Environmental Goods and Services in the World Trade Organization

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As part of the current round of global trade negotiations under the World Trade Organization (WTO), nations will be negotiating the liberalization of environmental goods and services (EGS). The EGS negotiations constitute a new and proactive approach to reconciling trade and environment concerns, providing an arena in which concrete progress can be made in environment and development. Although the negotiations show strong promise for sustainable development, this promise will only be realized if the liberalization takes into account existing market asymmetries and the needs of developing countries. This article examines the potential benefits and adverse impacts of EGS liberalization, the challenge of defining and classifying EGS in the WTO, and some policy suggestions for ensuring that EGS negotiations work toward sustainable development in the world economy.

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Multiple forums have asserted the potential for synergies between trade liberalization and improvements in environmental quality. Agenda 21, the program of action formulated at the 1992 "Earth Summit" in Rio de Janeiro, asserts that trade can contribute to sustainable development, whereas the Preamble of the Marrakesh Agreement Establishing the World Trade Organization (WTO) mentions the importance of working toward sustainable development. Similar assertions have been made more recently in the 2000 Millennium Declaration, the

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2002 World Summit on Sustainable Development Plan of Implementation, and the 2002 Monterrey Consensus.

However, the relationship between trade and environment and the appropriate role for the WTO on this issue have been the subject of significant debate. In the interests of furthering that debate, a Committee on Trade and Environment (CTE) was established in the WTO with a broad work program, including such issues as the relationship between the WTO and multilateral environmental agreements (MEAs); environmental regulations; and taxes, technical regulations, and labeling, among others. Although the CTE has met a number of times since its formation and has focused particularly on MEAs and on the role of nongovernmental organizations, it has failed to advance the larger debate to any significant degree.

In the current Doha Round of negotiations (launched in November 2001 as the "Development Round"), however, there are new opportunities for the WTO to support "win-win" trade and environment outcomes, particularly through the commitment to liberalize trade in environmental goods and services (EGS). At the Fourth Ministerial meeting of the WTO, held in Cancún in September 2003, member countries agreed to reduce and/or eliminate "tariffs and nontariff barriers to environmental goods and services." This mandate marked an initiative by the WTO to introduce a new element in the decade-long trade-environment discussions characterized largely by paralysis.

Negotiations on one or two lists of environmental goods are to be carried out in a CTE Special Session (CTESS), whereas negotiations on environmental services are to be carried out in the General Agreement on Trade in Services (GATS) Special Session. Once one or more common lists of environmental goods have been agreed on, negotiations on nonagricultural environmental goods are to occur in the Committee on Market Access,[1] although GATS negotiations focus on the establishment of country-specific lists based on a request-and-offer-approach for future liberalization efforts. The EGS negotiations constitute a new and proactive approach to reconciling trade and environment concerns, providing an arena in which concrete progress can be made.

The EGS agenda came as a surprise to almost all during the Doha negotiations. However, following an initial sense of optimism, negotiations have bogged down. Some argue that in the absence of clear international definitions, placing the WTO in the position of arbitrating product coverage may end up weakening the WTO. Several industry representatives argue that the inclusion of EGS can have unintended consequences.

1. It is not clear where agriculture-based environmental goods would be addressed.

In particular, the representatives are concerned that the inclusion of such a judgment invites an increase in tariffs and nontariff barriers for nonenvironmental goods and services as a way of pricing mainstream or dirty products out of the marketplace. Although this scenario remains unlikely, it is reported to have been proposed by at least one nongovernmental organization.

If properly managed, EGS liberalization could contribute to sustainable development in the world economy and to bridging the North-South divide that has characterized the trade-environment debate since its inception. In particular, early EGS liberalization could contribute to environmental goals by lowering prices of EGS relative to their nonenvironmental or mainstream counterparts, thus facilitating and promoting more environmentally sustainable production. It would also send a policy signal about the importance of environmental expenditures in emerging markets. In addition, EGS liberalization could contribute to the development goals of the Doha Round by fostering the development of the EGS sector in developing countries, particularly in new export niches.

However, significant challenges must be overcome for these benefits to be obtained. Specifically, the determination of which goods and services should be classified as EGS for the purposes of liberalization is a fundamental issue that is the subject of great contention. This determination will have a profound impact on the degree to which EGS liberalization actually contributes to environmental quality and development goals. In addition, the timing of liberalization and the degree to which there is special and differentiated treatment for developing countries will also be key factors influencing the outcomes of liberalization.

In this article, we examine both the potential benefits and the challenges of EGS liberalization. The focus, however, is on negotiations on environmental goods, as their significance for sustainable development is much higher. The article is organized as follows: We look first at what types of goods and services might be considered EGS, as well as the size and geographical distribution of the current EGS market. We also briefly discuss the Doha negotiating mandate. In the next section, we examine some of the potential benefits and adverse impacts of EGS liberalization, before moving on to some of the challenges that the WTO context offers EGS liberalization, particularly the processes and production methods (PPM) issue and the problem of classification. Before concluding with policy implications, we briefly review some unrecognized liberalization opportunities: energy efficiency and sustainable agriculture.

Context

DEFINING ENVIRONMENTAL GOODS AND SERVICES

Although later sections of this article will address the thorny problem of classification in the WTO, it is useful to begin by providing an overview of what might be considered EGS, broadly defined. In one effort to define EGS, United Nations Conference on Trade and Development (UNCTAD) divides environmental expenditures into four categories: environmental infrastructure, air pollution control, remediation, and support services (Vikhlyaev, 2004). Other authors adopt a broader view and see EGS as comprising an "agglomeration of providers of many types of goods, services, and technologies" (Thompson, 2002). Additional international efforts to define the environmental sector include work by the Organization for Economic Cooperation and Development (OECD), Environment Business International (EBI), environmental technologies industries and their associations, and the United Nations Environment Program (UNEP).

A relatively comprehensive overview of environmental markets has been undertaken by the OECD and the Statistical Office of the European Union (Eurostat). *The Environmental Goods and Services Industry* is a classification manual that describes the main categories of environmental goods in world markets (OECD, 1999). Unlike other lists discussed below, the OECD/Eurostat list was not compiled for either trade or customs classification purposes, but to help measure the characteristics of environmental markets. It is useful in discussing EGS because it reflects the breadth and complexity of the environmental sector.

In developing the list, an OECD/Eurostat Working Group defined the environmental industry as comprising "activities which produce goods and services to measure, prevent, limit, minimize or correct environmental damage to water, air, and soil as well as problems related to waste, noise and eco-systems." The main categories of goods and services comprise (a) Category A, the pollution management group, which includes such goods and services as air pollution controls and wastewater management; (b) Category B, cleaner technologies and products, which are products and technologies with fewer adverse environmental impacts in their production and/or use than standard products; and (c) Category C, resource management products, such as water supply systems and renewable energy.

As a first effort in classifying environmental goods, the OECD/Eurostat Working Group noted several unresolved issues that are particularly important from a tariff classification perspective.

- In Category A, some goods may have dual or multiple uses. For example, component electrical or low-technology parts, such as pipes or bolts used in the construction of waste incinerators, can also be used as components for nonenvironmental goods. Although the World Customs Organization has dealt with dual-use and multiple-use products in the past, it usually requires a heavy degree of administrative oversight.
- In Categories B and C, references to cleaner and more resource-efficient technologies and products suggest that continuous improvement and innovation are decisive factors in environment-related classifications. Performance or product characteristics of standard technologies and products thus serve as a kind of reference point against which comparative environmental characteristics or performance levels are measured. The Working Group noted that in "a dynamic perspective, the cleaner technologies and products of today will become the 'standard' technologies and products of tomorrow."[2]

The use of relative classification creates a moving target that would be difficult to accommodate within the WTO as it currently functions. Countries have varying preferences as to which of these categories (or even individual products) will be subject to early liberalization. One major factor in determining those preferences is the size and competitiveness of domestic EGS industries.

THE CURRENT EGS MARKET

Despite the lack of a clear, international definition of environmental goods and services, most estimates count expenditures on the environment to be in the range of U.S. $500 billion per year, with growth projections expected to exceed U.S. $600 billion by 2005 (EBI, 2002)

As shown in the first column of Table 1, at present, 90% of the EGS market resides in the developed world, namely the United States, Japan, and Western Europe. In addition to being a lucrative market, it is also fairly labor intensive, employing approximately 3.4 million individuals in 1999. The region with the smallest EGS market is Africa, where a small U.S. $3.1 billion worth of EGS were sold in 1999. Later work by EBI shows faster growth in the sector than forecasted in this earlier study for the North American Free Trade Agreement countries. The U.S. EGS market had reached U.S. $212 billion; Canada's reached US$16.1 billion; and Mexico's attained U.S. $3.8 billion in 2001 (EBI, 2004). An OECD and Commission for Environmental Cooperation (OECD/CEC, 2003) study reports a growth rate between 2% and 6% in items such as the number of

2. Under Canada's Environmental Choice program, among the criteria for defining "green" power is the date of commissioning of electric power plants: environmental benefits or offsets only occur when a new facility comes on line.

Table 1
Global Market for Environmental Technologies

Country or Region	*1999*	*2008*	*2024*
		U.S. $ billion	
United States	189.0	200.1	221.3
Western Europe	149.3	160.7	183.2
Japan	89.3	92.1	97.3
Asia	21.8	41.3	128.6
Mexico	2.2	3.8	10.0
Latin America	8.6	15.2	41.8
Canada	13.2	16.0	22.5
Australia and New Zealand	8.2	10.8	17.6
Eastern Europe/Former Soviet Union	8.7	26.7	196.0
Middle East	6.1	11.9	39.0
Africa	3.1	7.4	34.8
Total	499.6	586.0	778.1
Total developing country	50.5	106.3	399.2
Developing country share (%)	10	19	51

Source: Environmental Business International (2002).

firms, gross production, added value, total inputs, and labor in the Mexican EGS sector for the period 1993 to 1998.[3]

The picture in the first column is changing. Analysts project that between 1999 and 2008, the market for EGS will grow by less than 1% in the developed countries, but by 8.6% rate in the developing world (EBI, 2002). Indeed, EGS markets in Eastern Europe and the former Soviet Union are expected to increase at a rate of 13.2% each year; markets in Asia are predicted to increase at 7.3% and in Latin America by 6.5%. In other words, the market for EGS in developing countries will double by 2008. If one assumes that current projections hold for the next 20 years, developing countries will comprise more than half of what will then be approaching a US$750 billion global market.

At present, the global export market for EGS is concentrated in a handful of large firms in the United States and Europe, such as Dow Chemical, Dupont, and Deutsche Babcock (Barton, 1997). Indeed, of the top 50 environmental companies of 2001, all were from the United States, United Kingdom, France, Germany, Japan, Denmark, and Spain (EBI, 2002). However, Brazil, Mexico, Russia, China, and India all have fledgling EGS industries.

After examining the industry's projected trends, it should come as no surprise that the developed world is interested in securing access to the

3. These figures refer to environmental goods and services falling primarily into Category A of the OECD/Eurostat classification system as they are more tractable.

growing and potentially large developing country EGS market. This also has important implications for the development aspects of trade liberalization, something that has been identified as a key element in the Doha negotiating mandate.

THE DOHA NEGOTIATING MANDATE

Implicit in the Doha decision is a commitment to enact an early liberalization of environmental goods and services relative to across-the-board liberalization.[4] It is therefore important to view the EGS mandate within the broader context of the liberalization mandate set out in the Doha Ministerial Declaration. Throughout this document, countries promised to improve market access for a comprehensive list of products and services of interest to developing countries and to bolster liberalization with technical assistance aimed at developing countries. It is a sentiment that runs throughout the Ministerial Declaration.

> The majority of WTO members are developing countries. We seek to place their needs and interests at *the heart of the Work Program adopted in this Declaration* [italics added]. Recalling the Preamble to the Marrakesh Agreement, we shall continue to make positive efforts designed to ensure that developing countries, and especially the least-developed among them, secure a share in the growth of world trade commensurate with the needs of their economic development. In this context, enhanced market access, balanced rules, and well targeted, sustainably financed technical assistance and capacity-building programs have important roles to play. (World Trade Organization, 2001, para. 2)

Increasing market access for developing countries is one acid test for measuring substantive progress. Market access objectives enunciated at Doha commit governments to reducing or eliminating tariffs, including tariff peaks, high tariffs, and tariff escalation, and nontariff barriers, "in particular on products of *export interest to developing countries* [italics added]" (WTO, 2001). Within this overall priority of implementing a liberalization agenda that benefits developing countries, a reasonable assumption of the contextual meaning of the EGS mandate is, therefore, to identify EGS of existing or potential interest to developing countries and to which tariffs or nontariffs barriers exist.

4. The Ministerial declaration states the following: "With a view to enhancing the mutual supportiveness of trade and environment, we agree to negotiations, without prejudicing their outcome, on . . . (iii) the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services" (World Trade Organization, 2001, para. 31).

Potential Beneficial and Adverse Impacts of Early EGS Liberalization

EARLY EGS LIBERALIZATION: POTENTIAL BENEFITS

Before looking at which EGS could benefit from the Doha mandate, it is important to note the question of sequence or timing. Although not explicitly stipulated, the Doha EGS mandate clearly implies early action. By liberalizing early, EGS could garner either a temporary price preference relative to mainstream or nonenvironmental goods or services or experience a relative decline in prices so as to reduce price premiums that consumers often pay for green products (in many cases, price premiums for environmental goods are in the vicinity of 10%).

Clearly, this price decrease would disappear once across-the-board liberalization of all goods took effect. However, even this temporary price drop could help shift consumer behavior in much the same way that fiscal policy or incentives are used at the domestic level to differentiate green and nongreen products. (A familiar example used by many countries for years involves differentiated tax treatment for unleaded versus leaded gasoline.)

As in almost all areas of tariff liberalization, a reduction in the price of imported goods is associated with welfare gains for consumers. Any opportunity to lower the price of environmental goods and related services could deliver significant welfare gains in developing countries where demand for these goods and services is increasing quickly. Specifically, a reduction in the price of imported air and water pollution abatement control equipment, wastewater treatment, water filtration, and sanitation goods and services could help developing countries address some of the most urgent environmental and developmental problems they face. Action by the WTO could also help realize some of the goals drawn up during the 2002 Johannesburg World Summit on Sustainable Development in priority areas such as clean water.

A relative price decline stimulated by WTO action could lead to various multiplier effects that far exceed narrow price effects. These include awareness by consumers of the range and availability of green alternatives products;[5] potential scale economies from increased demand that could further reduce prices and stimulate demand; and an increase in the profile of EGS among institutional buyers, notably public and corporate procurement officials who pursue a corporate commitment to green purchasing. A competitive EGS marketplace can also serve to stimulate R&D in these technologies.

5. One of the major constraints often cited by consumers to explain why they do not buy more environmental goods and services is their uncertain availability or their difficult access.

This price difference could also help foster the development of the environmental sector in developing countries. In addition to the possibility of high future developing-country profits, future growth could lead to the addition of approximately 1.9 million new jobs.[6] Many of these markets are now niche markets and dominated by small and medium enterprises (SMEs)—in Mexico, 99% of the environmental goods firms are small and medium enterprises (OECD/CEC, 2003)—that could benefit from less expensive inputs and larger demand. These benefits to SMEs would, of course, hinge on the domestic policies that would be put in place to accompany this multilateral advancement.

EARLY EGS LIBERALIZATION: POTENTIAL ADVERSE IMPACTS

The extent of the price changes for EGS is a function of the tariffs and nontariff barrier levels in place prior to liberalization, as well as of the timing with which that liberalization occurs. However, because the timing or sequence of EGS liberalization was not explicitly spelled out, it has become subject to debate. Some WTO delegations have proposed that EGS liberalization take place after, rather than prior to, across-the-board liberalization. Any residual tariffs or nontariff barriers (NTBs) affecting EGS would prompt response. If WTO members pursue this sequence of EGS liberalization, then any positive effects related to a reduction in relative prices for EGS would likely be lost. Moreover, treating EGS as a left-over menu of unfinished business would relegate the issue back to its second-tier slot and undermine potential gains from developing countries, thus distorting the intent of the Doha Ministerial declaration.

Given the existence of small but growing environmental industries in some developing countries, another challenge for EGS negotiations is to set a stage for liberalization that will not decrease the number of firms and reduce competition in this market, but rather increase both, especially in the developing world. Some analysts are concerned that EGS liberalization could lead to higher prices and a less competitive marketplace because of the distorted nature of the current EGS market (Barton, 1997). Rapid liberalization in the developing world could expose firms in developing countries (mainly SMEs) to competition with developed-country firms that could lower prices in the shorter term (to wipe out competition) and raise them in the longer term (to increase profit shares). Thus, EGS liberalization could negatively affect fledgling environmental firms within developing countries.

If this occurred, liberalization in the case of asymmetric markets could also hurt pollution-intensive firms in developing countries and

6. These estimates are based on the author's calculations from Environmental Business International (2002) data. They primarily include environmental technologies and related services.

infringe on their ability to employ cleaner core technologies that would result in more environmental gains. In developing countries, pollution-intensive sectors, such as pulp and paper, steel, nonferrous metals, energy and electricity, and so forth, are more and more often required to deploy many of the end-of-pipe technologies classified as EGS. In essence, these firms form the demand for EGS. Many domestic firms in these pollution-intensive manufacturing sectors are struggling to compete against the developed-country counterparts and the few multinational firms that dominate the market.

The prospect of higher prices for end-of-pipe technologies represents an increasing expense for these firms. It will more than likely not lead to benefits in company balance sheets. These higher prices present two further concerns. First, higher prices may lead domestic firms to pressure governments that try to increase environmental protection in their countries. Second, firms that do pay for costly end-of-pipe technologies will have less money and therefore be less apt to invest in new core energy combustion and other technologies that may actually pollute less than end-of-pipe options. In addition, they may have less funding available to invest in research and development for plant-level environmental innovations (Barton, 1997). As such, for the sake of potential negotiations, it is important to have a detailed understanding of current EGS markets and their distortions so that these challenges may be overcome.

Challenges of EGS Liberalization in the WTO

Despite the potential gains associated with early but careful EGS liberalization, EGS negotiations in the WTO have barely progressed since Doha, for two reasons. First, any momentum on the EGS agenda hinges on progress in the core elements of the Doha agenda. The July 2004 package endorsed by WTO members reaffirmed that the priorities of WTO negotiations consist of agriculture; industrial tariffs; services; and a range of other items, such as sugar and cotton, antidumping measures, subsidies applied to fisheries, and the scheduled phase-out of the textile and clothing quotas. The focus of work within the Trade Negotiations Committee and other special session committees until the Sixth Ministerial Conference, which will be held in Hong Kong in December 2005, will almost certainly be on these negotiating items. By contrast, the trade-environment agenda in the WTO has always been a lower priority.

The second reason for the lack of progress since Doha is that there are problems inherent in the EGS issue itself. These revolve around two related issues: the debate over PPM, which has eased considerably during recent years but remains as important as ever, and the lack of internationally accepted standards or classifications for EGS.

THE CORE DEBATE OVER TRADE AND ENVIRONMENT: PPMS

It has often been argued that the WTO is not in the business of differentiating between "good goods" and "bad goods." Attempting such a distinction in environmental matters not only exceeds the mandate of the WTO but also sets a precedent of inviting distinctions in other areas, notably labor and human rights. On the other hand, many progressive companies and institutions that have made an effort to differentiate themselves on the market through the greenness of their production—either to minimize their environmental liability or to benefit from early adaptor advantages—are increasingly pushing for recognition of their efforts. Examples include consortia of companies, such as the Canadian Clean Power Coalition, the Clean Energy Group in the United States, and the World Resources Institute–led Green Power Market Development Group. They are coming together to promote the production and use of alternate or renewable energy sources.

Much of the debate over trade and environment in the WTO has been over the issue of whether (and how) the WTO can distinguish between otherwise similar products based on their processes and production methods. An extensive literature exists on General Agreement on Tax and Trade (GATT)/WTO trade laws, their jurisprudence, and the PPM issue. Without reviewing that literature here, it is clear that the PPM issue remains at the heart of the WTO trade-environment debate, including the Doha negotiations over environmental goods and services.

In general, there is little disagreement that the WTO enables countries to set their own environmental standards covering how products are made. Indeed, the bulk of domestic environmental regulations, standards, and on-the-ground enforcement of pollution laws centers on production methods. After all, industrial production is an important source of various kinds of air and water pollution. Moreover, there is universal agreement that WTO members can regulate the entry of products into their country based on the extent to which those products comply with various product-related criteria—as well as product performance standards and end-of-use product disposal—recycling or related criteria.

The contentious issue that remains at the heart of the WTO debate is whether a country can condition the access of a product based on its PPM-related characteristics when the PPM criteria are not directly related to the product itself. As we have seen from the above discussion, a large portion of environmental products currently supported by the market draws some or all of their green definition from the environmental characteristics of their production methods. An accelerated trade liberalization schedule adopted by WTO members that would differentiate PPM-based products under the current status quo would create profound misgivings in Geneva. This would be especially pronounced among developing countries, which view the recognition of the PPM

issue as opening the door to the worst kind of green protectionism by developed countries. Allowing discrimination based on PPMs gives governments greater opportunity to protect their industries unfairly against foreign competition by making regulations that penalize industries that do not use products made using environmentally preferable PPM that have been selected to favor the domestic industry. As seen below, the chapeau of Article XX tries to weed out this protectionist discrimination.

This largely explains the curious fixation by the WTO Committee on Technical Barriers to Trade on environmental labeling and certification systems—curious because these systems represent a narrow range of market segments: little more than 2% to 3% of total market share. However, some WTO members argue that ecolabels in practice differentiate products based on their PPM characteristics—for instance, energy inputs or levels of NOx, SOx, or greenhouse gas (GHG) emissions generated in their production. Regardless of whether this differentiation reflects actual consumer preferences or major shifts in public policy (e.g., anticipating the reality of a carbon-constrained world with the Kyoto Protocol), some WTO members argue that green product labels should be deemed inconsistent with WTO rules because it allows discrimination among "like products."

However, several commentators argue that WTO rules enable countries to take PPMs into account, depending on the specific circumstances of the case, such as whether the effects of unregulated production methods lead to transboundary or global environmental damages (Charnovitz, 2002; Howse, 2003). Recent findings by the WTO Appellate Body suggest that general exceptions to GATT Article XX legitimately can be invoked in response to certain PPM-related considerations (Howse, 2002).

The WTO shrimp-turtle case Appellate Body ruled that measures addressing a foreign PPM, such as how shrimp are produced, could be justified under Article XX if there exists an "environmental nexus" between the state taking the measure and the issue the measure addressed. It is understood that transboundary environmental issues such as shared air and water resources, climate stabilization, and migratory species protection would meet the nexus criteria. Of course, the Appellate Body requires that other controls and limits on the use of GATT's Article XX are in place. With this ruling, this rarely used, last-resort, and defensive mechanism, *so rarely used* appears to have changed the state of trade law on PPM, giving it a new interpretation. Thus, the PPM issue for non-product-based measures is not inconsistent with the WTO regime but must meet many conditions not applicable to product-based measures (to weed out protectionist discrimination). The Appellate Body also ruled that good faith negotiations were a prerequisite for the use of PPM-based trade measures.

This Appellate Body addressed developing countries' concerns by requiring that technical and financial assistance and other forms of capacity building be offered to the exporting country by the importing country that will have to adopt higher environmental standards. The remaining PPM issue is thus increasingly believed to reflect the unwillingness of WTO members to deal with this contentious issue within the negotiation processes rather than a systemic problem of the WTO.

How EGS liberalization proceeds will depend, at least in part, on whether a peace clause arises in the WTO regarding the PPM issue, which would likely be necessary for a wider classification of environmental goods to emerge, even if that classification were specifically directed to helping exporters in developing countries. If PPM characteristics are excluded from the current liberalization negotiations, a narrower range of EGS would be included, with a majority being goods and services associated with pollution control.

CLASSIFICATION OF EGS

"Goods" and "Bads"

The central question raised is, therefore, what goods and services should be considered EGS in the WTO. The nearest international definitions of environmental goods and services are based on lists of what could be termed *environmental bads*. These include ozone-depleting substances (Montreal Protocol); specimens of endangered species (CITES); hazardous wastes (Basel Convention); GHG emissions (Kyoto Protocol); persistent organic pollutants (Stockholm Convention); and, to some extent, living genetically modified organisms (Biosafety Protocol). Within these legal agreements, countries have agreed that unrestricted production, consumption, and trade of these goods are either environmentally damaging or (as in the Biosafety Protocol) pose certain environmental risks.[7]

The emphasis on environmental bads at the international legal level mirrors the main focus of domestic environmental policy. Regulatory action for the past 30 years has usually involved constraining or altogether prohibiting environmentally damaging sources or products.[8] Far less time has been spent on identifying those instances in which environmental goods could be promoted. Although progress has been made in

7. An e contrario definition does not necessarily provide much insight, so one could wonder if the term *environmental good* includes products produced from the natural environment, such as minerals, wood, fish, agriculture, and so forth. If not, is *environmental good* restricted to products that are deemed to be inherently good for the environment—solar panels, pollution abatement technologies? Or is, for example, nuclear technology an environmental good?

8. An example of the latter is the prohibition on DDT in the 1970s or limited used of some pesticides.

the last decade regarding the schemes used to differentiate environmental goods in the marketplace (e.g., green labeling, certification, and green procurement initiatives), these schemes usually assume a second order of importance in domestic environmental policies. This is especially the case in developing countries, where they are just beginning to emerge.

The WTO itself is not a standard-setting body in general, and it may lack both the mandate and expertise to classify environmental goods and services. By relying on a trade body to define the scope of EGS from a tariff classification perspective, the WTO runs the risk of distorting and potentially undermining trends in environmental policy that have been forming for the past decade.

However, despite its reticence about distinguishing between "good" and "bad" goods, the WTO has shown itself capable of classifying product coverage through its successful steerage of the WTO Agreement on Information Technology Products (ITA). Although an international definition and product coverage of ITA products had not been completed by the relevant United Nations body (the International Telecommunications Union), the WTO began negotiations by setting out the broad principles of a draft ITA liberalization agreement. Once completed, the scope of product coverage was negotiated in close conjunction with national information technology regulators.[9]

Given this precedent, discussions in Geneva have not involved a legal or institutional debate about whether the WTO is capable of acting on the EGS mandate. Rather, work has involved a debate about lists.

The Debate About Lists

When work on EGS began at the WTO, several delegations—notably the United States and New Zealand—pointed to the Asia-Pacific Economic Cooperation (APEC) Early Voluntary Sectoral Liberalization initiative as a starting point for delegates to consider (CTESS, 2002). According to these and other countries, the virtues of the APEC environmental goods list are (a) that it already existed and (b) that it reflected a consensus of both industrialized and developing countries. The 1998 and 1999 APEC lists of environmental goods concentrate mainly on capital goods, including

- municipal water delivery systems, potable water treatment technologies, wastewater treatment and sanitation technologies, and related infrastructure;

9. A similar approach has been followed by environmental negotiators. In 1989, negotiations that led to the Basel Convention set out principles, general obligations, and a broad definition of product coverage under that agreement. Upon the signing of the Convention in March 1989, environmental experts and national regulatory authorities proceeded to define product coverage in the annexes to the Convention. Almost all environmental agreements, including CITES and the Montreal Protocol, regularly review their coverage in response to new scientific information and changing environmental conditions.

Table 2
Tariffs Associated with Environmental Goods

Environmental Good	*Country*	*Tariff (%)*
Filters for internal combustion engines (8421.23)	Mexico	15
	United States	2.6
	Japan	0
	New Zealand	13.5%
Water filtration (8421.21)	Chile	8
	Australia	5
	Canada	0
	China	18
Sewage treatment (8421.29)	China	18
	United States	0.8
	Australia	5

- industrial heat-pump technologies in existing and new applications; and
- end-of-pipe pollution abatement technologies, including scrubbers to remove NOx and SOx.

Other examples of goods included in the APEC list are vacuum pumps (8414.10); industrial or laboratory furnaces and electric, induction, or dielectric ovens (8514.20); exposure meters (9027.50); and electromagnets (8505.90).

Tariffs applied to most goods found on the APEC list are already in the range of nuisance tariffs (not high enough to distort trade but still increase administrative costs) in most industrialized countries. By contrast, several developing countries apply most-favored-nation (MFN) tariff levels that exceed 20%. Examples of MFN tariff rates associated with environmental goods are noted in Table 2. Lowering tariffs on these environmental technologies could certainly lower prices, resulting in greater consumer welfare and potentially improved environmental quality in developing countries, including in areas important for development, such as water and sanitation.

All or Just Some Environmental Goods?

As indicated by the APEC discussion, the admittedly modest and incomplete work in EGS classification in the WTO to date suggests that the scope of EGS will center on environment-related technologies, such as incinerators and other capital goods to manage wastes, air pollution scrubbers for industrial applications and catalytic converters used in automobiles, wastewater treatment and sanitation technologies and related engineering services, and renewable energy technologies.

Indeed, services that are directly associated with administering complex environmental technologies, such as monitoring systems, on-site auditing and inspection services, and environmental legal services, have also been identified under offers at the WTO. Clearly, environmental technologies constitute the most important part of the estimated U.S. $550 billion that is spent yearly on the environment.

From a tariff classification perspective, capital goods and services associated with pollution and waste management are a good place for the WTO to begin its work. Goods within this sector comprise both low-technology items, such as pipes and filters, and higher technology goods, such electrostatic precipitators. Both low- and high-technology goods are accompanied by various environmental services, notably engineering services. Despite their diversity, capital goods such as scrubbers or water filtration pipes are relatively easy to define from a tariff classification perspective. Because air pollution scrubbers, for example, are operated exclusively to address pollution, problematic tariff classification issues associated with end-use or dual-use definitions are avoided.

However, there are a number of potential problems that could arise from this reliance on a partial classification of only some EGS. In the past decade of environmental policy, governments, the private sector, and consumers have tended to complement end-of-pipe pollution abatement targets and thresholds with a menu of approaches that avoids upstream pollution by emphasizing cleaner production methods and management approaches, innovative market-based approaches such as tradable emission permits, and a reliance on consumer-oriented environmental approaches. Examples in the latter area include labeling and certification systems covering a wide range of consumer goods and services, from sustainable coffee and bananas to renewable energy; energy-efficient appliances and ecotourism services; and such market-based approaches as tradable emission systems for water quota rights and carbon sequestration trading.

Unlike other economic sectors, environmental goods and services provide a wide range of inputs to other economic sectors. For example, both Germany's Blue Angel labeling scheme and the European Union's environmental labeling and certification systems classify a wide range of consumer goods by their relative environmental characteristics and/or performance, with the relative rating compared to a proxy-using mainstream or industry averages. (In the case of Germany's program, environmental products constitute approximately the top 20% of any product category for which less polluting or more environmentally benign alternatives exist.)

Overall, environmental products at the consumer level now cover literally hundreds of product groups, themselves covering thousands of tangible products. Examples of environmental products that are classi-

fied as cleaner range from recycled paper and plastics to environmentally preferable products such as jute, plant-to-energy conversion systems that close energy loops, consumer green electricity generated from renewable or low-impact electric-generating sources, composite railway ties, and zero-emission or hybrid automobiles.[10]

Many of these products would fall into Categories B (cleaner technologies and products) and C (resource management products) of the OECD/Eurostat classification matrix and rely on relative, as opposed to stand-alone or absolute, classification criteria. Unlike pollution abatement equipment, technologies and goods under these categories are not characterized by their exclusivity of application for environmental ends. Rather, cleaner, efficient, and sustainable goods serve as substitutes for their dirtier, inefficient, and unsustainable counterparts. Because environmental products now cover a wide and expanding range of products and services, with their definition based on relative performance characteristics, the WTO agenda faces the daunting task of trying to pin down quickly moving targets.

Compounding this difficulty in classifying relative-versus-absolute consumer product characteristics are the nonuniform variables applied to green product or services definitions. Some green products use certain life-cycle assessment or cradle-to-grave considerations in their definition (e.g., the total amount of energy used by the product in its manufacturing and the type of energy sources used). The Center for Resource Solution, for instance, has improved its Green-e activities by launching a "Made with Renewable Energy" logo in 2004 that vendors are putting on their products more often.

Other green products restrict their definition to product performance characteristics. Examples include energy efficient household and office appliances, sustainable tourism, zero emission and hybrid automobiles, sustainable and organic farm produce, and sustainable forestry and fisheries products. Although most of these products and services enjoy no more than 2% to 3% of any given market, they nevertheless are the most visible and arguably the most dynamic portion of environmental markets.

Thus, although environmental technologies and related services comprise the bulk of environment-related expenditures, the APEC list was never supposed to be a comprehensive reflection of environmental markets. The classification system developed by OECD/Eurostat (described above) is such an effort. However, as has been shown here, the potential use of this system by the WTO also has significant obstacles.

10. Most environmental labeling schemes, in assessing whether new product categories should be included in their programs, undertake substitute assessments. Product and technology substitution assessments are also carried out by such programs as the Cleaner Technologies Substitutes Assessment operated by the U.S. Environmental Protection Agency.

The challenge facing the WTO is therefore to strike a balance between moving on a fairly narrow range of environmental goods that already have their own customs codes and addressing a much wider range of consumer-based products and services that lack not only stand-alone HS codes, but also unambiguous product definition. For example, the Swiss delegation in Geneva has suggested (albeit in jest) that bicycles should be included in any EGS liberalization action. So far, only a few WTO members—namely Japan, Qatar, and Taiwan—have proposed concrete lists of environmental goods for inclusion.

Using Preexisting Labeling Schemes

Given that most environmental goods aimed at consumer markets cannot be characterized by an exclusivity of application, the best means of defining EGS may be to refer to existing labeling and certification schemes. One of the most striking developments in the environmental agenda of the past decade is the emergence of third-party, voluntary labeling and certification schemes administered by nongovernmental actors, as well as government-administered agencies such as in the European Union (Germany and Scandinavian countries also have their own), Canada, China, India, the United States (organic standards), and elsewhere.

The evolution of labeling and certification schemes indeed represents one of the most visible and innovative efforts by the environmental community to craft market-based policies. In recent years, government procurement activities and institutional purchasing agreements of large companies such as General Electric and public agencies such as the World Bank refer to recognized environmental labeling and certification schemes to fulfill internal green purchasing commitments.

An easy solution for the WTO when sorting out how to define EGS is to refer to predominant labeling and certification schemes in developing and developed countries and then to cross-reference the most common products certified in those schemes potentially subject to early liberalization. For example, almost all environmental labeling and certification schemes cover paper products, household paints, recycled plastics, and energy-efficient appliances (discussed below). Of course only a small proportion of these labels exist in developing countries, and urgent needs could be defined through a cross-list of products. Even in countries such as Mexico where a recent study of environmental labeling and certification schemes completed for the CEC revealed that a surprisingly high number of these schemes exist, capacity building and technical and financial assistance are still needed to fully take advantage of export markets (Lendo, 2004).

However, green labels and certification schemes remain an enduring point of friction within different committees' agendas at the WTO. Along with the MEA issue, ecolabeling has been the subject of discussion

in the GATT since 1991. Most developing countries continue to suspect that criteria set in such schemes either favor domestic producers or may somehow condition market access or affect the commercial opportunities of nonlabeled products. This suspicion continues, despite the fact that no single voluntary, third-party labeling scheme has come remotely close to initiating WTO-like dispute settlement procedures. More efforts must be made to address the market access issue for developing countries if trade liberalization in EGS is to yield the maximum environmental and economic benefit for these countries. Since 1991, however, discussions involving environmental labeling have been short hand for the uneasiness many WTO members feel about letting any reference to production and process methods (contained in virtually all labeling schemes) condition market access of nonenvironmental goods (Appleton, 2002).

It is unlikely that the systemic considerations associated with labeling and trade-environment issues will be cast aside because of the potential economic and environmental gains EGS liberalization can deliver. Yet by acting only on pollution-abatement technologies, the WTO would send the message that there are almost no environmental goods and services being produced in developing countries. This is erroneous and could be deeply divisive. One example of an environmental good produced in developing countries is sustainable agricultural products. Such products are currently not included in EGS negotiations. Kenya and other African countries have stated their comparative advantage in environmental products based on agriculture (though no formal submissions have been made). Their liberalization, if done carefully, could provide not only environmental benefits, but also development benefits (see section on sustainable agriculture below).

By excluding environmental consumer goods, the WTO ignores the most visible aspect of environmental markets and thus passes up a win-win opportunity. Addressing the market access concerns of developing countries directly would be the best way for the WTO to improve its image with many civil society groups and would support the environmental and economic advantages of many developing countries.

The Product-By-Product Approach

In light of these considerations, the most sensible solution may be one that has recently gained traction in the CTE: the product-by-product approach to EGS. Both the Non-Agricultural Market Access Committee and the Special Session of the GATS Council have referred to EGS classification work. Although the criteria for product selection remains unclear, a logical approach would entail identifying those environmental priorities that are the most pressing from a national or international perspective.

This approach was taken in work commissioned by the CEC and the International Centre for Trade and Sustainable Development. The EGS most likely to help Mexico achieve its sustainable development goals were compared to the current OECD list to identify which EGS (currently on or not on the list) would need to be included in a positive list. The EGS of interest to Mexico fall within the OECD resource management group. However, the greatest benefits to Mexico would be in expanding the list from being primarily composed of inputs to sustainable agriculture and tourism to including outputs derived from sustainable agriculture, tourism, forestry, and fisheries. Examples include organic fruits or sustainable fisheries or lumber operations (Lendo, in press).

The expansion of these markets would bring significant sustainable development benefits, because, in most cases, they are labor intensive and their production-provision processes take place in low-income southern areas, including indigenous communities. Moreover, data on trade flows indicate that Mexico is already a net exporter in those sectors. Hence, trade liberalization at the multilateral level has the potential to increase its market penetration in other markets (Lendo, in press).

Unrecognized Liberalization Opportunities

The section below describes how two environmental areas—energy-efficient appliances and outputs from sustainable agriculture—could respectively alleviate air pollution and/or climate change and deforestation associated with loss of biological diversity. The two could be perceived as environmental goods and are briefly described below.

ENERGY EFFICIENT APPLIANCES

In most industrialized and emerging economies, household electrical appliances account for roughly one quarter or more of total residential energy consumption, which in turn accounts for one third of total electricity demand. Generating electricity remains by far the single largest source of air pollution in many countries (International Energy Agency and OECD, 2002). For instance, in the United States, 70% of sulfur dioxide and 25% of nitrogen oxide emissions (the main polluting ingredients in acid rain) and 35% of carbon dioxide emissions (the main GHG causing climatic change) are from electric power generation (Block & Vaughan, 2002). The U.S. Environmental Protection Agency estimates that its voluntary labeling program for energy efficiency—ENERGY STAR—has directly prevented 38 million tons of GHG emissions and 140,000 tons of nitrogen oxides. Similarly, Danish researchers have

shown that if currently available energy-efficient computers were used in Europe, the reduction in air pollution would be equivalent to the displacement of 166,000 tons of GHG and 874 tons of sulfur dioxide.

Although tariffs are generally low for most energy-efficient products, room exists for additional tariff reduction. For example, MFN tariffs on electric water heaters were levied in 2001 at rates ranging from 2.7% (European Union) to as much as 35% (China).

Preliminary discussions at the OECD on opportunities to expand the trade in energy-efficient appliances through tariff reductions continue. Japan, for instance, has included energy-efficient consumer equipment on its list submitted for negotiation. In addition to the appropriate customs classification, the identification and reduction of nontariff barriers affecting these goods pose major challenges that must be overcome first.

SUSTAINABLE AGRICULTURE

Agriculture held the key to the success of the Doha Round and remains the deal breaker as WTO members scramble away from the debris of the Cancún Ministerial meeting in September 2003. Although the environment played virtually no part in the Cancún meeting, aside from deciding whether UNEP would be granted observer status in the CTE Special Session, expanding the EGS agenda to include agricultural products could extend market access to products of export interest to developing countries. The United States has expressed a certain openness to including organic agriculture products in the environmental goods and services list.

Produce grown in traditional, low-impact, community and family farms is increasingly falling under some kind of sustainability or organic nomenclature. Small-scale farms in developing countries are generally characterized by an absence of nearly all capital inputs such as pesticides, fertilizers, herbicides, and genetically modified seeds—for the simple reason that millions of small-scale, subsistence farmers cannot afford to purchase capital inputs. Consumers in Europe, Japan, the United States, and Canada are showing an increased preference for produce grown without pesticides or other chemical inputs (Yussefi & Willer, 2003).

The International Foundation for Organic Agriculture Movement compiled data on the organic food markets. It shows that the current global market for organic foods is U.S. $23 billion in 2002, with annual growth rates averaging 10% to 12% in the largest North American and European markets. Organic foods remain among the fastest-growing segments of the food sector (Yussefi & Willer, 2003). So far, genetically modified (GM) crops cannot be certified organic, though some of these technologies could be beneficial for the environment. Many argue that this growth is fostered by the introduction of GM crops. Outside of

Europe, buying certified organic food is the sole way for consumers who want to avoid this technology to ensure their food is GM free.

There is an opportunity to assist small-scale farmers in developing countries by extending the scope of the EGS coverage to include sustainable agriculture (see reference to Mexico above). Though segmenting the market on organic standards might be easier, sustainable agriculture includes a broad range of practices, such as reliance on heterogeneous organic and biological inputs to improve production, rain-fed irrigation, dry-land farming with a low ratio of irrigated land to crop output, crop rotation, and integrated pest management.

After examining classification issues related to organic foods, the United Nations Statistical Commission noted in 2002 that organic farming "should be considered as a different agricultural activity from farming using chemicals." All international bodies, including, for instance, the International Federation of Organic Agriculture Movements, that provide definitions for organic foods stress the close relationship between organic farm systems and the natural environment. Organic production processes could indeed be argued to produce a different product, because no pesticide residues are present to be tested at the border and consumers worried about eating these residues may not have to peal their fruits before eating them. Thus, the end product is different as a result of the process, and the products could thus be treated as product-related PPMs and thus not "like products."

The CODEX Alimentarius Commission, which is cited in the WTO Agreement on Sanitary and Phyotosanitary Measures and the Agreement on Technical Barriers to Trade as an example of a relevant international standard-setting body, defines organic agriculture in its voluntary guidelines as

> one among the broad spectrum of methodologies which are supportive of the environment. Organic production systems are based on specific and precise standards of production which aim at achieving optimal agro-ecosystems which are socially, ecologically and economically sustainable.

Of the growing list of organic products, coffee is a useful starting point. Grown almost exclusively in developing countries, coffee, in good years, surpasses all other goods except petroleum in value as a trade commodity, generating U.S. $11 to U.S. $15 billion in commerce per year. By definition, most small-scale coffee farms in developing countries produce sustainable coffee. For instance, the International Trade Center estimates that more than 90% of all coffee grown in Ethiopia is organic, even though no formal certification system is in place. The North American market for certified, shade-grown sustainable coffee is U.S. $152 million on the retail side, whereas the global market value (including

noncertified coffees that are marketed as sustainable, bird-friendly, organic, or named otherwise) is U.S. $565 million per year in retail sales (Giovannucci, 2001).

The link between organic produce from developing countries and trade negotiations was recently acknowledged by the U.S. Trade Representative Robert Zoellick, who noted in October 2003 during the negotiations leading to the U.S.–Central American Free Trade Agreement that there

> is a growing market in the United States for organic and environmentally friendly products. In this project, USAID [U.S. Agency for International Development] will join with the Humane Society to assist small producers in our Central American FTA [Free Trade Agreement] partners who want to sell organic products to high value specialty markets in the United States and elsewhere.

The opportunity to reduce tariff levels for sustainable agriculture could produce important benefits. In some instances, tariff levels on agricultural produce exceed 300%.

It is not clear where agriculture-based environmental goods would be negotiated. Some experts believe that organic agriculture would be negotiated within the Negotiating Group on Agriculture, but others feel it may be better to retain discussions on organic agriculture within the Market Access Group so that they do not get bogged down in the larger market access negotiations on agriculture and also turn faster benefits from the paragraph 16 modalities from the Doha mandate.

Conclusion

NEGOTIATION CHALLENGES

The Doha mandate on environmental goods and services has the potential to deliver tangible benefits in support of environmental, social, and economic objectives. Equally importantly, the green goods mandate can build on the more general commitment to widening developing countries' market access—one of the foundations of the Doha Development Round agenda—by supporting accelerated liberalization of trade in goods of particular interest to developing countries. Produce from sustainable agriculture represent one such situation.

However, success in environmental goods and services is not possible if countries fail to take account of the inherently dynamic characteristics of environmental markets. Two categories of green goods are apparently being excluded from current discussions among WTO member countries. These are consumer products that are given support in many

developed countries and in a growing number of developing countries, as well as environmental farm, textile, and apparel products from developing countries.

A great deal more research is needed in the area to delineate clearly which parts of the EGS market are competitive and which may lead to high concentration and elimination of nascent industries in developing countries. Addressing the current asymmetries while liberalizing global EGS markets may be critical to turning EGS liberalization into a sustainable development opportunity in the developing countries. A more competitive EGS marketplace will not only bring lower prices and more welfare across the developing world, but it will gear domestic firms toward a leveled playing field with international ones and release additional funds for more environmentally benign production technologies and innovations.

But EGS liberalization will only provide these benefits if (a) it is carried out in advance of broader liberalization and (b) if it takes into account the particular needs of the developing countries through special and differentiated treatment (S&DT). The concept of common but differentiated responsibility (CDR) is widely accepted in MEAs as an appropriate approach to addressing global environmental problems. The S& DT concept has historically been accepted in the context of trade liberalization and can be viewed as the corollary of CDR.

The focus of negotiations thus far has been on capital goods and services related to maintaining complicated environmental technologies. However, these represent neither the entire environmental market nor the most dynamic and visible portion of that market. Underlying the confusion of environmental approaches to defining EGS is a systemic problem of the WTO membership with regard to differentiating or conditioning market access for goods based on their production process characteristics. Therefore, the WTO has understandably focused its attention largely on goods and services that, by their application, result in environmental benefits. At the same time, because the production process issue remains highly divisive within WTO jurisprudence, current classification efforts in the WTO risk ignoring EGS that result from environmental considerations.

By attempting to dodge the PPM issue, the WTO also risks excluding environmental products and services for which developing countries have a strong comparative advantage, at a time when development issues are of the utmost importance for successful negotiations. For example, by placing classification work for environmental goods in the Non-Agricultural Market Access Committee, the WTO seems intent on excluding sustainable and organic farm produce, a niche market for which small-scale farms from developing countries have a comparative advantage. Other markets that would be excluded under the current tra-

jectory of WTO classification include nontimber forest products, sustainable forestry, and sustainable fisheries products.

POLICY OPTIONS

There are three ways to broaden EGS coverage while avoiding a divisive debate around PPMs. The first would entail identifying EGS on a product-by-product basis, focusing on those EGS that have the potential to deliver the greatest environmental benefits within a specific category or that have emerged to address pressing environmental problems at the national or regional levels.

The second would involve shifting the hapless debate within the CTE around MEAs toward a useful purpose. Because objectives codified in MEAs represent global consensus, the WTO could carve out a positive list of those EGS that help meet the objectives of MEAs. For example, shade-grown organic coffee, which is grown under standing tree canopies, permits 90% more bird life than modern monoculture coffee plantations do. Because habitat protection is a priority of the Convention on Biological Diversity, EGS that would further the goals of that convention could be included in an expanded EGS list (the EU has, for instance, mentioned the possibility of including environmental goods relevant to biodiversity).

Third, the contradiction that developing countries that stand to win from the broadening of the EGS definition are also those that have been the main opponents of environmental labeling and PPM issues in trade discussions (perceived as disguised protectionism from developed countries) could be addressed. To ensure that accelerated liberalization of EGS will improve rather than impair developing countries' market access, four initiatives could be pursued in tandem with EGS liberalization:

1. Any liberalization measures should include safeguard mechanisms to enhance competitiveness.
2. Special and differentiated treatment should be recognized as being a critical aspect of sustainable development and should be a foundation for EGS liberalization.
3. Work should begin on mutual recognition and equivalency of standards to ensure that market access for comparable goods and services is not limited by obstacles that developing countries often face in accessing third-party certification.[11]

11. An interesting initiative in that regard is that of the Global Eco-labeling Network (GEN). The GEN was first set out in 1994 as a forum for information exchange and cooperation among organizations operating ecolabelling programs and is now involved into the development and implementation of a more coordinated ecolabelling system. Information on GEN can be found on http://www.gen.gr.jp/

4. Capacity-building efforts and improvements in data are crucial for developing countries: Pro bono legal services should be established to help disentangle liberalization efforts for legitimate EGS from disguised green protectionism similar to the case of Chilean sardines. An international bank of these cases should be maintained to help developing countries assess the legitimacy of their claim before they invest considerable sums into the dispute settlement process. Resources should be allocated to help developing countries assess the impacts that different definitions of EGS would have on achieving their own sustainable development goals. Finally, countries should start including EGS of domestic importance in their national statistics to systematically record the main characteristics and evolution of these sectors.

Although the EGS liberalization negotiations represent an opportunity to take advantage of synergies between trade and environment, this will only occur if the challenges inherent in it are both recognized and overcome.

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