

ICTSD Project on Environmental Goods and Services



# Options for Liberalising Trade in Environmental Goods in the Doha Round



By Robert Howse and Petrus B. van Bork  
University of Michigan and Independent Consultant



International Centre for Trade  
and Sustainable Development

Issue Paper No. 2

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## ACRONYMS

<b>APEC</b>	Asia-Pacific Economic Co-operation
<b>CTE</b>	WTO Committee on Trade and Environment
<b>CTE-SS</b>	WTO Committee on Trade and Environment Special Session
<b>EGS</b>	Environmental Goods and Services
<b>EPP</b>	Environmentally Preferable Products
<b>GMO</b>	Genetically Modified Organisms
<b>GSP</b>	Generalised System of Preferences
<b>LDCs</b>	Least-developed Countries
<b>MFN</b>	Most Favoured Nation
<b>OECD</b>	Organization for Economic Co-operation and Development
<b>PPM</b>	Process and Production Methods
<b>R&amp;D</b>	Research and Development
<b>UNCTAD</b>	United Nations Conference on Trade and Development
<b>WTO</b>	World Trade Organization

## FOREWORD

Environmental goods and services (EGS) as a subset of goods and services were singled out for attention in the negotiating mandate adopted at the Fourth Ministerial Conference of the World Trade Organization (WTO) in November 2001. Increasing access to and use of EGS can contribute to reducing air and water-pollution, improving energy and resource-efficiency, and facilitating solid-waste disposal to name a few of the benefits. Trade in these sectors can also be a powerful tool for economic development by generating economic growth and employment and enabling the transfer of valuable skills, technology and know-how embedded in such goods and services. In short, trade in EGS can facilitate the achievement of sustainable development goals laid out in global mandates such as the Johannesburg Plan of Implementation, the UN Millennium Development Goals and various multilateral environmental agreements.

On the other hand, the negative impacts of liberalisation on vulnerable industries in developing countries, in particular fledgling small and medium-sized enterprises, and sections of populations without the purchasing power to access privately-delivered EGS, such as sanitation, has often been cited. Environmental goods such as pollution prevention and end-of-pipe equipment and technologies are essentially produced and exported by developed countries. As a result, many developing country policy makers argue that these negotiations would primarily benefit the economies of developed countries which are looking for new markets and might generate important tariff revenue losses for some developing countries. Furthermore, in order to generate durable benefits they argue that there is a need to ensure that the trade in EGS goes hand in hand with the transfer of technologies, but negotiations to date have failed to take into account the relationship between the environmental goods mandate and incentives for technology transfer. This has led to calls among some stakeholders that liberalisation should be gradual or carefully qualified and in certain cases that countries should be able to stop or roll back liberalisation that may have these negative impacts.

This uncertainty regarding the sustainable development impacts of EGS liberalisation is partly responsible for the fact that developing countries have been slow in articulating their positions in the WTO Committee on Trade and Environment (CTE). To add to the confusion, the definition of goods and services deemed 'environmental' remains a highly controversial issue, which still awaits resolution at the WTO. What makes a good environmentally friendly? Is it the way it was made, the characteristics of the final product or what the product can do or all of these? How to deal with cases of dual use, namely products that can be used both for environmental and non-environmental purposes? Members have been trying a variety of approaches such as proposing specific lists of goods or even seeking to identify goods and services that are inputs into specific environmental projects. A number of goods proposed are based on lists developed by the Organization of Economic Co-operation and Development (OECD) and the Asia Pacific Economic Co-operation Mechanism (APEC) which heavily focused on capital, technology and knowledge-intensive goods exported primarily by developed countries. Others go beyond this categorisation to include environmentally preferable goods that many developing countries have a comparative advantage in producing.

As a contribution to the debate this paper examines and builds on the different approaches that have emerged in the negotiations as well as existing and expected trends in international trade in environmental goods. The authors propose ways to overcome disagreements in the negotiations and agree on liberalisation of environmental goods that can provide win-win outcomes for the environment and development for all WTO Members. Robert Howse is Professor of Law at the University of Michigan and has published extensively on key legal issues in international trade law, public health and the environment. Petrus van Bork is a consultant

specialising in information technology, standards and innovation policy matters. The study is part of a series of issue papers that address a range of cross-cutting, country specific and regional issues of relevance to the current EGS negotiations, commissioned in the context of ICTSD's Environmental Goods and Services Project. The project aims to enhance developing countries' capacity to understand trade and sustainable development issue linkages with respect to EGS and reflect regional perspectives and priorities in regional and multilateral trade negotiations.

We hope you will find this paper to be stimulating and informative reading and useful for your work.

A handwritten signature in black ink, appearing to read 'R. Ortiz', with a horizontal line underneath.

Ricardo Meléndez-Ortiz  
Executive Director, ICTSD

## EXECUTIVE SUMMARY

In recognition of the potential of international trade to enhance the global environment, Members of the World Trade Organization (WTO) have been discussing the mandate from paragraph 31(iii) of the Doha Ministerial Declaration to “reduce or as appropriate eliminate tariffs and non-tariff barriers” on environmental goods since 2001. There are already low applied tariff rates on what in this study are referred to as ‘established environmental technologies’, i.e. goods or technologies used primarily to prevent, minimise or remedy an environmental problem. Further, in most cases environmental benefits from liberalising this first category of environmental goods are only likely to flow if the price effect is large enough to persuade governments to adopt stricter regulation. Hence, WTO negotiators need to move beyond focusing on these goods, derived primarily from lists developed by the Organization for Economic Co-operation and Development (OECD) and Asia-Pacific Economic Co-operation (APEC).

In particular, although these lists have been the subject of intense negotiations in the WTO Committee on Trade and Environment Special Session (CTE-SS), they were not designed with the purpose of capturing or addressing the dynamic and international nature of contemporary technological change. In an era of dynamic technological innovation, it will be to the advantage of developing countries to invest in state-of-the-art technology, avoiding second-best technologies, and any approach to liberalising environmental goods that hopes to be supportive of the environment and development must take this into account.

More broadly, however, the question must be asked: how will reducing tariffs on environmental goods enhance environmental protection? For already established environmental technologies, such as those included on the OECD and APEC lists, environmental benefits may be delivered if companies decide to increase their environmental performance because the cost of doing so has been slightly reduced due to lower tariffs on environmental goods. Significantly lower compliance costs, it has been argued, may also be a driver for governments to put in place stricter environmental requirements. This will particularly be the case if governments become aware of the importance of promoting the use of certain products by WTO-induced tariff reductions. Tariff reductions could induce increased investment in appropriate environmental technologies, with positive feedback effects between domestic technological development and its use by indigenous firms. However, in these cases active government support to promote domestic enterprises could be a more effective policy tool than tariff liberalisation. In developed countries, applied tariffs on the listed environmental technologies and products are already low, which would suggest that there would be little environmental dividends there as the result of new WTO rules.

On the economic side, the environmental goods industry will gain from tariff liberalisation of established environmental technologies to the extent that the export market for environmental goods in developing countries will be enlarged. It has been argued that exports of both cutting-edge and non-cutting edge technologies to developing countries will create opportunities for significant technology and knowledge transfer, as well as opportunities for substantial portions of environmental projects to create jobs and contracts for suppliers at the local and regional levels. Although developed countries have more exports in the listed products, developing country exports are growing rapidly. However, it must be borne in mind that tariff liberalisation alone may not suffice to foster the transfer of latest technologies and active policies by the government targeted to induce or create a conducive environment for technology transfer may need to be put in place. Further WTO Members must make sure that liberalisation does not encourage ‘dumping’ of old or outdated technologies.

For the second category of environmental goods, namely environmentally preferable products (EPPs), there are direct environmental impacts as a result of consumer behaviour. Tariff reduction will change the relative prices of EPPs and non-EPPs in the market place such that some consumers will substitute

EPPs for non-environmentally preferable products. EPPs are defined as products that generate environmental benefits at any point during their life cycle, and they can be broken down into those EPPs which generate environmental benefits during the production process and those that do so during their use or disposal stage. The former sub-category, known as EPPs based on 'process and production methods' (PPM), has perhaps justifiably generated controversy. PPM-based differential treatment that relies on varying certification and labelling requirements could create uncertainty and impose costs on developing country manufacturers. However, to address these problems, WTO Members could adopt a duty drawback system to give preferential treatment to PPM-based EPPs. Instead of being required to provide a preferential tariff rate at the border, Members could charge the existing 'most-favoured nation' (MFN) bound rate at customs, but the producer of the environmentally preferable product would be entitled to request a rebate of the duty paid at the border based on credible certification that the products exported were manufactured in an environmentally-friendly way.

In order to ensure that PPM-based EPPs serve environmental interests, and at the same time are administrable by customs officials, Members could identify selected crucial environmental imperatives reflected in multilateral instruments (such as the Kyoto Protocol and the Plan of Implementation of the World Summit on Sustainable Development). Members could agree to lower tariff rates on goods that fulfil the criteria and as such are 'environmentally preferable'. Alternatively, instead of altering their overall tariff schedules, they could sign a protocol or separate treaty that could include a positive list of products that would implicitly include any product that meets the criteria-based definition of an EPP. Such a protocol or treaty could contain a negative list of products for which particular WTO Members are not prepared to grant preferential treatment. Such a negative list, subject to periodic review, might resolve debates about the practical issues of distinguishing products based on considerations such as dual or multiple use or PPMs. Alternatively, Members could use the duty drawback system suggested for PPM-based EPP, but with the rebate going to the end user.

The extent to which liberalisation of trade in EPPs could be supportive of the environment in developed and developing countries is connected to consumer preferences for EPP-related criteria. While many developed country consumers already prefer EPP-type products, and are likely to consume more of them as a result of reduced prices stemming from tariff cuts, developing country preferences for EPPs are relatively low, with price and functionality acting as more important purchasing criteria. As income, education and industrialisation continue to increase, however, developing country consumers are likely to increase their interest in such products.

Enhanced capacities in several key sectors determine the ability of a developing country to exploit current and future opportunities for EPP exports, particularly those based on PPMs. These include the provision of telecommunication services, technological capacity, renewable energy resources, geographical location, ecological potential and resource potential.

While the clear specification of environmental criteria would go some way to eliminating the problem of multiple end-use, countries could also identify environmental products by specifying which sub-category of an HS code - known as an "ex-out" - to liberalise. WTO negotiators should regard themselves as the clients or "masters" of the HS; this classification system is there to serve their needs, not to impose disciplines and obstacles on trade liberalisation efforts.

It is also important to stress that an 'environmental-performance' criteria-based approach would include only those PPM-based EPPs that are based on objective criteria articulated in credible domestic, regional or international standards. Further in order to avoid arbitrary or unjustified discrimination, developing countries should have the opportunity to fully participate in the standard-setting process.

# 1 INTRODUCTION

Paragraph 31(iii) of the 2001 World Trade Organization (WTO) Doha Ministerial Declaration calls for “the reduction or, as appropriate, elimination of tariffs and non-tariff barriers to environmental goods and services”. This paper examines this mandate as it relates to environmental goods.

The Doha mandate does not define “environmental goods” or the modalities for the negotiations. As a result, modalities and definitional aspects of environmental goods have been the main focus of the negotiations since 2001.

The analysis in this paper examines and builds on the different approaches that have emerged in the negotiations - narrow approaches based on existing definitions of environmental goods versus broader approaches that seek to expand that definition. The Introduction sets out the background to the negotiations and issues raised by technological change and innovation.

## 1.1 Background to the Negotiations

In the Special Session of the CTE, Members have been engaged in reaching agreement on a common definition of which “environmental goods” to include in the negotiations under the Paragraph 31(iii) mandate. One approach of these negotiations has been to use the existing Asia-Pacific Economic Cooperation (APEC) and Organization for Economic Cooperation and Development (OECD) lists of environmental goods as a starting point. These lists reflect the best efforts of a broad range of governments to come to agreement on the scope of environmental goods, but there the inclusion of other goods has not been ruled out. The APEC list however is based on a narrow conception of an environmental good - that the good in question plays some role in the control, abatement or remediation of pollution, or, alternately, is a “clean” technology. The kinds of goods contemplated by this narrow approach are referred to in this paper as established environmental technologies.

Section 2 of the paper examines environmental and trade effects of reduced tariffs on established environmental technologies for developed and developing countries. In Section 3, the environmental and trade effects are analysed for reduced tariffs on environmentally preferable products, including those based on process and production methods (PPMs).

Section 4 outlines the current proposals on environmental goods in the Special Session of the CTE. Options for how to proceed are developed in Section 5. These include proposals to select crucial environmental imperatives, develop an environmental performance criteria-based approach, negotiate an environmental goods agreement in the WTO and put in place an environmental duty drawback system. Finally, Section 6 offers some conclusions and recommendations as a contribution to advance the debate.

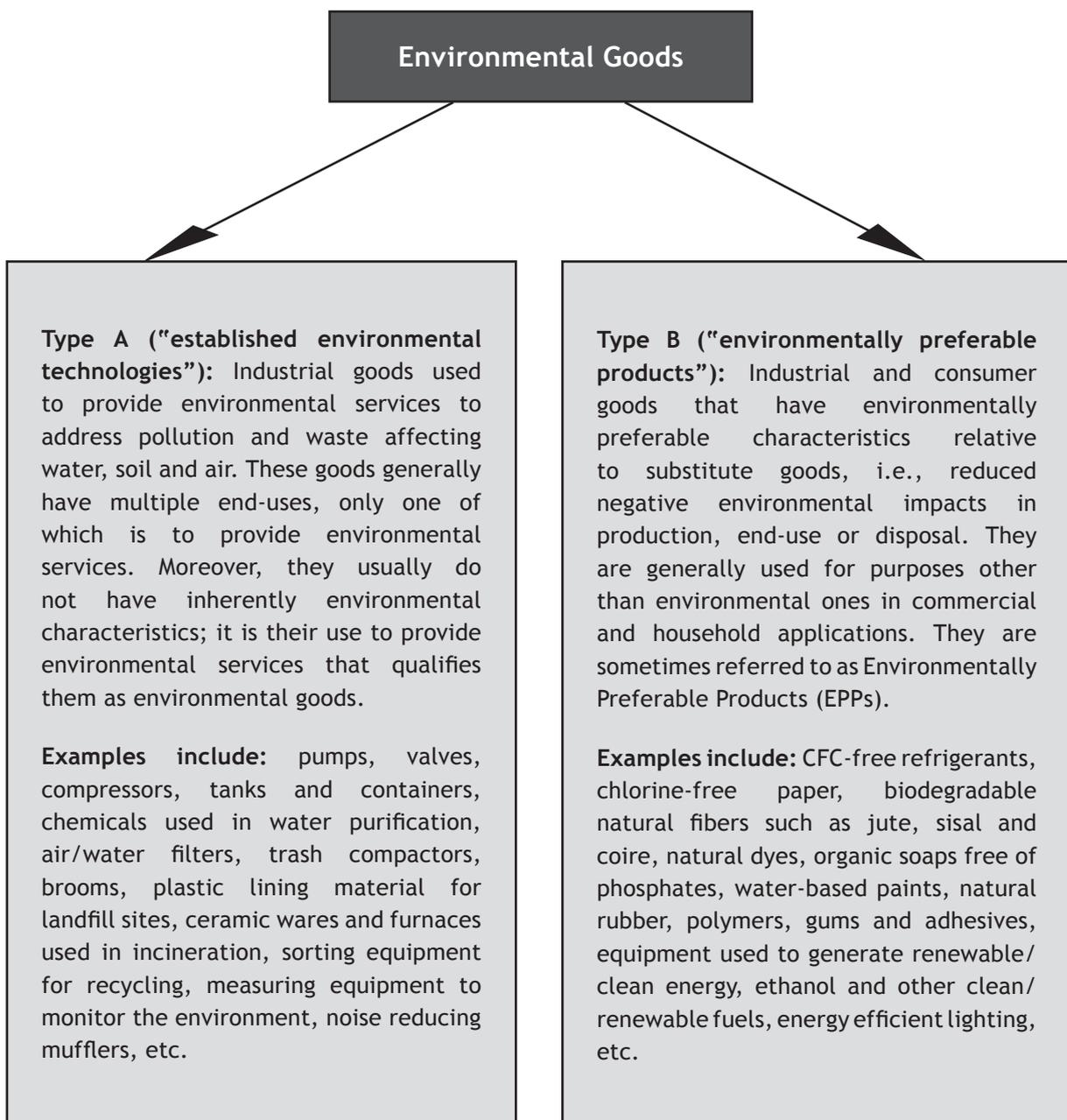
The OECD definition is somewhat broader and includes not only established environmental technologies but also “cleaner technologies, products and services that reduce environmental risk and minimize pollution and resource use”. The OECD list, which admittedly is an illustrative one, goes some distance beyond the established environmental technologies included in the APEC list by including a category for goods that are inputs into (though not outputs emerging from) sustainable agriculture, forestry and fisheries (see WTO, 2002).

A broader approach to the negotiations has been proposed which would go beyond the traditionally defined environmental goods in the APEC and OECD lists to include environmentally preferable products (EPPs). The United Nations Conference on Trade and Development (UNCTAD) defines EPPs as “products which cause significantly less ‘environmental harm’ at some stage of their life cycle than alternative

products that serve the same purpose, or products the production and sale of which contribute significantly to the preservation of the environment”. This broader approach could either include or exclude EPPs distinguished on the basis of the process and production methods (PPMs) used. This paper deals with both EPPs including PPMs and EPPs excluding PPMs in its analysis of a broader approach to the negotiations on environmental goods.

A narrow definition of environmental goods, which focuses on products whose only function is attaining the environmental goal in question, or which focuses on the environmental effects of a product at a particular stage of its life cycle, could lead to over-investment in less efficient methods of achieving environmental goals and under-investment in more efficient methods. Negotiations that proceed in this manner, thus, risk misallocating resources.

Figure 1: Classes of Environmental Goods



This risk is acute in the CTE-SS talks because most lists put forward draw heavily upon both the APEC and OECD lists which are outdated, reflecting the “mature” environmental management or control industry at the time these lists were negotiated. Thus, these lists are inherently oriented to the entrenchment of out-dated technologies. This is problematic for the negotiations currently underway in the WTO in an area of rapid technological and conceptual change. It is essential that the

WTO negotiations avoid ‘dumping’ of older technologies through the reduction of trade barriers. Thus, one key challenge will be to develop a credible system to keep pace with technological developments that are acceptable to all Members. That said it has also been emphasised during the negotiations that these lists would be used only as a ‘starting’ or ‘reference’ point, and WTO members are free to go and indeed have gone, beyond these lists.

## 1.2 Issues Raised by Technological Change

The nature, extent and facilitation of technological innovation is a crucial aspect of analysis of environmental goods. It has been estimated that 50 percent of established environmental technologies will be replaced within 15 years (OECD, 2005). Considering the short product and technological development cycles for information technologies (IT) and biotechnology, it is safe to assume that over a period of 10 to 15 years nearly all currently existing or envisaged environmental technologies will be obsolete and will have been replaced by new products.

Given that these technologies are highly portable, frequently revolutionise the fields they touch and often level the playing field by setting a technological bottom line, any definition of environmental goods that seeks to facilitate technical innovation should take into account technological innovation and dynamism. The rapid rate of change in environmental technologies would appear to be increasingly advantageous for the developing world; over time periods of 10 to 15 years, whole generations of engineers, technologists and scientists can be trained to apply new technologies.<sup>1</sup> It is, thus, risky to negotiate trade agreements based solely on currently applicable technology. This risk is illustrated by the WTO Information Technology Agreement where there are serious concerns that the list of products is already out of date and needs to be revised. Yet, it has been difficult to agree on a revised list, despite efforts since 1997.

Furthermore, in an era of dynamic technological innovation, it will be to the advantage of developing countries to invest in state-of-the-art technology, avoiding second-best technologies. For example, it would be more profitable to invest directly in a fibre-optic cable or satellite national telecommunications infrastructure, instead of a copper-based system. It is difficult to generalise about the best use of capital in a globalised and Internet-driven world economy, particularly as the technological products of intensive capital investment can often be fit into a vest pocket in the 21st century. Intensive capital investment is, in many cases, no longer synonymous with large facilities in defined and fixed geographical locations. Often, technology is highly portable or consists largely of intellectual property (IP) supported by hardware. Computer software is a prime example of intellectual property that can instantly impart the most modern capabilities, whether in the setting of a Tibetan monastery or a research laboratory in Viet Nam.

Nor are other areas of high technology immune. Little is considered more synonymous with recent scientific and technical advances than biotechnology. A cutting-edge example in biotechnology is the exploitation of ‘extremophilic’ organisms (i.e., organisms that live in ultra-hostile environments, such as in hot springs, hot sulphide cycles, in ecosystems near deep-sea magma vents or under the Antarctic ice). While it took substantial monetary, technical and scientific resources to initiate research on ‘extremophilic’ organisms,

once this initial research had been undertaken, efforts quickly built on this research around the globe to exploit its commercial uses.

Even developing countries that are struggling to create a positive development cycle are already using cutting-edge scientific research to exploit local opportunities. A good example is an alternative sustainable biotechnology initiative in East Africa called the East African Regional Programme and Research Network for Biotechnology, Biosafety and Biotechnology Policy Development (BIO-EARN). BIO-EARN supports research initiatives in East Africa through which graduate students from the University of Nairobi work with the Department of Biotechnology at Lund University in Sweden to look at extremophile organisms isolated from hot springs and soda lakes in the Kenyan Rift valley to investigate, inter alia, their potential use in bioremediation of polluted sites (Oluoch, 2001). BIO-EARN is using cutting-edge ideas and biotech research in support of national and regional African developmental objectives. In many other more advanced developing countries with universities, engineering schools and science faculties, rapid access to similar cutting-edge knowledge is having a major impact on research initiatives and the ability to rapidly commercialise new technology.

The ability to immediately transfer the results of intensive capital investment in research and development (R&D) in disparate and distant geographic locales will serve to help level the playing field in technology between developed and developing countries. For example, the fact that a capital investment has been made in the United States or Scotland does not mean

that the results of that investment cannot be immediately used in China, India or Paraguay. In many cases, notably China, this is already occurring. The rapid international movement of the results of investment in R&D could also allow developing countries to leverage their labour costs, infrastructure, location and other traditional advantages to their interest in a high technology, Internet-driven world economy.

Due to the short time frames for transferring many advanced technologies, as well as the increasing feasibility of delivering expertise, advanced education and process control over the Internet, developing countries - particularly those that have invested in education - may become zones of 'technologically intense' activity in a matter of a few years.

The OECD list of environmental goods was originally intended to be simply illustrative, while the APEC list was the result of political economy considerations of context-specific negotiations. As a result, through no fault of their own, these lists do not take into account the crucial question of dynamic technological change, which offers opportunities to developing countries that did not exist when these lists were made. This paper seeks to outline an analytical framework that incorporates dynamic technological change in order to assist countries in assessing their interests in the tariff negotiations on environmental goods.

The reason cited for singling out environmental goods for special treatment in tariff negotiations is to enhance the achievement of environmental objectives. Thus, the first question is - how will reducing tariffs on environmental goods enhance environmental protection?

## 2 ESTABLISHED ENVIRONMENTAL TECHNOLOGIES

### 2.1 Environmental Impacts of Tariff Reductions

It has been put forward in the negotiations that environmental benefits will flow from reducing tariffs on established environmental technologies. However, a profit-maximizing firm that is in compliance with existing environmental regulations may not be induced to exceed existing regulatory requirements merely because the cost of doing so has been slightly reduced due to lower tariffs on environmental goods.

This generalisation may need to be qualified by the increasing salience of corporate environmental responsibility. If multinational corporations are committed to voluntary actions to reduce environmental harm further than they are required by government regulation, then lowering the costs of these initiatives may have a direct impact on firm behaviour. Given that, to date, empirical evidence of voluntary commitments is scarce, it is difficult to speculate on their significance and environmental impact.

This implies that environmental benefits from reducing tariffs on established environmental technologies are likely to result only if lower tariffs significantly reduce the cost of industry compliance with environmental regulations. Significantly lower compliance costs, it has been argued, may also be a driver for governments to put in place stricter environmental requirements. For reductions in tariffs to translate into stricter environmental requirements, however, the government must have wanted to impose stricter environmental rules prior to the tariff change and been held back because of the costs imposed by tariffs on the ability of industry or government to achieve stricter performance. The government would have to be made aware of the changes in tariffs and the resulting change in costs of compliance with the standard. The government should as a result be both willing and able to change environmental requirements for the tariff to result in changes in environmental policy. While this full set of assumptions about the impacts of tariffs on costs and costs on government or company decision-making is held by many negotiators promoting negotiations on

tariff reductions on environmental goods, these might not hold in all cases.

Governmental policy reactions to WTO-induced reductions to tariffs on environmental goods also depend on the extent to which a country relies on imported environmental goods. If imported goods are required for basic environmental compliance, a government could decide to apply lower duties on certain products to provide an incentive to industry for compliance. If a developing country government considered that the environmental benefit from reducing the cost of imported environmental goods was worth the cost of foregoing tariff revenue, it may have unilaterally considered lowering the tariff rate independent of the WTO. Therefore, it is not clear why negotiation of reductions in bound Most-favoured Nation (MFN) rates at the WTO is needed to achieve environmental benefits (Vikhlyayev, 2003). While the WTO negotiations and resulting liberalisation may serve as a catalyst for governmental interest in particular economic instruments that could be used to address environmental problems or opportunities which could otherwise be shrouded by political economy considerations, it can be retorted that governments in most developing countries will act to mitigate environmental harm of its own accord.

In situations where environmental regulations are not imposed using a "command and control" paradigm but rather using the polluter pays principle, environmental taxes are imposed on polluters to the extent to which they incur environmental externalities. In such a scenario, a reduction in the cost of environmental goods could make it less expensive for the firm to avoid polluting than simply to pay the tax, and the firm would as a result likely decide to just reduce its pollution using the less expensive technology.<sup>2</sup>

#### *Developed Countries*

Developed countries already have low applied rates for many of the listed environmental technologies and products (Bora, 2004). This raises

the issue of whether the price effects of further lowering tariffs on imports would be significant enough to allow developed country governments to impose stricter environmental regulations or to agree to stricter commitments in multilateral environmental agreements (MEAs). This question becomes even more pointed when we consider that import competition from MFN trading partners may not be a significant determinant of the domestic price of environmental technologies given the extent to which major suppliers in many countries are either domestic producers or export to the country using lower tariff rates within a free trade area or customs union. Thus, in the absence of economic modelling, which would have to include a model of the political economy of domestic environmental regulation, we are sceptical as to whether tariff reductions on established environmental technologies would benefit environmental performance in developed countries.

### *Developing Countries*

With respect to environmental performance in developing countries, significantly lowering tariffs on established environmental technologies - where such tariffs are high - could make a substantial difference not only to economic activity in their environmental sectors, but to the cost of environmental compliance for industry. This may also permit developing country governments to impose stricter regulations. Or, at least, it may allow improved enforcement of existing regulations (Lendo, 2005).<sup>3</sup> Reducing tariffs is not without costs, specifically the loss of tariff revenue, which for some poorer countries may be significant. Moreover, incentives for developing country industries to buy outdated technology from developed countries may not be optimal from an environmental and economic perspective insofar as these technologies do not represent the most efficient means of achieving environmental objectives. It may be more advantageous to use tariff reductions to encourage imports of new and state-of-the-art technologies complemented by incentives for domestic research and development in new technologies and production methods.

Neither tariff reduction strategies for importing environmental technologies nor focusing on incentives for domestic production is without costs or risks from an environmental point of view. Neither is obviously ex ante superior to the other and, indeed, a combination of the two might be more effective than either in isolation. We would be ill-put, however, to advise developing countries to negotiate tariff reductions without a basis in state-of-the-art scientific and technical knowledge upon which to determine which environmental goods to liberalise. Imports of environmental technologies from developed countries, even to a limited extent, can provide the basic technological capacity upon which developing countries can build domestic expertise.

Tariff reductions may also lead to increased developing country investment in appropriate environmental technologies. Such enhanced investment, which could be the result of foreign direct investment or government-funded research and development initiated as a result of the tariff reductions, could in turn lead to further synergies resulting from the development of indigenous technologies to enhance domestic environmental performance (Steenblik et al, 2005; Chaytor, n.d.). There could also be positive feedback effects between domestic technological development and its use by indigenous firms, which might enhance both competitiveness and environmental performance. Nevertheless, these positive feedback effects might make a case for active policies to promote domestic enterprise rather than simply straightforward liberalisation as the best solution. However, in the creation of strong domestic industries, strategic liberalisation can play an important role, for example, in facilitating access to inputs and intermediate goods used in the manufacture of critical technologies. Nonetheless, if trade liberalisation is to be used in a strategic way in the environmental goods sector, the government would have to adopt policies that would encourage environmental technology innovation locally based on the encouragement of new enterprise - particularly encouragement of new industrial sectors.

## 2.2 Economic Impacts of Tariff Reductions

When the commercial interests of developing countries are considered, a conceivably quite different picture emerges from a solely environmentally-focused analysis. Given the technological gap and lag that has traditionally existed between developed and developing countries, developed countries are important, perhaps essential, markets for established environmental technologies as well as growing markets for the latest solutions to environmental problems.

In most developing countries, applied tariffs are higher on established environmental technologies (although not to the degree of the extremely high rates that have been “bound” in international negotiations) than in developed countries. Applied tariffs are in the range of seven to eight percent for developing countries and ten percent for least-developed countries (LDCs) compared with rates that are less than two percent in developed countries (Steenblik et al, 2005). Therefore, while the environment in developed countries may not necessarily benefit as a result of tariff cuts on environmental goods, the environmental goods industry in both developed and developing countries will gain to the extent that the export market for environmental goods in developing countries will be enlarged. Larger markets may also have positive downward effects on prices of established environmental goods in home country markets based on newly available economies of scale.

Furthermore, exports of both cutting-edge and non-cutting edge technologies to developing countries should create opportunities for significant technology and knowledge transfer, as well as opportunities for substantial portions of environmental projects to create jobs and contracts for suppliers at the local and regional levels.

There is a strong possibility that once local suppliers of environmental goods become established through involvement in environmental projects supported by inexpensive imports of inputs into such products, they can become regional and international exporters (Steenblik et al, 2005; Chaytor, n.d.). This would increase competition within developing countries, including through enhanced South-South trade.

### *Developing Country Exports of Listed Products*

A key point of contention in the WTO debates on established environmental technologies included in the lists currently under consideration is the extent to which these products are of export interest to developing countries (see below). Recent research by Robert Hamwey suggests that although developing countries for the most part have a trade deficit and developed countries a trade surplus for goods in the OECD and APEC lists, developing country exports in the sector are expanding rapidly (Hamwey, 2005). Developing country exports of these products increased at least 12.5 percent between 1997 and 2003, exceeding the 9.5 percent average growth rate in world exports of these goods during the period. While these exports were primarily to the North, South-South trade is also significant, meeting 12 percent of developing country import needs in 1997 but rising to 20 percent in 2003. A number of these products, however, are also apparently ‘dual-use’ i.e. having both environmental and non-environmental uses.

In particular, a sub-group of developing countries that have autonomously reduced tariffs on environmental products included in APEC and OECD lists have seen increases in imports of environmental goods, which could potentially fuel the mercantilist fears expressed by many negotiators of floods of imports based upon current WTO environmental goods lists. However, his research shows that these countries have subsequently seen increases in their exports of related environmental goods, supporting the theory that tariff reductions can fuel imports of environmental technologies that are necessary for successful research and development of domestic expertise which can lead to increased exports.

A Global Partial Equilibrium Modelling (GSIM) of trade liberalisation of goods in the OECD and APEC lists suggests that production and exports would increase globally but especially in developed countries, Asia and economies in transition (one to two percent) but less than 1 percent in Africa and Latin America.

## 3 ENVIRONMENTALLY PREFERABLE PRODUCTS

### 3.1 Environmental Impacts of Tariff Reductions

When a definition of environmental goods is considered that includes environmentally preferable products (EPPs), tariff reductions can have positive environmental impacts without changes in the supply or demand of government regulation (i.e. directly through consumer behaviour). As defined by UNCTAD, EPPs as “products which cause significantly less “environmental harm” at some stage of their “life cycle” than alternative products that serve the same purpose, or products the production and sale of which contribute significantly to the preservation of the environment.” (Vikhlyaev, 2003). EPPs are thus preferable to other products in terms of their use of natural resources and energy; amount of waste generated throughout their life cycle; impact on human and animal health; and preservation of the environment (see Box 1). Assuming a normal competitive market, tariff reduction will change the relative prices of EPPs and non-EPPs in the market place, such that some consumers will substitute EPPs for non-EPPs. Insofar as the use of EPPs is presumed to be, by definition, environmentally preferable, the shift in consumption should result in positive environmental effects regardless of any changes in government policy or regulation. While the definition includes products that generate environmental benefits at any point during their life cycle, this broad definition can be broken down into EPPs who generate environmental benefits during the production process, during usage and during disposal.

The former products are differentiated based on so-called Process and Production Methods (PPM) criteria because there may not be any distinguishable differences in the final physical or chemical characteristics of the products when compared with their ‘less-environmentally friendly’ substitutes. Possibilities for differentiated treatment for EPPs based on PPMs have been cold-shouldered by most developing and developed country negotiators alike due to difficulties faced by customs in administering preferential treatment for such EPPs (as they

would fall under the same HS classification) but more importantly due to systemic concerns regarding differentiation based upon PPM criteria.

Delegates are worried about including a concept in the WTO that, although based on positive incentives, would distinguish otherwise ‘like’ products on the basis of the environmental or labour conditions in the exporting country, which different countries have different capacities to ameliorate. Moreover, in almost all cases, PPM-based differential treatment would need to rely on certification and labelling whose requirements might vary from country to country and further impose costs on developing country manufacturers. As a result, WTO delegates have focused on the possibility of inclusion of EPPs defined on the basis of their end-product characteristics.

Many developing countries have not yet made submissions of lists covering environmental goods that they wish to see covered in the negotiations. In fact, most developing countries have not yet made submissions of lists of environmental goods that they wish to see covered in the negotiations in large part because environmental goods of potential export interest to developing countries would be based on PPMs. At the same time, though, developing countries would like to avoid introducing PPM-based distinctions at the WTO in general because it could open a “pandora’s box” of “green protectionism” across negotiating areas whereby developed countries could block imports from developing countries because of the relatively poor environmental conditions in these countries overall.

#### *Developing Countries*

The extent to which consumers in developing countries will switch their preference to EPPs in light of lower prices, driven by tariff reduction, will depend to a large extent on the relative price difference that will exist between the

*Box 1: Criteria for Environmentally Preferable Products*

Claims that certain developing country products are preferable from an environmental point of view in general relate to one of the following areas. The degree to which this is valid may depend on the adoption of certain technologies and practices.

1. Use of natural resources and energy

- Lower consumption of energy along the whole life cycle of the product (natural-based products are usually less energy-intensive, particularly at the production stage, than synthetics)
- Type of energy used (from renewable or non-renewable resources)
- Lower material consumption in production and distribution
- Lower use of non-renewable resources, which are moreover preferably substituted by sustainably managed renewable resources
- Use of otherwise wasted products.

2. Amount of waste generated along the life cycle

- Lower emissions of CO<sub>2</sub> and other environment-harmful gases, at the production, consumption and disposal stage
- Lower or zero contamination of water and soil (agriculture refraining from the use of chemical inputs has a good record in this respect)
- Lower amounts of solid waste
- Products are reusable
- Products are recyclable or biodegradable (natural-based products have a certain edge in recyclability and are easily biodegradable).

3. Impact on human and animal health

- No toxic substances are contained in the product and no toxic residues are released from it at the production, consumption and disposal stage
- No health hazards can occur at the production and disposal stage
- Only natural ingredients and inputs are used in the production process (organic food, organic textiles).

4. Preservation of the environment

- Product comes from a sustainably managed natural source (timber from a sustainably managed forest)
- Product contributes to a better preservation of an exhaustible natural resource (fish or shrimp bred on farms)
- Product enhances the value of a natural resource, contributing to its better preservation (forest by products, spices, raw materials for the pharmaceutical industry, etc., which, if commercially used, increase the interest in the preservation of the tropical forest)
- Product has a beneficial impact, at its production stage, on the environment (products of organic agriculture improve soil fertility and affect positively the whole ecosystem, including biodiversity).

Source: UNCTAD (1995)

EPPs and their 'less environmentally-friendly' counterparts. In some cases, as for example the use of the energy-efficient light-bulbs or energy-efficient appliances, any initial higher costs may be compensated by cost-savings over the longer term.

While developing countries are catching up with developed countries in the area of environmental protection (Steenblik et al., 2005), this process is very uneven, with the rapidly industrializing nations forging ahead and LDCs lagging behind. However, while preferences for consumption of environmentally-preferable products are undoubtedly higher in developed countries, it is reasonable to speculate that if a spectrum of developing nations is considered, the closer a country is to rapidly industrialising nations, the more consumers in that country are likely to behave in ways similar to developed country consumers, especially in relation to environmental issues. Higher levels of education and access to news and information play an important role in raising awareness of the impacts of human activity on the environment, the dependence of society on its natural resource base and long-term consideration of the sustainability of production - especially given that increasing education and industrialisation often occur at the same time as increased pollution and depletion of the natural resource base.

Conversely, due both to a lack of ability to pay and information costs, LDC consumers will favour the lowest priced goods of adequate functional quality in any given market irrespective of mode of manufacture or production. However, the debate about GMOs in the developing world, including LDCs, suggests that consciousness of environmental and biodiversity considerations may exist despite poorer economic conditions.

### *Developed Countries*

In the case of developed countries, tariffs on industrial products are already quite low on most non-agricultural products and a great deal of trade occurs based upon regional arrangements within which goods trade tariff-free. However, apart from finished industrial

products, developed country MFN tariffs are not so consistently low. The tariff rate applied by developed countries on a set of 'core' EPPs listed by UNCTAD in its 2005 study (UNEP-UNCTAD CBTF, 2005) is 1.6 percent compared with 0.8 percent on established environmental technologies found in the combined OECD and APEC lists (Hamwey, 2005). There may be higher tariff rates, for example, on forestry products that are EPPs based on PPMs (e.g. sustainably harvested firewood).

Consumers in developed countries already display preferences for EPPs. While the growth in exports of 'core' EPPs from developing countries has been less dynamic than those of goods in the OECD/APEC lists (including a number of dual-use products), they are of much greater importance to LDCs and lower-income developing countries (Hamwey, 2005). To the extent that consumers in developed countries, induced by a fall in prices through trade liberalisation, switch to these EPPs, it will have a beneficial environmental impact on both the importing and (in case PPM-based EPPs are included) exporting countries as well. There are, however, concerns regarding EPP tariff reductions insofar as it is difficult for customs officials at the border to identify the end product as environmentally preferable and implement the lower tariff rate. This is particularly true for PPM-based EPPs which may not be physically distinguishable from their non-EPP counterparts.

The identification and documentation of such EPPs, supported by international, regional or domestic standards and certification and conformity assessment, may strengthen the preference of developed country consumers for these products. However, such schemes, above the national or regional levels do not, as yet, exist on a systemic level. Schemes at the national level - where they exist - are currently market-based and seem to have limited success - and in some jurisdictions very poor success (Alam, 2005). For example eco-labelling schemes are available in some countries such as Germany's 'blue angel' and the European Union 'flower' ecolabel. These eco-labelling

programs are market-based and not statutory, and strong international standards would have to be constructed to ensure their consistency and accuracy if they were to be held to account in customs classifications and tariff treatment.

As they stand now, though, there is little evidence that the niche markets to which these schemes cater have significantly supported the environment in exporting markets and in the markets in which they operate.

### 3.2 Economic Impacts of Tariff Reductions

#### *Developing Countries*

Several leading developing country experts have suggested that there is scope for consideration of EPPs, and perhaps even PPM-based EPPs, in the WTO EGS negotiations. Monica Araya, a former Costa Rican trade official currently at the Yale Centre for Environmental Law and Policy, observes:

*“[A] production-based definition of environmental goods and services (EGS) encompasses a wider range of environmentally-friendly goods, such as organic produce or eco-certified wood, [...] the prevailing anti-PPM rationale in Geneva – and in the trade community more generally – has grown out of sync with market realities. This mismatch hurts many exporters. The deliberate exclusion of ‘green’ products from the EGS liberalisation agenda is a missed opportunity and should not go unnoticed. [...] While it is imperative to promote more affordable greener technology via lower barriers, this promotion could still proceed as part of a broader package – not the only package.” (Araya, 2003)*

Moses Ikiara, of the Kenya Institute for Public Policy Research and Analysis, suggests that “defining environmental goods on the basis of how they are produced could be important for developing countries” (Ikiara, 2004). Ikiara provides examples, such as organically produced food and cotton fibre, charcoal and briquettes made from waste, and sustainably produced firewood. The OECD has also suggested that developing countries have substantial trade potential (both in terms of exports and imports), especially when PPMs are included (Steenblik et al., 2005).

Developed and developing countries have roughly the same export share in the core EPPs, although imports by developed countries far exceed those of developing countries. EPPs listed as ‘core’ by UNCTAD face much higher applied tariffs in developing countries (18.6 percent in 2003) compared to the average level of tariffs on goods in the OECD and APEC lists (9 percent in 2003) (Hamwey, 2005). While developing countries as a group have a significant trade surplus in the ‘core’ EPPs, this was not shared by developing countries in Africa and the Americas which show a slight trade deficit. In EPPs, as with goods in the OECD/APEC lists, exports to developed countries have grown faster than those to other developing countries, due possibly to higher applied tariffs prevailing in the latter. Further liberalisation could therefore increase South-South trade in the sector. However, any lowering of tariffs in developing countries is likely to benefit developed country exporters along with developing country exporters.

Enhanced capacities in several key sectors is necessary in order for the benefits of environmental goods to be gained in developing countries. These include the provision of telecommunication services, technological capacity, renewable energy resources, geographical location, ecological potential and resource potential. These factors determine the ability of a developing country to exploit current and future opportunities for EPP exports, particularly those based on PPMs, and as such more detail into each factor is warranted.

One of the most salient commodities in fostering development in general is the provision of telecommunication services. In order, inter alia, to identify opportunities, obtain market information and stimulate innovation, communication is an essential starting point. Bottom of Pyramid (BOP) business models for

telecoms, such as Grameen Telecom (GTC) in Bangladesh, have shown that with the provision of micro-finance (in this case, the Grameen Bank) to poor entrepreneurs, a cell phone can be provided to a village “cell phone operator” and provide telecommunication services to a village and surrounding area (Prahalad, 2005). This in turn can generate an economic surplus through enabling a myriad of economic activity (in this case, GTC is a not-for-profit organisation).

Renewable energy sources are often characterised by not only their ‘green’ qualities, but their ability to be deployed both off-grid and in scaled applications - which is ideal in many developing countries and LDCs. In this sense, there is a positive feedback effect between the use of cell or satellite based telecoms and the provision of off-grid, ‘green’ power. Green power is electricity that is generated from environmentally preferable renewable energy sources, such as solar, wind, geothermal, biomass, biogas and low-impact hydro. Furthermore, telecommunication services are a necessity for growth and can provide an early, proven revenue source to finance the deployment of power from renewable energy sources - an EPP in areas not reached by traditional electricity grids. Thus, a vital element of economic development - telecommunications services - can be strengthened by reducing tariffs on equipment to generate renewable energy.<sup>4</sup>

Given even modest quantities of power<sup>5</sup> and communications capability, investments in these types of communication and energy infrastructures sets the stage for innovation at the local level and increases the potential for the deployment of new technology.

Geographical location is another key determinant in the production of EPPs that are time-to-market sensitive and are bulky and/or low-value products. Developing countries that are in relative proximity to developed countries could

usefully explore opportunities for EPPs largely based on this proximity. Other than agricultural products, examples include products made of stone (granite, marble and other counter-top materials) and large scale energy resources for export, such as wind, geothermal, solar, tide and biomass.

Ecological potential is considered to be the energy available in the local ecology not only for the growth of agricultural based commodities, but for use as sources of renewable energy production (solar, wind, biomass, etc.).

Resource Potential is the ability to exploit locally available mineral and other resources in the production of EPPs or the provision of PPM-based environmentally preferable services. Examples of products include stone, cork or bamboo for the manufacture of flooring to replace hydro-carbon based flooring materials, such as vinyl. Examples of EPP services include spaceport launch facilities (such as at Kourou, French Guiana and Alcantara, Brazil), which permit satellites to be launched with the use of less energy in the lift phase due to their strategic locations near the equator.<sup>6</sup>

### *Developed Countries*

As mentioned earlier, developed countries are characterised by low tariff rates on most, if not all, EPPs though for some categories, it may be higher. Thus, the trade effects of reducing tariffs between developed countries are likely to be minimal. Developed countries (and some rapidly industrialising countries) that are strong on innovation are likely to obtain particular benefits from increased exports of manufactured goods in the category of EPPs including PPMs-based products; the nature of innovation in the manufacturing sector is to develop products that use less resources per unit of output for competitive reasons that go beyond strict environmental concerns.

## 4 PROPOSALS IN THE WTO NEGOTIATIONS ON ENVIRONMENTAL GOODS

Negotiations for tariff reductions on environmental goods are being undertaken in the Special Session of the CTE in accordance with Paragraph 31(iii) of the Doha mandate. To date, several WTO Members have submitted proposals on environmental goods in these negotiations. The following section outlines these proposals.

### *Brazil*

In its proposal (Brazil, 2005), Brazil supports a definition of environmental goods that takes into account the needs of developing countries through special and differential treatment. Such a definition would improve market access for products with low environmental impacts or derived from or incorporating cleaner technologies.

By encompassing products “derived from” cleaner technologies, Brazil’s definition would include at least some EPPs including those based on PPMs. Brazil proposes to base negotiations on the UNCTAD definition of EPPs. Brazil expresses interest in products, such as natural fibres and colourants and other non-timber forest products, as well as bio-fuels.

### *Canada*

Canada originally proposed a set of categories on the basis of which WTO Members could submit lists of environmental goods for consideration in the negotiations. The proposed categories, largely drawn from the APEC and OECD lists, are: air pollution control; water pollution control; solid/hazardous waste management; remediation/clean-up of soil and water; noise/vibration abatement; environmental monitoring; analysis and assessment equipment; potable water treatment; recycling systems; renewable energy plants; heat/energy management and soil conservation (Canada, 2004).

However, Canada later submitted a list of products for consideration in the negotiations grouped under the previously suggested

categories (Canada, 2005). This suggests that Canada believes the negotiations can advance without a prior consensus among Members as to the definition of environmental goods. Canada’s list includes products identified by six-digit HS classifications and other products identified by an “additional product specification”. This implies it is Canada’s view that HS classifications should not be a limiting factor in determining the products considered for the negotiations.

### *China*

China suggests that discussion of issues, such as “multiple use” and “PPMs” should be avoided in the negotiations, which presumably means that products that raise such concerns should be excluded “from a practical point of view”. China proposes two lists of products - a “common” list and a “development” list. The “development” list embodies special and differential treatment and is comprised of products selected by developing countries from the “common” list, for which developing countries would be exempted in whole or in part from reciprocity (China, 2004). Although they have submitted a list that includes some products that are of export interest to them, China has expressed concern that the list currently under consideration by the “Friends of Environmental Goods” (Canada, the EU, New Zealand, Japan, Norway, Taiwan, Switzerland and the US) does not include products that are of interest to them. As a result, they have in many meetings expressed interest in India’s project approach (see below), but for the most part have attempted to remain open to both the project and list options.

### *Chinese Taipei*

In its submission, (Chinese Taipei, 2004), Chinese Taipei takes a narrow approach which supports liberalisation based upon a list of more traditional, end-of-pipe environmental goods, considering that “the APEC list offers the most practical approach to identifying the possible

coverage of environmental goods”. Chinese Taipei suggests that, in accordance with the APEC list, negotiations should be limited to products “that directly control pollution”.

### *Cuba*

Claiming that the “list” approach is not advancing the discussions given uncertainties about its actual benefits, Cuba’s submission (Cuba, 2005) sets out some issues to be addressed, such as dual end-use, the inadequacy of the APEC and OECD lists, the lack of special and differential treatment for developing countries, the need for a discussion on the linkages between environmental goods and services and issues related to non-tariff barriers, such as eco-labelling. Cuba signals its interest in renewable energy, energy efficient technology and natural products.

### *The European Communities*

The EC proposal (EC, 2005a) takes a broad and “conceptual” approach to the definition of environmental goods, including products with high environmental performance or low environmental impact.

The EC notes that where the HS classifications prove inadequate for the appropriate product scope, more specific national nomenclatures could be used, provided that “the products covered should be clearly identifiable or recognizable on the basis of objective and quantitative criteria”.

The EC proposal raises two important matters. First, the need for agreed international standards to identify products that have high environmental performance or low environmental impacts. Second, the importance of the list of included products shifting to take account of technological change - that is, there should be a “living” list or broad categories characterised by their environmental purpose, which could make provision for the inclusion of new technologies. We note, however, that this would not help remove from the list products that may become obsolete in terms of their environmental value.

In its submission of 5 July 2005 (EC, 2005b), the EC makes more explicit its willingness to include some EPPs based on PPMs, where identified by “an eco-label issued by a labelling scheme included in the existing international GEN network, which covers both developed and developing countries”. This statement is accompanied by the following, not entirely clear, qualification: “the EC too believes that within the group of eco-labelled products it is preferable to single out those which are not exclusively definable by non-product related production or processing methods”.

The EC supports the inclusion of PPMs if the PPM-based EPPs can also be distinguished in some other way (i.e., not exclusively based on the PPM itself). This appears to mean that, even if the criteria for considering a product as “environmentally preferable” is its PPM, the product should be described on the list in a manner that refers to other “product-related” characteristics.

This approach may offer some compromise between the strong conceptual case for including PPMs (especially the advantages from a developing country export perspective) and the practical concerns expressed by many that a pure PPM classification may not be workable for customs administration. However, a credible eco-label would itself appear to solve the practical difficulties related to customs administration.

### *India*

India’s proposal (India, 2005a) suggests moving away from “list-based” approaches to an “environmental project” approach, whereby each WTO Member would designate a national authority to select “environmental projects” based upon criteria agreed by the Special Session of the CTE. Environmental goods and services used in selected projects would qualify for tariff concessions for the duration of the project. The approach, it argued, would define boundaries within which individual countries would address their national environmental goals along with global environmental objectives in a developmentally supportive way.

India puts forward that an environmental project approach would ensure that approved goods and technologies were used for environmental purposes. In the list approach, on the other hand, products receiving tariff concessions could also be used for a different “dual” purpose not related to the environment.

Problems related to technological lag would be solved by the project approach because the products for which tariffs would be reduced would be identified at the time the project was designated - they would be goods, services, technologies and processes that were relevant at that moment.

In a subsequent submission (India, 2005b), India reiterated that the project approach would be rules-based and that the criteria according to which national authorities would designate projects would be determined multilaterally in the CTE to ensure transparency of the process. Further, the domestic implementation of these criteria would be subject to WTO dispute settlement.

India also notes that the project approach would enable the transfer of environmentally sound technologies (ESTs) as mandated by the Rio Earth Summit. Transfer of ESTs would improve the ability of developing countries to meet technical and sanitary requirements, enhance their export potential and facilitate compliance with MEAs. In response to allegations that the project approach would provide no new incentive to liberalise since countries can already unilaterally reduce tariffs for projects, India argued that concessions would have to be granted to all WTO Members equally, that is, through the ‘most-favoured nation’ principle. It also pointed out that the approach provided for ‘temporal binding’ -- any concessions agreed to would be temporarily bound for the duration of the project in question. (India, 2006)

Importantly, India’s approach encompasses technology transfer, thereby moving beyond the tariff issue. While India’s proposal is conceptually innovative, the details of how this approach would operate in practice and the extent to which it would assist small and

medium sized enterprises (SMEs) are points under discussion. In addition, it does not investigate the possibility of increased special and differential treatment under the Trade-related Aspects of Intellectual Property Rights (TRIPS) Agreement.

### *Argentina*

The Argentinean “integrated” approach seeks to bridge the gaps between India’s environmental project (EP) approach and the list approach favoured by several developed countries. Drawing heavily from the EP approach, their proposal, tabled in October 2005, would have national authorities decide on whether to eliminate tariffs for environmental products used in designated environmental projects (Argentina, 2005). However, as in the list approach, Members would multilaterally pre-identify categories of environmental projects and of environmental goods that could be used in the projects. Unlike the Indian paper, the Argentine did not mention environmental services liberalisation. As well, the proposal did not clarify other questions, including whether goods recognised by the CTE would have to be approved by the national authorities. According to the proposal, national authorities would then approve enhanced liberalisation of products used in environmental projects on the basis of these categories.

### *Colombia*

Colombia also presented an informal ‘non-paper’ (Colombia, 2006) aimed to bring together India’s project approach, the list approach, and Argentina’s “integrated” approach that would create a list of goods and services that would then be eligible for project-specific liberalisation, while also addressing concerns about special and differential treatment and multiple use.

It outlines potential criteria for defining products with a single environmental use: they must be used either for improving the environment or reducing waste and the consumption of natural resources, and must have a “direct and verifiable” environmental

application that complies with the objectives of multilateral environmental agreements (MEAs). For goods with dual and multiple uses, Colombia proposes that Members would only need to liberalise trade if they were used in a project, programme, plan or system deemed to have verifiable environmental benefits by a designated national authority.

### *Japan*

In its submissions (Japan, 2002), Japan favours the OECD approach to the product coverage of environmental goods. Japan notes several issues of importance to the negotiations, such as whether to include environmental goods based on PPMs, how to address end-use related problems, the criteria to determine product coverage as well as customs-related concerns. These issues, Japan considers, need to be considered before the talks are concluded.

Japan's submission includes a list of products for which it proposes that tariffs be removed. The list includes many "ex-outs" from HS classifications and many parts and components that can be used in goods that can be used for the benefit of the environment, such as flat pane display devices where used in double-hulled oil tankers and car navigation systems capable of receiving traffic-jam information. Japan lists many appliances, such as PDP and LCD televisions, washers and dryers that it considers to be cleaner technology and products than available substitutes. Japan's list reflects a fairly broad definition of environmental goods.

### *Korea*

Korea, in its submission (Korea, 2005), takes a practical approach to defining environmental goods based on a number of criteria, including that the end-use of the products be primarily for environmental purposes and that products should be classifiable under existing HS codes. Korea would exclude EPPs that are based on environmentally-friendly PPMs or superior environmental performance for practical reasons, such as the difficulty of dealing with them under established customs classification and administration procedures. Korea's

submission puts forward a proposed list of 89 products, primarily related to pollution management.

### *New Zealand*

New Zealand's submission (New Zealand, 2005), suggests "screening" proposed products based on agreed "reference points", these being the OECD and APEC lists, along with "approaches to environmental goods agreed through high quality and comprehensive regional or bilateral Free Trade Agreements". According to this proposal, only environmental goods that could be justified by at least one of these reference points would make it through the screening and be considered for negotiation.

With respect to those products that get through the "screening", New Zealand supports proposals to identify a "core" list of products, for which liberalisation would be required and a "complementary" list, from which Members could self-select products for liberalisation. As an example of the "reference point" approach, New Zealand refers to Canada's proposed list of categories from which environmental goods could be chosen.

New Zealand proposes that the "core" and "complementary" lists be "living" lists, whereby these lists could evolve over time, informed by technological change. New Zealand's list contains EPPs excluding PPMs ("Environmentally Preferable Products based on end-use or disposal characteristics only").

### *The United States*

In its submission of 19 June 2003 (US, 2003a), the United States supports basing the negotiations on the APEC list. It endorses the selectivity of this list and the exclusion, on the basis of practical realities, of goods that might be included "from a purely conceptual perspective". The US suggests that factors to determine the feasibility of goods could include, according to the list, questions of customs administration, dual-use issues, differing national nomenclatures below the HS six-digit level and WTO legal issues (e.g., "like" products and PPMs).

The US endorses the manner in which the APEC list works within the HS by including all products in an HS six-digit category, even if only some of them have an environmental purpose; for pragmatic reasons, in other words, the US accepts “over-inclusiveness”.

Given that the US appears willing to accept “over-inclusiveness”, it is not clear why it views dual-use as a problem since the effect would be the same, namely to confer on some products without the desired environmental effects the same tariff treatment as those that are environmentally beneficial.

In a further submission (US, 2003b), the US broadens its approach by suggesting that two lists should be developed - a “core” list, based upon the APEC list and a “complementary” list. For the “core” list, Members would reduce or eliminate tariffs and non-tariff barriers. In the case of the “complementary” list, Members would liberalise a percentage of the products listed within a period of time, but could pick and choose the products that would make up the total percentage.

With respect to these two proposed lists, the US objects to products being included as a consequence of their PPMs, as such distinctions cannot be accommodated within HS classification procedures.

In a later submission of 2005 (US, 2005), the US put forward an initial list of products that it would like to see covered by the negotiations. The US list reflects its rejection of a broad conception of EPPs including PPMs. A focus of the US list are components of renewable energy technologies. While the US does not explicitly recognise EPPs, it includes seven UNCTAD-listed EPPs in its list of 158 potential products.

### *Qatar*

Qatar’s primary concern is to have natural gas-fired generation systems and advanced gas-turbine systems included in the list of environmental goods (Qatar, 2002 and 2003b).

Qatar is one of the few Members that have dealt specifically with the importance of non-tariff barriers to trade in environmental goods. Its submission cites subsidies, fiscal incentives and tax and duty exemptions that favour environmentally harmful (carbon-emitting) PPMs for energy (Qatar, 2003a). Qatar also objects to the inclusion of goods that are energy efficient (e.g., certain refrigerators) on the grounds that their primary function is not environmental.

### *Switzerland*

Switzerland’s proposal (Switzerland, 2005) supports the inclusion of EPPs with “high environmental performance or low environmental impact” in the list of environmental goods, based on their end-use or disposal characteristics. Switzerland reads the OECD definition of environmental goods as fully incorporating EPPs as defined by UNCTAD.

On the one hand, Switzerland endorses a definition of EPPs as including goods where “environmental benefits arise in the production process” (paragraph 11); on the other hand, Switzerland suggests that only “end-use or disposal characteristics” be included, thereby excluding PPM-based EPPs (paragraph 21).

Switzerland supports a “living” list to allow the “agreed” list to evolve over time. Many of the products on Switzerland’s proposed list raise dual or multiple-use issues. For instance, its list includes component parts that may be used in bicycles and trains (i.e. environmentally friendly means of transport), but that also have many other consumer and industrial functions.

## 5 WHERE TO GO FROM HERE?

### 5.1 List-Based Approaches

One approach for the tariff negotiations would be to proceed by having each interested WTO Member submit lists of environmental goods for tariff reduction. This would permit each Member to determine what it considers an environmental good. As with other tariff negotiations, the lists would be based on the Harmonized System (HS) customs classification.

Members could negotiate tariff reductions based on the environmental goods contained in the proposed lists. The nature of concessions for each product could be determined by the usual dynamics of tariff negotiations. Given that the HS classification does not generally identify products according to their environmental impacts, tariff reductions could encompass the range of products in a given HS category regardless of their end-use.

As a result, a given classification line would include some products with environmental effects as well as others without such environmental effects. If the negotiations were to be based on broad HS classifications, one issue is to what extent such “over-inclusiveness” of tariff reduction would dissuade some Members from agreeing to concessions for the entire product class. This has become a major faultline in informal technical discussions that have taken place at the WTO as most developing countries insist in applying the ‘single-end use’ parameter in screening environmental goods to identify those that solely have environmental uses. The identified products would then be taken up for tariff-reduction negotiations. Demandeurs for environmental goods liberalisation stress on the other hand that such an exercise would yield too few goods and suggest instead to retain goods that have predominantly an environmental use. The scope of the end-use permitted, whether “singly”, “largely” or “predominantly”, will likely affect the type and scope of the goods that will finally be negotiated.

If Members could agree on a balanced list of concessions on broad product categories, the “over-inclusiveness” of liberalisation may go

beyond goods used for environmental end-uses and, as a result, not necessarily be relevant from an environmental perspective. It has yet to be conclusively determined whether such a broad approach to the negotiations would be problematic for sustainable development. It would matter in cases where the “non-environmental” products in the same HS category were environmentally harmful or less beneficial substitutes for the environmental products within the same classification.

In other situations, however, it would not be problematic. For example, a country could have included within the bound category of products equipment that is often used for pollution abatement, but can also be used for other industrial purposes. Lower tariffs on the latter would not necessarily undermine the environmental benefits of lower tariffs on the former. The result is more trade liberalisation than is strictly required for a given environmental objective. From a development perspective however, some countries may be concerned about ‘over-inclusiveness’ for reasons of loss of tariff-revenue as well as fearing adverse impact on any established domestic industries in this sector.

The conceptual analysis presented in this paper suggests that, in fact, the environmental impact of liberalisation would be more direct and robust for EPPs. While it is primarily developed countries that have thus far submitted lists, and while some of the proposals on the negotiating table in the Special Session of the CTE take narrow or constrained views of what should be included within the meaning of environmental goods, the fact is that a number of the lists already submitted contain a wide range of EPPs - at least, non-PPM based EPPs. This includes notably the Japanese, EU and, even US lists. Given that these lists are already under discussion in the negotiations without any prior consensus on the definitional limits of environmental goods, it would seem impractical at this juncture to turn back the debate over definitions and scope of the negotiations.

This leaves the field open for developing countries to submit their own lists of goods in light of their distinctive environmental and economic interests. Composing such lists would require considerable technologically and economically sophisticated research and analysis to identify the appropriate products. In the process of identifying products, developed countries have had a head start. The question is whether developing countries, with their widely varying technical capacities, will be able to define lists that adequately serve their interests within the current timeframe of the negotiations.

While several Members have presented lists prior to any consensus being reached on the definition or scope of environmental goods, some proposals clearly raise practical issues with respect to the acceptability of goods. For example, it is true that the HS classifications and ordinary customs administration are not easily tractable to a system of differential bound tariffs based on PPMs. Nonetheless, this fact should lead Members to consider whether, in the case of PPMs, liberalisation approaches other than reductions in MFN bound tariff rates, are appropriate.

The HS classification is supposed to facilitate, not constrain, trade liberalisation. Too often in the discussions on environmental goods the classic means of classifying goods using the HS has been viewed as a normative or practical constraint on negotiated tariff reductions. This is the "tail wagging the dog".

Quite apart from the issue of environmental goods, technological change is eroding the usefulness of distinctions between product and process, making shifting and multiple functionality more the norm than the exception in many product areas and, more generally, creating the necessity to make the HS more adapted to current realities. WTO negotiators should regard themselves as the clients or "masters" of the HS; this classification system is there to serve their needs, not to impose disciplines and obstacles on trade liberalisation efforts.

Finally, it must be recalled that even within the existing HS classification there is some flexibility - the possibility of 'ex-outs' to address the question of how to classify environmental goods in a way to avoid the dual-use concern. One option would be for products to be named at the relatively general 6-digit HS level, with a separate column specifying that only a sub-category - called an 'ex-out' - would actually be eligible for expedited liberalisation. A problem with this approach is that these 'ex-outs' are only identified in general terms. For example, 'liquid pumps' would be the category at the 6-digit level, and the ex-out identified would be 'pumps for sewage systems'. Developing countries argue that such unspecific references could lead to a multitude of different interpretations of product coverage. Instead, they would like to have more specific definitions at an 8-, 10- or 12-digit HS level. The World Customs Organization has pointed out that 'ex-outs' are already used extensively by customs officials. The problem however is that the HS-nomenclatures at the 8, 10 or 12 digit levels are often not harmonised for the same 'ex-out' product. It should also be noted that, as a matter of international customs law, governments are free to introduce classifications in their national nomenclature below the six-digit level.

An alternative approach would be to use a mix of HS codes and products named by words or terms. For example, in the case of the Information Technology Agreement (ITA), WTO Members which chose to be a Party to that Agreement bound themselves to liberalise tariffs on two lists of products: an "A" list, based on HS classifications, and a "B" list of products, where the obligation to liberalise would apply regardless of how those products might fit within existing HS classifications. In effect, each WTO Member would decide how to reflect its obligations to liberalise on the B list through national nomenclature.

In order to avoid the difficulties encountered by the ITA approach to a "living" list, the use of a combined negative/positive list approach could be considered. According to this approach, any product that is an established technology or

meets the UNCTAD “environmentally preferable product” definition - including those that have not been placed on a positive list - would be considered bound at the specified, preferential rate of tariff or zero tariff. While affording certainty concerning the treatment of the listed products, the positive list would not be exhaustive, but open-ended.

One attractive feature of this approach is that developing countries, which have had less of an opportunity thus far to engage in the kind of research needed to define adequate lists, would not be disadvantaged. They would have a right to insist that even a non-listed product that meets the UNCTAD definition of an EPP be given the specified preferential tariff treatment in the importing country. Ideally, the same right would be extended to all WTO Members, although there could be an argument for special and differential treatment in this instance.

At the same time, individual WTO Members could place certain kinds of products on a negative list, indicating exclusion from liberalisation, even if these products may fit within the UNCTAD definition of EPPs. The use of a combined positive/negative list approach means that countries put only those products that are problematic into a negative list while leaving the positive list open-ended. This would allow future technologies to be quickly disseminated without further recourse to negotiation because the new technologies would be automatically

included (in a positive list) and if they do not fall under an excluded HS category in the ‘negative’ list. Such an approach would also allow trade in environmental goods to be further liberalised over time without the complications of going back to the negotiating table.

Given the current lack of consensus on the limits of what to place on a positive list for bound tariff reduction or elimination, a negative list may well be necessary if the multilateral outcome is not to be limited to the lowest common denominator (i.e. the narrow range of products acceptable to all WTO Members as suitable for inclusion on a positive list).

The choice of the “list-based” approach could demand increased technical assistance to developing countries to generate an appropriate list (at least one WTO Member, Canada, has recognised the importance of providing such assistance and has pledged to supply it). Moreover, it may turn out to be the case that non-tariff barriers, such as technical standards and conformity assessments, or, even non-trade considerations, such as the availability of financing, are significant impediments to expansion of developing country export industries in the technologies at issue. Although submissions to the WTO Negotiating Group on Non-Agricultural Market Access (NAMA) have begun to touch on this issue, analysis of tariff effects must be contiguous with analysis of non-tariff and structural (“non-trade”) barriers.<sup>7</sup>

## 5.2 Alternatives to List-Based Approaches

### *Selected Crucial Environmental Imperatives*

Given the analytical challenge of defining environmental goods in the present WTO negotiations, it would be desirable for Members to identify selected crucial environmental imperatives reflected in multilateral instruments (such as the Kyoto Protocol and the Plan of Implementation of the World Summit on Sustainable Development) in order to facilitate a comprehensive approach to the reduction of tariff and non-tariff barriers. For example, the WSSD Plan of Implementation

made specific reference to the creation and expansion of markets for environmentally friendly goods and services.<sup>8</sup>

Therefore, the international community has expressed its support for the liberalisation and market expansion of the environmental goods and services sector as a strategy worth exploring in pursuit of sustainable development. In this respect, the WTO could select certain environmental objectives as a guideline for choosing environmental goods and services to liberalise.

The selection of certain environmental objectives as guidelines is potentially less market distorting than the selectivity that is the focus of the debate in the CTE. While the CTE is currently struggling to line up environmental impact with tariff bindings of products narrowly defined through HS codes administrable by customs authorities, using environmental objectives as the guidelines themselves could better achieve narrow and effective definition of products.

### *An Environmental Performance Criteria-Based Approach*

Members favouring more restrictive list-based approaches ostensibly only do so for reasons of a practical and legal/structural nature. We observe, firstly, that the practical reasons that have been advanced relate exclusively to concerns about one possible avenue of liberalisation, namely negotiation of lower MFN bound rates on the products in question. Since the Doha mandate includes the reduction of both tariff and non-tariff barriers, it would seem inappropriate to exclude from the negotiations a priori products for which there are practical obstacles to tariff reductions, since these obstacles may not come to light in the negotiations on non-tariff barriers.

Secondly, we observe that, even in the case of tariff barriers, negotiated MFN bound rates are not the only approach to liberalisation. For example, WTO Members sought to liberalise tariffs for the purpose of furthering development through the Generalised System of Preferences (GSP). Although GSP preferences are not binding, many developing countries wanted them to be. There is no reason that preferences cannot be made into binding commitments. Indeed, preferences are binding within regional agreements and in treaties, such as the Lomé Convention.

Thus, it is possible for WTO Members to provide a lower tariff rate on certain goods, depending upon whether they conform to particular criteria (e.g. whether they are "environmentally preferable"). In order to have a preference, there is no need for the criteria to be connected

to HS classification or to be traditional criteria used in negotiations or customs practices connected to MFN bound rates - the MFN bound rates would not change.

As a legal matter, instead of altering their MFN schedules, WTO Members could sign a protocol or separate treaty on environmental goods, whereby they agree to provide, on an MFN basis, a specified tariff treatment to goods exported by any other WTO Member that meet specified environmental performance criteria. As discussed below in the section on international standards, to ensure that these criteria are applied to imports in a transparent, non-discriminatory manner, and to avoid protectionism, the environmental performance criteria could be based on domestic, regional and international standards that are formulated and applied in accordance with the principles of the WTO Technical Barriers to Trade (TBT) Agreement.

Finally, a protocol or treaty could contain a negative list of products which, for reasons of perceived impracticability of enforcement or other reasons, particular WTO Members are not prepared to grant the specified tariff treatment, even if, arguably, these products met the specified environmental performance criteria. The list could include many 'dual-use' products for example or PPM-based EPPs. Moreover, this list could be subject to review in a fixed period of time so that WTO Members which have not reserved products on the negative list could re-evaluate their decisions. Moreover, other Members might feel sufficiently confident that the practical issues could be overcome and may, in time, remove these products from their negative list.

It should be noted that, as the Appellate Body held in the *Argentina-Leather* and the *Chile-Price Band* cases, a WTO Member has considerable scope to determine how it decides its applied rate of tariff, provided the applied rate does not exceed the MFN bound rate and provided that it does not discriminate between products originating in different WTO Member countries (i.e. provided that GATT Article I is respected). For example, the factors to be

taken into account in determining applied rates below the MFN rates need not have anything to do with the physical characteristics of the product.<sup>9</sup>

While the project approach advocated by India and described in the earlier section also advocates a change in the applied tariffs for the duration of a project, one of the main criticisms levelled against it is that it does not offer binding concessions and predictability. The protocol mentioned above could address these concerns and need not be tied to the duration of specific projects.

### *Should An Environmental Performance Criteria-Based Approach Include PPMs?*

It has been suggested that the very concept of non-discrimination built into GATT Article I (MFN Treatment) and Article III (National Treatment) excludes the possibility of using PPMs as a means of distinguishing traded products. In this respect, it is necessary to clearly set apart policy debates about environmentally preferable PPMs in the context of unilateral trade sanctions and the actual legal and structural concerns these issues raise in the framework of the WTO.

The issue of environmentally preferable PPMs arose from the Tuna-Dolphin dispute, which concerned a ban by the United States on imports of tuna from Mexico on the grounds that the tuna had been harvested in a dolphin-unfriendly manner. The GATT panels on the dispute, as well as many GATT Contracting Parties, were concerned about the policy implications of the unilateralism of the measure and the question of equity between developed and developing countries, as well as the possibility of hidden “green” protectionism. The panels seem to have argued that all these issues could be managed by a clear rule that distinctions based on environmentally preferable PPMs were not permissible under GATT law. One of the authors of this study, and many environmentalists, have argued that the environmentally preferable PPMs concept was not well suited to dealing with the serious policy issues raised by the kind of measure at issue in the Tuna-Dolphin dispute (Howse, 2000).

The context of environmental goods negotiations, however, is entirely different from that of the Tuna-Dolphin dispute. The issue in the current WTO negotiations is multilateral liberalisation, not unilateral restriction of trade. Furthermore, the Tuna-Dolphin panels were not adopted by the GATT Contracting Parties, and subsequently, in another dispute that raised similar issues, the Shrimp-Turtle case, the WTO Appellate Body used a different set of legal concepts to address these issues.

Given that WTO jurisprudence has arguably moved beyond the PPM concept, it would be difficult to comprehend if that concept, the rejection of which was originally employed to shield developing countries from “green protectionism”, were now used to exclude products from liberalisation in which developing countries have considerable export potential.

In addition to the debate on PPMs, environmental protectionism and the Tuna-Dolphin case, some GATT cases on MFN and customs classification have been widely misread to suggest that, in respect of tariff and related treatment of goods at the border, only differences based on physical characteristics are permissible. One of these cases, Belgian Family Allowances, was a very early GATT case that dealt with differential tax treatment based on non-physical characteristics. A careful examination of the facts reveals that the measure at issue in this case was not a PPM. The differential treatment of imported and domestic goods, while not based on physical characteristics, was based on the system of social protection that existed only in the country of origin of the goods and had nothing to do with PPMs. Clearly, origin-based discrimination is an MFN violation and, thus, the Belgian measure was found to be in violation of GATT Article I. This obvious conclusion says nothing about whether products may be distinguished on the basis of their process and production methods.

Another case, often wrongly cited, is the Spanish Coffee case (Spain-Tariff Treatment of Unroasted Coffee), in which Spain afforded differential treatment to different kinds of unroasted coffee. Some of the differences between the

different types of coffee in question were physical and others related to the “cultivation method” used, which they described as a PPM. The panel’s finding that the different kinds of coffee were “like” did not hinge on a distinction between PPMs and physical characteristics; instead, the panel found likeness, regardless of both kinds of differences, because these differences would not be observable to the end-user, the consumer. Any difference would be undistinguishable since the coffee would be drunk by the consumer in a blend that would homogenise any disparities between types of coffee.

In fact, the Spanish Coffee case highlights the proposition that what matters are differences

that affect the end-using consumer of the product. As Araya has observed:

*“The idea that consumers pay attention to the physical characteristics of [...] products – regardless of how they were produced has weak empirical support. On the contrary, trends in consumer behaviour and public opinion suggest the opposite. Witness recent market trends that show the emerging new role of PPMs: differentiation of organic and ‘fair-trade’ production, consumer rejection of genetically modified food, and boycotts to so-called ‘unsustainable’ corporate practices.”* (Araya, 2003).

### 5.3 Practical Customs Considerations

Practical considerations of customs administration must also be analysed regarding an environmental performance criteria-based approach to tariff liberalisation. In this approach, a determination that the product met the relevant environmental criteria and was eligible for a preferential tariff rate would necessarily depend upon some kind of certificate of conformity provided by the supplier. There are certainly issues of monitoring and verification that are raised by the use of such certificates,

but this is not a novel challenge - customs authorities frequently rely on certificates of origin or conformity in other contexts, such as regional preferences or technical standards (OECD, 2004). In the case of environmentally preferable products, issues of standard setting, conformity assessment and certification could ideally be addressed through the involvement of domestic, regional and international standardisation, conformity assessment and certification institutions.

### 5.4 Importance of International Standards

In its submission, the European Communities emphasises the importance of international standards in the discussions on environmental goods. In our view, an environmental performance criteria-based approach would only include products based upon objective criteria, articulated in credible domestic, regional or international standards, to determine their “environmentally preferable” nature. These standards should be in accordance with the principles of the TBT Agreement and, where appropriate, mechanisms for certification and conformity assessment, such that every WTO Member can potentially benefit from the preferences.

As noted by several developing countries and Canada in their submissions, technical assistance may be required to ensure that all WTO Members are able to benefit from trade liberalisation in environmental goods. It is especially important that producers in less-developed countries have the means to certify EPPs credibly; likewise, that developing countries have the opportunity to participate fully in the development of regional and international environmental standards, in order to ensure that these standards do not unnecessarily or arbitrarily favour products currently produced in developed countries.

## 5.5 Environmental Duty Drawbacks

Cases where the environmental value of the product depends upon its specific use once inside the border raise the question of how best to facilitate ease of customs administration at the border, traceability of the product from its point of production to the border, and traceability within the importing country. Certificates of destination, while an option, raise distinct practical issues since the importer may be a wholesaler or other intermediary not well situated to certify the ultimate use of the product.

Many WTO Members currently operate duty drawback schemes, where duty collected at the border is refunded based on an application by the final purchaser certifying a particular use for the goods. There is no practical reason why duty drawback schemes could not be extended to products that are identified based on environmental use criteria. While some might question the administrative cost of such schemes, a combination of automation and adequate design should allow these schemes to be economically viable.

Instead of being required under any prospective WTO environmental goods agreement to provide a preferential rate of tariff to the importer of an environmental good, Members could charge the existing MFN bound rate at the border, but be bound under WTO law to remit the duty upon the presentation of a valid request by

the end user, accompanied by certification that the product indeed has been used in a manner that yields the environmental benefits at issue. Again, we emphasise that since duty drawback or remission schemes are already being widely operated among WTO Members for other purposes, there would be no need to create a new kind of mechanism or legal or institutional framework to administer environmental duty drawbacks.

The logic of environmental duty drawbacks can be extended much further to provide an innovative solution in the case of EPPs based on PPMs, where for particular reasons a system based on the presentation of a certificate of conformity at the border is not considered practical. The normal, non-preferential rate of duty would be collected at the border, but the producer of the environmentally preferable product would be entitled to request a duty drawback, based on credible certification that the exported products to the WTO Member in question were manufactured in accordance with the PPMs in question.

The advantage of environmental duty drawbacks is that, unlike certification of conformity, where the preference is granted at the border, there is no need for customs authorities to assess the authenticity of the certificate at the time the goods cross the border.

## 6 CONCLUSIONS AND RECOMMENDATIONS

Given the already low applied tariff rates that exist in most (though certainly not all) cases for established environmental technologies, and given that in most cases environmental benefits from liberalising these goods are only likely to flow if the price effect is large enough to persuade governments to adopt stricter regulation, a focus in the current negotiations on tariff reductions with respect to only these established environmental goods is unwarranted.

Further problems with limiting negotiations to established environmental technologies are that these goods are mostly produced by developed country industries and there is a need to ensure that liberalisation is responsive to technological change. Liberalisation must not be a vehicle for promoting trade in outdated technologies.

Given that a number of developing countries have little or no export interest in established technologies, it makes sense to expand the scope of the negotiations to include EPPs, including those that have positive environmental value due to their PPMs. Concerns of Members regarding PPMs could be addressed in innovative ways such as the duty drawback system mentioned in this paper. The basis should be credible regional and international standards. Technical assistance and participation of developing countries in the standard-setting process will be crucial.

Among the submissions on environmental goods to the Special Session of the CTE to date, there is wide agreement that a broad approach to environmental goods may be conceptually justified. However, a number of Members have raised practical objections, such as the problem of dual-use and legal/structural constraints to making MFN tariff bindings based on criteria other than physical characteristics or product function. As set out in this paper, we consider that these practical concerns can be addressed and surmounted in a manner that, importantly, allows for the inclusion of EPPs of interest to developing countries.

While the Harmonized System does not provide classifications that correspond to the “environmental” properties of products, WTO customs classification practice is flexible enough to accommodate “ex-outs” and national nomenclature below the six-digit classification level. The WTO Information Technology Agreement “B” list is an example where tariff liberalisation commitments have been made on products, without prejudice to their classification within the HS.

Alternatively, it is possible to use methods other than MFN tariff bindings to accomplish tariff liberalisation, according to an environmental performance criteria-based approach, as proposed in this paper.

Under an environmental performance criteria-based approach, MFN bound rates would remain the same, but WTO Members would undertake to provide preferential tariff rates for products that meet the designated environmental criteria.

While concerns about PPMs have pervaded discussion of the issue of “unilateral” trade sanctions for environmental purposes, the liberalisation of environmental goods is an entirely different policy context. A close reading of relevant WTO case law illustrates that, while prominent in policy debates, the PPM exclusion has never been part of core GATT/WTO doctrine as regards classification of products for purposes of tariff treatment and the application of MFN obligations.

Where environmental criteria refer to the use of the product after it crosses the border or to the manner in which it was produced, verification during customs control may not be practical. In such circumstances, WTO Members may choose instead a duty drawback system, where the normal duty is assessed at the border, but the user (in the case of use-based environmental criteria), or the producer (in the case of PPMs) applies for a duty rebate after importation, based upon a verifiable certification that the product meets the environmental criteria.

We are perplexed by the focus to date on the issue of reducing tariff barriers. While this may be an important issue, conceptual work on and identification of non-tariff barriers is necessary, whether with respect to subsidies, technical standards or government procurement practices.

Structural barriers that relate to intellectual property and technology transfer may have an important impact on the overall capacity of developing countries to benefit significantly from the current negotiations on environmental goods. Concerns about customs classification that have driven much of the controversy so

far in discussions on the meaning and scope of environmental goods are not present in the case of non-tariff barriers.

Given the importance of the objectives contained in multilateral environmental instruments, we propose that in the current negotiations on environmental goods, WTO Members identify selected crucial environmental imperatives reflected in multilateral instruments, such as the Kyoto Protocol and the Plan of Implementation of the World Summit on Sustainable Development, to help define a comprehensive approach to the reduction of tariff and non-tariff barriers, with the cooperation of other institutions.

## ENDNOTES

- 1 It has been suggested that each generation of developing countries develops on an increasingly compressed time frame. For example, in our own time, China is not only developing at a tremendous pace, but is also competing with developed nations in developing new high-technology products, which illustrates this new phenomenon. A key point in China's development is that engineers in developing countries increasingly have access - via the Internet - to technical papers, conferences and much else, as soon as it becomes available to any engineer, anywhere. Time lag from technological introduction to availability is effectively zero for much high-technology, software and scientific knowledge, leaving intellectual property as arguably the key barrier – a legal, rather than economic or technological obstacle.
- 2 If before the tariff cut, the tax on a unit of pollution is  $x$  and the cost of avoiding that unit of pollution through the use of environmental goods is  $>x$ , the firm would pay the tax and continue to pollute. After the tariff cut, the tax remains  $x$ , but the cost of avoiding the unit of pollution through the use of environmental goods is now  $<x$ . Therefore, the firm will now decide to avoid the unit of pollution using the environmental goods, rather than pay the tax.
- 3 In this extensive case study, a strong attempt has been made to assess the sustainable development impacts of trade liberalisation of environmental goods and services based on different definitions and using suitably adapted versions of two methodologies – the first developed by Kirkpatrick, et. al., 1999 and the second by Bisset, et. al., 2003.
- 4 Incidentally the deployment of renewable energy equipment at the local level often generates considerable local opportunities for suppliers and creates jobs. For instance, even a small solar PV panel or array will require careful physical siting, gravel and concrete for its mounting pedestal, installation and labour. If the PV panels and modules are locally assembled, there is further demand for the components of the module (glass, metal, etc.).
- 5 Lighting is an excellent example of a good that can extend productivity if available. While light has been traditionally provided by energy-consuming light bulbs that inefficiently provide light (and much heat) by passing current through a metal filament, it is now possible to provide light using increasingly inexpensive and high-intensity light emitting diodes (LEDs). LEDs not only consume much less current, they also do not produce appreciable heat and have life-spans many times those of light bulbs. Lastly, the cost of LEDs continues to fall, even as their efficiency continues to increase.
- 6 Launch sites closer to the equator allow for less fuel to orbit and less fuel to final geo-stationary orbit (for instance for telecoms satellites). This means that more precious fuel remains for other purposes, which increases asset lifetime. Sea launch is also being actively pursued, also making equatorial sea sites attractive.
- 7 There is a real risk that the almost exclusive focus on tariff reduction modalities has built into the negotiations from the start a bias against the best interests of developing countries - even when looking at the negotiations from a strictly commercial-diplomacy angle, since it may well be that the market access of developing countries to developed country markets depends more on reduction of structural and non-tariff barriers. Notably, lowering tariff barriers will significantly increase access of developed country producers to developing country markets.
- 8 In paragraph 93(b), governments are called on to "(b) Support voluntary WTO compatible market-based initiatives for the creation and expansion of domestic and international markets for environmentally friendly goods and services, including organic products, which maximize environmental and developmental benefits through, inter alia, capacity building and technical assistance to developing countries".
- 9 Report of the Appellate Body in Chile - Price Band System and Safeguard Measures Relating to Certain Agricultural Products ("Chile-Price Band"), WT/DS27/AB/R, 23 April 2002, paragraph 273. See also, Report of the Appellate Body in Argentina - Measures Affecting Imports of Footwear, Textiles, Apparel and Other Items ("Argentina - Textiles and Apparel"), WT/DS56/AB/R, 22 April 1998, paragraph 55: "We conclude that the application of a type of duty different from the type provided for in a Member's Schedule is inconsistent with Article II:1(b), first sentence, of the GATT 1994 to the extent that it results in ordinary customs duties being levied in excess of those provided for in that Member's Schedule" (emphasis added).

## ANNEX 1: UNCTAD EPP CATEGORISATION

*UNCTAD has identified two types of environmental goods (Type A and Type B EGs) for analytical purposes:*

- Type A EGs, which include all chemicals and manufactured goods used directly in the provision of environmental services.
- Type B EGs, which include all industrial and consumer goods not primarily used for environmental purposes but whose production, end-use and/or disposal have positive environmental characteristics relative to similar substitute goods.

Moreover, in order to analyse environmental good trade flows, these two broad sets of EGs have been further decomposed into 10 homogeneous groups of EGs: Type A EGs have been subdivided into 2 groups:

- An O+A list comprised of the group of all EGs included on the OECD and APEC lists while avoiding double-counting of goods appearing on both lists.
- An Oth-TypeA-EGs list comprised of several goods used to provide environmental services which have not been captured by the OECD and APEC lists. This list contains, for example, plastic gloves and protective eyewear which are used in environmental clean-up and remediation activities.

Type B EGs that have been subdivided into 8 groups:

- A CT list comprised of clean technologies used for power generation. This list includes energy efficient natural gas based power generation and renewable energy technologies and their components.
- A CT-fuel list including fuels for CT, and some conventional (i.e., fuel-switching), power generation technology applications. This list includes natural gas, propane and butane, as well as ethanol and a range of agricultural feedstocks - bagasse and oilseeds - used respectively to produce ethanol and biodiesel fuels.
- An EPP-core list comprised of consumer and industrial non-durable and semi-durable EPP goods. Goods on the EPP list have been selected based on environmentally superior end-use and disposal characteristics only (i.e., not based on PPMs). This list includes a wide variety of goods including natural fibres for industrial uses and in the form of textiles; natural rubber; natural vegetable derivatives, colorings and dyes.
- An EPP-RCY list comprised of recoverable materials that are reintegrated into the production cycle. This list includes scrap and waste paper, wood, plastics, rubber and various scrap metals.
- An EPP-WOOD list comprised of wood and wood-based products including building supplies and furniture.
- An EPP-WSA list comprised of apparel manufactured from natural wool and silk fibres. - An EPP-CM list comprised of raw cotton materials and cotton textiles.

- An EPP-CA list comprised of apparel manufactured from natural cotton fibres.

With the exception of the O+A and CT lists which share some common goods, the above lists contain unique products not present in the other lists.

*(Source: Hamwey 2005)*

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