Economy Transdisciplinarity Cognition www.ugb.ro/etc	Vol. XIII, Issue 2/2010	6-22

INTERNATIONAL TRADE DEVELOPMENT - RISKS FOR THE ENVIRONMENT?

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Abstract: Trade is considered to be one of the main pylons for the economic globalization. Through the open markets, can be efficiently improved the resource allocation, that's why goods are produced where it is most economically (newly environmentally) effective to do so. The last period of time, the international debates focus on the impact of economic growth and international trade on the environment. The objective of this study is to facilitate a better understanding of the impact of trade which can constitute only a threat for the environment, or it can also have a favorable effect on it. It aims to detect how the international organizations can contribute to the decrease of discrepancies between trade and environment policies, can make the environment and trade goals be complementary and mutually supportive, can combine the reforms in both area for finding the ways to raise incomes without compromising the environment. The paper also discusses the role of trade barriers in these issues, as the means to protect the environment or to inhibit the access for improving the new environmental technologies and environmental standards. This proposal attempts to make a constructive generalization about how environmental concerns can work through the trading system to foster or impede development, in both rich and poor countries, since all of them can not be specialized in clean industries. And, finally, this survey emphasizes that the economic growth is harmful for the environment unless the production becomes cleaner and less resource consuming at the same time, and the consumers become more willing to recycle waste instead of abandoning it.
Key words*: economic growth, environment, international trade, standards, World Trade Organization*

Introduction

For the last years, the debate concerning the environmental consequences of liberalized trade is one of the most discussed subjects. Economic growth owed to the liberalization of international trade and environmental protection, are both very important for the human wellbeing. By setting the mitigation of environmental degradation as one of the main targets, the governments can guide the economic development so, as to fulfill the tasks without affecting the welfare of the country. In these circumstances international trade, as a means which contributes to the economic growth, has a wide range of benefits which include the access to a larger variety of goods and services to consumers, easier access to foreign technologies, access to larger markets for producers, and increased efficiency in resource allocation.

From the environmentalists' perspectives, international trade is viewed through its impact on the environment, namely, air and water pollution, the degradation of natural habitats and loss of species, and global pollutants, particularly carbon dioxide emissions, are major concerns. In the same time, pollution and environmental degradation are negative externalities-costs not borne by their creators but placed on third parties and society as a whole. Because polluters do not generally bear these environmental costs, they have little incentive to minimize them, which means that it is desirable to require or encourage polluters to internalize these costs—through regulations, economic incentives, or legal and social action aimed at preventing, repairing, or compensating for environmental damage.

In this context of ideas it is considered an open economy exchanging goods and services with the rest of the world, where production and consumption of traded commodities generate an externality, such as pollution. Pollution abatement can be achieved by using various policy instruments, such as emission taxes, output taxes, or export tariffs. To minimize the cost of reducing pollution, the optimal response would be to use policy instruments most directly linked to the source

of the externality. In that context, trade instruments, such as bans on exports, are inferior to effluent taxes, abatement subsidies or more complete assignment of property rights. Non-targeted instruments, such as border measures, induce large welfare losses by distorting resource allocation beyond the source of the externality.

From the other side Lopez and Islam state that while trade has rapidly expanded, the environmental trends show a sharp dichotomy: the local urban environment improves but the green or rural environments continuously deteriorate. One reason for this may be that local urban pollution is directly felt by large concentrations of population able to exert strong pressures on politicians to control it, while the rural environment affects directly a smaller fraction of the population which, due to its geographical dispersion, is less able to pressure governments.

Certain economists as well as environmental action groups, consider international trade to be ecologically harmful and undesirable, especially when a country's environmental policies are weak or non-existent. Some (e.g., Daly) also believe that if all countries were self-sufficient, the environment and the utilization of natural resources would be improved relative to a world with a more open flow of traded goods.

Most economists would consider these views to be incorrect. One assumption often made is that trade tends to increase production (correct) which always leads to increased pollution and environmental damage (incorrect). If this view was correct, any impetus to growth, whether via increased trade or domestic demand, would lead to a worsening of the environment (Seale and Fairchild, 1994). Expanding trade is a source of increased wealth and diffusion of technology, both of which enhance societies' ability to protect and upgrade their environments. There is no reason to assume that growth of per capita income necessarily, or even on average, damages the environment.

Thus, views differ regarding the impact of international trade on the quality of the natural environment. These two connotations of international trade impact on the environment I will treat in this paper.

Chapter I: Positive and negative effects of international trade on the environment

Trade liberalization brings advantages and disadvantages at the same time and the compromises are inevitable. There are cases that free trade and environmental protection are complementary, but, sometimes, this liberalization accelerates environmental degradation. For this the companies and the countries that have benefits from liberalized trade could contribute, in a constructive manner, to improve the environment by allocating more resources for this purpose.

In general, however, trade is not the root cause of environmental problems, which rather reflect market and intervention failures. An expansion of trade can produce negative environmental effects so large, sometimes, that they outweigh the conventional benefits from open markets (increased specialization, more competition and so forth), resulting in an overall decline in national welfare. However, this is possible only if a country lacks a domestic environmental policy that reflects its environmental values and priorities (GATT, 1992).

Freer trade, sometimes, produces resources that might be used for environmental protection; it cannot be assumed that this will happen in the absence of regulations or incentives for improved environmental management. If the goals of environmental protection and economic development are to be made compatible, economic activity will need to be conducted in ways that diminish environmental degradation (U.S. Congress, 1992).

Overall, trade liberalization is likely to give rise to negative environmental externalities, but also to some environmental gains.

But the policy implication of a negative association between freer trade and environmental degradation is not that freer trade should be halted. What matters is the adoption of the most cost-effective policies to optimize the externalities. Restricting trade is unlikely to be the most efficient way of controlling the problem, especially where trade retaliation may occur (Pearce, 1992). The losses can best be minimized by firm domestic environmental policy design to uncouple the environmental impacts from economic activity.

From the other side Anderson, Blackhurst (1992) and Arden-Clarke (1991), state that “the basic issues are: (a) free trade is alleged to “cause” environmental degradation: hence liberalization of trade should be attenuated for environmental reasons. An example might be the trade in tropical hardwoods; (b) protection of domestic markets is said to cause environmental degradation: hence trade liberalization favors the environment. An example might be the Common Agricultural Policy. (b) is clearly inconsistent with (a); (c) it is argued that trade liberalization needs to be attenuated when

environmental degradation arises from trade: through imported polluting products (damage is done in the importing country) (the unidirectional externality case);" through the process of production in the exporting country which may incur damages to the exporting country and the importing country (the 'common property' or mutual externality case) (Pearce, 1992). Thus, the environmental effects of trade liberalization, both positive and negative - will vary, depending on the country, sector and particular circumstances.

Table 1: Environmental effects from trade and trade liberalization

Potential effects	Products traded	Scale/economic growth	Structural changes in the pattern of production and resource use	Environmental regulations and policies
Positive	Faster diffusion of environmental goods and services Market expansion for goods produced by more environmentally sound inputs	Increased efficiency of international markets improves the allocation of resources and mobilises financial resources that can be devoted to addressing environmental problems	Removal of trade-distorting policies (subsidies, tariff and non-tariff barriers) eliminates pressures on the natural resource base and pollution caused by these incentives Promotion of allocation of economic activities among countries according to environmental and other endowments	Harmonisation of environmental policies can lead to higher standards, *e.g.* EU
Negative	Market expansion for goods that damage the environment, such as hazardous waste and chemicals and endangered species	Exploitation of the natural resources Excessive pollution	Encouragement of production and consumption in countries which are unsuited to the nature or intensity of the activity	Harmonisation of environmental policies can lead to countries accepting the lowest standards
Measures to avoid negative effects	Provision of adequate means to dispose, recycle or reuse hazardous wastes Ban on trade in specific products	Full internalisation of environmental damages in prices Well defined property rights	Full internalisation of environmental damages in prices Well-defined property rights	

Source: Potier, M. 1997, *Environmental Assessment of Trade Liberalization: An OECD Perspective*, in Sustainable Development in a Developing World, Colin Kirkpatrick and Norman Lee (eds.), Edward Elgar Publishing, Cheltenham; pp. 46-57

1.1 Negative Effects

The impact of trade liberalization on the environment, from the environmentalists' point of view is often negative, at least in the short term. Esty (1994, b) argues that the environmentalists "view competitiveness achieved by degrading the environment as unfair trade and fear that it exerts downward pressure on environmental standards elsewhere as competitors demand that their governments reduce pollution control costs…".

In the absence of effective environmental policies, including those aiming at internalizing environmental costs, or when distortive domestic policies exist, increased economic activity generated from trade liberalization contributes to environmental problems. Trade is linked to few forms of environmental damage. Damage can arise from the consumption of an imported product which gives rise to an environmental loss. Most usually such "consumption externalities" are health-related - e.g. pesticides on imported fruit, treated products etc. Another form of damage arises because of the production of the good in the exporting country. Tropical hardwoods from unsustainable forestry, for example, impose a cost on importing countries if the population of the importing country cares about deforestation. A further category of damage arises from transboundary pollution, e.g. acid rain. Here the damage is physically located in the "importing" country but caused by activity in the "exporting" country.

When producers pollute, they are either made to pay nothing, or to pay less for the pollution than its cost to the community. In either case, they fail to incorporate pollution fully into their cost-benefit analysis. This inefficiency leads producers to over-pollute. Because of these market failures (Nordström, Vaughan, 1999), free trade may damage the environment by: increasing energy consumption, farming and wastage by lowering prices and increasing demand; increasing pollution and the risk of environmental accidents by facilitating movement of environmentally hazardous materials; (Steinberg, 1997) and accelerating the overuse of natural resources (Schoenbaum, 1991).

The potentially harmful impact of trade liberalization on environment is indeed a challenging issue in agriculture, and this issue raises growing concerns. The greenhouse effect, the emissions of transport related activities, the adverse effects of intensive processes based on irrigation and various chemical inputs and the introduction of allergenic species translate into environmental losses that compensate for efficiency gains associated with free trade. One must however carefully tackle those issues: since the initial situation is already a second best, the impact of trade liberalization can be ambiguous. The initial situation, before liberalizing trade, was characterized by large subsidies and the environmental impact of such policies should also be taken into consideration in the balance. In

total, the environmental pressure could well be relaxed in countries where prices would fall as a result of liberalization, while increasing in other countries intensifying their production in order to export. If the techniques mobilized in the latter are less intensive in environmental resources, the impact of liberalization will be beneficial (Fontagné, Von Kirchbach, Mimouni, 2001). Two additional outcomes will lead to dramatic changes in the agro-food sector in the future: the dynamics of the world population and the limits to the extension of arable land surfaces.

On the other hand, two major reasons are suggested for why the expansion of international trade can be harmful to the environment, especially in developing countries. The first reason is the lack of internalization of cost. It is argued here that an increase in international trade would generate external costs, especially in transportation, that are not reflected in the price of the products. Thus, without the internalization of these costs by the firms, the level of international trade would be greater than what would be socially desirable which means that more environmental (external) costs would be generated, than would be socially desirable. The second reason that has been advanced is that increasing international trade leads to the widening of income inequalities within and between countries. As these income disparities increase, the disadvantaged groups may view the more intensive utilization of environmental goods as their only survival mechanism. More intensive utilization of these environmental goods may lead to their degradation (Pemberton, Charles, 2001).

While trade liberalization is likely to reduce some protectionist barriers which are encouraging environmentally harmful activities, it is also possible that trade liberalization could worsen particular environmental problems in the absence of appropriate domestic environmental policies. For example production and export subsidies can potentially worsen environmental conditions by distorting resource values, input costs and market prices.

Therefore, the negative impacts of trade liberalization of the environment generally relate to the expansion of trade in a context of market and other intervention failures. For this the environmentalists require "responsiveness to environmental needs to be a fundamental element of trade rules" (Esty, 1994, b)

1.2 Positive Effects

"*Trade creates wealth, and wealth cleans up the environment*"
Marcich, M. (2000). Trade and Environment: What Conflict?

Several documents on the effects of trade liberalization on the environment shows that, in general terms, trade liberalization can have a positive impact on the environment by improving the efficient allocation of resources, promoting economic growth and increasing general welfare, provided effective environmental policies are implemented (Potier, et al. 2008). Trade opening has much to contribute to the fight against climate change by improving production methods, making environmentally friendly products more accessible at lower costs, allowing for a more efficient allocation of resources, raising standards of living leading populations to demand a cleaner environment and by spreading environmentally friendly technologies. Trade liberalization can provide these resources for environmental improvement, particularly for developing countries and economies in transition.

Thus, Frankel and Rose (2003, p.2) state: „If trade raises income, it allows countries to attain more of what they want, which includes environmental goods as well as more conventional output." Increased international trade improves the efficiency of resource allocation and allow production only under conditions that are environmentally and technically most feasible. The basis of this argument is as follows. A protective regime of high tariffs and quantitative restrictions is likely to lead to the expansion of domestic production into areas that are not environmentally suitable, the production being possible only because of the subsidization that is afforded by the protective regime. In agriculture, production in such environmentally unsuitable areas is usually only possible by the modification of the natural environment, through the use of ameliorants such as fertilizers, pesticides and irrigation, which are likely to lead to environmental degradation. Increased international trade as a result of the removal of trade restrictions would mean that production in domestic economies would have to be internationally competitive. Thus, there would be the removal of high tariff and quantitative restrictions, which would lower the implicit subsidization of domestic production. This in turn would lead to a decrease in the profitability of production requiring high levels of environmental ameliorants, and a decline in production in environmentally unsuitable areas. Another argument in favor of the beneficial effects of expanded international trade is that such expansion would allow developing countries improved access to modern, environmentally friendly technology. Expanded

international trade would encompass an expansion in the trade of inputs. Such an expansion in trade would lead to the importation of inputs that are more internationally competitive and an important aspect of this international competitiveness is the environmental friendliness of the technology (Pemberton, Charles, 2001). Thus, developing countries if they were part of this expanding trading system would now have access to modern, environmentally friendly technologies.

Liberalization of international trade and conservation of the environment form a complex relationship. On the one hand, free trade may improve the environment by: increasing real income and standard of living, so that there are more resources available for dedication to the environment (to actually improve the environment, these resources must be so dedicated reducing population growth through the higher education, that comes with higher incomes; reducing waste through efficiency gains of competition and economies of scale; encouraging intergovernmental cooperation on matters regarding the environment; and providing access to technology for dealing with waste (Nordström, Vaughan, 1999).

1.3 Liberalizing trade in environmental goods and services (EGS)

Open economies are more receptive to imports of innovative foreign technologies that are cleaner and more efficient than older production processes. In some cases, multinational firms might bring technologies that meet corporate or home country standards which are more stringent than local requirements. But it is not inherently true that economic improvements arising from freer trade will translate automatically into environmental improvements. As the scale and rate of economic growth increases, environmental degradation may outpace environmental gains made through the use of environmentally preferable technology. Thus how is specified in *Trade and Environment: Conflicts and Opportunities (U.S Congress, 1992, p.39)* "Liberalizing trade and investment might speed international diffision of environmentally preferable production technologies. Such cleaner technologies not only reduce the pollution associated with production, they often offer improved energy and materials efficiency, accruing further environmental and productivity gains."

Expanding the trading opportunities of developing countries in the light of environmental concerns may require mitigating the adverse effects (if any) of environmental regulations, policies and standards on their exports, as well as actively seeking new market opportunities for example through the promotion of "environmentally friendly" products. Liberalizing trade in environmental goods and services (EGS) has benefits for both trade and the environment.

The elimination or reduction of barriers to trade in this area will benefit the environment by improving countries' ability to obtain high quality environmental goods. It will facilitate access to these types of goods and foster a better dissemination of environmental technologies at lower costs. This negotiation will also have a positive impact on climate change by improving access to goods and technologies that can contribute to climate change mitigation. According to the World Bank study on trade and climate change, elimination of both tariffs and non-tariff barriers to clean technologies could result in a 14% increase in trade in these products.

By reducing the prices of environmental goods and services, limited environmental protection budgets can be stretched further than they otherwise could have been. Expanded market opportunities can encourage technological progress, as well as providing economies of scale and increased efficiency.

The resulting market expansion from trade liberalization will put a downward pressure on prices in home-country markets and increase competition between imported and domestic goods, thus further lowering compliance costs. By increasing the dissemination of eco-friendly goods and technologies at a lower cost, trade liberalization will make it less difficult to set stringent environmental targets. That's why the demand for environmental goods and services is dependent on domestic and international environmental regulations and their enforcement; consumer pressure (green consumerism) and community pressure. In a regulatory framework which ensures that the type of environmental goods and services demanded is appropriate, trade liberalization can help to ensure the availability of those products. Also important is the choice of environmental policy instruments and the type of compliance model. OECD studies have recognized certain guiding principles, including the need for incentives; a focus on pollution prevention; and a long-term environmental strategy with a flexible regulatory framework.

The value of trade in eco-friendly goods and technologies is still relatively low. Much of that trade is internal to a few multinationals. Developed countries dominate the high-technology end of

exports on the low-tech side and in bio-fuels, developing countries are significant exporters, but only as a group.

The markets for eco-friendly goods are extremely distorted by subsidies and preferential procurement policies of governments in developed countries, and by tied aid and multilateral projects that carry tariff waivers and offer long-term concessions (up to 25 years), as well as by local content requirements in developing countries (local content requirements are used by some developed countries as well.) the development of eco-friendly goods could be done in two different ways. One way would see the demand for these goods met by finished products exported from a handful of developed countries to developing-country markets. The other way would see an increasing allocation of at least a portion of the component manufacturing to developing- country industries, with those components then used in the final assembly of the new type of goods technology.

In principle, developing countries have two very substantial assets that favor their competitiveness in renewable: abundant renewable resources, and in many cases, lower costs of production of equipment, components and bio-fuels (Vikhlyaev, 2009). Taken together these factors point to considerable scope for trade and cooperation, particularly since more mature renewable energy technologies (e.g. hydropower, geothermal and biomass combustion) are close to reaching saturation in developed countries.

In theory, liberalizing trade in environmental goods (EG) and services could help developing economies build more environmentally sustainable economies. However, continued trade growth in EG depends not only on policies supportive of freer trade in these goods and services, but also on viable domestic consumer markets for them. In fact, trade in EG is restricted to a handful of middle-income countries, which have adequate purchasing power to sustain a dramatic rise in imports of EG (Jha, 2009). Concerning the tariffs and trade barriers regarding eco-friendly goods and technologies, there is a twofold rationale statement. First, reducing or eliminating import tariffs and non-tariff barriers for these types of products should reduce their price and therefore facilitate their deployment at the lowest possible cost. Access to lower-cost and more energy-efficient technologies may be particularly important for industries which must comply with climate change mitigation policies that place the burden of emission reductions on the emitters.

A study of selected eco-friendly technologies has identified various types of non-tariff measures that may potentially hinder trade in these technologies. These include measures such as burdensome pre-shipment inspection and customs procedures; quantitative import restrictions (for example, through import licensing, import quotas, or prohibitions), import surcharges or border taxes, technical requirements and voluntary standards, burdensome conformity assessment procedures, costly certification and testing procedures, and discriminatory taxes.

The second reason for reducing tariffs and other trade barriers is the fact that trade liberalization of eco-friendly goods would provide incentives to producers and provide them with domestic expertise to expand the production and export of these goods. It is argued that trade liberalization of such goods would allow developing countries, in particular, to promote the industrial diversification of their economies and realize economies of scale. Indeed, increased trade allows larger markets for eco-friendly goods, leading to profits from economies of scale and giving producers the opportunity to learn and benefit from technological advances.

Moreover, trade liberalization of eco-friendly goods, in particular in developing countries, could help increase local capabilities for innovation and adaptation of domestic technology rather than foster dependence on transfer of foreign technology. Trade opening could then facilitate the integration of small and medium-sized enterprises into related global supply chains, thereby increasing employment and reducing poverty (UNEP&WTO, 2009).

Chapter II: The effects of the international trade on the environment

In the literature, the assessment methodologies are facing difficulties, because of segregation trade – induced impacts from a range of other variables. The difficulty of specifying or quantifying the effect of trade liberalization on the environment depends, first, on a country's comparative advantage, which in turn depends on country characteristics. There is no reason to expect trade to have the same effect on all countries. Second, the effects of trade on the environment depend on whether environmental policy is rigid or instead responsive to changes brought about by trade. When policy is rigid, the outcomes depend on the type of environmental policy instruments used by regulators (Copeland, Taylor, 2004). Finally, the welfare effects of trade liberalization are sensitive to both a country's comparative advantage and the flexibility of its policy regime, because how

Nordström and Vaughan (1999, p. 31) say: “trade will mitigate local pollution problems in countries with a comparative advantage in industries that tend to be inherently cleaner and magnify local pollution problems elsewhere. This result is almost definitional. As trade is liberalized, global pollution problems will get worse if differences in environmental standards dominate classical factors of comparative advantage (capital abundance for developed countries and labour abundance for developing countries), and improve if classical factors of comparative advantage dominate differential environmental standards.”

2.1 Approaches for evaluation the effects of trade liberalization on the environment

OECD has been developed, in order to facilitate the conduct of environmental reviews, a combination of two approaches for governments to use to evaluate the effects of trade liberalization (focusing on goods trade). The first approach considers the changes in output resulting from the gradual elimination of tariff barriers on goods and thus, their eventual impacts on the use of natural resources. The second approach has a more legal cut in the sense that it highlights the changes in national laws and regulations following trade liberalization. Analyzing in more detail the OECD methodologies, the first approach involves examining four different categories of economic impact of (goods) trade liberalization: scale effects (the level of trade or of economic activity), structural effects (the pattern of economic activity), products effects (product trade flows) and technology effects (technology trade flows).

Scale effect

International trade development implies increased economic activity, which, in turn, affects the use of environmental resources. Augmented trade may also contribute to exacerbate environmental pressure since more growth means more consumption and more production, and thus more pollution or more environmental degradation. This is known as the scale effect and is produced at the macro-economic level by the reduction of tariffs on tradable goods. The effect is empirically important, especially for countries that specialize in environment-intensive activities, holding constant production techniques and the mix of goods produced, is likely to cause an increase in the level of local and global pollution and also faster degradation of natural resources. It is widely accepted that trade liberalization has significant macro-economic effects, particularly on the level of economic activity, and influences the utilization of natural resources, energy and materials as well as pollution levels. This vicious circle is perpetuated especially in the case of incorrect pricing of scarce environmental resources. In fact, when environmental costs are not internalized correctly, trade-induced economic growth tends to aggravate inefficient patterns of production and consumption (Daly, 1993). Most authors agree that growth in economic activity is largely beneficial, although others have criticized the standard economic analysis involved in assessing gains of free trade.

Positive scale effects may occur when economic growth creates an increased demand for improvements in environmental quality and financial gains are used by both public authorities and private companies to address environmental problems. It does not, however, necessarily follow that economic gains will be automatically used for environmental protection, or, indeed, that any improvements in environmental quality will ensue.

Negative scale effects may occur in the absence of sound environmental management and internalization of environmental costs: growth increases both the use of natural resources and the ‘throughput’ of materials and energy and associated pollution (UNEP, 1999). This is particularly the case with common goods or resources when there is no incentive to restrain individual behavior; producers using these resources will also increase profits by not spending on environmental protection measures (Esty, 1994, a). In this situation, trade-induced economic growth leads to higher pollution and unsustainable patterns of production and consumption.

Given the more lenient attitude of governments toward rural environmental degradation and global pollutants than to urban local pollution, the negative impact of the scale effect is likely to be worse for the green-global environment than for the urban environment.

Structural effects

Structural effects are those which are associated with the patterns of economic activity and the processes of resource use and production which are an indirect result of trade liberalization. Therefore, they are more indirect and micro-economic effects, basically related to modification of processes of production stemming from the reduction in tariff barriers. Classical trade theory posits that free trade enables countries to specialize in the export of goods that incorporate proportionately more of those factors of production that they possess in relative abundance and best reflect their

natural endowment. This leads to a competitive advantage over other countries and lower prices; it also means that global material welfare can be attained at a lower factor input, including environmental resources, than would be the case if countries attempted to satisfy all requirements through local production alone (Johnston, 1996).

Positive structural effects may result when liberalization improves the allocation of resources and the efficiency of production and consumption. The economic rationale behind this idea is the classic concept of "comparative advantage." In the context of the use of natural resources, this means that each country should be better off specializing in the production of those goods that are intensive in its natural endowment.

Negative structural effects may occur when there are no appropriate mechanisms to evaluate and internalize environmental costs and environmental costs and benefits are not reflected in the prices of traded goods. This leads to miss-allocation of productive resources and/or over-exploitation of natural resources and specialization in pollution-intensive goods and industries (Arden-Clarke, 1991). The structural effects together with product-related effects are enclosed in composition effects.

Product-related effects

Product effects relate to the diffusion of environmentally sound, or hazardous, goods as a result of trade liberalization, since the reduction in trade barriers is likely to be associated with increased exchanges of specific products that can harm or enhance the environment.

Positive product-related effects may result, also, from increased trade in goods which are environmentally-beneficial relative to competing products, such as energy-efficient machinery, low-sulfur coal, or recyclable containers. Positive product effects would also stem from increased trade in environmental goods and technologies themselves, such as equipment for water treatment, waste management and air quality.

Negative product-related effects may result when freer trade merely expands exchanges in environmentally harmful or sensitive products, such as toxic wastes and hazardous chemicals or endangered species or other similar commodities. Because of differing regulations in different countries, freer trade may reduce the incentive to establish stringent national environmental standards; this occurs when toxic wastes are accepted for disposal in countries with lower environmental standards.

Technology effects

Technology effects are associated with changes in the way products are made depending largely on the technology used. The productivity obtained from the implementation of new technology and knowledge conducts, normally, to economic growth. Technological improvements are the result of potential savings on inputs, (such as energy and environmental amenities), which, with the time become rare. In generally, the technique effect refers to reductions in emission intensity per unit of output. If trade raises income, emission intensity may fall, if environmental quality is a normal good. A normal good is one for which as incomes rise, individuals would prefer more of. Higher income may lead to stricter environmental regulation, under the assumption that country governments are responsive to the citizens' demands (López, Galinato, and Islam, 2007). The technique effect of trade has been found to reduce certain pollutants, particularly air pollutants, but the effects on other environmental factors is less significant.

On the other hand, the removal of border constraints, improved intellectual property regimes and other trade liberalizing policies can have an influence on the way environmentally sound techniques and technology are distributed internationally (Esty, 1994, a). An important consideration in this context is the extent to which international investments and multinational companies are active in establishing environmentally sound operations, particularly in developing countries where regulations may not be stringent. For many of these countries, access to improved technology and management systems can represent a significant environmental benefit.

Positive technology effects may occur when opening-up of markets results in expanded sales opportunities and easier dissemination of environmentally friendly goods, services and technologies. New and cleaner technology can reduce both, pollution per unit of output as well as overall levels of pollution, thus enhancing both economic and environmental efficiency. But, foreign producers may transfer cleaner technologies abroad only when the trade measures and agreements are conducive to investment. If there are positive scale effects which generate an increase in income levels, the public may demand a cleaner environment as an expression of their increased national wealth, which in turn will generate demand for cleaner technologies, more stringent pollution standards and stricter enforcement of existing environmental laws.

Negative technology effects may occur when environmentally unsound technologies, that are both cheap and/or unsophisticated or obsolete, are promoted by freer trade, or, when pollution intensive industry migrates to areas where environmental standards are lower—the so-called pollution havens hypothesis (Esty, 1994,a).

The second general approach from the OECD methodologies involves a legal rather than economic analysis. Regulatory effects result from the impact of trade liberalization on national environmental policies and standards. On the one hand, positive regulatory effects occur when trade measures do not impinge upon the ability of governments to implement effective environmental policies. In addition, openness can have an educative effect and lead to upwards harmonization of environmental regulations. On the other hand, negative regulatory effects occur in case harmonization provisions of trade agreement neutralize governments' ability to set environmental protection standards.

Trade policy framework has its effects on the environment, especially from political and legal point of view, because changes in trade policies can influence existing environmental policies and standards at the national and international levels. Of particular concern are the contradictions that may arise between national and international environmental product standards when they are set at different levels of stringency thus affecting internalization of environmental costs (Charnovitz, 2000). This legal dimension has been discussed extensively in the literature concerning GATT provisions, particularly with regard to the WTO Agreement on Technical Barriers to Trade (Ewing, Tarasofsky, 1997). Following the recent WTO ruling against the EU's ban on hormone-treated beef, it appears as if WTO rules restrict the right of governments to decide what level of environmental or health protection they consider appropriate for their citizens.

Positive regulatory and policy effects may occur when increased international cooperation resulting from trade agreements and economic integration can help induce institutional changes necessary to develop improved environmental protection and enforcement measures. In addition, openness can have an educative effect and lead to upwards harmonization of environmental regulations.

Negative regulatory and policy effects may occur in case harmonization provisions of trade agreement neutralize governments' ability to set environmental protection standards. Negative regulatory and policy effects fall into two categories. First, as domestic economies open up to international markets, countries may not adopt instruments to internalize environmental costs because of concerns that this may affect competitive advantages. Secondly, provisions for international harmonization in trade agreements may not allow national governments to determine the levels of environmental risk which they consider appropriate (UNEP, 1999).

López, Galinato and Islam, Dean, Daly and Cobb described two more types of effects, namely: composition effect and growth effect.

Composition effect

Another influence on the environment comes from the division of labor or specialization undertaken by a developing economy. In this way the role of trade liberalization consists in inducing a new specialization in production and consumption, which may or may not exacerbate the environmental degradation occurring in the economy (Beghin, 2000). Lopez and Islam state that if the economy's comparative advantages favor clean industries, increasing trade openness may switch from pollution-intensive "dirty" goods to less polluting, or "clean," goods and services. The general assumption is that production of dirty goods is more intensive in physical capital and natural resource while clean goods production is more intensive in human capital.

From one side, countries that have large endowments of natural resources are likely to relatively specialize in resource-intensive industries and thus increase the extraction of natural resources when they open to trade. Other positive impacts on the environment may also arise. Freer trade expands the consumption possibility set, thus raising incomes and hence the demand for environmental goods. Governments may then respond by raising environmental standards (Pearce, 1992).

From another side, Copeland (2005, p.3) states: „for an exporter of pollution-intensive goods, the composition effect tends to increase pollution. This additional composition effect over and above the increase in the scale of production of the economy tends to increase pollution unless the income elasticity of marginal damage is sufficiently large." The situation is even worse in the countries where property rights on resources are poorly defined or where environmental regulations are not properly enforced, increased trade is likely to result in more resource degradation and deforestation. Even more seriously, lack of property rights on resources may lead countries to specialize in natural

resource–intensive activities and hence to further environmental degradation even if they are not richly endowed in resources. That is, the institutional and regulatory failures may lead to false comparative advantages, in which case trade may reduce rather than raise income as is normally assumed (this is behind the pollution haven hypothesis).

In this context of ideas, the literature describes two major competing theories. The pollution haven hypothesis, which predicts that countries with relatively weak environmental policy will specialize in dirty industry production: Indonesia, China, Costa Rica and Turkey. The specialization in dirty activities is not by itself evidence of externalities, but there is evidence that the burgeoning, often informal, environmental protection in many countries does not internalize the cost of pollution appropriately. In many versions of this hypothesis countries with weak environmental policy are also low-income countries. An alternative hypothesis is that environmental policy has little or no effect on the trade pattern: instead standard forces, such as differences in factor endowments or technology, determine trade. For example, under this view capital abundant countries tend to export capital-intensive goods, regardless of differences in environmental policy (Copeland, Taylor, 2004). It is called the factor endowments hypothesis, although it can be interpreted more broadly to encompass other motives for trade, such as technology differences.

The available evidence on the environmental impact of trade policy reform and integration in goods and factors markets does not support the pessimistic conjecture of a wholesale specialization in dirty activities by developing economies. There is convincing evidence that under an import substitution strategy, countries have specialized in pollution-intensive manufacturing activities for which they are not truly competitive. Outward orientation has reduced the pollution intensity of output in several countries through a composition effect.

Growth rate effect

It is considered that trade liberalization and openness may cause a number of dynamic forces that promote not only a once-and-for-all effect on the income level but also a faster pace of economic growth over time and this will tend to mean more materials and energy being 'dragged through' the economic system to feed the expanded economic activity (the materials balance principle) (Daly, 1993). For example, trade openness may cause an economy to adopt new technologies at a faster rate due to the fact that many new technologies are generated abroad. A faster pace of economic growth may cause lower environmental quality than a country growing at a slower rate (López, Galinato, Islam, 2007). The issue here is that environmental institutions and policies need time to be adapted. An economy growing at a fast rate will find it much more difficult to timely adapt their policies and institutions to properly respond to increasing pollution than an economy growing at a more moderate pace. This trade-induced growth rate effect may result in a decline in environmental quality.

2.2 Methods, methodologies, techniques for assessing the effects of trade on the environment

In assessing existing and potential environmental effects, the specialists are applying different types of techniques and methodologies with various variables, which take into account the complex aspects of multilateral liberalization of trade barriers. In addition to examining the environmental effects associated with economic changes (scale, structural and technology effects), particular emphasis are given to assessing the regulatory situation, in relation to current rights and obligations (and possible future developments) arising under WTO provisions on domestic regulations. It is obvious that it will always be required a combination of different assessment methods. However, it is controversial with regards to which types of methods the emphasis should lie upon.

In 1999, the European Union (EU) began to carry out **Sustainability Impact Assessments** (SIAs) for the negotiation of its major multilateral and bilateral trade agreements. SIA is a process undertaken before and during a trade negotiation, which seeks to identify economic, social, and environmental impacts of a trade agreement. The purpose of an SIA is to integrate sustainability into trade policy by informing negotiators of the possible social, environmental, and economic consequences of a trade agreement. The idea is to assess how best to define a full package of domestic policies and international initiatives to yield the best possible outcome, not just in terms of liberalization and economic growth, but also of environmental protection.

It has been identified four methodological steps for SIA:

- Screening

Apart from the various assessment methodologies is a technique called screening. Screening is used, in the initial part of the environmental review, with a similar intent to reduce the extent of the assessment. It aims at identifying and separating out those parts of the liberalization agreement which

are more likely than others to produce environmental effects, such as pollution and resource degradation.

According to the OECD indications, countries interested in reviewing trade policies with potentially significant environmental effects could establish own screening criteria. Given differences in countries' preferences, the criteria would reflect their national environmental concerns. The screening phase, however, would be for every country the beginning step of the environmental review in order to select specific trade measures meriting further consideration.

Screening is intended to encourage cost effectiveness, allocating resources to those trade measures that are deemed significant. Those measures of the trade liberalization agreement whose analysis is ruled out are those unlikely to produce significant environmental impacts.

Several criteria might be taken into consideration, at this initial level of analysis, to decide which liberalization measures do not impinge on the environment. Among these are: whether the areas to be affected are already under economic, social or environmental stress, whether the measure is likely to contribute to cumulative impacts of the new Agreement as a whole or whether the existing regulatory and institutional capacities in the affected areas are sufficient to implement mitigatory measures (Kirkpark, Lee, 1999). In the specific context of services liberalization, the EU SIA reached the conclusion, after the screening level, that significant impacts (economic, social and environmental) can be anticipated in most sectors.

- Scoping

Similar to the screening procedure, scoping aims to discriminate the most significant and likely environmental impacts from other more neutral effects resulting from trade agreements. In fact, while many environmental issues should be examined, limited data, limited resources and practicality require that the assessment be focused on very specific pressure points. The countries are committed to undertaking objective and science-based assessments based on a scoping mechanism, which has two principal components: identification and prioritization of relevant issues.

The first component of the scoping process is very similar to the screening exercise, since it involves the identification of a range of foreseeable environmental impacts to be further analyzed in the environmental review. Following the identification process, prioritization is used to select important issues warranting more in-depth analysis. Some of the initial identified impacts may be eliminated from consideration through the prioritization procedure.

- Preliminary Assessment:

to determine the impacts associated with each measure and with the agreement as a whole;

- Flanking measures (mitigation and enhancement analysis):

to determine types of measures which may reduce significant negative impacts that result from trade opening measures and enhance positive impacts on sustainable development (particularly for developing countries).

The main tools for predicting environmental and socio-economic effects can be: modeling or forecasting of direct environmental effects, matrices and network analysis, participatory or consultative techniques, geographical information systems as a tool to analyze, organize and present information. The tools for analyzing and comparing options are: scenario analysis and multi-criteria analysis, risk analysis or assessment, cost benefit analysis, opinion surveys to identify priorities.

Scenario-building

Any environmental review has to take into account the considerable uncertainty characterizing the package of measures resulting from a new round of trade negotiations. In fact, the level of liberalization reached in a future agreement will affect the sustainability impact of any trade measures. Consequently, it is considered an alternative scenario to be constructed to shed light on the sensitivity of the sustainability outcome to the adoption of different negotiation agendas (Kirkpark, Lee, 1999). For practical reasons the scenarios have been limited to three: a "base" or benchmark scenario, an "intermediate" scenario and a "towards full liberalization" scenario:

- Base or benchmark scenario, where no new agreements were reached and the level of commitments remained unchanged;

- Intermediate scenario, where improved commitments regarding market access and national treatment were to be reached as much as a strengthening of GATS discipline on Article VI and new rules on safeguards, subsidies and government procurement;

- Towards full liberalization scenario, that assumed substantially more services trade liberalization with the adoption of new commitments in terms of market access and national treatment across the four modes of supply and twelve services sectors.

This scenario building analysis can represent a powerful instrument to render environmental reviews more flexible and adaptable to the evolving situation of particular requests and offers made in the context of trade negotiations.

Environmental Impact Assessment (EIA)

Environmental Impact Assessment is a methodology for the examination the trade-environment relationships. This would identify the broad ecological implications of different trade approaches and what types of mitigating measures or complementary mechanisms might be put into place to minimize environmental damage. The combined techniques have been used in some cases, such as that developed by the North-South Center of the University of Miami (Harwell, et al, 1994). The assessment is organized on the basis of qualitative ranking of known environmental risks; it catalogues known ecosystem types and their locations, connects important economic sectors to affected ecosystem and extrapolates information from data on the changes in economic sectors already known to be occurring in the wake of liberalization of trade. The method is based on the scenario-consequence approach and progresses through four stages, using the results of each previous scenario:

- Trade scenario: Identification of the potential changes in the trade regime between countries engaged in the liberalization process and modifications in the structure of imports and exports;
- Economic sector scenario: Estimation of the changes in economic activity in a country as the result of trade;
- Stress scenario: Estimation of the magnitude and type of environmental effects and risks induced by economic change;
- Trade/environment impact assessment: Estimation of the impacts on ecosystems, both with and without additional environmental controls being imposed on the critical ecosystem components, as measured by the stress scenario.

Macro-modeling approaches for identifying environmental impacts

Models have shown themselves to be a useful tool for explaining complex economic changes, such as those that occur as a result of trade liberalization. However, because of the arbitrary nature of the assumptions, caution should be exercised in interpreting the findings and policy implications that derive from them. An expert meeting convened by UNEP recognized that the application of models to policy formulation is limited. Macro-economic models are also being used to identify indirect effects of trade liberalization. Among the more specific economic models, which identify correlations between economic variables and environmental effects, are the OECD General Equilibrium Environmental model (GREEN) for analyzing greenhouse gas abatement costs, the TEQUILA (Trade and Environment Equilibrium Analysis) model for assessing NAFTA's effect on Mexico's emissions of pollutants, and the COMPASS (Comprehensive Model for Policy Assessment) model for simulating interactions between economic growth, energy use and the environment.

Issue-specific focus

The approach that focuses on the effects of growth resulting from trade liberalization using the environmental Kuznets curve (EKC) is interesting because of its overall theoretical consistency. There are however, significant limitations in the type of analysis, particularly because the economic mechanisms by which increases in wealth result in increased environmental protection are poorly understood (De Mestral, 1996), and valid doubts arise when the argument is exaggerated. Another approach which focuses on specialization in pollution - intensive industries is interesting because it allows concentration on primarily environmental issues; however, it has been criticized by various authors because of the underlying assumptions of direct or linear relationships between variables, and the manner in which incomplete data are utilized. The 'environmental Kuznets curve' (EKC)—the hypothesis which postulates an inverted U-relationship between environmental improvement and growth—is being applied to analyze the effects of trade liberalization. This approach attempts to show that economic growth is not a threat to global sustainability, and that it alone might solve the problems of environmental degradation (Beckerman, 1995).

Focus on Specialization in Pollution-Intensive Industries

This approach, based on econometric methods, examines the structural effects of freer trade and investigates whether there is a direct causal link between trade liberalization and specialization in pollution-intensive activities, leading to higher levels of environmental deterioration.

Focus on national level effects

The techniques used in these studies are too varied methodologically for it to be possible to derive lessons. However, regardless of the methods used, it has been shown that results of these

studies on the whole shed little light on the trade-environment relationship and provide conflicting evidence (Markandaya, 1995). The various national studies, although focusing on the same general issue, are concerned with differing economic and environmental domestic conditions and distinct policies, regulations and enforcement. Most have been carried out on a case-by-case basis, using a variety of ad hoc methodologies, including combinations of various well known methods. Because of this lack of uniformity, it is not possible to compare them.

Methods used to review trade agreements

The quality and accuracy of the reviews of trade agreements varies greatly, both because of methodological differences, and more importantly, because they often are done with a view to meeting minimum requirements and in response to public opinion rather than as a means of identifying priorities and integrating the findings in decision-making (UNEP, 1999).

Descriptive methods

Associated with case studies, a large number has been produced by UNEP on trade and the environment. Their advantage is that they provide on the- ground, empirical insight, and thus come to results which cannot be found with more aggregated techniques, such as modeling. A drawback of many existing case studies is that their methodology is insufficiently developed or explained. They often do not sufficiently examine causal chains, to the effect that specific trade impacts cannot be clearly separated from other factors of change. Another disadvantage is that there is a very limited possibility to generalize from case studies, as it is difficult to assess to what extent they are pertinent for other regions or countries.

Chapter III: The WTO contribution in the environmental protection

The purpose of the WTO is to enable countries to gain the benefits of an open trading system. If it is to be used as an instrument to achieve environmental purposes, the case in principle is made for it to be used to secure objectives in other areas of international public policy such as health, labor standards, postal services, human rights and air transport standards.

In particular, the WTO, which came into existence on 1 January 1995, has a Committee on Trade and Environment. This Committee's work builds upon the foundation laid by the former GATT Working Group on Environmental Measures and International Trade (OCDE, 1999). The WTO Committee is working to identify the relationship between trade and environmental measures in order to promote sustainable development and to make appropriate recommendations on whether any modifications to the provisions of the multilateral trading system are required, compatible with the open, equitable and nondiscriminatory nature of the system. Under WTO rules, as confirmed by WTO jurisprudence, members can adopt trade-related measures aimed at protecting the environment, subject to certain specified conditions. These measures are not necessarily discussed at the WTO. And those that come up for discussion are not necessarily raised as formal disputes; they are often raised and discussed at the Committee level. However, certain measures taken to achieve environmental protection goals may, by their very nature restrict trade and thereby impact on the WTO rights of other members.

Allowing for the optimal use of the world's resources in accordance with the objective of international trade development and seeking to protect and preserve the environment are fundamental to the WTO. These goals go hand in hand with the WTO's objective to reduce trade barriers and eliminate discriminatory treatment in international trade relations, since environmental problems often transcending national borders, have required a response which must involve concerted action at the international level. For WTO members, the aims of upholding and safeguarding an open and non-discriminatory multilateral trading system, on the one hand, and acting for the protection of the environment, on the other, can and must be mutually supportive.

The environment is of such importance, that WTO rules should allow trade restrictions to support protection of the environment. Thus, it is generally argued with four cases. First, the WTO does not permit controls on trade according to how products are processed or the environmental effects of those processes. Second, the observance of respect for national sovereignty upon which the WTO is based prevents extraterritorial application of trade measures to protect the environment. Third, the WTO threatens to invalidate trade provisions in some multilateral environment agreements. Fourth, the WTO does not give adequate expression to the precautionary principle.

There are several provisions in the WTO agreements dealing with environment. There is a reference to sustainable development as one of the general objectives to be served by the WTO in the Marrakech Agreement which established the WTO (Oxley, 2001). The most important provisions as

far as environmental issues are concerned are Article XX of the GATT and the Agreements on Sanitary and Phytosanitary Measures and the Agreement on Technical Barriers to Trade.

The 1999 Report by the WTO Secretariat makes a useful contribution to the trade and environment debate. It explains how trade can exacerbate market failures and inadequate environmental regulation. It makes clear that economic growth, while advantageous, is not sufficient to achieve better environmental outcomes. It admits that governments may hesitate to undertake a needed environmental control out of fear that it will hurt national competitiveness. These findings will be helpful in responding to the views of many developing countries who have been arguing that "environment is ab initio a non trade issue."

But the Report is not uniformly strong. It asserts without proof that the gains from trade are sufficient to repair any environmental damage. It overlooks how trade measures might be more efficacious than available policy alternatives. It does not discuss ways in which WTO disciplines may prevent the attainment of environmental treaties. It gives minimal attention to the problem of protectionism and how trade policy failures can worsen environmental quality. The discussion of regulatory chill is analytically weak (Charnovitz, 2000).

In light of the jurisprudence to date, it is fair to say that WTO rules provide ample space for environmental concerns to be accommodated. Even if a measure is found to be inconsistent with basic WTO disciplines, it may be justifiable under one of the exceptions, for example, if it pursues an environmental or human health objective and if its application does not reveal protectionist intent.

The TBT Agreement and the SPS Agreement seek to ensure that requirements that products must fulfill for environmental purposes do not create unnecessary obstacles to international trade. At the same time, these agreements recognize explicitly members' rights to protect animal or plant health and the environment at the level they choose.

Sanitary and Phytosanitary Agreement

Many countries used the quarantine provisions to secure economic protection rather than to protect health and safety. The SPS Agreement was negotiated in the Uruguay Round to contain such abuse. It states that if countries base restrictions on trade on recognized international standards, the restrictions are deemed as complying with the agreement. Countries could apply other standards, but they were subject to challenge by other WTO members to demonstrate that they were based on science and supported by a risk assessment process. The development of the SPS Agreement coincided with a global trend to shift away from dealing with risk on a “no-risk” basis to “risk management”. The latter approach leads to better use of resources and better enjoyment of benefits. The requirement that decisions be based on science and a process of risk assessment introduced transparency into decision-making by creating a visible check on abuse of executive discretion. This not only protected the rights of members of the WTO, it also gave assurance to consumers that governments were not abusing their powers.

Agreement on Technical Barriers to Trade

The Agreement on Technical Barriers to Trade (TBT) was negotiated in the Uruguay Round, replacing the Standards Code. It was designed to reduce the scope for countries to use technical standards as disguised barriers to trade and “it is known as “soft low”. Ostensibly, it establishes a test to distinguish legitimate standards from protectionist measures“(Marchich, 2000, p. 917).It obliges members to ensure that national treatment and non-discrimination apply when technical standards are adopted as mandatory regulations. Technical standards with restrictive trade effects are permitted for four “legitimate purposes”, (including standards developed for the protection of the environment, for national security requirements, for the prevention of deceptive practices and for the protection of human health and safety and animal and plant health and life), the effect provided is not more restrictive than necessary to meet one of those objectives, taking into account the risk of non-fulfillment. In assessing that risk, the agreement stipulates that relevant elements of consideration are, inter alia, available scientific and technical information, related processing technology or intended end uses of products.

Members are also required to base their standards on those developed by international bodies which are presumed to be in compliance with the Agreement. In other cases, and where measures have a significant impact on trade, parties are obliged to notify the measure and provide opportunities to other WTO members to comment.

There are no cases where it can be said WTO procedures prevent effective protection or management of any environmental asset. The campaign to “Green the WTO” is basically a political campaign to include the environment in the system of multilateral trade rules. Trade measures are not

effective tools for managing the environment. Multilateral agreements that set common standards to be applied domestically is a much more effective approach to protect the environment (Oxley, 2001). The welfare benefit that the WTO creates is very large. Creating a general right to restrict trade on environmental grounds threatens the capacity of the WTO to provide that benefit and advocacy of that right shows a fundamental disregard for the welfare benefit of the WTO system. However, WTO is able to concur mitigate the impact of international trade on the environment. Nordström and Vaughan (1999, p.59) remark: "the WTO can do a few important things for the environment. The most obvious contribution would be to address the remaining trade barriers on environmentally-friendly production technologies and environmental services in order to reduce the cost of investing in clean production technologies and environmental management systems. Another potential contribution would be to seek reductions in subsidies that harm the environment, including energy, agricultural, and fishing subsidies."

Conclusions

Economic theory provides strong support for joint trade and environmental policy design and implementation within one country. A joint reduction of both trade and environmental distortions is welfare improving for any country (Beghin, 2000).

Trade liberalization can not be deemed to have only positive or only negative effects on the environment. Its effects on the environment, in fact, depend of the priorities and goals, as well as which of the environmental or trade objectives are prevailing and how they complement or support each other. To obtain positive results it is necessary that the environmental and international trade policies to interact from the most basic level, because all economic activities are based on the limited natural resources, namely the environment, which after all suffers again due to the environmental waste. Considering that trade liberalization will lead to increased production and consumption, this will lead to the growing request of natural resources which degrades the environment. But it is observed that the reduction of trade relations because of this reason is totally wrong, because these effects can be easily controlled and eliminated by a proper environmental policy.

There is a strong role for market-based incentives in this context. These aim to divide economic activity and environmental impact. In other words, the prime focus of policy must be on correcting the sources of environmental degradation in the country of export. Using trade restrictions is a last resort when all other means to correct the damage have failed. It is important to recognize, however, that free trade is not to be pursued at all costs. The environmental damage associated with expanded trade is a real cost that needs to be deducted from the (generally) large benefits of freer trade. There is no justification in free trade arguments for ignoring environmental costs. Environmental costs change the conditions under which free trade maximizes world human wellbeing (Pearce, 1992).

Thus, the question if free trade harms the environment can have different answers. Trade's effect on the environment depends, also, on the context — what regulatory and other restrictions apply to the production and use of traded items, how stringently regulations are enforced, and how trade-generated revenues are used. The main arguments that trade is asserted to be pro the environment are: it generates resources that can be devoted to environmental protection; the international trade regime supports environmental protection by increasing the efficiency of resource use; if failures are corrected, free trade increases welfare both nationally and globally; market forces encourage technological innovation which reduces the cost of environmental protection; the polluter pays principle supports improved efficiency in the allocation of environmental resources and helps prevent trade distortions; trade fosters the multilateral co-operation needed to address transboundary environmental problems; trade protectionism can be environmentally damaging.

From the other side the environmental critique relates its claims to: transport externalities: factoring in the full environmental costs of transport would reduce the gains from long-distance trade; pervasive environmental externalities that push the costs of production and consumption on to third parties; lowering environmental standards gives countries a competitive advantage; eco-dumping occurs when environmental costs are externalized; reduced diversity, leading to greater ecological risk; sustainable scale: trade allows a country to exceed its domestic regenerative and absorptive limits by importing those capacities from other countries; trade-induced growth may cause environmental harm from the unsustainable consumption of natural resources and waste production; trade agreements may override environmental regulations unless appropriate protection is built in; trade restrictions should be available as leverage to promote worldwide environmental protection.

In sum, liberalized trade has both positive and negative impacts on the environment. For the success of interdependent trade and environment relationship it is necessary that the process of trade liberalization should be developed parallel with the evolution and strengthening of the environmental legislation with a non-protectionist aspect. At the same time, environmental policies should be conducive to technological development which would accelerate the productivity and increase the economic efficiency with the certainty that trade rules are appropriate and support the development of the non-protectionist environmental measures. In the book *Trade and Environment: Conflicts and Opportunities, (*U.S. Congress, 1992, p.39) is very well noted "There can be circumstances in which freer trade and environmental improvement are complementary. There can also be circumstances in which trade hastens environmental degradation. Insofar as it helps make societies wealthier, liberal trade might encourage steps for environmental protection. As wealth increases, societies may give more priority to environmental improvements." So the most important decisions are upon us (governments, international institutions, etc), if we want or we don't, to use the trade-generated incomes for the environmental and humanity protection.

References

Anderson, K., and Blackhurst, R. (eds.), (1992), *The Greening of World Trade Issues.* Ann Arbor: The University of Michigan Press

Arden-Clarke, C., (1991), *International Trade, GATT and the Environment*, WWF International, Position Paper, Gland

Beckerman, W., (1995), *Growth, the Environment and the Distribution of Incomes: Essays by a Skeptical Optimist*, Economists of the Twentieth Century Series by Edward Elgar

Beghin, J., (2000), *Environment and Trade in Developing Economies: A Primer for the World Bank's Global Economic Prospects 2001***,** Working Paper 00-WP 247**,** World Bank

Charnovitz, S., (2000), *World Trade and the Environment: A Review of the WTO Report*

Copeland, B and Taylor, M., (2004), *Trade, Growth and the Environment*, Journal of Economic Literature 46:1, pp. 7-71

Daly, H., (1993), *The Perils of Free Trade*, Scientific American, pp. 50-57

De Mestral, A., (1996), *Dispute Avoidance: Weighing the Values of Trade and the Environment under the NAFTA and the NAAEC*. Environment and Trade Series No. 1 Commission for Environmental Co-operation, Montreal

Esty, D., (1994), (a) *Greening the GATT - Trade, Environment and the Future*. Washington DC, Institute for International Economics

Esty, D. 1994, (b) *Unpacking the Trade and Environment Conflict*, Law & Pol'y Int'l Bus, 25. pp. 1259-1286

Ewing, K. and Tarasofsky, R., (1997), *The Trade and Environment Agenda: Survey of Major Issues and Proposals—From Marrakesh to Singapore*. Environmental Policy and Law Paper No. 33. IUCN, Gland

Fontagné, L., Von Kirchbach, F., Mimouni, M., (2001), *A First Assessment of Environment-Related Trade Barriers*, WTO – UNCTAD

Frankel, J. and Rose, A., (2003), *Is Trade Good or Bad for the Environment? Sorting Out the Causality*, NBER, wp. 9201

GATT, (1992), *Trade and the environment. Chapter 2*, International trade 1990-1991,1, Geneva, GATT

Harwell, C. et al, (1994), *Free Trade and the Environment: A Prospective Analysis and Case Study of Venezuela*. University of Miami

Jha, V. 2009, *Environmental Goods: a Reality Check*, Trade and Environment Review, pp. 178-199

Johnston, N., (1996), *International Trade and Environmental Quality* in Swanson, T. *The Economics of Environmental Degradation: Tragedy for the Commons*? UNEP, Edward Elgar Publishing, Cheltenham

Kirkpark, C.,Lee, N., (1999), *Sustainability Impact Assessment Study-Phase Two*, Main Report, pp. 17, 21

López, R., Islam, A., (2007), *Trade and the Environment***,** Princeton Encyclopedia of the World Economy

López, R., Galinato, G. and Islam, A., (2007), *Government Expenditures and Air Pollution*, University of Maryland at College Park, Working Paper

Marcich, M., (2000), *Trade and Environment: What Conflict?*, 31 LAW & POL'Y INT'L BUS. pp.917, 920

Markandaya, A., (1995), *Reconciliation of Environmental and Trade Policies: Synthesis of Country Case Studies*. Paper prepared for UNCTAD, Geneva

Nordström, H. Vaughan, S., (1999), *Trade and Environment*, WTO, Geneva, Special Studies, 4, 13

OECD, (1999), *Report on trade and environment*, C/MIN (99)14, Paris, OCDE

Oxley, A., (2001), *WTO and the Environment*, International Trade Strategies Pty Ltd

Pearce, D., (1992), *Should The GATT Be Reformed For Environmental Reasons?*, CSERGE Working Paper GEC 92-06

Pemberton, C. and Charles, K., (2001), *The Environment, Trade and the WTO - The Caribbean Perspective, Farm & Business*, The Journal of the Caribbean Agro-Economic Society 5/1

Potier, M., (1997), *Environmental Assessment of Trade Liberalization: An OECD Perspective*, in Sustainable Development in a Developing World, Colin Kirkpatrick and Norman Lee (eds.), Edward Elgar Publishing, Cheltenham

Potier, M. et al., (2008), *Trade and environment at the OECD: key issues since 1991*, Working Paper on Trade and Environment, OECD No. 2008-01

Seale, Jr. and Fairchild, (1994), *Trade Agreements, Competition, and the Environment. Gridlock at the Crossroads*, J. Agr. and Applied Econ. *26* (l), pp. 97-107

Schoenbaum, T., (1991), *International Trade and Protection of the Environment: the Continuing Search for Reconciliation*, AM. J. INT'L L. 268, 280

Steinberg, R., (1997), *Trade-Environment Negotiations in the EU, NAFTA, and WTO: Regional Trajectories of Rule Development*, 91 AM. J. INT'L L. 231, 234

U.S. Congress, (1992), *Trade and Environment: Conflicts and Opportunities*, *OTA-BP-ITE-94*, Washington, DC: U.S. Government Printing Office, pp. 59-73

UNEP&WTO, (2009), *Trade and Climate Change*, Geneva, UNEP

UNEP, (1999), *Environmental Impacts of Trade Liberalization and Policies for the Sustainable Management of Natural Resources, A Case Study on Chile's Mining Sector*, New York and Geneva, United Nations

Vikhlyaev, A., (2009), *UNCTAD WTO Negotiations on Environmental Goods and Services: the Case of Renewables*, Trade and Environment Review, UNCTAD, pp. 178-193