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1. INTRODUCTION

Trade-environment linkages are multiple and complex in nature. In different contexts or when viewed from differing perspectives in the same context, trade and environment could be mutually conflicting or mutually supportive.

Most economic activity damages the environment to some extent or the other, and trade liberalisation, in so far as it results in an increased scale of economic activity, will, in all likelihood, lead to an increase in environmental damage. Moreover, increased openness to trade and globalisation will encourage international movement of goods that, from an environmental point of view, ought not to be traded. In structural terms, trade liberalisation may tilt the product mix of a national economy towards goods that are natural resources - intensive or pollution intensive which in turn will lead to a more rapid resource depletion and environmental degradation. On the other hand, there are the favourable impacts of trade on environment. When trade becomes an engine of efficiency and growth, it helps the environment in two ways. First, efficient firms tend to economise on the use of natural resource inputs and the discharge of polluting waste and, second, growth translates into higher standards of living for the people. Openness to trade and investment also makes possible the transfer of new environmentally friendly technologies. Finally, the structural change that comes about in the composition of a country's economy as a consequence of trade liberalisation can be beneficial for the environment, if specialisation occurs in less polluting sectors.

Turning the issue of trade-environment linkage around to examine the question of the impact of environmental objectives on trade reveals the same double-edged-sword property of conflict and complementary. On one hand, there is a serious threat posed to market access and competitiveness of developing countries by the environmental regulations - both governmental and those made by consumer led movements - of developed countries. In addition, there are the adverse trade effects of the international treaties on the developing countries. On the other hand, new opportunities to export environmentally friendly products in developed countries have emerged for the developing countries. The 'green trade' may be expanding slowly, but it, nevertheless, represents a new area which holds promise for converting environmentalism into tangible gains from trade.

Finally, it may be noted that the timing of trade liberalisation of the developing countries has a crucial bearing on the challenge posed by the growing environmental concerns. That is to say, those developing countries that have delayed their transition towards outward-orientation - and India is certainly one of them - will find the task of restructuring their economies rendered more difficult by the need to reconcile trade and environment.

2. TRADE LIBERALISATION AND THE ENVIRONMENT

2.1 Developing Countries

Trade liberalisation implies reducing or removing government intervention while fulfilling environmental objectives require increased government intervention. Nevertheless, in economic theory trade liberalisation and environmental regulation are shown to be compatible if all the environmental costs are internalised . In the real world, however, full cost internalisation can only be a distant possibility. In a world of partial and imperfect or inoptimal environmental policies, no *a priori* judgement can be made on the question of the impact of trade liberalisation on the environment. In fact, given the vast diversity of environmental standards across

countries - i.e., a situation where there is a large variation in the extent to which different countries internalise their environmental costs - any conclusive empirical judgement on whether increasing trade openness in developing countries benefits or harms their environment is also not possible. The best possible course of action then is to refer to the country case studies - which address a whole range of trade-environment issues including that of the environmental impact of trade liberalisation - carried out during 1993-96 by local research institutes in developing countries under the joint UNCTAD-UNDP project on 'Reconciliation of Environmental and Trade Policies' and make do with the broad empirical generalisations that emerge from them.[1]

The *country case studies* do not provide any hard evidence on trade liberalisation having a decisively negative impact on the environment. In fact these studies provide examples of both trade liberalisation benefitting the environment, and trade liberalisation harming the environment. More importantly, in all the cases of the latter kind - including that of the export - oriented industries of tanning and shellfish in India - the appropriate remedy suggested is correcting government or market failures and/or adoption of appropriate technologies rather than reversing trade liberalisation.

2.2 India

Trade liberalisation in India has led to an expansion of exports, but the latter still constitutes only a small proportion of the total production. Under such circumstances, it is not likely that exports will contribute significantly to environmental degradation in this country.

A study, which estimates the average CO_2 emission caused by production for export and that caused by production for domestic consumption, found that the proportion of export production to total production was the same as the proportion of emission caused by export production to that caused by total production in most of the sectors.[2] For all the sectors combined, the study found that the exports accounted for 9.8 per cent of carbon dioxide emissions in the country, while they constituted about 8.7 per cent of the total

output in the country. The study thus clearly shows that export production is only marginally more carbon intensive than overall production in the country.

The study also concludes that the ecological damage, which is caused by exports, is mostly local in nature, and can be solved easily by government intervention at the source of production. Hence, there is no need or justification for the use of trade measures such as export bans or restrictions, as instruments of pollution abatement.

3. DOMESTIC ENVIRONMENTAL REGULATIONS

3.1 Domestic Environmental Regulations in the Developing Countries

The developing countries face a serious dilemma at the policy level - whether to go for policies designed to maximise economic growth and treat some environmental degradation as an inevitable cost, or to choose a policy package which balances growth and environmental preservation with a view to long run sustainability. However, given that there is a tension between, the demand for stricter environmental regulations, and the urgency of fast economic growth in these countries, it is the latter which by and large influences policy making. Nonetheless, the fact remains that in times to come the importance of domestic environmental regulations can only increase.

3.2 Trade Impact of Domestic Environmental Regulations in the Developing Countries

The evidence that is available on the trade impacts of domestically generated environmental regulations in developing countries is scanty, and certainly does not corroborate the claim frequently made by industrialists that the imposition of stricter environmental standards have adversely affected competitiveness and growth prospects of exports from these countries.

Even in the UNCTAD-UNDP country case studies there is no suggestion of stricter locally imposed environmental standards having a significantly negative impact on trade. The exception is the case

of Poland (a transition rather than a developing economy). Traditionally, Poland has been exporting electricity (to the Czech Republic and Germany) and other energy intensive goods. However, with the introduction of market reforms and stricter environmental regulations - which, among other things, require the power plants to install fuel gas desulphurisation facilities to reduce SO_2 and NO_2 emissions and, thereby incur higher generation costs - the prices of energy and raw materials have risen sharply. This is expected to result in a significant decline in competitiveness of polish exports. On the other hand, Poland is expected to reap the positive benefits of stricter environmental regulations through the adoption of environmentally sound technologies and the emergence of pollution abatement industries.

3.3 Domestic Environmental Regulations in India

The priorities in environmental management of a low - income country like India are quite different from those of the developed countries or even those of the middle-income countries. In India the focus of environmental regulations is on sustainable development, increasing the availability of drinking water and sanitation facilities and improving ambient air standards rather than on the problems of global warming and ozone layer depletion.

The major environmental regulations in India are the Water Act of 1974, the Air (Prevention and Control of Pollution) Act of 1981, and the Environmental (Protection) Act of 1986. The Ministry of Environment and Forests is the authority for enforcement and implementation of changes in regulations whenever necessary.

Other examples of environmental regulations in India arising from local as well as international concerns are the bans on benzidine dyes and pentachlorophenol (PCP) and the compulsory requirement of effluent treatment in new tanneries and the fish processing industry. In the agricultural sector the use of pesticides and chemicals which may increase productivity but generate harmful effects on health is also being curbed.

3.4 Trade Impact of Domestic Environmental Regulations in India

Domestic environmental regulations *per se* do not seem to have a major trade impact in India except, perhaps, in the case of Small and Medium-sized Enterprises (SME). Much more important is the foreign or external environmental regulations, and the Indian case-study focuses primarily on that. However, some estimates of the costs of compliance of domestic environmental regulations have been provided. For example, meeting of the new domestic pollution standards in the leather industry is expected to increase the prices of leather and leather products by 1.5 per cent. Similarly, the costs of effluent treatment for the fish processing industry is estimated to be as small as 0.2 per cent of the turnover. It follows that, no significant loss in competitiveness of leather products and shellfish can be said to result from the imposition of stricter domestic environmental standards.

4. RELOCATION OF PRODUCTION TO COUNTRIES WITH LOWER DOMESTIC ENVIRONMENTAL STANDARDS

An important question in trade and environment context is whether there is any tendency for the more polluting and dirtier industries in the developed countries having strict domestic environmental regulations, to relocate themselves in the developing countries, which have liberal domestic environmental regulations, in order to avoid the higher costs of producing under stricter environmental regulations. On the surface, the argument that the countries, having less strict environmental regulations, implicitly offer a scope to reduce costs and thereby attract polluting industries, seems to be appealing. However, an in-depth analysis reveals that industrial location decisions are based on a variety of factors of which the environmental regulatory framework is only one. The other more important factors are availability of infrastructure, costs of labour, access to markets and social and political stability. Moreover, even in evaluating the environmental regulatory framework, the potential investor will assess not only the current regulations, but also how they are likely to evolve in future.

Empirical studies of MNCs have clearly shown that location decisions are governed by factors such as infrastructure, labour skills and costs and size of the market, rather than by environmental regulations. At the same time, some evidence in support of the pollution-migration hypothesis has also been found. However, this evidence is only a weak one, and could easily change if a comprehensive analysis of the migration of the concerned industries is made. In fact, some very recent studies do point out that, in overall terms, the migration of the "polluting" industries to the developing countries, which is alleged to have taken place to exploit the lower environmental standards in these countries, could well be explained by other factors such as the changing pattern of demand in the developing countries themselves.

Even when pollution-intensive industries do migrate to the developing countries, they are more likely to be governed by the higher corporate standards prevailing in the home country, than by the lower local standards, as far as pollution abatement is concerned. This is not only in keeping with tbeir public image, but also the correct pre-emptive action in anticipation of stricter domestic environmental regulations in future in the developing countries.

In the *country case studies,* the only study in which some concern has been expressed on account of the migration of the pollution-intensive industries is the Thailand study.[3] In the second half of the eighties, there were substantial increases in ODS imports into Thailand. Almost all of these imports went into Japanese, European and US firms or in joint ventures of any of tbese foreign companies with Thai firms, to serve as solvents in production. It seems then, that the foreign companies are treating Thailand as a 'pollution haven' and shifting ODS consuming production there. However, the Thai Department of Industrial Works has already moved into action. It has entered into agreements with the US Environmental Protection Agency and Japanese Ministry of International Trade and Industry to encourage the MNCs to phase out the use of these solvents in their Thai operations just as in their home - country operations.

It seems then, that barring a few stray cases of migration of pollution - intensive industries from the developed countries to the developing countries to take advantage of the lower environmental standards in the latter, there is no general trend of relocation of such industries taking place on account of difference in environmental standards. The incidental occurrence of the pollution-migration phenomenon does not justify the concern that is sometimes shown for it, and definitely does not call for a policy response such as the imposition of an "ecoduty" on imports from the developing countries on the ground that the latter is following a 'pollution haven' strategy to gain an 'unfair competitive advantage'.

5. EXTERNAL ENVIRONMENTAL REGULATIONS

5.1 Product and Process and Production Methods Standards

In principle, a country cannot impose its own environmental standards on its trading partners. However, in practice, the developing country exports have to meet the demands of environmental regulations in the developed countries, in addition to the requirements of their own environmental regulations.[4] Product standards, that have been set up at the national as well as the international level, is one important example of an environmental regulation in the developed countries which the exporters in the developing countries have to contend with.

Product standards define the criteria a product should meet with regard to design, composition, quality, safety, and performance. For an internationally traded product, the effects of its consumption occur in the importing country, and it is obvious that product standards protect the health, safety and environment of the importing and consuming country. The WTO rules allow a country to impose on the imported products the same product regulations as it applies on the domestically produced products, provided that these regulations do not amount to creating unnecessary obstacles to trade.[5]

Product standards are of two types - *technical standards* and *technical regulations*. The former are established by various private and quasiprivate entities such as the International Organisation for

Standardisation (IOS) and are voluntary, while the latter are established by governments and are mandatory. Examples of environmentally related technical regulations are pesticide and heavy metal residue levels in food products, auto emission standards and requirements for disposable packaging.

While product standards are based on the physical characteristics of the product, Process and Production Method (PPM) standards pertain to the methods by which a product is produced or harvested, but which do not show up in the physical characteristics of the product. The PPM standards, infact, specify how a product should be produced. In so far as the environmental problems created by a production process or method are entirely local and not transmitted to the importing country, there is no justification for the application of PPM-based standards on imported products, and, in fact, the WTO rules (Article III) do not allow the imposition of PPM standards by a country on its trading partners.

In the Uruguay Round, with a view to achieve the objective of preserving national authority to set whatever standards a government deems appropriate for the protection of health, safety and the environment without letting such standards conflict with liberal trade, two agreements were reached, one dealing with government regulations of products - Agreement on Technical Barriers to Trade (TBT) - and the other dealing specifically with food, animal, plant health and safety - the Sanitary and Phytosanitary (SPS) Agreement. The Technical Barriers to Trade (TBT) Agreement on technical standards and regulations of this Round in fact covers 'product characteristics and their related processes and production methods', but the term is limited to coverage of PPMs that are characterised in the final product. In the SPS Agreement, national standards must be based on international standards where they exist. However, a member may set standards that exceed international ones provided these higher standards are scientifically justifiable, based on proper risk assessment and do not result in arbitrary discrimination against imports. In short, the rules formulated under the TBT and SPS Agreements place considerable restrictions on the ability on the

national governments to establish environmentally related technical regulations on products.

In practice, however, the distinction between product and process standards often gets blurred. By specifying products in a very narrow way, an importing country can more or less determine how they are produced in the exporting country. Moreover, in certain cases, it becomes essential for the importing country to inspect the production facilities in the exporting country to ensure the meeting of the requisite product standards. For example, the European Union inspects the meat and drug production facilities in India and Zimbabwe before approving exports to its region. There are many other instances of environmental measures in developed countries, such as reducing pesticide residue levels in food stuffs, regulating emission standards for machines, and changing packaging requirements, forcing the exporters in developing countries to modify or make adjustments in their production processes and methods.

5.2 Packaging

A major problem faced by the exporters of developing countries is the increasingly stricter requirements of packaging in the developed countries. The costs involved in implementing measures for reuse or recycling of packaging materials depend upon the size, quality and characteristics of the packaging, and these costs therefore turn out to be higher for imported products than for similar domestic products. Moreover, differing packaging regulations between countries considerably increases the transaction costs for the developed countries exporters.

Packaging regulations in the developed countries tend to be 'arbitrary' and 'excessive' as evidenced by the faet that they have sometimes had unintended harmful effects for the environment. For example, jute packaging, which is both reusable and recyclable was replaced by plastic packaging as a consequence of the German Packaging Ordinance. Recycling companies in Germany refused to handle jute packaging used for wrapping bales of cotton and wool because of the labour required to remove the metal clips used in such packaging. Such problems, however, are better solved by adaptations

in the packaging design or by more advanced recovery process, rather than by replacing a packaging material that is inherently environmentally friendly.

The *country case studies* infact suggest that, in general, initial problems with packaging requirements tend to be resolved after some time on the basis of adjustments in the importing countries as well as knowledge and experience acquired by exporters. Nevertheless, from a trade and efficiency viewpoint, harmonisation of different countries' packaging requirements should be encouraged.[6]

5.3 Eco-Labelling

The purpose of eco-labelling is to evaluate the environment friendliness of various products and provide the relevant information to consumers so that they can make an informed choice. In other words, an eco-labelling scheme informs consumers that a labelled product is environmentally superior to other products in the same category, with a view to promote the consumption of environmentally friendly produets. It is a kind of third party product certification, with the certification done by a purely private organisation, such as the Green Seal in the United States, or by a mixed private-public entity as in the Canadian system.

Eco-labels should not be confused with "single issue" labels which refer to only one particular environmental aspect of a product, say, its energy use. Eco-labels are also different from the so-called "statutory warning labels". Eco-labels are awarded after taking into account the full chain of economic activity - extraction, processing, production, transport, sale, use and disposal - and for multiple environmental criteria such as energy use, pollution, ecological disruption, recyclability and degradability. In this respect, it may be viewed as one major component in the broader emerging activity of Product Life-Cycle (PLC) management. The latter has the following three steps - (i) an inventory stage, (ii) an impact analysis stage and (iii) an improvement analysis stage. In the first stage the physical effects are quantified; in the second stage the physical effects are classified in terms of ambient

environmental, biological, and ecological effects; and in the last stage production techniques and product characteristics less detrimental to environmental are sought.

In short, eco-labels, on one hand, assists consumers in expressing their environmental preferences in the marketplace and, on the other hand, helps producers in acquiring a higher market share and possibly price premiums (to the extent consumers are willing to pay) for their environmentally superior products. While eco-labels can not replace technical regulations which are intended to ensure consumer health and safety, and while they do not address consumption externalities and free-rider problems, they do, by improving information, to some extent enable the market system to internalise the environmental costs and benefits.

Eco-labelling is different from mandatory labelling requirements governed by the TBT agreement. Eco -labelling schemes are generally voluntary schemes of non-governmental organisations. Eco-labels, therefore, do not have any official status, and, in terms of WTO rules, they do not seem to be justifiable. The WTO prohibits discrimination between 'like products' imported from different countries and between imported and 'like domestic products', while eco-labels implicitly discriminate not only on the basis of the characteristics of products, but also on the basis of the production processes and methods. In practice, however, the unsettled legal status of eco-labels does not seem to matter, and the importer as well as the exporter accept them as something real. In other words, regardless of the ambiguity in its legal status, the importance of eco-labels in international trade is on the increase and the developing countries, in particular, are becoming increasingly exposed to the adverse trade effects of eco-labelling. Eco-labelling schemes, like the product standards, may intenionally or unintenionally, create non-tariff trade barriers and, thereby, reduce market access for the developing country exporters. Alternatively, they may suffer a loss in competitiveness on account of the compliance costs of eco-labelling requirements. In general, however, these negative trade impacts will be relatively small as eco-labelling, till date, has captured only a small segment of the market.

5.4 Trade Impact of External Environmental Regulations on the Developing Countries

It is true that for a number of products which are exported from the developing countries there are new environmental regulations and standards to be met, and in most of these cases the producers have had to make some change or the other in the production process. These adjustments in the production processes or techniques entail extra costs and, thereby, tend to reduce the competitiveness of these exports. The adverse impact on competitiveness may, however, be very small in magnitude terms, particularly if (i) foreign competitors are also incurring compliance costs, (ii) the financing of pollution abatement measures is internationally harmonised under the Polluter Pays Principle, (iii) compliance costs are passed backwards to factor returns rather than forward to prices, and (iv) the environmental regulation costs are a small fraction of the total production costs which include wages, raw material, transport etc. Moreover, it is even possible in certain cases that the switch to an environmentally superior technique results in increased efficiency and lower per unit eosts.

In an empirical assessment of the impact of external environmental regulations on the developing countries in the *country case studies,* the evidence provided is mixed. For a number of large developing countries it has been found that the loss in competitiveness resulting from compliance with environmental regulations in the developed countries is of a very small order and, by and large leaves their exports unaffected. In some other developing countries, the adoption of stricter environmental regulations required by the developed countries has in fact resulted in increased efficiency and profitability for the exporting firms.

However, there are causes of concern. Firstly, the smaller producers in the developing countries seem to be facing the brunt of the foreign environmental regulations. The costs of compliance for the small firms are much higher than that for the large firms. Moreover, the increasing number and variety of regulations is becoming increasingly unmanageable for the small producers. This

can have serious long-run implications for income distribution and economic growth in the developing countries. Secondly, several studies dwell upon the rather serious information bottleneck regarding changes in environmental regulations and highlight this as a major cause for the reduction in exports from the developing countries. Finally, there are some developing countries where there is a perception that the external environmental regulations have been deliberately made unnecessarily complex and cumbersome to ward off exporters from these countries.

Like the statutory environmental regulations, eco-standards set through eco-labelling in the developed countries also create problems of reduced competitiveness and market access for the developing country exporters. The creation of this new kind of non-tariff barriers to trade by the developed countries - also known as "Green Protectionism" - is a much talked about issue these days, and it is feared that the developing countries exports to the developed countries would fall sharply due to the changing consumer preferences for eco-friendly products induced by eco-labels. However, the evidence that has been made available in the *country case studies* do not warrant such fears. In the country by country analysis, exporters from many countries deny that there has as yet been any significant effect on their exports on account of the eco-labelling schemes, while exporters from some other countries view such schemes as opportunities to develop new products. There are only a few instances of an adverse trade impact reported in these studies. Thus, the broad conclusion that emerges from these case studies is that there is as yet no real evidence for the alleged strongly negative impact on trade of the voluntary schemes for encouraging eco-friendly products on the exports of developing countries. However, a caveat is in order. These studies are based on past experience in which the spread of the eco-labelling schemes is limited to certain products and to certain segments of the market. In future, as these schemes become widespread their impact on trade will have to be reassessed.

Notwithstanding the fact that the fears of "Green Protectionism" are unfounded, there are problems in the voluntary labelling schemes of eco-friendly products which must be resolved

if these schemes are to be prevented from becoming significant non-tariff barriers to trade. The problems are, firstly, that the eco-labels are often awarded on considerations which are not scientific, and certainly do not take into account the diversity in the production processes in the developing countries; secondly, the verification procedures for the award of an eco-label are unduly strict and make it virtually impossible for an exporter to obtain that label; thirdly, even for a product which is entirely imported and there are no domestic substitutes the right to grant a label is with the importing country; fourthly, for products which are domestically produced as well as imported, the exporters find it difficult to obtain labels owing to lack of information; and finally, if eco-labelling for any domestic product cannot be shown to have increased acceptability among the consumers there is little justification for the application of labelling requirements on the imported substitutes.

5.5 Trade Impact of External Environmental Regulations on India

After the disintegration of the USSR, India has become increasingly dependent on the OECD countries for its exports. This is shown by the figures for the share distribution of India's exports by the destination countries. In 1993, for instance, the market share of OECD countries in India's exports was 57 percent. The main products exported to this market were food and agricultural products, textiles and leather. Together, these three products (or product categories) accounted for more than 50 per cent of India's exports to the OECD countries.[7]

More recently, two high-value-added commodities - processed food and marine products - have significantly increased their relative shares in the Indian export basket. The major market for these exports is again the OECD countries. For marine products, the market share of OECD countries (among which Japan has the largest share) is in fact 83 per cent. Finally, for another major export item of India, dyes and pigments, the maximum share - as much as 60 per cent of the total exports - is of the OECD countries.[8]

It follows that the major part of the Indian export basket consists of a group of environmentally sensitive products - processed foods, marine products, leather, textiles and dyes - and they are mostly directed towards markets where eco-regulations are on the increase, namely, the OECD countries. Under such circumstances, the vulnerability of Indian exports to the emergence of stricter external environmental regulations cannot be denied. However, the extent of vulnerability of these products varies depending upon the compliance costs and the ease with which an environmentally superior technology can be accessed.

5.5.1 Processed Food

Most of the processed food exported from India goes to Japan and the European Union (EU), both of which have strict eco-regulations in this sector. Under the Japanese Food and Sanitation Law imports of many citrus fruits from India such as carambola, pomegranate, passion fruit etc. are prohibited. For nuts, there is the Residue Standards of Agro Chemicals Law which defines limits to the extent of use of more than 20 pesticides. In the EU, all food imports are not only subjected to strict eco-regulations limiting the use of pesticides, but are also inspected at the first point of entry for compliance with these regulations.

In India, increasing the productivity of the horticultural products through extensive use of pesticides is the norm. It is an obvious measure for achieving lower per unit cost of production in this sector. However, liberal use of pesticides is not compatible with the eco-regulations in the OECD countries, and cost-effective options are not easy to find. The substitution of DDT with the more eco-friendly Malathion leads to a fourfold increase in costs, thereby, increasing drastically the subsidy expenditure of the government. Cost considerations are equally serious if the other option of organic farming is pursued to meet the prevalent eco-standards. In other words, meeting the eco-standards in the OECD countries either way is bound to result in a decline in the price competitiveness of the Indian agro-products.

5.5.2 Marine Products

As much as 83 per cent of the total exports of marine products from India is supplied to the OECD countries from which EU and Japan together account for 70 per cent of these exports.[9] Japan has very strict laws with respect to shrimps. The use of all types of antibiotics, oxolinic acid and oxytetracyclines and pesticides such as DDT, Aldrin and Heptachlor is prohibited. The EU, particularly Germany, has very strict standards for the mercury, cadmium and lead content in fish exported to these countries. EU also applies process standards for hygiene during handling, processing and storage of marine products.

In general, Indian marine products exporters have not had much difficulty in meeting the standards for pesticides and heavy metal residues. Moreover, the Indian government has instituted quality control and standardisation facilities for the benefit of marine products exporters, and has even made inspection of the product quality mandatory prior to exporting fish and fishery products. While this has ensured that these exports are in accordance with the standards in the importing countries, the additional waiting time involved in testing and certification at the domestic level before exports actually take place introduces a trade-off between the eco-friendliness and perishability of the product. Exporters are in fact concerned that as the scale of operations increase in this sector, meeting eco-standards of the importing countries would pose a problem.

There are also some stringent regulations in the importing countries with regard to the type of packaging used for the exports of marine products. However, the marine products exporters in India are in regular consultation with institutes such as the Indian Institute of Packaging, and, therefore, manage to meet these packaging specifications without any difficulty.

5.5.3 Tea

India exports about 1.10 million worth of tea - which is approximately 30 per cent of its total tea exports - to the OECD countries.[10] India also faces growing competition form other

developing countries in Asia in tea exports, and it is, therefore, vital that India retains its market share in the OECD countries and possibly increase it by improving its tea standards in accordance with the regulations in these countries.

The developed countries, particularly Germany, have found the high residue levels of Ethion, Tetradifon and Heptachlor in Indian teas objectionable. Likewise, other OECD countries have complained about high residue levels of Bicofol in Assam, Terai and Booras teas. India tea exports are seriously threatened by the standards set in the developed countries with regard to residue levels of pesticides.

In response to these eco-standards, the Indian government has banned some hazardous pesticides and has restricted the use of some other less hazardous pesticides. The government has also issued guidelines for environmentally safe tea growing practices. However, the implementation of these measures requires testing facilities which are not growing fast enough, and this is a major obstacle in the progress towards higher eco-standards of tea production in India.

Precise estimates of the compliance costs and their impact on competitiveness of Indian tea is not available. However, intuitive estimates of exporters reveal that complying with eco-regulaions of the developed countries on a large scale would entail significant cost increases and substantially reduce competitiveness of CTC and orthodox tea. Given that India's main competitors, China and Sri Lanka, have already internalised tbe eco-regulations in the production of these teas, India is bound to lose a part of its share in this market. Under such circumstances, India may do well to switch from CTC type tea to premium tea like Darjeeling tea and other value added tea products, such as tea bags and instant tea, as far as its exports thrust is concerned.

5.5.4 Dyes

OECD countries account for approximately 60 per cent of India's exports of dyes.[11] In its exports of dyes, India faces stiff

competition from China, Indonesia, Japan, Korea, Taiwan, Singapore and Hong Kong. External environmental regulations for dyestuffs have a twofold impact on India's exports. These regulations directly affect exports of dyestuffs and pigments from India, and, by virtue of their use as inputs in production of leather and textiles, also affect their exports.

In the importing countries, use of certain dyestuffs such as Cobalt Blue, Sulphur Black and Benzidene have been banned, and, at the same time, there are strict stipulations regarding the pH level of dyes. A by-product of maize starch can serve as a substitute for Sulphur Black. For replacing Cobalt Blue, however, technology upgradation investments of the order of US$ 13 million have to undertaken.[12] Such large investments are clearly unaffordable for Small and Medium-sized Enterprises (SME), which supply a significant portion of dyestuff exports from India. The cost of non-benzidene dyes is more than double that of benzidene dyes. Complying with the eco-regulations on dyes in the developed countries would thus result in a substantial increase in costs of production for the manufacturers of dyes. The resulting loss in competitiveness, however, will be more serious for the SMEs because their unit costs of compliance will be higher than those of the large-scale enterprises.

5.5.5 Leather and Leather Products

India's leather industry, composed of a large number of small-scale tanneries, has certain intrinsinc advantages in international trade such as a large raw material base and relatively cheap labour. India's leather exports, which have been traditionally dominated by exports of raw hides and skins, is now shifting increasingly to more value added products, such as footwear. However, the difficulties posed by the recent foreign environmental regulations have the potential of seriously undermining the export prospects of this sector.

European Union, particularly Germany, is the major export market for India's export of leather and leather products. (Approximately 85 per cent of India's leather exports and 80 per cent

of footwear exports is supplied to the OECD countries, within which the European Union alone absorbs about 60 and 45 per cent of these exports respectively[13]).

In 1989 the German government banned the use of the toxic fungicide Pentachlorophenol (PCP). Other countries like United States, Denmark and Sweden followed suit by prescribing their own safe limits for the use of PCP. Indian leather industry, which was used to the use of PCP for tanning, could not find a substitute that was both cheap and environmentally acceptable in the importing countries. The tanneries ultimately resorted to using BUSAN 30 which is imported from Germany or the United States and is, on an average, ten times costlier than PCP. Apart from PCP, there are other chemicals used in the production of leather such as Benzidine dyes which are not considered environmentally safe in the OECD countries, and the exporters expect the total costs of production to increase by about 10 to 15 per cent if all the existing chemical inputs in leather production are replaced with their environmentally friendly substitutes.

The costs of compliance are even higher for Small and Medium sized Enterprises (SME) who account for about 70 per cent of leather exports from India, Handicapped as they are in terms of access to finance and technology, the additional problem of complying with stricter eco-regulation in the developed countries has made their position highly vulnerable. Apart from the restrictions on the use of PCP and some other chemicals, the developed countries have imposed some PPM based restrictions, such as efficient effluent treatment in tanneries for the leather imports, which are infact not WTO compatible. Regardless of that, Indian leather industry is already engaged in setting up common effluent treatment plants and relocating tanneries. This can have very serious financial consequences for the SMEs.

Eco-labelling has also emerged as a significant non-tariff barrier for the leather exports from India. Without financial and technical assistance, it is not easy to qualify for eco-labels. Testing facilities for eco-criteria, the collaboration between Indo-German

Export Promotion Project and Central Leather Research Institute notwithstanding, are grossly inadequate in India. The costs of verification of compliance with the eco-criteria in different importing countries, therefore, tend to be very high. For example, in case of footwear, it is estimated that the cost of compliance would be about 33 per cent of the present export price.[14] This, surely, is a substantial decline in cost competitiveness of India's leather exports.

Finally, there is a silver lining to the dreary picture of the impact of external environmental regulations on the leather exports. The popularity of certain natural products such as biocides, oils and fats, vegetable dyes and protein binders is increasing, and India's expertise in producing vegetable-tanned leather may well become a paying proposition as green consumerism catches on.

5.5.6 Textiles and Ready-made Garments

More than 70 per cent of India's textile exports are supplied to the OECD countries from which European alone accounts for 40 per cent of these exports.[15] Over and above the standards relating to dyes, there are bans and restrictions on the use of other carcinogenic or allergenic substances which are imposed on the textiles imports in these countries. Germany, in particular, has disallowed imports of any textile product printed or dyed with azo-dyes and dyes that contain traces of nitrobenzene. Indian garments exported are being subjected to extensive tests for traces of this chemical. So much so, that the textile exporters are required to provide a declaration that these chemicals are not present in their merchandise, and, in case the tests do reveal the presence of these chemicals in the exported goods, the latter are liable for outright rejection.

In assessing the impact of the external eco-regulations on India's textile exports, two important points have to be considered. Firstly, given that a large portion of the textile exports from India comes from the SMEs for whom the unit cost of compliance is high, the prices of the textile exports from India are bound to rise substantially. Secondly, the fact is that, in case of textiles exports, there is keen price competition, and competitiveness basically

implies the ability to sell at low prices. The clear implication of both the points taken together is that complying with external eco-regulations is likely to result in a steep decline in competitiveness for the Indian textile exports, and the expected benefits from the textile negotiations concluded at Marrakesh may not materialise.

Voluntary environmental measures such as eco-labelling are expected to further erode the competitiveness of the textile exports from India. For example, meeting the eco-criteria prescribed for eco-labels in the OECD countries, is almost certainly going to require changes in the production processes and methods of cotton growing and processing. There is a trade-off involved between eco-friendliness and productivity in cotton production, and exporters are of the opinion that the price rise, which would result from switching over to eco-friendly techniques of production, may be acceptable to the environmentally conscious consumers in the OECD countries, but will in all likelihood involve a loss of market share in the rest of the world where the willingness to pay a premium for 'green' products is lacking.

The problem of compliance in the case of eco-labels is even more serious than that in the case of compliance with statutory eco-standards, because adherence to eco-labelling criteria is a non-viable proposition not only for the SMEs but for the large producers as well.

6. Multilateral Environmental Agreements

A very important trade and environment issue is the use of trade measures to secure international environmental objectives in the Multilateral Environmental Agreements (MEA). Trade measures have been included in some MEAs, but they are to be used only as a last resort in the event of non-compliance. Of the 200 or so MEAs currently in existence, over 20 incorporate trade measures to achieve their goals. The three most important among the 200 MEAs are the following: (i) The Montreal Protocol (MP), (ii) The Basel Convention (BC), and (iii) The Convention on International Trade in Endangered Species (CITES).

6.1 The Montreal Protocol

The Montreal Protocol on substances that Deplete the Ozone Layer was negotiated in 1987. Its aim is to limit emissions of chloroflurocarbons (CFC) and other chemicals that deplete atmospheric ozone. Its trade measures include a ban on imports by parties from non-parties of CFCs and certain products that contain CFCs. Exports to non-parties, though not banned, are restricted. The protocol also restricts trade in the controlled substances among parties in a manner so as to phase out production and consumption of these substances. Parties that have reached their limit of consumption are allowed to import more of the controlled substances only if they export an equal amount. In this way, trade in the controlled substances is restricted between parties as well as between non-parties. And, anyway, with the Protocol attaining almost universal membership the distinction between parties and non-parties is fast fading.

It is generally believed that trade sanctions against non-parties have been effective in inducing the non-member countries to join the Montreal Protocol. However, this view is not empirically corroborated in the case studies conducted by UNEP and UNCTAD. The trade threat of cutting off ODS supplies would be credible for countries which were either major importers of CFCs or major exporters of CFCs. Developing countries, in general, are not exporters of CFC. In the developing countries importing CFCs, the TNCs which mainly use these substances can easily find substitutes. Therefore, trade sanctions would compel only those developing countries to join the Montreal Protocol which have domestically owned firms as the primary users of CFCs and are highly dependent on imports for the supplies of these substances.

6.2 The Basel Convention

The Basel Convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposal was negotiated in 1989 and came into force in 1992. The trade measures in the Basel Convention provide that countries have a right to ban waste imports. The Convention also prohibits the export of wastes to non-parties

except under certain conditions (Article 11). The conditions require the exporter to give notice to, and obtain consent of, the importing country prior to exporting. Moreover, the exporter of hazardous wastes has the obligation of ensuring that these wastes are deposed off in an environmentally sound manner in the destination country, and, if, for some unforeseen reason, the disposal cannot be done as planned, he is duty bound to reimport the wastes into the country of origin (Article 8).

While the vast majority of hazardous wastes is recycled or disposed of in the country of origin, an estimated 10 per cent of OECD wastes enter international trade. Possibility of international trade in hazardous wastes diminishes the incentive for properly managing and reducing such wastes at the source, and encourages the developed countries to shift the burden of waste disposal onto the developing countries, which infact do not have adequate waste disposal facilities. The trade restrictive measures in the Basel Convention are aimed at correcting such inherent 'distortions' in the incentive structure created by unregulated trade.

In economics terms, international trade in wastes takes place because there are differences in costs of disposal across countries. In particular, the transboundary movement of hazardous wastes between developed and developing countries is a natural consequence of the substantial disparity in their costs of disposal of wastes, and, any prohibition or restriction of trade will give rise to a tendency for illicit trade. It is doubtful if the developing countries are adequately equipped, in terms of administrative infrastructure, to detect and check such illegal trade. Moreover, the obligations for reimportation of illegally exported wastes applies to parties, non-parties are not under any such obligation. It is also extremely doubtful if the trade measures of the Basel Convention have played any role in inducing countries to join the Convention. The United States, which, according to a UNEP study, generates, more than 50 per cent of wastes at the global level, is not yet a party to the Convention. In short, in practice, the efficacy of the trade measures of the Convention in achieving the environmental goal of better waste management seems to be limited.

6.3 The Convention on International Trade in Endangered Species

The Convention on International Trade in Endangered Species (CITES) was signed in 1973 and came into force in 1975. The objective of CITES is to promote the conservation of endangered and threatened species by using various trade restrictions and bans. Three groups of species are identified, and an appropriate trade measure is defined in each case. Appendix I species are those 'threatened with extinction and are or may be affected by trade', Trade in Appendix I species is prohibited for 'primarily commercial purposes.' Appendix II contains species that 'although not necessarily now threatened with extinction, may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilisation incompatible with their survival'. Trade in Appendix II species is prohibited if authorities in the country of export determine that the export will be detrimental to the survival of the species. Appendix III lists species that a country has identified as 'subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation, and as needing the cooperation of other parties in the control of trade'. Unlike species in Appendices I and II, the listing of species in Appendix III does not require a vote of the Conference of Parties. Trade in Appendix III species requires the presentation of appropriate export documents at the time of importation.

The effectiveness of using trade controls for conservation of species has three major limitations. The first, limitation arises from the fact that it is domestic rather than international trade which poses the major threat to wildlife, and, restricting international trade does not have any indirect effects of preventing or reducing internal trade. The second, limitation is due to the fact that, for many species, habitat loss is more damaging than harvesting, and, hence, harvesting and trade restrictions hardly seem to be focused on removing the main cause of the extinction of species. Thirdly, it is well known that trade bans often result in the greater evil of illicit trade or smuggling, which, given the limited administrative resources of the developing countries, can never be effectively controlled. Moreover, a trade ban on wildlife reduces its asset value and hence the incentive for its conservation as far as the legal owners are concerned. A judiciously

controlled harvesting and trade is a more practical option than an outright ban on trade because the former generates revenues which can be used for furthering conservation.

6.4 Trade Impact of the MEAs on the Developing Countries

Trade provisions of MEAs apply equally to the developed and the developing countries. However, the impacts of these trade measures are likely to be more significant for the developing countries than for the developed countries. Firstly, even if the unit cost of adjustment to a trade measure, in absolute terms, is the same between developed and developing countries, the relative cost of adjustment will be higher for the latter, on account of the difference in their income levels. Secondly, the developing countries, unlike the developed countries, tend to rely on export of selected products for their growth, and, are likely to experience a decline in their growth potential if trade in any of these products are banned or restricted. For example, a convention which restricts trade in forest products can have significant growth reducing effects for tropical timber exporting developing countries. The short-run and long-run impacts of the trade measures of MEAs may also vary considerably across the developing countries, as they are at different levels of industrialisation and tecbnological maturity. Finally, depending upon the environmental problem at hand and the trade measure used, the trade impact will be different for each MEA.

6.4.1 The Montreal Protocol

According to the *country case studies* the trade and competitiveness effects of the phase-out of the controlled substances by the parties to the Montreal Protocol on the developing countries using these substances as intermediate inputs depend on the availability and cost of domestic substitutes in the latter countries. For example, in Poland, which did not produce controlled substances, the cost of polyurethane used in upholstery rose significantly as a consequence of the trade measures of the Montreal Protocol. In India, the use of CFC is important not only in refrigeration and air conditioning but also in life-supporting sectors such as drugs and pharmaceuticals and food preservation. In the latter sectors, the scope

for cutting down on the use of or substituting for CFC is quite limited. The cost escalation resulting from the phase out of CFC would, therefore, be greater in the case of drugs and pharmaceuticals and food preservation than in the case of air conditioning.

The *country case studies* also, report that the stipulations of Montreal Protocol have adversely affected the exports of products containing controlled substances from the developing countries. For the manufacture of refrigerators and freezing equipment the developing countries have traditionally relied on the use of CFCs. However, the exports of these products from these countries to the OECD countries which had been growing very rapidly in the past, are now facing a slack in demand as consumers in the latter countries are fast switching over to freon-free refrigerators and air - conditioners. Manufacture of CFC-free refrigerators require an altogether different technology which may have to be imported. Investing in new technology, significantly increases the unit cost of production for these products. Exports of these products are, therefore, bound to fall, at least in the short run. In the *country case studies,* three countries, Poland, China and India, are reported to have experienced a decline in their exports of refrigerators and air conditioners on this account. (In China, one company stands out as an exception as it actually *increased* its exports of freon-free air conditioners. However, the general trend is of a decline in exports for air conditioners with refrigerants, cleaning articles with blowing agents and other chemical products). On the other hand, in Malaysia, exports of air - conditioners to the developed countries have continued to grow rapidly even after the introduction of restrictions on the use of CFC in the Montreal Protocol. This has happened mainly because the air - conditioning industry in Malaysia is dominated by TNCs for whom switching over to a new technology is neither difficult not unaffordable.

Another important trade impact of the Montreal Protocol is the cost escalation in sectors that depend upon refrigeration, such as fruits and dairy products. In Colombia, for example, industries such as flowers, bananas and processed meat rely heavily on CFC for refrigeration, and are, therefore, experiencing major increases in their costs of production. Similarly, in Poland, dairy products, fruit

and vegetables, have all encountered increased costs because of their dependence on refrigeration.

Finally, the *country case studies* point out that the incremental per unit costs of technology switching, which is required for meeting the stipulations of the Montreal Protocol, are not the same for the large firms and the SMEs in the developing countries. These costs are invariably higher for the SMEs. Moreover, further discrimination against the SMEs results from the fact that the larger firms have better access to the Multilateral Fund that has been made available for technology switching necessitated by the trade measures of the Montreal Protocol.

6.4.2 The Basel Convention

There are no precise empirical estimates of the trade and competitiveness effects of the bans and restrictions on the transboundary movements of hazardous wastes in the Basel Convention. However, *a priori* it can be said that, at the national level, these effects tend to be positive. The export of hazardous wastes to the developing countries contaminate the soil and the neighbouring waters and also endanger human, animal and plant life. All this constantly erodes the productivity of natural resources in these countries. To the extent that the bans or restrictions on exports of hazardous wastes to the developing countries can slow down the process of erosion of productivity, there are positive competitiveness and trade effects of these measures of the Basel Convention.

For the impact of the Basel Convention on competitiveness at the firm level, much depends on whether or not the waste metals are included in the definition of 'hazardous waste'. From the importing country viewpoint, waste metals may not be a hazardous waste, but, in fact a source of supply of inputs for its industries. Industries, which depend upon recyclable waste metals for their input supplies, are bound to be adversely affected by the Basel Convention. For example, in Poland, restrictions on the import of scrap iron, has choked a major source of supply of raw materials for the metallurgical industry, resulting in increased production costs and loss in competitiveness for this industry. The iron and steel industry in

Brazil, is affected in a like manner by the restrictions on imports of scrap iron.

Since metals hardly ever occur naturally in their pure form, in February 1998 in the Fourth Conference of the Parties to the Basel Convention Annex VII was adopted to exclude metals, containing only small and harmless amounts of hazardous contaminents, particularly, iron and steel scrap, from trade restrictions.

6.4.3 The Convention on International Trade in Endangered Species

Trade measures of CITES often result in unnecessary economic losses with no apparent gains for the environment. This is because CITES does not provide economic incentives for a managing a species sustainably, but relies on administrative controls and bans on trade. On the other hand, national measures can balance economic utilisation and sustainable management of a species more effectively. For example, Zimbabwe, which is a party to CITES, has reported significant losses with regard to crocodile farming and ivory trade. Trade in these products are banned under the CITES convention, but, in Zimbabwe's view, trade in these animal products can be carried out without endangering elephant and crocodiles. In other words, with appropriate national measures in place, trade in animal products is compatible with sustainable management of the species, and, international bans on such trade are unnecessary and, in fact, counter - productive in so far as they give rise to illegal trade.

6.5 Trade Impact of the MEAs of India

Apart from the impact of domestic and environmental regulations on India's exports, there are the effects of the MEAs on competitiveness and productivity and, more generally, on growth and development prospects in India. India is a signatory to the Basel Convention and Montreal Protocol and its subsequent London amendment.

For about 45 per cent of India's metallurgical industry the main source of raw materials is the recycling of scrap.[16] The use of recycled scrap is more eco-friendly and also more cost-effective than the production of pure metal. India is, therefore, highly dependent upon

scrap imports. For this reason, it, despite being a party to the Basel Convention, is opposed to the ban on importation of scrap. On the other hand, India is strongly in favour of international monitoring of boundaries to prevent illegal importation of hazardous waste which can harm the environment and bring about a loss in productivity and competitiveness.

In India, CFC is used very widely as an intermediate input. It is a critical input for the refrigeration industry which, though relatively new, is growing fast. Other industries which rely on CFC are air conditioning, water coolers, chillers, cold storages, transport and ice candy machines as well as automobiles, trains and shipping. Food preservation, drugs and pharmaceuticals and export oriented sectors, such as, horticulture, aquaculture and floriculture using refrigeration also indirectly depend upon CFC.

However, India's per capita consumption of CFC is very low, and it has been granted a grace period of ten years to make the necessary adjustments in its production facilities before it can meet its obligations under the Montreal Protocol. With the grace period included, India is committed to phase out its production and consumption by the year 2006. The grace period, however, does not apply to the ban on exports of CFC from India.

The phase-out of CFC hits India particularly hard because India, which produces around 30,000 tonnes of CFC per annum, has invested heavily in this industry in the recent past and many of the new manufacturing plants are yet to complete their payback period.

Full adjustment costs of the phase-out of CFC are calculated by summing up the costs incurred by producers of CFC, industries using CFC as an intermediate input, and consumers of final products. A Task Force established by the government has estimated the adjustment costs of complying with the Montreal Protocol under two different scenarios, one, where the phase-out would take place early, and, the other, where it would occur late, almost at the end of the phase-out period. In the early phase-out, CFC would be replaced at the earliest possible, without waiting for the completion of the payback

period for the new plants. On the other hand, in the late phase-out production and consumption of CFC is allowed to grow unchecked till the final date of phase-out.

According to the Task Force (TF) estimates, the full cost of the late phase-out is about 75 per cent more than the early phase-out. Two other studies by the World Bank (WB) and the Ministry of Environment and Forests (MEF) have also estimated the total cost of the phase-out under the two scenarios. Like in the case of TF estimates, the phase-out cost is higher for the late phase-out scenario in the case of both these studies.

The WB and the MEF estimates also provide the break-up of the total cost of phase-out in terms of the costs borne by the producers, the user industries and the consumers of CFC. The break-up clearly shows that in the early phase-out, the producers would not be able to recover fully their investments in new CFC plants, and would therefore bear a greater adjustment cost (than in the late phase-out). On the other hand, in the late phase-out, it is the consumers who bear a greater burden of adjustment. This happens because in the late phase-out while the producers get adequate time to write off their investments, the consumers are likely to face difficulties in maintaining CFC - using refrigerators and other products after 2010. From the consumers viewpoint then, the early phase-out is to be preferred to the late phase-out. Since the numerical strength of the consumers is greater than that of the producers, both the studies conclude in favour of an early phase-out.

However, the exporters in India cannot wait till the government takes a decision on the phase-out strategy to be adopted. They are in fact driven by more compelling considerations such as the growing demand for CFC-free products in the international market, and have already begun to shift to substitutes of CFC, namely, HCFC and HFC134a. Other substitutes of CFC preferred by both the environmentalists and the consumers are the hydrocarbons such as pentane and butane. Indian manufacturers have shown keenness to use these natural gases as they are freely available. Using the substitute chemicals also require suitable changes in the existing technology.

Moreover, the efficiency in case of the substitute chemicals may be lower than that in case of CFC. The cost of adjusting to HCFC, at the firm level, is estimated to be 30-35 per cent of current prices for refrigerators and 10 per cent of current of prices for automobile air conditioners.[17] The fund created by the Montreal Protocol to finance the cost of adjustments for the various countries affected by the ban on CFC has been shown to be insufficient for even meeting the financial requirements of this one country.

An additional problem faced by the Indian firms planning to shift to the use of environmentally friendly substitutes of CFC is that the basic system design required for the CFC-free technology is not domestically available. The other option for obtaining the required technology is a tie-up with foreign companies. Unfortunately, however, the foreign companies have not shown any interest in collaborating with the Indian companies for this purpose.

Finally, there is the problem of CMC-free technology being unsuitable for the conditions in India. Efforts are already on in India's own research institutes to develop an indigenous technology for replacing the existing CFC technology. Success in this venture will surely make available the most cost-effective option for India in the long run.

7. RECONCILING TRADE AND ENVIRONMENT

7.1 Developing Countries

While it may seem that environmentalism has seriously undermined the virtues of free trade, the fact is that in most cases, where increased trade apparently leads to environmental degradation, the real cause is the absence of appropriate environmental policies. To put it in another way, the growing global concern for environmental preservation, which the developing countries have to share, has made it imperative for these countries to jointly formulate trade and environment policies. As the *country case studies* clearly show, the nature of the trade-environment linkage varies from country to country and, within a country, from sector to sector and, even from commodity to commodity. In such a scenario, the approach that will work best

in the business of formulating trade and environment policies is a case-by-case approach. However, there are some common problems and certain broad guidelines for the policy making exercise which emerge from the discussion on reconciliation of trade and environment in the *country case studies.* Moreover, the need for different case-specific policies apart, there are some macro trade-and-environment policies which apply to all the cases because they create a background in which the potential conflict between trade and environment is mitigated.

The major problems in reconciling trade and environment identified by developing countries are the following: (i) high adjustment costs incurred, particularly, by the SMEs, in complying with the environmental regulations of the developed countries; (ii) inability to earn a premium for environmentally friendly products; (iii) the incompatibility of foreign standards with local conditions; (iv) the absence of timely and adequate information dissemination with regard to rapidly changing environmental requirements in the international markets resulting in high transaction costs; (v) the inadequacy of testing and monitoring facilities to ensure product quality in conformity with the standards set in the developed countries.

Turning to the solutions of the problems, the important areas to be focused on in formulating appropriate policies are listed below.

7.1.1 Trade Liberalisation

Improved market access through trade liberalisation facilitates diversification of exports and almost invariably results in an increase in export earnings, thereby generating additional resources which can be utilised for improving the efficiency and the environmental quality of production in the developing countries. Identifying new areas for further trade liberalisation including reduction or elimination of tariffs beyond the results of the Uruguay Round will in all likelihood help the cause of environment.

7.1.2 Environmental Infrastructure

Most developing countries are in a phase of economic development where industrialisation necessarily leads to increasing urbanisation and pollution of environment. To keep the latter in check, a host of infrastructural facilities are required. These facilities, which may be collectively referred to as the environmental infrastructure, include testing, monitoring and certification bodies, technical and financial assistance for upgradation of process and production methods, improving dissemination of information regarding environmental regulations, and research and development support. While improvements in environmental infrastructure are crucial for making rapid economic growth compatible with high environmental standards, profit maximisation considerations prevent the private sector form making the requisite investments in environmental infrastructure. The role of the government in these countries is, therefore, paramount in providing a better environmental infrastructure, which will go long way in reducing costs of compliance, particularly, for the SMEs.

7.1.3 Environmentally Sound Technologies

Potentially, the most effective solution to the developing countries' exporters' problem of complying with environmental standards in developed countries lies in the adoption of Environmentally Sound Technology (EST), as the use of EST will simultaneously help trade as well as environment - both local and global. ESTs are of two types - 'end-of-pipe' type or 'clean production technology' type. The end-of-pipe technology follows a 'clean-up-afterwards' approach by installing an equipment in the existing machinery to remove pollutants at the end of the pipe. On the other hand, the clean production technology involves a change in the process of production and the characteristics of the product so as to avoid pollution in the production process, following a 'pollution prevention approach'.

There are, however, many obstacles in the path leading to the use of EST in the developing countries. Firstly, developed countries are not willing cooperators or collaborators in the transfer of ESTs

to the developing countries. The past reluctance of the former in the case of transfer of ordinary technology to the latter applies equally now in the case of transfer of ESTs. Secondly, a highly selective and pragmatic approach in deploying the ESTs in developing countries must be employed, if they are to meet with the same success as in the developed countries. Thirdly, ESTs may not be viable in the developing countries if their application is restricted to the export sector. Finally, the developing countries' access to the ESTs are rendered particularly difficult by high costs, licensing controls and constraints on the flow of Foreign Direct Investment (FDI), which are a major source of transfer of such technologies to the developed countries.

Generally firms in developing countries access EST by licensing or assembling the technology from a blueprint rather than acquire it in embodied form through imports of the necessary equipment. These firms do not get financial assistance from banks easily and, therefore, shy away from purchasing pollution prevention technology which commands high initial costs but offers low operating costs in the long run. In fact, because of the lack of availability of funds, firms in developing countries often end up choosing end-of-pipe technology which costs less initially but has high operating costs. FDI, as a source of transfer of EST, has also not been tapped successfully by many developing countries. The domestic incentives in the most of the host developing countries are hardly adequate to attract FDI for the transfer of EST. Where substantial incentives in the form of tax holidays, grants, subsidies on pollution control expenses and tax breaks on imported pollution technology has been given by host governments in the developing countries, there is evidence of transfer of ESTs from the developed countries having taken place.

7.1.4 Harmonisation of Environmental Standards

Environmentalists have been strong advocates of harmonisation of PPM-based standards as a guarantee for a commitment to universally agreed upon environmental objectives and against competing deregulation. Some industry and labour groups, who feel that harmonisation would prevent import competition and migration

of pollution-intensive industries from OECD countries to developing countries, have also lent support to the environmentalists.

However, the advocates of harmonisation are far outnumbered by those opposing it. Moreover, the opponents of harmonisation have advanced solid arguments for harmonisation not being desirable, except in dealing with global environmental problems. Their main argument is that in dealing with intrinsically domestic environmental problems, each country should have the autonomy to decide on its own standards which is consistent with its environmental and developmental priorities. Moreover, since the PPMs have no transboundary environmental effects, harmonisation of PPM-based regulations have no basic justification. Even the 'polluter pays principle' recognises the reality of differences in environmental standards. Harmonisation of process standards may even obliterate differences in comparative advantage.

In the controversy over harmonisation a middle ground is occupied by those who advocate the case for voluntary 'minimum' standards. According to this approach, harmonisation of standards should be encouraged where the same environmental and economic conditions prevail, and internationally agreed minimum standards should be formulated for all other cases. The voluntary minimum standards, it is alleged, will help resolve many trade conflicts which arise due to differences in environmental standards across countries. Moreover, internationally agreed minimum standards could be linked to positive measures such as transfer of finance and technology, and general environmental support. For example, in the Montreal Protocol the developing countries are subjected to a special and differential treatment and, at the same time, a multilateral fund was established to help them meet their financial and technological requirements so that they could fulfil their reduction targets.

7.1.5 Mutual Recognition of Environmental Criteria or Standards

There is a growing fear that divergent environmental criteria set by consumer and environmental interest groups in the form of eco-labelling in different countries has a particularly adverse effect on the trade interests of the developing countries. To allay such fears,

the concept of 'equivalent' standards leading to mutual recognition of eco-labels has been proposed by UNCTAD's *ad hoc* Working Group on Trade and Environment. Mutual recognition, effected through an international agreement, would require an importing country to award its own eco-label to products that meet the criteria of the eco-label of the exporting country and the use and disposal criteria of the eco-label of the importing country. Mutual recognition of eco-labels, however, needs to go through a confidence-building process, before it is actually practiced.

7.1.6 Green Trade

The demand for environmentally friendly products in the developed country markets is increasing rapidly since the mid-eighties. Whether or not this represents a significantly large emerging opportunity for trading in 'green' products as far as the developing countries are concerned depends on the price premiums that these environmentally friendly products can fetch in the market. The available empirical evidence does not prove the existence of significant price premiums. Further research is required to indicate precisely the areas where premiums are large enough to justify the investments that must be made to exploit the new opportunities in green trade.

7.1.7 Aid Agencies

A very large portion of the exports from the developing countries comes from the SMEs, who are particularly handicapped in making large investments for environmental improvement. Aid agencies - national and international - can be persuaded to provide financial support to the SMEs in the developing countries for schemes such as common effluent treatment plants and information dissemination services.

7.1.8 Coordination at the National Level

The *country case studies* are replete with examples of how improved policy coordination at the national level will help in solving many of the trade-environment problems. Some developing countries are already implementing projects to

promote better coordination between different ministries as well as between the government and the private sector, including NGOs and consumer groups.

7.1.9 Building Partnerships

The *country case studies* have shown how SMEs of developing countries can gain immensely from cooperating among themselves as well as from cooperating with other manufacturers in other developing countries. Future studies to explore the possibilities of reconciling trade and environment through partnerships of developing and developed-country companies, and the scope of trade in environment-friendly products through cooperation between exporters in the country of origin and the importers in the destination country, are the need of the hour.

7.1.10 Regional Cooperation between Developing Countries

Several studies have shown the importance of regional cooperation between developing countries for building capacity to provide services such as product testing, certification and accreditation in solving the environment related problems of exporters in these countries. It is recommended that regional cooperation should also focus on building awareness and providing education on different aspects of trade, environment and development.

7.1.11 Participation in International Deliberations

Several studies indicate the need for developing countries to participate more actively in international deliberations and negotiations on trade and environment, in particular in the WTO Committee on Trade and Environment (CTE), the International Organisation for Standardisation (ISO) and the Conferences of Parties of Multilateral Environmental Agreements, in order to prevent the creation of "unnecessary" and "unscientific" environmental regulations and standards in the developed countries, which serve the sole purpose of erecting non-tariff barriers for the developing countries' exports.

7.2 India

There is now a perceptible effect of external eco-regulations and eco-labelling on Indian exports, particularly exports of processed food, dyes, leather, and textiles. The relatively insignificant effects of the external environmental regulations on the marine exports at present are also likely to become sizeable in future as the scale of operations in these exports rise.

Most Indian exports compete on the basis of price and, hence, their competitiveness in the international markets is seriously threatened if the cost escalation due to the use of eco-friendly inputs and technology, which are required for complying with the external regulations, are high. Complying with voluntary standards are even more problematic for Indian exporters. In this case, while the costs of compliance are high, price premiums are not available because there is keen competition to capture the limited market for eco-friendly products. In facing the impact of external eco-regulations and eco-standards the most ill-equipped are the SMEs. The SMEs, who are handicapped not only in terms of finance but also in their ability to access eco-friendly inputs and technology as well as information regarding eco-regulations, account for more than 50 per cent of Indian exports. Government support to the SMEs is, therefore, of utmost importance.

Among the MEAs, the Montreal Protocol has major implications for India. The Montreal protocol requires India to phase-out the production and consumption of CFC by the year 2006. However, an early phase-out of CFC would be in the interest of consumers. Three studies estimate the cost of an early phase-out to be lower than that of a late phase-out. Apart from the cost involved in the phase-out, there is the problem of lack of availability of CFC-free technology from domestic or foreign sources.

In reconciling trade and environment in India, the task of the government is rendered particularly difficult by the stronger claims of India's other development priorities like, education, health and infrastructure, on the budgetary allocations. Nevertheless, in dealing with the problem of the adverse impact of the external eco-regulations

and eco-standards on the competitiveness of Indian exports, the government has to undertake proactive measures at the domestic and the international level. Or else a retardation in India's export growth will impede its developmental process as well.

Turning to the government's policies for reconciliation of trade and environment the thrust areas are as given below.

7.2.1. Strengthening Export Councils

Lack of awareness about the external regulations, voluntary standards, and available technology at the individual firm level (particularly if its small) is a major constraint faced by the manufacturer/exporters. Government intervention to disseminate information regarding the latest environmental regulations and standards, available technologies, processes and raw materials to the exporters is a must. In reaching out to the exporters, the government would do well to involve the exporters' councils. Once the export councils are activated and strengthened, they could also obtain feedback from exporters regarding changing environmental regulations and participate in international trade negotiations along with the government. Finally, the export councils could also help in marketing eco-friendly products.

7.2.2 Testing Facilities for Compliance with Environmental Regulations

The technology for testing the quality and eco-friendliness of a product is either not available or very costly. The government should, therefore, not only provide financial assistance, but also attract foreign collaborations for the purpose of testing. Indo-German and Indo-Dutch collaborations for testing in the leather sector have already taken place. New collaborations for other sectors must be urgently sought.

7.2.3 Environmentally Sound Technology

In two of India's major export markets - European Union and Japan - there are now very stringent environmental regulations and standards that can have a serious impact on the competitiveness of

Indian exports. The most effective long-term solution to this problem of the Indian exporters is the adoption of environmentally sound technologies in production. In some cases, the ESTs are available domestically, but in most other cases the relevant EST has to be obtained from abroad. Unfortunately, there are many internal barriers to the transfer of EST. While some barriers arise from the very structure of Indian industry, others are a result of the past policies of the government.

The barriers to the adoption of EST within the industry are (i) a myopic view regarding the gains from EST, (ii) the apparently lower costs of conventional technology because of non-inclusion of environmental costs, (iii) the sunk capital cost of the existing technology which has not been fully recouped, (iv) risks and uncertainty about the profitability of the new EST, (v) managerial and labour union's resistance to change, and (vi) inadequate financial assistance to meet the high capital costs of the new technology.

The barriers that exist because of the policy regime are (i) limitations on the extent of technology transfer, (ii) restrictive royalty limits, (iii) sub-licensing requirements, (iv) delays in approval due to complex administrative procedures, (v) high customs duties and other taxes, (vi) non-existence of managerial skills required for effectively negotiating and assimilating new technology, and (vii) inadequate commercial orientation of research and development.

Turning to a policy agenda for facilitating the transfer of EST, it may be noted that while the climate for the transfer of technology has improved due to the industrial policy reforms that have already taken place, the reforms have to be further speeded up to induce a freer flow of EST into India. In general, the government must foster greater competition within Indian industry to create an urgency for change, adaptation and innovation in the managerial mindset. Attracting foreign direct investment must also be a top priority for the government. This is because within the MNCs themselves, technology transfer from parent company to subsidiary, tends to be rapid and efficient. At the same time, non-governmental organisations

(NGO) can pressurise both the MNCs and the Indian government to improve environmental performance. Joint ventures are another medium through which technology can be brought into India, and the efforts made in the latest industrial policies to encourage joint ventures may well be rewarding. Finally, the government should ensure that R&D efforts are specifically directed towards the twin goals of commercial gains and environmental improvement.

In facilitating the transfer of EST into India, equally important are the policies which would induce appropriate changes at the firm level. Schemes which, on one hand, would help firms in enhancing their technical capacity and broadening their technical knowledge, and, on the other hand, would reward firms for their environmental innovations, must be devised.

7.2.4 Cooperation Between India and the Importing Countries

At least for products for which India is a major supplier, the importing countries should be persuaded to develop eco-regulations in consultation with the former. Moreover, when the regulations are changing, the importing country should give sufficient notice to the Indian exporters so that the latter get adequate preparation time for complying with the changed regulations. Technological cooperation between the importing countries and India, in the matter of complying with the external regulations, is also highly desirable. In sectors, where technologies in accordance with the environmental requirements of the OECD countries exist, technological cooperation between these countries and India must be arranged for. In sectors, where such technologies have not been devised in the OECD countries, the latter can provide financial and technical assistance to research institutes which can carry out the relevant research in India.

7.2.5 Government Subsidy

In the Uruguay Round Agreement on Subsidies and Countervailing measures, some environmental subsidies given to firms for the adaptation of their existing production processes to conform with the requirements of new environmental regulations have been exempted from the general rule that 'specific' subsidies

are 'actionable'. The other financial priorities of the government notwithstanding, the 'non-actionable' environmental subsidies represents a new area which should be given its due in a reoriented subsidy programme of the government.

7.2.6 Corporate Sector Initiative

In the case of phasing out of CFCs, it was found that while the government was still in the process of deciding whether to adopt an early or a late phase-out strategy, many Indian refrigeration and air conditioning manufacturers had already changed over to a CFC-free technology. Such initiatives by the corporate sector should be encouraged in other sectors affected by external eco-regulations as well.

8. TRADE AND ENVIRONMENT AND THE WTO

From the WTO viewpoint, the main trade and environment issues are whether or not the working of the WTO conflicts with environmental protection measures adopted by national governments, and whether WTO rules should be enlarged and modified to include the agenda for environmental protection. While the environmentalists contend that the WTO has a *pro-trade* bias and needs to be reformed to accommodate environmental objectives, the exponents of free trade and the members of the developing countries strongly assert that WTO should not become an environmental agency, nor should it involve itself in reviewing national environmental priorities, setting environmental standards or developing global policies on the environment. As the Uruguay Round did not address the trade and environment issue, the resolution of these issues was carried over to the post-Uruguay Round negotiations within the framework of the Committee on Trade and Development (CTD). The Committee submitted its first report in November 1996, and another one later in November 1999. Till date, however, the main trade and environment issues remain unresolved.

8.1 Subsidies, Border Adjustments and Taxes

GATT subsidy and border adjustment rules are complex and went through a considerable revision in the Uruguay Round.

In general, subsidies contingent upon export performance are prohibited, except for primary products. Other subsidies are either 'actionable' or 'non-actionable' implying that they may or may not be retaliated against through imposition of countervailing duties by the importing countries. Article VIII specifically mentions subsidies to promote adaptation to new environmental regulations as non-actionable, provided certain conditions are met. Article VIII also includes certain other non-actionable subsidies for industrial research and precompetitive development activities, which in turn includes research on pollution-prevention and environmental protection technologies. In the Agreement on Agriculture, countries have committed to a phased reduction of domestic support measures, but certain types of environmental subsidies have been exempted from the commitment. These include payments made by government for environmental conservation and for retiring land and other agricultural resources from production.

Border adjustments for internal taxes can also affect environmental objectives. In regard to indirect taxes, GATT subscribes to the view that while indirect taxes are shifted forward to consumers, direct taxes are borne by the factors of production. Accordingly, for indirect taxes on 'like' products, such as sales and value-added taxes, GATT follows the *destination principle* and allows adjustment at the border. On the other hand, for direct taxes, such as, corporate tax and taxes on wages, GATT follows the *origin principle,* and does not allow adjustment at the border. This approach, however, may not be correct from an environmental point of view. If, say, pollution is caused by a production process, a tax on the concerned product, because it is adjustable at the border, may be levied in the interest of the manufacturer/exporter. However, this would prevent internalisation of environmental costs of production and encourage rather than discourage pollution. In a like manner, the border adjustment of indirect taxes on inputs permitted by GATT rules works against the internalisation of environmental costs of production in the case of traded goods.

8.2 Product and Process and Production Method Based Standards

GATT recognises that environmentally related product and PPM-based standards can conflict with its major principles of non-discrimination, national treatment and a preference for tariffs over quotas. It, therefore, provides for exceptions in Article XX. Article XX allows members to override other GATT obligations in adopting measures necessary for protecting human health and safety, animal or plant life or health and the environment and for conserving exhaustible natural resources, provided certain conditions, including the one that these measures should not create unnecessary barriers to trade, are met. In the Uruguay Round two agreements - Agreement on Technical Barriers to Trade and Agreement on Sanitary and Phytosanitary Measures - were reached with a view to protect human, animal and plant health and safety and the environment.

The TBT deals with government regulations of products, and requires that national regulations be based on relevant international standards where they exist, except when international standards are ineffective for the fulfilment of legitimate objectives. The developing countries would have to meet these standards for their exports, and, in case the exporting country challenges these standards the burden of proof of showing that they are inconsistent with WTO would rest with the former. However, for their own technical regulations, the developing countries need not use international standards as the basis, as the latter may not be relevant to their needs. Most importantly, the TBT applies the "least trade-restrictive" test to national regulations, requiring these regulations to be not more trade-restrictive than necessary to fulfil a legitimate objective.

The SPS, which is concerned specifically with food, animal, and plant health and safety, also requires the members to base their regulations in international standards where they exist. However, national standards higher than international ones can be set if they are necessary and based on scientific principles, subject to fulfilment of certain other conditions given in Article V of the SPS Agreement, The SPS Agreement also fulfils the least trade-restrictive criterion.

Voluntary eco-labelling schemes have an ambiguous status within GATT. GATT is based on the principle of non-discrimination but eco-labels are deliberately discriminatory, although on ostensibly environmental rather than protectionist considerations. The fact that they implicitly discriminate on the basis of the physical characteristics of the product is not necessarily inconsistent with GATT, but when they discriminate on the basis of the underlying production process, then it is clearly a violation of the GATT principles. However, GATT itself is not effective in regulating actions of private organisations and subnational governments.

GATT principles do not justify import restrictions based on PPM-based standards. However, this is a major bone of contention between the environmentalists and the trade liberalisers. While the former argue that most often it is the production process which causes environmental degradation, and would like to give the national governments the authority to restrict imports of such products, the latter vehemently oppose such restrictions on the ground that they would encourage disguised protectionism and seriously undermine free trade to the disadvantage of the developing countries. A meeting point in this debate would obviously be to permit PPM-based restrictions if the environmental damage is transnational or is detrimental to a shared environmental resource.

In between the two extremes of product standards and the PPM-based standards is the third category of product-related PPM standards. This category covers situations in which the environmental damage is caused by the consumption of the product, but the most effective way of preventing it is the regulation of the production process. Examples are the regulation of hygienic standards in slaughterhouses to ensure the quality of meat, and the regulation of pesticide use in the cultivation of fruits and vegetables to bring down the residue levels in the product. The TBT and SPS allow import restrictions for product-related PPMs, subject to certain conditions.

8.3 MEAs

The trade provisions of MEAs are generally import or export bans, which are not allowed in GATT except when overridden by

Article XX. Article XX makes no explicit distinction between trade bans to implement an MEA and those that do not. Nor does it deal with trade restrictions that treat MEA members and non-members differently, as is the case in the Montreal Protocol. The MEAs, therefore, raise two questions - one legal and the other policy related. The legal question is whether and under what circumstances trade measures in MEAs are consistent with WTO rules, and, if they are not, the policy question is whether to amend WTO rules or simply forgo the use of such measures. The WTO's Committee on Trade and Development took up this issue and included it in its 1996 Report, but the results were inconclusive.

8.4 Unresolved Issues

Prima facie, the principles of liberal trade embodied in GATT/ WTO appear to be compatible with the objectives of environmental objectives. However, an indepth analysis reveals numerous unresolved points of conflict, and in most of these conflicts the parties at cross witb each other are the countries of the North and those of the South. The major conflicts in the context of trade and environment are as given below.

1) Can a country impose an "eco-duty" on imports from a country which has lower domestic environmental standards and thereby gain an "unfair" competitive advantage?

2) Whether and how the current subsidy rules should be amended to permit subsidies for corrective pollution cleanup, international subsidies for pollution abatement and certain other implicit subsidies?

3) Whether and how to alter the existing GATT rules for border adjustment which encourage inefficient product taxes over more efficient pollution or input taxes?

4) Whether and how to make the existing GATT rules regarding PPM standards more specific so that these standards are not misused to create unnecessary trade barriers, particularly when the environmental damage caused is not transnational?

5) How to make the TBT's least restrictive test effective in limiting the ability of governments to establish environmentally related technical regulations on products?

6) How to evaluate the scientific principles on which the SPS measures are to be based?

7) How to regulate the eco-labelling schemes, especially when they use PPM-based criteria, and prevent them from harming the developing country exports?

8) How to make the trade policy instruments of MEA WTO-compatible?

9. INDIAN POLICY STANCE ON TRADE AND ENVIRONMENT

After the conclusion of the Uruguay Round Agreement, trade and environment issues were intensively discussed in the Committee on Trade and Environment. The Committee deliberated upon ten main issues relating to trade and environment, before submitting its first report in the Ministerial Conference of the WTO in Singapore in 1996. On seven of these issues India has taken a definite and clear stand. The issues and India's stand on each of them are discussed below.

1) On the relationship between environmental policies and measures having significant trade effects and the provisions of the multilateral system, India has emphasised upon the simultaneous observance of certain basic principles of free and fair trade and of environmental protection. The trade principles advocated by India are non-discrimination, protection through tariffs rather than quotas, and transparency. The environmental principles favoured by India are common but differentiated responsibilities of members, sovereignty over environmental resources, autonomy in formulating domestic environmental regulations, fair and equitable sharing of benefits and special needs of developing countries.

2) On the relationship between provisions of the multilateral trading system and the product and process and production method

based standards, India, along with some other developing countries strongly opposes any proposal to include non-product-related PPM standards in any manner under the TBT.

3) On the issue of the creation of non-tariff barriers through the voluntary eco-labelling schemes in the developed countries, India has taken the strong stand that such schemes should not be allowed to reduce the market access of the developing country exports, particularly, when they are not compatible with the principles of free and fair trade embodied in the WTO.

4) In general, on the issue of the adverse impacts of the environmental regulations on the market access of developing countries, India has proposed a thorough and comprehensive review of such impacts by the CTE with a view to safeguard the existing market access of the developing countries, and possibly also secure additional market access for them through phasing in of environmentally friendly products.

5) On the issue of transparency of environmental measures, India strongly supports transparency as proposed by Hong Kong. However, with regard to environmental reviews as proposed by the United States, India's view is that such reviews should be conducted only at the national level, and not through the WTO.

6) On the relationship between the TRIPS agreement and the transfer of technology and development of environmentally sound technologies, India's stand is that, at least in cases, where the use of proprietary ESTs is either mandated by MEAs or national environmental standards or, if not mandated, is required for the sake of complying with multilaterally agreed upon environmentally standards, the IPR holders should be made duty bound to transfer ESTs on affordable terms to developing countries.

7) On the relationship of TRIPs agreement to MEAs that contain obligations related to Intellectual Property Rights, India's stand

is that the TRIPS agreement should accommodate the goals of the Convention of Biological Diversity including the goal of sharing equitably the benefits arising from the use of biological resources and traditional knowledge.

10. SUMMARY AND CONCLUSION

While, on one hand, the developing countries are required to pursue trade liberalisation to promote efficiency and growth, on the other hand, they are compelled to undertake regulatory measures to prevent any damage to the environment taking place because of increased trade. Fortunately, however, in practice (just as it is shown to be in theory), with appropriate governmental interventions at the source of the environmental problem, trade liberalisation has been found to be compatible with environmental protection. Nevertheless, the trade and environment interlinkages has introduced new challenges for the developing countries in their pursuit of sustainable development. The degree of response of the developing countries to this new challenge of incorporating the objective of environmental protection in their developmental strategy varies depending upon the extent of preparedness in terms of infrastructure development, awareness, technical expertise, labour skills and government's support facilities. However, in qualitative terms, there is a lot of commonality in their past, present and future responses to the problem of reconciliation of trade and environment.

The domestic environmental regulations in the developing countries are still evolving, and the current regulations, in general, are quite lax. Not surprisingly, the impact of these regulations on the competitiveness of the developing countries' exports is insignificant. In selected sectors, strict environmental regulations do prevail. Even in these sectors, the adverse impact on competitiveness has been prevented or kept in check by making appropriate adjustments in the production method, such as the adoption of an environmentally sound technology.

In India, in particular, the domestic environmental regulations are in its infancy, and cannot be said to be having any impact on the competitiveness of Indian exports. However, the compulsory

requirement of effluent treatment in new tanneries and the fish processing industry has imposed a sizeable cost burden for the small entrepreneurs, even though for the industry as a whole the resulting cost escalation is not much.

The external environmental regulations faced by the developing countries are a more serious matter. The OECD countries have developed a strong culture of strict environmental regulations and standards, which are applied not only to the domestic products but also to the products imported from the developing countries. While the large producers in the developing countries have, by and large, taken the requirement of meeting these regulations in their stride, and made the necessary adjustments or changes in their production methods, product design and packaging materials, the small and medium sized entrepreneurs have found the per unit costs of complying with the external environmental regulations to be quite high, and have, in fact, suffered a significant loss of competitiveness of their exports. This can have very adverse effects for the income distribution in the developing countries, and can even hamper their growth prospects if a major proportion of their exports comes from the small producers. As far as the voluntary eco-standards set through the eco-labelling schemes are concerned, there is as yet no perceptible trade impact. This is because these eco-labelling schemes are, till date, limited to a few products consumed by high-income consumer groups in the OECD countries. However, these labelling schemes are growing fast, and the expectation, that they may emerge as significant non-tariff barriers for the developing country exports, is a reasonable one. An *ex-ante* concern shown in the developing countries over the eco-labelling schemes of the OECD countries is, therefore, entirely justified.

Many Indian exports, particularly exports of processed food, dyes, leather, and textiles are already facing the adverse impact of the external eco-regulations. Once marine exports begin to take place on a large scale, they too would face such an adverse impact. The competitiveness of most Indian exports, based as it is on low price rather than high quality or exclusive product design or characteristic, is extremely sensitive to

increases in costs of production. The high costs of complying with the external environmental regulations, therefore, pose a serious threat to Indian exporters, particularly the small ones. The growing importance of the voluntary eco-labelling schemes also pose a serious potential threat to Indian exports. This is because, while the costs of adjustment required in the production method and process to meet the product standards prescribed in the labelling schemes are high, the resulting "eco-friendly" product may not earn any significant price premium in the international market.

Trade provisions of Multilateral Environmental Agreements (MEA) do not discriminate between the developed and the developing countries, but, in their implementation, the impact invariably turns out to be greater for the developing countries than the developed countries. One reason for this is that the same absolute adjustment cost of a trade measure for the developed and the developing countries implies a higher relative adjustment cost for the latter, as they are at much lower income levels. Secondly, most trade bans of MEAs affect some or the other critical export sector of the developing countries, hampering considerably their growth prospects.

India is a producer of chloroflurocarbons (CFC). The MEA of greatest relevance for India is, therefore, the Montreal Protocol, which requires India to phase-out the production and consumption of CFC by the year 2006. This may better be treated as an upper bound, as three studies point out that the cost to the economy of an early phase-out would be significantly lower than that of a late phase-out. The real problem, however, in executing the phase-out - early or late - is the difficulty in obtaining the CFC-free technology from foreign or indigenous sources.

For reconciling trade and environment in the developing countries, the governments in these countries would do well to work on the assumption that environmental degradation is caused by market or policy failures rather than subscribe to the mistaken view that trade and environment are inherently in conflict. In other words, in solving environmental problems, it is almost always better for the

government to follow the *specificity rule,* namely, intervene at the source of the problem and apply appropriate taxes and subsidies based on the 'polluter pays' principle, than to impose trade restrictions, which may be easier to implement, but is usually less efficient. Moreover, governments in developing countries should think in terms of furthering trade liberalisation (rather than reversing it) because, as many studies have shown, the income gains accruing from trade is sufficient to pay for the necessary abatement costs and also leave an economic surplus. There are other major areas in which *active* governmental support can and should be provided. These are, (i) enrichening environmental infrastructure, (ii) facilitating the adoption of Environmentally Sound Technologies (EST), (iii) striving for mutual recognition of environmental standards, (iv) exploiting the opportunities in 'green trade', (v) tapping the national and international aid agencies for providing financial assistance to the small exporters, (vi) improving policy coordination at the national level between the government, the private sector and the NGOs, (vii) promoting partnerships of developing and developed-country companies, (viii) encouraging regional cooperation between developing countries to build capacity in environment related services, and (ix) participating in international deliberations with a view to prevent the formulation of "inessential" environmental regulations and standards, which are nothing but disguised trade barriers.

In India, the government, despite being burdened by other more pressing developmental responsibilities, such as providing infrastructural services, education and health services, must play a proactive role and adopt a multi-pronged approach to reconcile trade and environment. The thrust areas, over and above the ones mentioned in the case of developing countries in general, in policy making by the Indian government are: (i) strengthening the export councils, (ii) provision of testing facilities for compliance with external environmental regulations, (iii) facilitating the transfer of EST from the developed countries and developing indigenous ESTs within India, (iv) encouraging technological cooperation between India and the importing countries, (v) arranging for and providing financial assistance for the small exporters, and (vi) encouraging the corporate

sector to take initiative in developing the requisite environmental infrastructure so that the government can take a back seat in the matter in future.

The trade and environment issue was not discussed in the Uruguay Round. The issue was later taken up by the Committee on Trade and Environment (CTE) which submitted its report in 1996 and 1999. However, the main trade and environment issue of whether or not the WTO should become an international environmental agency for reviewing national environmental priorities, guiding the formulation of national environmental standards and developing global environmental policies, is still unresolved. While the environmentalists and the developed countries' members would very much like the WTO to undertake such a role even at the cost of compromising on the principles of free trade, the "free-traders" and the developing countries' members are vehemently opposed to WTO interfering with the autonomy of the individual countries in formulating their own environmental regulations and standards in accordance with their developmental priorities. Apart from this macro trade-environment issue, there are other micro trade-environment issue, relating to eco-duties, subsidies for fulfilling environmental objectives, production process and method based restrictions and eco-labelling schemes, on which the developed and the developing countries are at cross purposes, and which continue to remain unresolved within the framework of the WTO.

NOTES

1. The case studies for the eleven countries have been covered in Jha *et al* (1999). These countries are very heterogeneous in terms of income levels and development potentials, and have been put together in the name of 'developing' countries only for want of a better term. Of the eleven countries, only India and Zimbabwe are low-income countries; China, Phillippines, Thailand, Turkey, Colombia, Costa Rica, are *lower* middle-income countries; and Malaysia, Poland and Brazil are *upper* middle-income countries.

2. See Jha *et al* (1999).

3. *Ibid.*

4. Strictly speaking the term regulation should be used when compliance is mandatory, while the term standard should be used when compliance is voluntary.

5. See Article XX of GATT.

6. See Jha, Veena and Rene Vossenaar (1997), *Environmentally Orientated Product Policies, Competitiveness and Market Access* in Jha *et al* ed. (1997) for a detailed discussion of packaging regulations in the developed countries and their impact on the developing countries exports.

7. These figures have been taken from Jha *et al* (1999). The original source, however, is Comtrade, UNCTAD.

8. *Ibid.*

9. *Ibid.*

10. *Ibid.*

11. *Ibid.*

12. This figure has been taken from Jha *et al* (1999).

13. These figures have been taken from Jha *et al* (1999). The original source, however, is comtrade. UNCTAD.

14. This estimate has been taken from Jha *et al* (1999).

15. These figures have been taken from Jha *et al* (1999). The original source, however, is Comtrade, UNCTAD.

16. This figure has been quoted in Jha *et al* (1999).

17. These estimates have been obtained from Bharucha, Vasanta (1997), *The Impact of Environmental Standards and Regulations Set in Foreign Markets on India's Exports* in Jha *et al*, ed. (1997).

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