

# Liberalization of Trade in Environmental Goods for Climate Change Mitigation: The Sustainable Development Context

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By the International Centre for Trade and Sustainable Development (ICTSD)

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# Abbreviations

CDM	Clean Development Mechanism
EG	environmental goods
EGS	environmental goods and services
EPP	environmentally preferable product
EU	European Union
FDI	foreign direct investment
GDP	gross domestic product
HS	Harmonized Commodity Description and Coding System
ITA	Information Technology Agreement
IPCC	Intergovernmental Panel on Climate Change
PPM	processes and production methods
S&DT	special and differential treatment
UNFCCC	United Nations Framework Convention on Climate Change
WTO	World Trade Organization

## Summary of key issues, challenges:

- Trade is an important channel for the diffusion of climate mitigation goods. Lowering trade barriers brings their prices closer to world market prices, making them more affordable to consumers (industry and households) and bringing down climate mitigation costs overall. Lowering tariffs on climate mitigation goods can also contribute to UNFCCC technology transfer mandates by facilitating access to these goods.
- Trade barriers can be lowered autonomously. More importantly, countries can engage in multilateral, regional or bilateral trade negotiations to lower barriers with binding commitments.
- Trade liberalization is only one of a range of factors—including GDP, FDI, environmental regulatory frameworks and technical assistance—that affect actual trade in and diffusion of climate mitigation goods. Fiscal incentives, investment frameworks and intellectual property-related costs also determine access to, and affordability of, climate mitigation technologies.
- Many developing countries have other objectives, such as safeguarding sensitive industries and building domestic capacity, which may discourage them from pursuing all-out liberalization in climate mitigation goods.
- Negotiations on the liberalization of environmental goods and services (including climate mitigation goods) within the WTO Doha Round face some specific challenges. Definitional issues related to environmental goods remain unresolved. Complexities also exist with regard to their classification for customs purposes, making selective liberalization of climate friendly goods challenging. The modalities of liberalization also remain contentious.

## Summary of concluding thoughts:

- The liberalization of climate mitigation goods will bring benefits mainly to developed and a few middle-income developing countries, and may not lead to any environmental benefits in developing countries that lack purchasing power or have other import priorities.
- The negotiations under the WTO Doha Round may not result in an ambitious outcome on the liberalization of climate mitigations goods. In this case, other alternatives should be explored. These include negotiating an agreement within the WTO that would come into force only when a certain number of Members join, or a plurilateral agreement outside the WTO framework. Liberalization through RTAs, which would not necessarily need to single out EGS as a category, may provide a more straightforward option.
- Whatever the forum, any liberalization package will need to be complemented by a set of financial and technical assistance measures. While some measures may be accommodated within a WTO Agreement on EGS, others may require other appropriate institutional homes, such as the UNFCCC. Whether any link should be made between EGS negotiations and the UNFCCC process is debatable.
- The impact of trade liberalization for climate change mitigation efforts will only be as effective as the broader enabling framework within which it is put into play.

# Introduction

The Stern Review has highlighted the potential contribution trade liberalization in clean technologies could make to climate change mitigation. Such trade liberalization could contribute positively towards moving economies onto “low-carbon” trajectories to the extent that it drives diffusion and access to low-carbon and energy-efficient technologies as well as to renewable sources of energy.

Trade is an important channel for the diffusion of many climate mitigation technologies and goods. Few countries have the domestic capacities or know-how to produce all that they need. This is particularly true for developing countries, and although building domestic capacities may be their long-term goal, trade liberalization can provide rapid access to key technologies. Trade liberalization—whether locked in through negotiations at the WTO or elsewhere, or undertaken autonomously—can also lower the costs of environmental goods by allowing consumers (industries or households) to purchase them at world market prices.

A 2007 World Bank study, *International Trade and Climate Change*, points to the potential for liberalization in the area of low-carbon goods to lead to real increases in trade flows. According to Bank estimates, the removal of tariffs for four basic clean energy technologies (wind, solar, clean coal and efficient lighting) in 18 developing countries with high greenhouse gas emissions would result in trade gains of up to seven per cent. The removal of both tariffs and non-tariff barriers could boost trade by as much as 13 per cent. The net effect would, however, vary across technologies and across countries, depending on existing barriers and the import elasticities of demand.

Coupled with appropriate supportive measures, trade liberalization of climate technologies can also contribute towards fulfilling the technology transfer mandates contained within the UNFCCC. Similarly, trade liberalization can complement negotiations within the WTO Working Group on Trade and Transfer of Technology, which is mandated to “examine the relationship between trade and transfer of technology, and of any possible recommendations on steps that might be taken within the mandate of the WTO to increase flows of technology to developing countries.”

This paper will survey the key issues surrounding liberalized trade in low-carbon goods. It begins with an overview of progress to date in the WTO’s negotiations on environmental goods and services. The paper then asks what the limitations of the liberalization approach are. If the final objective is contributing to climate change mitigation by increasing the dissemination of low-carbon goods and technologies (while also fostering an open multilateral system of trade), then are there other efforts that need to be considered as necessary or desirable complements to lowering tariff barriers? Clearly, trade barriers are only one of an array of factors from fiscal incentives, the nature of investment frameworks, availability of finance and intellectual property-rights-related costs that determine access to and affordability of climate mitigation technologies. To conclude, the paper asks what modalities are available for liberalizing trade in low-carbon goods, both within and outside the WTO.

## Key issues

### The context of the Doha EGS negotiations

Paragraph 31(iii) of the Doha mandate, agreed by all WTO Members in 2001, calls for a reduction or, as appropriate, elimination of tariffs and non-tariff barriers on environmental goods and services. This mandate offers a good opportunity to put climate-friendly goods and services on a fast track to liberalization, although, as the negotiations to date have shown, this is not a simple proposition.

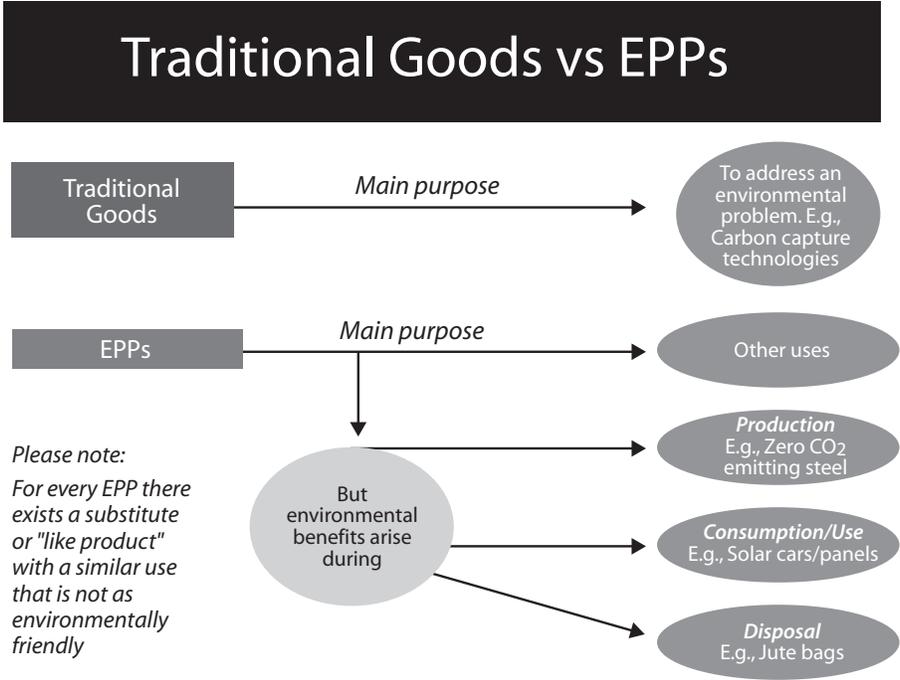
In principle, countries can derive the benefits of wider access to EGS by undertaking liberalization autonomously. However, trade negotiations in the WTO are expected to result in binding, predictable market access, as well as greater market expansion due to the scale of participation. In regional trade agreements, where the aim usually has been the liberalization of all goods and services, a separate, more ambitious EGS mandate has seldom been included.

Since the WTO is the only trade negotiating forum with a specific EGS mandate at present, this section will survey the key negotiating issues and challenges that have arisen in the WTO context, although more work is clearly needed to assess the prospects for pursuing opportunities within other fora, such as regional and bilateral trade agreements. The focus will be on goods, as negotiations have been more active in this area—although climate-related services also are key from a mitigation perspective.

### Issues of product coverage: What to liberalize?

*Defining and classifying climate-friendly goods.* The lack of a universally accepted definition of environmental goods has slowed down agreement on product coverage in negotiations on environmental goods. Two broad categories of EGs have featured in the WTO discussions so far: *traditional environmental goods*, with the main purpose of addressing or remedying an environmental problem (e.g., carbon capture and storage technologies); and *environmentally preferable products (EPPs)*, which include any product with certain environmental benefits arising either during the production, use or disposal stage *relative* to a substitute or “like” product. Figure 1 below provides some examples of products from both categories.

Figure 1



Source: Claro et al., 2007.

Introducing an additional layer of complexity, products can be environmentally preferable, either due to improvements in embedded technology (e.g., more energy-efficient variants of the same good, such as a car) or as compared to a different product (such as solar cookers versus wood-burning stoves).

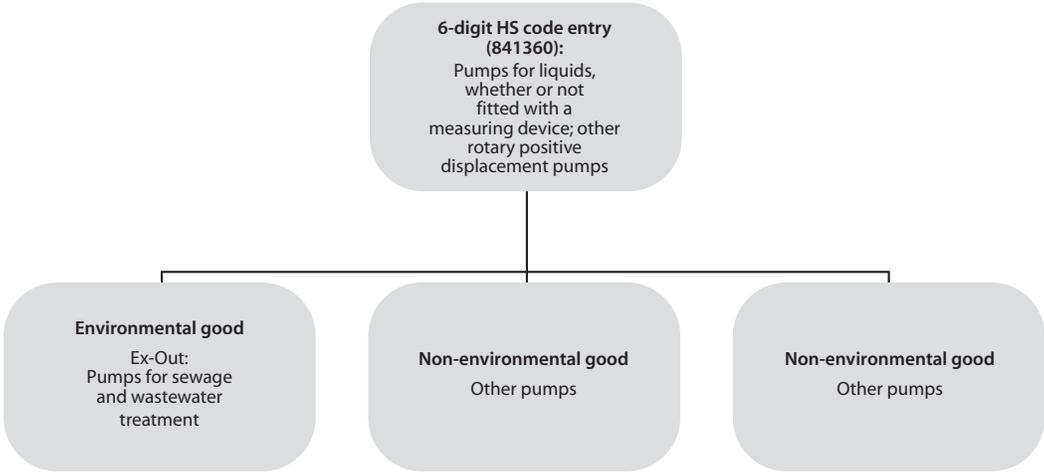
In terms of classification, categories and sub-categories of goods are assigned a code within the Harmonized Commodity Description and Coding System (HS), allowing countries to track trade volumes and tariff levels. The more digits are included in a code, the more specific the description of the good is. At the WTO, countries have HS numbers for products only up to the six-digit level. Beyond that, as product descriptions get more specific, different members use different codes and descriptions. This makes it difficult to clearly identify EGs, including climate mitigation goods, at the six-digit level. They are often lumped together with other goods that are unrelated to the environment or climate mitigation. For example one list of proposed products contains HS-8413.81: “pumps for liquids, whether or not fitted with a measuring device; other pumps”. Such pumps are often used by wind turbines for energy storage. But at the six-digit level of generality it is impossible to separate those pumps used in this manner from pumps used in any number of other applications. While it is possible to identify and liberalize specific goods using “*ex-outs*” beyond the HS-6 digit level, Members need to agree on product codes, or at least product descriptions in the area of climate mitigation, which can be a time-consuming process.

“*Processes and production methods (PPMs),*” *relativity and evolving technology.* Most WTO Members have not accorded “environmental goods” status to otherwise “like” products that have been produced using methods friendlier to the environment. This is due to the difficulty of distinguishing such products within the HS system and challenges of harmonizing standards and labelling, as well as to systemic concerns with regard to other non-product-related standards making their way into the WTO system as a basis for differentiated treatment. Even for products where the environmental benefits do not depend on PPMs, many are only relatively eco-friendly. Hybrid cars, which can be compared to electric cars, provide one example. Moreover, technological change could make existing “relatively friendly” EGs obsolete tomorrow. How should trade negotiations respond to these challenges? Once lowered and bound, tariffs cannot be raised again for obsolete products. At the very least, newer products that emerge should automatically benefit from trade benefits accorded to the obsolete one. If relatively clean goods are accorded preferences, should we distinguish based on national-level baselines, or some internationally set baseline? Predominant methods of production differ dramatically across countries. Some experts, including Mytelka (2007), argue that only truly “clean” technologies should benefit from EG liberalization—as opposed to “relatively cleaner” products, but then we are left with the challenge of defining truly clean—particularly challenging as one takes a longer-term perspective.

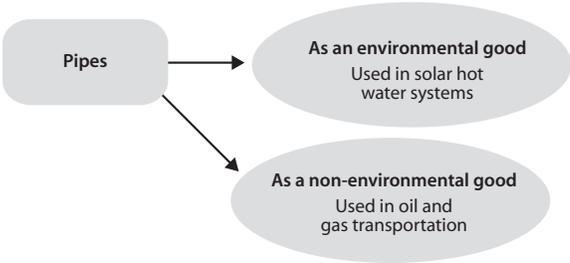
*The dual-use problem.* The dual use problem is one of most important challenges facing EG negotiators. It arises from the fact that most product categories proposed by WTO Members as EGs for rapid liberalization include, at the HS-6 digit level, other products that also have non-environmental uses. In other cases, a specific *ex-out* product, such as a pipe, may intrinsically be dual-use and used for environmental and non-environmental purposes. Pipes, for instance, are used as components of sewage treatment plants as well as for transporting oil and gas. The two types of dual-use products in terms are illustrated below.

Figure 2: Types of dual-use products

Dual-Use: Type 1



Dual-Use: Type 2



Most developing countries are hesitant to liberalize bound tariffs on dual-use products such as valves and pumps due to concerns about the impact of such overarching liberalization on their established domestic industries. Proponents of these liberalization efforts argue that the environmental benefits would be limited if liberalization was confined only to a handful of products used solely for environmental purposes.

*The distribution question.* A big challenge for the EG negotiations is to include products of export interest to developing countries. The perception so far has been that EGs—being capital- and technology-intensive—are of export interest only to developed countries and a few middle-income developing economies. Others, such as Hamwey (2005), see significant export opportunities for developing countries in a large number of lower-tech environmental goods, such as parts and components. However, these also happen to be the “dual-use” products with which most developing countries have concerns.

Undoubtedly, many developing countries such as China and India have emerged as leading producers in clean energy sectors such as wind and solar energy, and Brazil is a world leader in biofuel manufacturing equipment. According to the World Bank (2007), exports of clean energy products such as efficient lighting are growing rapidly from many developing countries. Analysis by Dr. Veena Jha (2008) reveals that

China and Mexico were among the top 10 exporters in various categories of EGs relevant to climate change mitigation discussed in the WTO. On the other hand, interest in the inclusion of agricultural products by Latin American countries, and particularly ethanol by Brazil, has met with some degree of resistance by traditional developed-country EG proponents.

## Issues of modalities: How to liberalize?

*Approaches to liberalization.* In addition to issues of product coverage, the question of how to approach the liberalization exercise has been another big stumbling block to progress in the Doha Round negotiations on EGS. For many developing countries, this issue needs to be resolved before the talks can progress to product coverage. Fundamentally, many developing countries are unwilling to commit to bound liberalization on lists that comprise mostly dual-use products. Some have therefore proposed their own alternative approaches to liberalization.

The *List Approach* is favoured by the so called “Friends of Environmental Goods,” comprising Canada, the European Union, Japan, Korea, New Zealand, Norway, Chinese Taipei, Switzerland and the United States. The approach essentially consists of identifying and submitting lists of what members regard as environmental goods of interest for accelerated and permanent liberalization by reducing or eliminating bound tariffs. India’s *Project Approach* proposes liberalizing any good or service intended for a specific environmental project as approved by a Designated National Authority for CDM project activities and based on criteria developed by the WTO’s Committee on Trade and Environment. Such liberalization would be temporary, lasting for the duration of the project, and domestic implementation of the criteria would be subject to WTO Dispute Settlement. The *Integrated Approach* proposed by Argentina resembles the project approach but with further identification of goods used in the various approved projects. Both approaches were driven by concerns of ensuring “environmental end-use” of products that are mainly dual-use. A third approach—the *Request Offer Approach*—has been proposed by Brazil whereby countries would request specific liberalization commitments from each other on products of interest to them and extend tariff cuts they deem appropriate equally to all WTO members. Some Members have informally proposed combining various approaches, depending on whether the good in question was single or dual-use. At the time of writing, there appears to be no resolution on which approach or combination of approaches to follow.

The World Bank report (2007) has proposed accelerated liberalization of products, technologies and services used in CDM projects. According to the report, such liberalization could reduce equipment costs and contribute to lowering transaction costs for potential investors as long as they were complemented by certain measures, such as supportive local regulatory measures.

*Technology transfer and special treatment of developing countries.* During the course of negotiations, many countries, including China, have stressed the need to facilitate technology transfer. Canada, among others, has stressed technology transfer as occurring through aid, private investment, technical assistance, partnerships between research organizations and small companies, and trade in environmental technologies themselves. Others, such as Cuba, prefer a differentiated treatment for developing countries, including transfer of technologies on favourable and preferential terms with related know-how and necessary training. Lack of adequate attention to technology transfer remains one of the main complaints with regard to the “list” approach. No WTO Member has, however, proposed a practical way to operationalize technology transfer through WTO EGS negotiations.

*Other cross-cutting issues:* that have been raised during EG discussions include the need to identify and deal with non-tariff measures and ensure special and differential treatment (S&DT) for developing countries. Various S&DT proposals—such as multiple product lists with different rates of tariff reduction, sensitive product exemptions and longer implementation periods—have been made by various WTO Members.

*Climate-relevant proposals.* From a climate mitigation perspective, the EG negotiations have seen proposals from Qatar, the “Friends,” and, more recently, from the United States and EU, which have included “climate-friendly” goods. Early on in the negotiations, Qatar proposed liberalizing natural gas fired generation systems and advanced gas generation systems, citing a reference to its benefits under the UNFCCC. Qatar also referred to the IPCC Assessment Reports, which recommended increased use of natural gas over other fossil fuels as a way to reduce greenhouse gas emissions.

The “Friends” proposed a list of 153 products, which included categories such as renewable energy products, solid waste management, and heat and energy management products. On 30 November 2007, the United States and EU proposed accelerated liberalization of goods and services relevant to climate change mitigation, including zero tariffs by 2013 for 43 products that were identified by the World Bank from the “Friends” 153 list as being relevant to climate change mitigation. There were to be longer phase-in periods for liberalization by developing countries and participation was made optional for least developed countries. The list of 43 goods included a wide variety of products such as solar collectors and system controllers, wind-turbine parts and components, stoves, grates and cookers and hydrogen fuel cells. The list was supposed to be a starting point for discussions rather than an exhaustive one. The United States and EU further suggested the negotiation of an innovative Environmental Goods and Services Agreement modelled on the existing WTO Information Technology Agreement (ITA) that would include other, non-climate related EGs as well. Relevant climate mitigation services such as engineering, maintenance and technical testing were also covered.

Despite the United States pointing out that it was a net importer of these 43 goods and that developing countries such as China, Mexico, Malaysia, Chinese Taipei and Indonesia were among the top exporters, many developing countries questioned the “development dimension” of the proposed list. Brazil criticized the exclusion of ethanol from the list. Many developing countries were concerned that the “climate goods” list, as with most other environmental goods proposed in the WTO, included dual-use products.

## Other Proposals

Over the course of time a number of creative proposals have been put forward by external experts that could merit consideration from WTO negotiators as they struggle to resolve the issues of product coverage as well as the approach to liberalization. Rob Howse and Petrus Van Bork for instance, in a paper undertaken for ICTSD (Howse, 2002) have proposed a dutydrawback scheme for products which are intended for an environmental end-use. Under this scheme, the duty collected at the border for “dual-use” products is refunded based on an application by the final purchaser certifying an environmental end-use for the product. Instead of being required under any prospective environmental goods agreement to provide a preferential rate of tariff to the importer of an environmental good, WTO Members could charge the existing MFN bound rate at the border, but be bound under WTO law to remit the duty upon presentation of a valid request by the end-user, accompanied by a certification that the product has indeed been used in a manner that yields the environmental benefits at issue. Howse and Van Bork also extend this scheme to include environmentally preferable products in cases where, for any particular reason, a system based on the presentation of a certificate of conformity is not considered practical. In such cases, the producer of the EPP would pay the normal MFN rate of duty at the border, but the producer of the EPP 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. Howse and Van Bork emphasize that such schemes are already in existence and hence there would be no need to create a new legal or institutional mechanism or framework to administer duty-drawbacks (Howse. and van Bork 2006). Some critics have however pointed out the administrative burden imposed by such a process as well as the possibility of corruption and diversion of products meant for environmental end-used to other uses.

Cottier and Baracol-Pinhão (forthcoming) in a recent paper advocate an environmental area initiative (EAI) approach, organising EGS negotiations on the basis of a prior identification of specific sustainable development target areas and goals. Adopting such goals and targets would partly draw from commitments to the UN MDGs and obligations under existing MEAs. Cottier and Baracol advocate the selection of environmental goods by using environmental services as a starting point. Goods are to be liberalized if one or the other of these conditions is met: (a) the good is essential to the delivery of the said services, or (b) it is a good or cluster of goods that is common to more than one type of environmental service. The EAI approach takes this into account by providing the necessary flexibility for Members to choose the mix or package of services and goods that corresponds to their national environment priorities (which could include for instance CDM projects). Under EAI, negotiations would cover tariffs, making use of listings, non-tariff measures and services, technical cooperation, as well as linkages to other regulatory areas, including IPRs to the extent they are relevant for the chosen field. Cottier and Baracol also advocate the liberalisation of EPPs on a separate track in order to provide meaningful export benefits to developing countries, although they also provide the possibility of special and differential treatment under which developing countries may choose not to liberalise these products.

Stillwell (2008) advocates a similar approach of starting by identifying environmental activities and categories as proposed by a number of WTO Members and then deciding on product coverage on the basis of a number of criteria such as (i) contribution to the fulfillment of environmental priorities (ii) direct use in addressing environmental problems (iii) direct environmental benefit arising from their use (iv) not having significant other non-environmental uses and (v) offering export opportunities for developing countries.

The author has also suggested the possibility of combining list and project approaches based on whether the products were single-environmental use, or dual-use. To this the request-offer approach by Brazil could also be added. Products could be further selected after screening on the basis of their dynamism in exports, sensitivity in terms of import liberalization or tariff-revenue, their use in the delivery of environmental services and subject to differentiated treatment in terms of depth, pace and sequencing of liberalization. (Sugathan *et al.*, 2007) While these are valuable suggestions, the question of whether to include dual use goods, and if so which ones, and the question of what is an ‘essential’ environmental good will remain subject to debate. Any revisions to the HS-codes that might be necessary to better capture environmental end-use products or PPM-based EPPs will be time consuming, so the best course may be to agree at least on a common set of product descriptions. Further, in the case of proposals like the dutydrawback scheme, administrative capacities and weaknesses in many developing countries will need to be considered. Perhaps this could be an area where technical assistance including that in trade facilitation negotiations could play a role.

## Beyond liberalization

This paper has identified some of the key issues and challenges pertaining to environmental goods negotiations that also affect liberalization efforts for climate mitigation goods. At this stage it is useful to ask whether EG liberalization can address climate mitigation efforts in a broader sustainable development context. The answer appears to be that trade liberalization by itself may not be sufficient or only have a miniscule impact. A whole host of complementary measures—regulatory, capacity building, financial and technology-related—will be required. In this regard, analysis of the Friends’ 153 EG list by Jha (2008) is revealing. Jha clearly shows that demand for these products may be determined by factors other than tariffs such as gross domestic product (GDP), foreign direct investment, enforcement of environmental regulations (shown by environmental performance indices) and the number of bilaterally funded “environmental” projects. For instance, many African countries already have very low tariffs on many environmental goods, but little or

no imports because their GDPs are constrained and they have other import priorities. Trade liberalization with a lack of purchasing power will certainly not help.

Further, while categories such as renewable energy and heat and energy management appear sensitive to tariffs, long-term dynamic comparative advantage (until 2015) in these products lie with developed countries (for renewable energy) and with middle-income developing countries (for heat and energy management products). It is thus important to ensure that benefits from trade liberalization also accrue to the poorer developing countries that may either lack resources to import such products or the capacity to produce, operate and deploy them.

Intellectual property rights may also act as a barrier to access, particularly in emerging climate technologies. Trade liberalization alone may not result in “take-off” of a technology in developing countries if costs are kept high due to high licensing fees or royalty payments. For a more in-depth discussion on this set of issues, see the background paper in this series, *Climate Change, Technology Transfer and Intellectual Property Rights*.

From a long-term perspective, it will also be essential to help developing countries build up their own productive and technological capacities in this area. The World Bank report calls for smarter trade as an adjunct to freer trade, and proposes bundling trade liberalization with a package of technical and financial assistance. The question of how to operationalize this understanding is pursued in the concluding section that follows.

## Additional opportunities for liberalization of low-carbon goods

With regard to trade liberalization, it is by no means certain that the Doha Round of negotiations will achieve what may be a desired level of trade liberalization with appropriate provisions that respond to the totality of developed and developing country interests. This is due to the complex political economy dynamics that will influence an eventual outcome, including progress in critical areas of the Doha negotiations, such as agricultural and industrial market access, concerns about impacts of liberalization on domestic industries and tariff revenues, as well as the inclusion (or lack thereof) of products of developing country export interests—including agricultural products.

This raises the issue of alternatives where liberalization initiatives for climate mitigation goods and services may be pursued. Within the WTO, Members might wish to consider initiatives similar to the ITA, which was open to voluntary participation—but concessions were extended on a most favoured nation basis to all WTO Members. The agreement could come into effect when a certain number of Members, constituting a minimum percentage of trade in these products and services, joined. Such an agreement could lie within the WTO Framework and could be tied to the timeline for conclusion of Doha Round talks. Another option is a plurilateral agreement similar to the WTO Government Procurement Agreement, which members could opt to join or to stay outside of. The trade concessions would extend only to participating Members. Such an agreement could also eventually be made multilateral (with benefits extending to the entire membership) once a minimum number of countries, constituting a certain percentage of trade in these products and services, joined.

Both options would, however, still need to deal with the challenges that apply to the Doha EGS negotiations—particularly in terms of product classification. Another possibility would be to pursue liberalization of “climate mitigation” goods and services through regional trading agreements or bilateral free trade agreements. In such cases there usually is no need for a separate EGS mandate, as the objective is to liber-

alize “substantially all trade”—although it may be possible to single out certain EGS for earlier liberalization. Because of the greater ambition of liberalization in regional trading agreements, dual-use of environmental goods may be less of a concern as compared to the situation in WTO EGS negotiations.

Whatever the forum for liberalization, it will be important to include it within a broader package consisting of complementary initiatives such as special and differential treatment and technical and financial assistance. The impact of trade liberalization for climate change mitigation efforts, as with most other sustainable development objectives, will be only as effective as the broader enabling framework within which it is put into play.

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