesh, with the aim of acquiring photovoltaic know-how (in 1990 Heliodinamica was chosen by the International Trade Center (UNCTAD/GATT), to receive ITC export development support).

27 A recent issue which has caused trade frictions involves the requirement that certain liquids - such as mineral water, soft drinks and beer - be retailed in returnable bottles. Foreign bottlers claim that such a requirement adds much more to their costs than it does to the costs of local bottlers. Other aspects of environmentally-motivated packaging regulations are also receiving increased attention (see, for example, the December 6, 1991 issue of the *Financial Times*).

Box 4 Notifications related to the environment under the Agreement on Technical Barriers to Trade

Signatories to the Tokyo Round Agreement on Technical Barriers to Trade are required to notify other Parties through the GATT Secretariat of products to be covered by their proposed technical regulations. Each notification includes a brief indication of its objective and rationale if the regulation differs from international standards (or where international standards do not exist), whenever the regulations are expected to have a significant effect on the trade of other Parties. The protection of human health or safety, animal or plant life or health, or the environment are among the reasons foreseen in the Agreement for which Parties may find it appropriate to adopt technical regulations or standards which differ from international standards (where they exist).

Since the middle of the 1980s, protection of the environment has become more widely cited as an objective and rationale for applying technical regulations. Indeed, from 1980 to 1990, 211 notifications of this nature were made. A further 168 similar notifications were made, but citing grounds of public health and safety.

These notifications can be sorted into the following nine broad categories according to areas of environmental concern and the product(s) to which the technical regulations apply.

Area of environmental concern	Objective/Rationale	
	Protection of the environment	Public health and safety
1. Air pollution, particularly by exhaust emissions, including use of unleaded gasoline and alternative fuels for motor vehicles	71	9
2. Noise emissions: motor vehicles, boats, aircraft, tools and machinery, household appliances	20	24
3. Water pollution, particularly by detergents, marine paints and chemicals, feedstuffs for marine fish farming	12	0
4. Hazardous substances:	87	94
(a) General	5	1
(b) Ozone-depleting substances, particularly CFCs and halons, including implementation of the Montreal Protocol	16	0
(c) Polychlorinated phenyls (PCPs, PCBs and PCTs)	6	3
(d) Fertilizers, pesticides, insecticides, fumigants, and equipment for their application	20	51
(e) PVC, chlorine	3	0
(f) Heavy metals, particularly mercury and cadmium	3	6
(g) Other chemicals, toxic products and dangerous preparations	32	20
5. Waste: recycling and disposal, including batteries and accumulators	2	13
6. Transport of dangerous products	8	2
7. Radiation	5	11
8. Conservation of endangered species	3	6
9. Energy conservation	3	0
	2	22
Total	211	168

sumption pollution. These include the inherent uncertainty stemming from consumers' perceptions and psychology, the subjectivity of many standards stemming from the inexact nature of their scientific basis, differences between countries in their attitudes toward risk, and the keen sense of national sovereignty over health and safety issues. Nowhere has this been more evident than in the long-running dispute between the United States and the European Communities over the use of growth hormones in beef production. Precisely because of these unavoidable differences in the views of countries on the reasonableness, scientific or otherwise, of even nondiscriminatory trade restrictions imposed because of safety and health concerns, it is important to have available both multilateral disciplines and an impartial dispute settlement mechanism.²⁸

THE ASSERTION OF JURISDICTION OVER ENVIRONMENTAL PRIORITIES IN OTHER COUNTRIES

The internationalization of otherwise purely domestic environmental issues can come from an altogether different source, namely the assertion of a right to have a voice in determining production processes in other countries. This assertion of jurisdiction can be based on a variety of grounds: the preservation of endangered species that belong to a foreign habitat; an objection to foreign production processes which are considered cruel and inhumane to animals, such as the incidental killing of dolphins in purse seine nets or the use of leghold traps in fur trapping; or a general objection to the pollution of the natural environment in other countries even though the pollution remains entirely within their borders.²⁹

Demands for suspending the trading rights of other nations when they do not comply with the expectations of external groups seeking to assert their own environmental priorities over others are often the consequence of these pressures. One recent example is the dispute over imports of Mexican tuna into the United States (see Box 2 above). In another, involving Japan's imports of the shells of hawksbill sea turtles (which are on the endangered species list), the United States threatened to ban imports from Japan of all animal products, including more than \$300 million in fish, plus pearls. Japan responded by agreeing to ban importation of the shells by the end of 1992. It is doubtful, however, that such unilateral approaches can be generalized or sustained over a long period.

Just as it would be difficult to contain the competitiveness argument, it is difficult to think of a way effectively to contain the cross-border assertion of priorities. If governments suspend the trading rights of other nations because they unilaterally assert that their environmental priorities are superior to those of others, then the same approach can be employed on

²⁸ For more on this issue, see for example, Kozliff and Runge (1991).

²⁹ In cases where a domestic environmental issue is internationalized because jurisdiction over others' environmental practices and policies is being asserted, there is a formal similarity to the class of cases - examined in Part 4 below - where there are physical spillover effects across nations. For want of a better term, such cases could be described as involving *psychological* - as distinct from *physical* - transborder spillover effects. The "pain" from such spillovers can be as real as that from physical spillovers such as acid rain. On the other hand, there is an important difference as well. Such spillovers risk becoming, in practice, open-ended (a characteristic they share with demands for global harmonization of standards to avoid competitiveness effects). On the other hand, the number of potentially harmful physical spillovers is inherently more limited and hence they are far less likely to open up a Pandora's box of demands ranging well beyond environmental concerns.

any number of grounds. Protectionists would welcome such unilateralism. They could exploit it to create embargoes, special import duties and quotas against rivals by enacting national legislation that unilaterally defines environmental agendas that other countries are likely to find unacceptable.

Changing the world trading rules so as to permit the suspension of trading rights of others by individual contracting parties, based simply on the unilateral and extra-territorial assertion of their environmental priorities, undoubtedly would be difficult because many countries would consider such a change to be a big step down a slippery slope. But this does not mean that alternative policy options are unavailable. There are always alternative means of influencing environmental objectives and practices in other nations' jurisdictions, short of using the unilateral trade weapon.

One example is consumer-based actions, including the promotion of environmental labelling so that consumers can easily concentrate their purchases on products produced in what they consider to be environmentally-safe ways.³⁰

Again, there is nothing under customary international law and practices that would prevent nongovernmental organisations in one country from actively diffusing their environmental ideas to residents of other countries, so as to create popular support for changes in environmental policies. This would open the door, in turn, to inter-governmental cooperation and the creation of a multilateral agreement to set standards for the activity in question - surely a realistic option considering the 127 multilateral environmental agreements noted in Table 1.

A ROLE FOR TRADE POLICIES?

At the beginning of the analysis of "domestic" environmental issues, it was noted that it is very unlikely that using a trade measure would be the most efficient way of dealing with a domestic environmental problem. Is this conclusion altered by the evident internationalization of such problems?

When competitiveness concerns are at work, the answer is no. To use trade policies in this case (to neutralize the trade and investment effects of different national pollution standards) would be inefficient for a number of reasons. First, it would block an opportunity for a mutually beneficial expansion of trade. Second, it would not necessarily cause the other countries to alter their environmental policies. An added drawback is the fact that it could be the exports of the lower income countries that would be hardest hit. Ironically, by reducing their economic growth it may even reduce their ability and willingness to pay for environmental improvements.

What if the "domestic" issues are being internationalized instead by foreign groups or governments asserting their jurisdiction over the country's environmental priorities? Here the answer regarding the role of trade policies is different because the underlying issue is dif-

30 See OECD (1991) for a discussion of environmental labelling in the OECD countries.

ferent. The primary question is not one of efficiency, but of enforcement. Is a trade measure the best instrument for getting an "uncooperative" country to change its environmental practices and policies?

Again the risk is that such a use of trade measures would lead to similar actions based on international differences in priorities in a wide range of other areas of economic and social life. And, since the trade measures would be necessarily discriminatory, their unilateral use would raise serious questions regarding their consistency with GATT obligations. Alternatively, if there is a shared consensus on a particular problem which leads to a multilateral agreement, the issue of using trade policy to ensure compliance by non-parties to the agreement may have to be addressed. This question is precisely the one that arises when environmental issues involving transborder physical spillovers are at issue.

4. PHYSICAL SPILLOVERS AND MULTILATERAL COOPERATION

What if the pollution does not remain within the country's borders? Pollutants can contaminate a lake, river or sea that is shared by other countries, or cause acid rain in countries located far down wind. The discharge of carbon dioxide (CO₂) and CFCs into the atmosphere may cause global warming or ozone depletion. Once transborder or global physical spillovers become a serious concern to people in other countries, governments will seek to control or eliminate them.

Since what one nation does or does not do can be seen to impact directly on another's health, safety and domestic environment - even if the scientific evidence can be a matter of dispute - inter-governmental cooperation is likely to be essential to finding a solution. In addition to resolving disputes about the direction and magnitude of these impacts, both efficiency and equity considerations must be addressed as part of the solution.

Efficiency issues arise because if different countries have different costs of abatement, then global efficiency would require that those differences be taken into account in minimizing the cost of reducing the environmental damage. The contribution to be made by each country to the solution of the environmental problem would then vary, the incidence falling more where the costs of abatement are less. Equity issues arise, in turn, because each country's contribution to the globally efficient clean-up effort may not match either its share of the pollution being emitted or its ability to pay. In such instances, securing multilateral cooperation will not be easy, even if awareness of the environmental effects is acute and the necessity for a multilateral solution is agreed.

These issues, and the question of the appropriate role of trade policy in multilateral solutions, are illustrated by the debate over deforestation and global warming. Indeed, this is an area where there is evidence both of contemplated unilateral actions (such as proposals to use import restrictions to persuade countries to reduce the cutting of their tropical forests) and of efforts at multilateral cooperation.

Debates on global warming have stressed a connection between deforestation and the increase in carbon dioxide in the atmosphere. While it is generally accepted that reducing CO₂ levels is likely to involve both reduced CO₂ emissions and action to slow or reverse deforestation, opinions differ as to which approach to emphasize. Countries which consume large amounts of fossil fuels (the principal source of CO₂ emissions) stress the need to preserve the forests. Other countries, concerned about foreign pressure to curtail the commercial exploitation of their forests, argue instead for a primary focus on reducing CO₂ emissions in high energy consumption countries.

One way of viewing this situation is that forests provide carbon absorption services to a world that is dumping increasing amounts of carbon into the atmosphere. Countries with a high ratio of forests to domestic carbon emissions effectively export carbon absorption services to the rest of the world. But because they are not paid for the exported services, they have little incentive to take such services into account when deciding how to use their forests. The result is most likely a faster rate of deforestation than would otherwise occur, which in turn creates concern among other countries.

Box 5 - Restricting trade in tropical timber

One especially unconvincing case for trade restraints on environmental grounds involves tropical timber. A number of groups have called for export or import restraints on tropical timber because of various concerns, including the effect of commercial logging in alienating the land of aboriginal peoples living in tropical forests, in contributing to the loss of genetic diversity of timber species and to the potential extinction of plants and animals, and in reducing the absorption of CO₂ from the atmosphere.

Attention to date has focused on tropical log trade. To what extent would a general ban on trade in tropical logs reduce deforestation? The answer is: hardly at all, for the following reasons:

- only 0.5 per cent of log production in developing countries is exported in log form;¹
- a ban on log exports would simply encourage logs to be sawn and perhaps processed into panels before being exported from developing countries (but with more wasting of timber and other resources because of relatively poor sawmill technology and management);²
- even if a ban on trade were extended to include sawn wood and wood panels made from tropical logs, it would have only a minuscule effect on felling, because even the sum of log plus processed timber exports amounts to less than 1 per cent of the trees felled in developing countries;
- through lowering the price of tropical timber, such a ban would reduce the incentive to protect existing forests and to establish new ones in developing countries;
- four-fifths of trees felled in developing countries are used as fuel directly or in the form of charcoal. This is largely because people are too poor to be able to purchase other fuels such as kerosine and need, in any case, to clear land (often slash-and-burn style) to be able to produce food for their growing population in the absence of enough paid employment opportunities; and
- little more than half the world's timber comes from tropical countries, so attention also needs to focus on forest management in industrial countries.

Should a developing country nonetheless take account of the concerns of other (including industrial) countries when determining its policy on forests? A country with a low ratio of carbon emissions per hectare of forest is effectively exporting, free of charge, "carbon absorption services" to the rest of the world. However, since it is not paid for those services (and for maintaining wilderness areas and a diversity of species), it has little or no incentive to take such services into account in deciding on the optimal management of its forest resource. The argument that it should maintain its forests because "they belong to the world at large" is unpersuasive to many people. After all, the argument goes, almost 80 per cent of the greenhouse gas emissions resulting from human activities are generated in industrial countries, so it is those countries which should look to solutions to global warming rather than ask lower-income countries to provide the solution.

Reducing emissions of greenhouse gases is obviously the most direct way to reduce the threat of global warming. But if deforestation is considered undesirable for other reasons, then some form of international agreement and possibly compensation to lower-income countries which are home to large forests needs to be considered. Perhaps the most effective way to slow the deforestation of tropical countries, however, is to promote employment and income growth for rural people in those countries, for example through economic policy reform at home and access to markets abroad.

¹ These and other trade data are taken from the Food and Agriculture Organisation's *Forest Products 1978-1989*, Rome, 1991.

² In 1978 more than 95 per cent of Indonesia's wood exports were in the form of logs, whereas now more than 90 per cent are in the form of sawn wood and wood panels.

In its 10 August 1991 edition, *The Economist* noted that Swedish sawmills use 98 per cent of a tree whereas Malaysian mills use only 40 per cent.

Given that the countries which are home to large tropical forests are currently exporting carbon absorption services (and biodiversity services) to the rest of the world free of charge, there is a certain logic to the view that they should be offered compensation for reducing the rate of exploitation, rather than be threatened with restrictions on their exports. Yet in many importing countries the discussions have tended to focus on proposals to ban or tax imports of tropical timber in order to protect forests abroad.³¹ Furthermore, as Box 5 suggests, even a complete ban on trade in tropical logs would have at best only a very minor effect on the pace of global deforestation. Compensation, in contrast, represents a general inducement for exporting countries to reform the full range of policies and activities which are currently depleting their forests.³²

Imposing unilateral trade restrictions in pursuit of environmental goals is likely to be inefficient - as in the case just cited - and it raises problems of legal consistency and bad precedent for the trading system.

TRADE MEASURES IN MULTILATERAL AGREEMENTS

There can be little doubt that cooperative action among countries is superior to unilateral action in the case of a transborder spillover. This has implications for trade and trade policies because it is evident from existing and proposed agreements, as well as from recent bilateral developments, that governments and environmental interest groups see a role for trade policy in the promotion and enforcement of international cooperation on environmental issues.

Augmenting the incentives to participate can be important, especially when there is an urgent need for an agreement. There are at least four reasons why a country might decline, at least initially, to join other countries in trying to solve an environmental problem: first, the country may find the scientific evidence unconvincing, and therefore either not accept that there is a problem, or believe that the risks are exaggerated, or that the proposed remedies will be ineffective; second, it may accept that a particular environmental problem exists, but attach a low priority to solving it; third, it may disagree with the pro-

31 It is sometimes argued that a general export ban on raw timber would enable the producing countries to achieve a target level of foreign exchange earnings at a lower resource cost because it would stimulate the domestic processing industry, thereby increasing the amount of domestic value added associated with a given level of wood exports. As far as economic growth and rising per capita incomes are concerned, this is an unpromising proposal since it could lead a country to expand industries in which it does not have a natural comparative advantage. Moreover, a ban on the export of unprocessed timber may not even increase foreign exchange earnings for any given level of timber harvesting (or, what is the same thing, maintain a constant level of foreign exchange earnings for a reduced harvest). It is true that an export ban may achieve a sufficient reduction in the domestic price of raw timber to make a previously uneconomic timber processing industry privately profitable. But that industry requires capital and labour in addition to logs. Insofar as these resources are drawn from other sectors producing tradable goods, the foreign exchange earned or saved by those other sectors will diminish. This may well more than offset any increase in foreign exchange earnings from the processing of timber. In other words, maintaining a target level of net foreign exchange earnings will generally require more, not less, harvesting of raw timber if a ban is imposed on log exports.

32 On policies which encourage deforestation, see for example Repetto and Gillis (1988), Mahar (1989), Binswanger (1991), Grut, Gray and Egli (1991), Southgate, Sierra and Brown (1991), Pearce (1991, Chapter 8), and Cairncross (pp.80-90).

posed allocation of responsibility, among the countries involved, for dealing with the problem; and fourth, the country simply may be trying to free ride on the efforts of other countries to solve the problem.³³

Fortunately, the difficulty of recruiting participants generally is not an unsurmountable obstacle since environmental agreements typically do not require that all countries actively participate in order for the agreement to deal effectively with the problem in question. Many countries' activities make only a marginal contribution to a particular problem, which usually means they can make only a marginal contribution to solving it. On the other hand, lack of participation can raise political problems related to reciprocity and fairness.³⁴

Promoting cooperation on environmental issues

Promoting cooperation involves creating incentives which can be negative or positive. Negative incentives can take various forms, including discriminatory trade measures that penalize exports of products which are unrelated to the environmental problem at hand. In any individual situation, it may be tempting to rely on such measures. But it is very unlikely that such an approach would be a sustainable way of dealing over time with the variety of environmental issues facing the world community.³⁵ Among other things, by generating resentment and commercial frictions in the case at hand, it reduces the prospects for inter-governmental cooperation on future problems. This and other drawbacks no doubt explain why none of the existing multilateral environmental agreements contain provisions for discriminatory trade measures to be taken against unrelated products in the case of non-participation or defection. It may also be that governments recognise that their own economies are likely to be damaged by new trade barriers.

When cooperation is not voluntarily forthcoming, positive incentives are the best way to achieve sustained inter-governmental cooperation. Positive incentives can include offers of financial assistance and transfers of environmentally friendly technology directly related to the problem at hand, as well as more broadly based offers, for example, to increase foreign aid, to lessen debt problems and to make non-discriminatory reductions in trade barriers.³⁶

It is useful to distinguish between (a) negative and positive trade measures applied to products which are unrelated to the environmental problem at hand, and (b) trade provisions applicable to related products. The distinction is useful because the scope for the latter type of trade measures is relatively limited, whereas there is essentially no limit to the use of trade measures on unrelated goods and services.³⁷

33 See Blackhurst and Subramanian (1992) for additional details. See also Cooper (1989) for an examination of how a lack of agreement on scientific issues blocked international cooperation in controlling the spread of contagious diseases for nearly seventy years. Regarding the income distribution effects of alternative environmental policies on the distribution of income, see Lloyd (1992), Snape (1992), Winters (1992) and Hoekman and Leidy (1992). The free rider situation is considered in Piggott, Whalley and Wigle (1992) and Enders and Porges (1992).

34 See, for example, MacNeill, *et al.* (1991 p.106) (p.86), and Hahn and Richards (1989).

35 Authors either fail to mention negative incentives when they discuss ways of encouraging participation in agreements or explicitly caution against the use of such measures. See Sand (1991), MacNeill, *et al.*, (1991), Chayes and Chayes (1991), Mohr (1990) and Stern (forthcoming).

36 See, for example, MacNeill, *et al.* (1991, pp.85-86).

37 In practice, it may not always be easy to draw a line between unrelated and related products. For example, the Montreal Protocol on CFCs contains provisions covering not only trade in CFCs, but also imports of semiconductors that have been washed with CFCs and exports of CFC-related technology.

Probably the best-known example of trade provisions in an environmental agreement are those in the Montreal Protocol on CFCs, though many earlier agreements covering fauna and flora contain similar trade provisions. The primary purpose of trade provisions in such agreements is to prevent trade between non-participants and participants from undermining the effectiveness of the agreement. Trade provisions often also have the incidental effect of treating non-participants less favourably than participants. Again, what distinguishes this from the use of negative incentives is that the products affected by the trade provisions are directly related to the environmental problem in question.

Trade provisions which are not essential to prevent the undermining of an agreement would be, of course, de facto negative incentives. Recalling the discussion of GATT rules in Part 2 above, it is also important to keep in mind that as long as participation in an environmental agreement is not universal, trade provisions will be, like negative trade incentives, discriminatory.

5. PROTECTION AND THE ENVIRONMENT

There are many examples, from many countries, of current government policies in such areas as agriculture, forestry, transportation and energy that have led to environmentally damaging behaviour.³⁸ It hardly needs to be added that the policy makers did not set out deliberately to create policies that would harm the environment. Nonetheless, that was the result. In such situations, policy reform would increase income and improve the environment at the same time. A case in point - and one which is particularly relevant to the interaction between trade and the environment - is agricultural policies in many of the developed countries.

Agriculture and the environment

There is little doubt that modern agricultural production often degrades the natural environment. Water, air and soil are subject to pollution by chemical fertilizers and pesticides, as well as by concentrations of manure from intensively farmed livestock. Chemical and pesticide residues in food are also a growing concern to consumers. When sloped land is ploughed, the result can be soil erosion and silting of downstream dams, and irrigation can create salinity problems. Would then the effect of trade liberalization be to accentuate these adverse effects or to diminish them?³⁹

The answer to this question clearly depends in part on the impact of liberalization on the distribution of agricultural production around the world. Broadly speaking, current policy distortions in food production have led to high prices and other forms of support for farmers in most high income countries and low relative prices for farmers in many low income countries.⁴⁰ Reductions in farm support and increases in market access in highly-protected coun-

38 In MacNeill *et al.* (1991, p.33, footnotes omitted), the authors note that Energy subsidies can, and usually do, favour large supply projects and undermine funding for biomass and renewables. Tax concessions for logging, settlement, and ranching can accelerate deforestation, species loss, and soil and water degradation. Pesticide subsidies can promote excessive use and thereby threaten human health, pollute water, and increase the number of pesticide-resistant species. Subsidies for water-resource development and water use can lead to overuse for irrigation and industrial and municipal purposes.

They go on to cite specific examples from Germany, Japan, the United States, Canada, Brazil, Indonesia, China and India.

39 See Eckholm (1976) and OECD (1989) for details on these and other environmental problems associated with agricultural production. A recently released joint study by two Dutch research institutes (RIVM and RIZA, 1991) concludes that much of the groundwater under farms in the European Communities is seriously polluted with pesticides and nitrates. According to the study, which fed samples from around the EC into a statistical model, farming is by far the most important source of the water pollution.

40 In its *World Development Report 1986* the World Bank observes:

Developing countries clearly tend to tax agricultural commodities and thus encourage imports and discourage exports ... Industrial countries, in contrast, tend to support domestic production and thereby inhibit imports and encourage exports ... Agricultural prices and costs are the key to the profitability of investment in agriculture. In industrial countries, resources are diverted from other sectors to agriculture. In developing countries, ... resources are diverted from agriculture to industry ... This makes developing countries export less and import more, even though they could become - if they are not already - efficient producers by making investments to acquire the necessary technology. (pages 11, 125)

As Krueger *et al.* (1988) demonstrate, most of the "taxation" of agriculture in the eighteen developing countries in their study occurred indirectly as a result of (i) an overvalued exchange rate, and (ii) industrial protection which depressed the prices of agricultural commodities relative to those of

tries would cause a partial shift of agricultural production from farms in those countries to more competitive producers, including ones in the low income countries.⁴¹ Clearly, this re-location of production would bring income gains to both groups of countries, with the gains being even larger if there were also policy reforms in the countries whose policies tax their farmers.⁴²

The environmental effects of agricultural trade liberalization are more difficult to predict because it requires information on, for example, likely shifts in input use. However, several empirical studies offer insights into what might be expected to occur. One aspect concerns the use of chemical fertilizers and pesticides, which is highly correlated with prices received by producers. For example, countries with relatively low producer prices (such as Argentina, Australia and Thailand) use less than one-tenth the amount of chemical fertilizer per hectare used by high price countries in Europe.

Further, a study of rice production in several Asian countries in the late 1970s revealed that both fertilizer and pesticide use were highly correlated with the domestic producer price of rice. In the United States, land set-aside programs have caused farmers to devote more effort to increasing yields on remaining land, which almost certainly has involved increased per-acre use of chemicals. High support prices in land-scarce countries, backed-up by protection at the border, have a similar impact on chemical use. Moreover, support prices and deficiency payments in both North America and Europe have discouraged crop rotation and diversification which are natural alternatives to the intensive use of fertilizers.⁴³

It is not unreasonable to conclude from such evidence that the positive environmental effects of the decline in the use of chemical inputs in the high income countries are likely to be substantially greater than the adverse environmental effects of the increased use of such inputs in the low income countries following a liberalization of world food trade. In other words, these several findings point to the conclusion that existing agricultural protection not only fails to help the environment, but almost certainly is an important source of environmental degradation.

There are fears that a partial shift of farm production from high income to low income countries would lead to large-scale deforestation. Such fears appear to be exaggerated. Evidence from Argentina and forest-abundant Brazil, for example, indicates that while the use of labour and capital equipment is reasonably responsive (and fertilizer use, starting from a low level, very responsive) to increases in prices received by farmers, the amount of land in cultivation is not. Recent studies of the agricultural sectors in China and Thailand point to the same conclusion.⁴⁴ In other words, in many countries most of the additional output would

nonagricultural tradable goods.

41 The following discussion of liberalizing trade in food products draws heavily on Anderson (1992a, b), where interested readers can find a more detailed development of the analysis as well as the supporting empirical data.

42 Many food-importing low income countries would be among the gainers, either because they switch to the status of food exporters at the higher relative price of food or because their gains from higher domestic food prices (which attract labour and capital into agriculture and away from less efficient but protected manufacturing industries) more than offset the decline in their terms of trade. Those current net-food importers which would not become food exporters would, nonetheless, experience an increase in food self-sufficiency (see Anderson and Tyers, 1991).

43 See Anderson (1992a,b), Avery (1991, p.216) and Barbier and Burges (1991).

44 The study by Fan (1991) found that in China during the 1965-85 period - when real prices received by farmers increased very substantially - none of the growth in farm output was attributable to land

come from a more efficient use of existing farm land. It is also necessary to keep in mind that clearing land for farming in response to higher prices is only one of several causes of deforestation (see Box 5).

Liberalizing protectionist agricultural policies in the high income countries is therefore likely to (i) cause the world's food to be produced with fewer chemicals, which in turn would reduce chemical residues in food and in the natural environment; and (ii) have at most a very modest impact on the rate of deforestation. It would also increase the availability of land for recreational and aesthetic uses - including the replanting of forests - in several high income countries as marginal farm land was taken out of production. Thus, in all likelihood there would be a substantial increase in global environmental quality following agricultural trade liberalization, even if no new environmental policies were introduced. Policy reforms in lower income countries which reduce the taxation of agriculture and improve forest management would add to these world-wide environmental gains.⁴⁵

Interaction among environmental and trade policies

The situation in agriculture illustrates the general point that current restrictions on international trade can be bad for the environment. As regards future policies, there is concern that the growing interest in the linkages between trade and the environment brings with it a potentially serious source of new protectionism. More specifically, the past success of particular producer groups in manipulating domestic environmental policies to benefit themselves at the expense of both the rest of the economy and ultimately even the environment, and the successes of inefficient producers in obtaining protection against imports, suggests that the risks of inefficient policies being implemented in the area where environment and trade intersect are especially great.⁴⁶

As was noted in Part 3, adoption of an environmental policy can cause direct pressure for additional protection, as the domestic industry may now claim that there is no longer a "level playing field". Alternatively, pressure may be exerted to amend existing unfair trade legislation to take into account asymmetric environmental regulatory regimes. In addition, firms may find that the impact of new environmental regulations on their profitability increases the likelihood that they can obtain protection under unfair trade laws or rules for emergency protection.⁴⁷ In the case of environmental, health and

expansion and only 8 per cent to increased labour use. A quarter of the output growth was attributed to increased fertilizer, a quarter to the introduction of the household responsibility system from the late 1970s, one fifth to greater machinery use and one sixth to technological change (Fan, 1991). Phantumvanit and Panayotou (1990) estimated that for the period 1962 to 1989, the elasticity of demand for cultivated land with respect to the lagged price of agricultural crops was only 0.08. That is, a 10 per cent aggregate output price increase would result in less than a 1 per cent increase in cultivated area.

45 Assuming high consumer prices for coal are maintained in high income countries, a similar environment-improving outcome is highly likely if global coal trade were to be liberalized (Anderson 1992a). An example from the manufactures area is discussed in Feenstra (1988). He shows how the voluntary export restraint agreement between the United States and Japan on automobiles led to an increase in the relative importance of heavier, less fuel efficient automobiles in the United States. See Birdsall and Wheeler (1991) for an analysis which concludes that openness to trade and foreign investment has been associated with less pollution intensity in Latin American countries.

46 See, for example, Krueger (1974), Bhagwati (1982), Hillman (1989) and Magee, Brock and Young (1989) and the references cited there in. For an analysis of how the emergence of environmental lobbying groups can affect trade policy outcomes, see Hillman and Ursprung (1992). See also Van Grassek (1991).

safety problems associated with consumption (rather than production), standards may be "strategically" manipulated by producer groups whose main aim is to put foreign rivals at a competitive disadvantage.⁴⁸

The issue of political support for inappropriate policies becomes even more acute when protectionists attempt to draw environmental groups into implicit or explicit alliances. For example, a particular industry which is resigned to the inevitability of stricter environmental controls may try to avoid or resolve conflicts with environmental groups by indicating a willingness to clean-up, provided they are allowed to design the "fair" policy for doing so (there are elements of this in the proposals for countering so called "ecological dumping"). A similar process can be at work when the proposal is for tougher product standards. When this happens, it can substantially reduce the prospects of the appropriate environmental policy being adopted, since the policy which ranks first on efficiency grounds often ranks near the bottom of the industry's list of "fair" policy options.⁴⁹

The dilemma for those concerned with the environment is that the political support of the affected industry for an economically costly environmental policy may increase the probability that at least some policy will be adopted. If this is the case, it may appear reasonable, in the short-term, for environmental groups to support the less appropriate environmental policy, despite the risk that their support of a higher cost policy will work against the environment in the medium and long term.

As has already been noted, non-discriminatory domestic policies offer the most efficient approach to dealing with nearly all environmental problems. Interference with trade is seldom, if ever, the first-best way of achieving a particular domestic environmental objective. If the efficient policy is believed not to be politically feasible, and the less efficient (protectionist oriented) policy is blocked by the GATT rules, the GATT rules can easily appear to be "environmentally unfriendly". But revising GATT rules to "legalize" inferior policies has serious drawbacks. Along with setting a bad precedent - the slippery slope argument - it would also remove an important incentive for countries to adopt appropriate domestic environmental policies.

47 See Hoekman and Leidy (1992). See also Finger and Murray (1990), Kaplan (1991) and Bovard (1991) on the point that the injury criteria established under existing legislation offer substantial discretion in evaluating the health of an industry.

48 For a general discussion see See Salop and Scheffman (1983).

49 The history of the United States Clean Air Act provides a concrete example of the interaction between producers and environmental groups in the case of domestic environmental policies. See Ackerman and Hassler (1981), Maloney and McCormick (1982), Yandle (1989), Tietenberg (1988), Daly and Mayor (1986) and S. Fred Singer, "The Answer on Acid Rain Falls on Deaf Ears", *Wall Street Journal*, March 6, 1990. Commenting on another example, involving the decision to build a major desalting plant in Arizona, Kneese (1988, pp.7 and 13) notes that the option selected was most likely "about 15 to about 150 times" as costly as an available alternative, leading him to observe later in the paper that "there simply was no effective advocate for efficiency in the loop, and the result is a wildly uneconomic approach to the problem of reducing salinity in the Mexicali Valley."

Appendix I

Multilateral environmental agreements with trade provisions

This appendix details multilateral agreements on the environment (excluding cultural and military agreements) which have trade provisions as of mid-1991. The date next to the title of the agreement is the date at which it was signed.

I. Agreements in force

1. Convention Relative to the Preservation of Fauna and Flora in their Natural State, 1933

Objective is to preserve the natural fauna and flora of the world, particularly of Africa, by means of national parks and reserves, and by regulation of hunting and collection of species.

Trade provision: Prohibits the import and export of trophies unless the exporter is given a certificate permitting export. Parties shall take measures to control and regulate in each of its territories the internal import and export of trophies acquired in a manner not in accord with national law (Art. 9).

2. Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere, 1940

Objective is to preserve all species and genera of native American fauna and flora from extinction, and to preserve areas of extraordinary beauty, striking geological formation or aesthetic, historic or scientific value.

Trade provision: Provides for the regulation of trade in protected species by the issuance of export permits (Art. 9).

Note: Parties are countries in the Western Hemisphere.

3. International Convention for the Protection of Birds, 1950

Objective is to protect the populations of birds, and particularly migratory birds, from extinction.

Trade provision: Prohibits the import, export, transport, offer of sale or sale of any (i) live or dead birds killed or captured during the protected season (Art. 3); (ii) eggs, or their shells or their broods of young birds in the wild state during the breeding season (Art. 4).

Note: Parties are ten countries in Western Europe

4. African Convention on the Conservation of Nature and Natural Resources, 1968

Objective is the conservation, utilisation and development of the soil, water, flora and faunal resources of the African continent.

Trade provision: For all species, a Party shall regulate trade in and the transport of specimens or trophies, and shall do so in such a manner as to prevent the illegal capture or killing of these. Trade in trophies and transport of specimens of protected species¹ shall be subject to a standard authorization (i) additional to that required for the hunting, killing, capture or collection; (ii) which indicates the destination; (iii) which shall not be given unless they have been legally obtained; (iv) which shall be examined prior to exportation. Parties will make the import and transit of such specimens or trophies subject to the presentation of the authorization required under (i) and confiscate illegally exported specimens or trophies (Art. IX).

Note: Parties are all members of the Organization of African Unity.

5. Benelux Convention on the Hunting and Protection of Birds, 1970

Objective is to harmonize regulations on the hunting and protection of birds in the wild state.

Trade provision: In the case of traffic with third countries, (i) the export, import and transit of live or dead game shall be governed by the regulations in force in the partner countries in which such operations take place (Art. 6); (ii) the export, import, transit of all live or dead birds and of their eggs and young, shall be permitted only with prior authorisation from the partner countries in which such operations take place (Art. 9).

Note: Parties are Belgium, Luxembourg, and the Netherlands.

6. Convention on International Trade in Endangered Species of Wild Fauna and Flora, 1973

Objective is the protection of endangered species against overexploitation through international trade.

Trade provisions: Trade of species threatened with extinction (listed in Appendix I), and trade in species that may become endangered unless trade is strictly regulated (listed in Appendix II), is authorized by export and import permits approved by the Scientific Authorities of the Parties concerned (Articles III and IV). Species that a Party identifies as being subject to regulation within its own jurisdiction and as requiring international cooperation to control trade (listed in Appendix III) is subject to an export permit authorised by the Scientific Authority of the Party (Article V). Article XXIII permits a party to exempt itself from the requirements of the convention with regard to a specific species listed in Appendices I, II, or III.

Note: CITES builds on a long history of controlling trade in endangered species through the issue of export permits. It adds the twist of requiring an import permit for an export permit to be issued, in order to prevent circumvention to non-Parties.

7. Agreement on the Conservation of Polar Bears, 1973

Objective is to prohibit the capturing and killing of polar bears, and to protect the ecosystems of which the bears are a part.

¹ Species in Class A are completely protected; species in Class B are completely protected but may be hunted, killed, captured or collected under special authorization granted by the competent authority (Art. VIII).

Trade provision: Prohibits the exportation from or importation and delivery into, and traffic within, its territory of polar bears or any part or product thereof taken in violation of the agreement (Art. V).²

Note: Parties are Canada, Denmark, Norway, United States and USSR.

8. Convention for the Conservation and Management of the Vicuña, 1980

Objective is the conservation and management of the vicuña.

Trade provision: The export of fertile vicuña semen or other reproductive material is prohibited except to member countries for research and/or repopulation (Art. 4).

Note: Parties are four Latin American states.

9. Convention on Conservation of North Pacific Fur Seals, 1957

Objective is to achieve maximum sustainable productivity of the fur seal resources of the North Pacific Ocean.

Trade provision: The importation and delivery into and the traffic within the territory of a Party of skins taken in the area of the North Pacific Ocean is prohibited except those taken by the United States or USSR on rookeries, those taken for research purposes, or by native populations, confiscated or inadvertently captured (Art. VIII).

Note: Parties are Canada, Japan, United States and USSR.

10. Montreal Protocol on Substances That Deplete the Ozone Layer, 1987

Objective is to reduce and eliminate man-made emissions of ozone-depleting substances.

Trade provisions: Trade provisions affect non-Parties only. Parties are to ban the importation of controlled substances as of 1 January 1991, and ban the export of controlled substances as of 1 January 1993. Parties are also to ban the export of the relevant technology to non-Parties. The 1990 amendments, which are not in force, require Parties to ban the importation of CFC-containing products as of 1 January 1993.

11. European Convention for the Protection of Animals during International Transport, 1968

Objective is to safeguard, as far as possible, animals in transport from suffering.

Trade provision: Each Party shall apply the provisions governing the international transport of animals contained in the Convention (Art. I).

12. International Plant Protection Agreement, 1951

Objective is to maintain and increase international cooperation in controlling pests and diseases of pests and plant products, and prevent their introduction and spread across national boundaries.

² Polar bears are listed in App. II of CITES which means that the export of bears, ect. must be limited to a level that is not detrimental to the species.

Trade provision: Parties are required to regulate very strictly the import and export of plants and plant products, by means, where necessary, of prohibitions, inspections, and destruction of consignments (Art. 6).

13. Plant Protection Agreement for the South East Asia and Pacific Region, 1956

Objective is to prevent the introduction and spread of diseases, insect pests and other enemies of plants into any part of the region.

Trade provision: Each Party shall use its best endeavours to apply with respect to the importation of any plants from anywhere outside the region such measures of prohibition, certification, inspection, disinfection, disinfestation, quarantine, destruction or other measures as may be recommended by the Plant Protection Committee for the South East Asia and Pacific Region (Art. III).

Note: Arose out of the International Plant Protection Agreement.

14. Phyto-sanitary Convention for Africa, 1967

Objective is to prevent the introduction and spread of diseases, insect pests and other enemies of plants into any part of the region.

Trade provision: Each Party shall control the importation of plants, apply measures of prohibition, quarantine, certification or inspection for any plant, plant material, seed or packing material as the Organisation of African Unity shall consider necessary (Articles 4,5,6).

Notes: (i) Arose out of the International Plant Protection Agreement;
(ii) Supersedes the Phyto-Sanitary Convention for Africa South of the Sahara, 1954.

15. Agreement Concerning the Cooperation in the Quarantine of Plants and their Protection against Pests and Diseases, 1959

Trade provision: Parties undertake to apply uniform phytosanitary regulations for the import, export and transit of consignments of vegetable origin dispatched from one country to another (Art. 4).

Note: Parties are states in Central and Eastern Europe, and the USSR.

II. Agreements that are not in force³

16. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, 1989

The objectives of the agreement are to limit the transboundary movement of hazardous waste among party countries, to set up notice and consent procedures, to define the scope of the agreement, and to define what constitutes illegal traffic and the responsibilities of the parties.

³ These agreements will enter into force when they have been ratified by a necessary group of countries.

Trade provision: Categories of wastes are defined in Annex I, and characteristics of hazardous wastes in Annex III. In addition, a Party may define as or consider to be a hazardous waste other substances in its domestic legislation. Each Party may prohibit the import of hazardous wastes for disposal and shall inform other Parties; Parties shall not export hazardous wastes to a Party unless the State of import consents in writing, provided the State has not prohibited the import; Parties shall not allow the export of hazardous waste to a Party or prevent the importation of a hazardous waste if it has reason to believe that the waste will not be disposed of in an environmentally sound manner; trade with non-Parties is prohibited (Art. 4). A proposed transboundary movement of hazardous wastes or other wastes shall be notified by the State of export to the State of import, which must consent to the movement with or without conditions, and export will be allowed only if the disposal will be conducted in an environmentally sound manner (Art. 6), and re-import the material if this is not the case (Art. 8). Illegal traffic in hazardous wastes is also subject to the duty to re-import.

- Notes:** (i) The agreement leaves open a definition of hazardous waste;
(ii) Resolution 3 recognizes the necessity of developing rules on liability and compensation for damage resulting from the transboundary movement and disposal of hazardous wastes and other wastes;
(iii) Only three parties have ratified the convention (20 are necessary for it to enter into force).

17. ASEAN Agreement on the Conservation of Nature and Natural Resources, 1985

To promote joint and individual state action for the conservation and management of the natural resources of the ASEAN region.

Trade provision: Parties are to regulate trade and the possession of species recognized as endangered by the parties.

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