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1 April 2009

Online at <https://mpra.ub.uni-muenchen.de/18343/>  
MPRA Paper No. 18343, posted 06 Nov 2009 06:19 UTC

The previous version: April 1, 2009

This version: September 1, 2009

## **Liberalizing Climate-Friendly Goods and Technologies in the WTO: Product Coverage, Modalities, Challenges and the Way Forward<sup>1</sup>**

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### **Abstract**

The Doha Round Agenda (paragraph 31(3)) mandates to liberalize environmental goods and services. This mandate offers a good opportunity to put climate-friendly goods and services on a fast track to liberalization. Agreement on this paragraph should represent one immediate contribution that the WTO can make to fight against climate change. This paper presents the key issues surrounding liberalized trade in climate-friendly goods and technologies in WTO environmental goods negotiations. It begins with what products to liberalize and how. Clearly, WTO environmental goods negotiations to date show that WTO member countries are divided by this key issue. Focusing on the issue, the paper explores options available to liberalize trade in climate-friendly goods and technologies, both within and outside the WTO, and along with these discussion, discusses how to serve the best interests of developing countries.

*JEL classification:* F18, F13, Q56, Q54, Q58, Q48

*Keywords:* Environmental goods and services, Low-carbon goods and technologies, Doha Round, WTO

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<sup>1</sup> Prepared for *Trade and Environment Review 2009*, a flagship publication of the United Nations Conference on Trade and Development (UNCTAD). It has benefited from helpful comments from Ulrich Hoffmann and Darlan F. Martí. That said, the views expressed here are those of the author, and do not reflect the positions of his affiliations and the UNCTAD. The author bears sole responsibility for any errors and omissions that may remain.

## **1. Introduction**

The Doha Round Agenda (paragraph 31(3)) mandates to negotiate “the reduction or, as appropriate, elimination of tariff and non-tariff barriers to environmental goods and services (EGS).” This mandate offers a good opportunity to put climate-friendly goods and services on a fast track to liberalization. Agreement on this paragraph should represent one immediate contribution that the WTO can make to fight against climate change (Lamy, 2008).

Climate-friendly technologies (or goods) refer to those the production of which or the utilization of which reduce climate risks to a greater extent than alternative technologies for producing the same product (or alternative products that serve the same purpose). Climate-friendly technologies include those aimed at improving energy efficiency or increasing energy generation from new and renewable sources and goods. Liberalizing such climate-friendly technologies, goods and services contributes not only to increasing the choices available for importing countries, but also to lowering the costs of those choices for those countries to either comply with existing and future greenhouse gas (GHG) emission commitments or to limit the growth of GHG emissions. The resulting market expansion from trade liberalization will put a downward pressure on prices in home country markets and increase competition between imported and domestic goods, thus further lowering the compliance costs. By increasing the dissemination of climate-friendly goods and technologies at a lower cost, trade liberalization will make it less difficult to set stringent GHG emission targets beyond 2012, given that the world’s GHG emissions should be cut at least in half by 2050 that the IPCC argues necessary in order to avoid dangerous climate change consequences.

This paper will focus on environmental goods (EGs), as that is the area in which negotiations within WTO have to date been more active. This by no means undermines the importance of environmental services in preserving the environment and mitigating climate change. Indeed, many services directly address climate change mitigation.

## **2. What Products to Liberalize and How?**

### ***2.1. Negative Approach versus Positive Approach***

To identify which goods and services to ban or promote, a basic distinction can be drawn between negative and positive approaches. A negative approach would be to identify specific goods and services that countries should be required to ban for trading. The Montreal Protocol on Substances that Deplete the Ozone Layer, which was signed in 1987 and has since been amended and strengthened, has taken this approach. The Montreal Protocol uses trade measures as one enforcement mechanism among several policy instruments for achieving its aim of protecting the ozone layer. Parties to the treaty are required to ban trade with non-parties in ozone-depleting substances (ODS), such as chlorofluorocarbons (CFCs) in products containing them (e.g. refrigerators), and potentially in products made with but not containing CFCs, such as electronic components. This latter provision has not yet been implemented primarily because of

problems of detection, and also because of the small volumes of CFCs involved. These trade measures have been extended gradually to all the categories of ozone-depleting substances covered by the Montreal Protocol (Brack, 1996; Zhang, 1998). Accompanied with finance and technology transfer mechanisms, this approach has been effective in phasing out ODS and contributing to the recovery of the ozone layer (Zhang, 2009a).

It is clear which products must be banned under the Montreal Protocol, but it is less straightforward to identify products that should be banned in relation to carbon abatement and climate change mitigation. Every product or technology causes environmental harm or affects the climate to some degree. A climate-friendly product or technology is just a concept of relative environmental performance. Such a product or technology tends to be sector- and country-specific, and is subject to change over time. For example, natural gas is less carbon-polluting than coal. Shifting to natural gas has been identified as part of the solutions for climate change mitigation. This has been the main reason why Qatar, in its submission to WTO, has proposed liberalizing natural gas and natural-gas-related technologies as a way to reduce GHG emissions. But natural gas is more carbon-polluting than wind power that emits zero carbon emissions when operating. A coal-fired power plant is more carbon-polluting than one which uses natural gas, but if coupled with carbon capture and storage (CCS) technology, it is more climate-friendly than a natural-gas-fired power plant without CCS. Besides, a country's choice of fuels and technologies depends to a large extent on its resource endowments and their relative prices. The fact that countries like China and India use more coal is not because they prefer it, but because of their abundant supplies of coal and its relatively lower price compared with its more environmentally friendly substitutes. Thus, while some countries or regional agreements (e.g. North American Free Trade Agreement) may have a negative list on services or on investments in certain technologies which are restricted, it is most unlikely that countries will broadly agree on a list of goods that need to be banned. Moreover, arguably, for the purpose of meeting a climate change mitigation objective, any likely ban or restriction would tend to be on goods that emit high levels of GHGs. This will face resistance from countries that object to the use of trade restrictions based on process and production methods (PPMs), partly because it is difficult for customs officials to distinguish between high and low GHG-emitting products. In addition, there is uncertainty about WTO compatibility in distinguishing a product based on the way that product is produced, rather than on the final product's characteristics. There is also controversy over whether WTO jurisprudence has moved beyond the PPM concept (Zhang, 2004; Zhang and Assunção, 2004; Howse and Van Bork, 2006). Thus a negative approach will not work in a post-2012 climate regime.

By contrast, a positive approach, which seeks to identify certain goods and services for enhanced market access, holds some promise. Establishing a list of goods, technologies and services in which trade is encouraged has its own problems, but is easier than having a common list of goods, technologies and services that need to be banned.

## ***2.2. List, Project, Integrated and Request-Offer Approaches***

The question then is which EGs and services need to be encouraged. Identifying them depends on their definition. Given their conceptual complexities and a lack of consensus

on their definition, WTO members have persistently disagreed over how to identify which EGSs should be subject to trade liberalization. Three approaches have been proposed in the WTO negotiations. The OECD advocates a list-based approach, whereby goods and services on an agreed list will gain enhanced market access through the elimination or reduction of bound tariffs and non-tariff barriers (NTBs) permanently and on a most-favored-nation (MFN) basis. Such lists have been produced by the OECD and by the Asia-Pacific Economic Cooperation (APEC) group. The two lists have 54 goods in common at the Harmonized Commodity Description and Coding System (HS) 6-digit level. However, 50 goods on the APEC list do not appear on the OECD list, while 68 goods on the OECD list do not appear on the APEC list. The main difference between the two lists is that only the OECD list contains minerals and chemicals for water/waste treatment, while the APEC list includes a relatively more extensive set of goods needed for environmental monitoring and assessment. The OECD list also contains a large number of environmentally preferable products (Steenblik, 2005). Taking the OECD or APEC lists of EGs as reference points, the so-called “Friends of Environmental Goods” group of countries, comprising Canada, the EU, Japan, the Republic of Korea, New Zealand, Norway, Switzerland, Taipei, Taiwan Province of China, and the United States proposed in April 2007 a list of 153 products. Just prior to the United Nations Climate Change Conference in Bali in December 2007, the EU and the United States submitted a joint proposal at the WTO calling for trade liberalization of 43 climate-friendly goods that were identified by the World Bank (2007) from a list of the Friends’ 153 products, with the aim of securing a zero tariff for these climate-friendly goods by 2013.

Many developing countries have consistently expressed concerns about using a list of environmental goods slated for expedited liberalization, noting that a number of products on such a list are primarily of export interest to industrialized countries, thus compromising the development dimension.<sup>2</sup> And the Indian Ambassador was quoted as saying that this EU-United States proposal was “a disguised effort at getting market access through other means and does not satisfy the mandate for environment” (ICTSD, 2007a). Another sticking point is related to the issue of dual use, in that many product categories proposed on an EGs list include, at the HS 6-digit level, other products that have non-environmental uses in addition to environmental uses. In response, India has advocated a project-based approach, whereby each WTO member would designate a national authority to select environmental projects based upon criteria developed by the Special Session of the Committee on Trade and Environment and whose domestic implementation would be subject to WTO dispute settlement. The EGs and services required for a thus selected environmental project would temporarily enjoy preferred market access for the duration of the project. India has argued that the project approach would ensure that the approved EGSs are used for environmental purposes. Argentina has proposed an integrated approach that aims to bridge the gap between the list approach

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<sup>2</sup> The United States Trade Representative rejected complaints that the EU-United States list consisted only of products of export interest to industrialized countries, pointing out that in 2006 the United States was in fact a net importer of the 43 products, with US\$18 billion in imports of such products, surpassing exports by US\$3 billion, and citing China and Mexico as the two top sources for those products (ICTSD, 2007c).

and project approach. It resembles the project approach but with multilaterally agreed pre-identified categories of goods used in the approved projects. Brazil has suggested a request-offer approach, whereby countries would request specific liberalization commitments from each other on products of interest to them and then extend tariff cuts deemed appropriate equally to all WTO members on an MFN basis. Brazil has argued that this approach follows along the lines of previous GATT/WTO negotiations and takes into account developing-country interests more adequately than the common list put forward by the EU-United States submission (ICTSD, 2007a,b). An analysis of the Friends' 153 EGs list by Jha (2008) indicates that a handful of developing countries are among the top 10 importers and exporters in various categories of EGs relevant to climate change mitigation. Based on these findings, she suggests that these countries could usefully engage in a request-offer approach to ensure trade gains. In this way, while the benefits of trade liberalization may be multilateralized, the cost would be borne by only a few players. These would be the very players that have a lot more to gain through liberalization.

All these different arguments clearly suggest that some WTO members have yet to be convinced of the climate mitigation credentials of some of the products that Europe and the United States have proposed. Moreover, advancing technologies will inevitably eclipse the continuing merits of some existing products. Thus an exclusive focus on the liberalization of these existing products raises the risk of being locked into current patterns of international trade in technologically advanced climate change mitigation products (i.e. producers of technology and importers of that technology). Furthermore, the developing world is in search of both an economic and an environmental gain through these negotiations under the Doha Round – and rightly so (Lamy, 2008). Even if these negotiations are on environmental issues, they must nevertheless deliver a trade gain if they are being conducted through the Doha Round of the WTO.

### **3. The Way Forward**

There are significant export opportunities for developing countries in a large number of low-tech EGs in the core list of environmentally preferable products developed in a study by UNCTAD (2005), and they also happen to be dual-use products (Hamwey, 2005). However, most developing countries are hesitant to liberalize bound tariffs on dual-use products due to concerns about the adverse impact of such broader liberalization on their established domestic industries and jobs and, in some cases, on their tariff revenues (ICTSD, 2008; World Bank, 2007). They insist in applying a single end-use parameter in screening EGs, and only those indentified EGs based on this parameter would then be taken up for tariff reduction negotiations (Howse and Van Bork, 2006). Isolating products of single environmental use requires assigning clearer HS codes or product descriptions for environmental goods. The HS allows countries to track trade volumes and tariff levels. The more digits there are in a code, the more specific is the description of the product. Currently, HS numbers for products are only harmonized cross WTO members up to the six-digit level. However, many HS product categories at the six digit level contain products that have both non-environmental uses and environmental uses. Clearly

identifying goods of single environmental use needs to go beyond the six digit level. However, no uniform code exists beyond this level. So, as product descriptions get more specific, different WTO members use different codes and descriptions. To identify and liberalize specific goods of single environmental use, including those climate mitigation goods, WTO members need to harmonize at least the ex-out product descriptions cross countries. However, harmonizing HS codes beyond the six digit level will be time-consuming and would not be viable, given the short time horizon for a possible conclusion of the Doha Round and the timing of review cycles of the World Customs Organization, which considers HS amendments once every five years, with the latest amendment in June 2004 and entered into force on January 1, 2007 (see Vikhlyayev (2009) for further discussion on dual-use and the limitations of the HS nomenclature).

What are the other options that need to be explored to accelerate liberalization of EGs? Arguably, countries are likely to agree upon a narrow choice of climate-friendly products that would be acceptable to a broader range of countries rather than a broader range of products that would be acceptable to only a few countries. One way forward along this line is to focus initially on specific EGs sectors in which the interests of both developed and developing countries coincide in fostering trade liberalization. Increasing energy efficiency is widely considered the most effective and lowest cost means of cutting GHG emissions, and trade in renewable energy equipment in developing countries appears sensitive to tariff reductions (Jha, 2008). Moreover, industrialized countries are set to take on higher proportions of renewable energies in their energy mix, either in order to comply with their GHG emission targets or with the aim of reducing their dependence on foreign oil, or both. Thus the initial round of liberalization should include renewable energy products and energy-efficient technologies. The World Bank (2007) estimates that the removal of tariffs for four basic clean energy technologies (clean coal, efficient lighting, solar and wind) in 18 large developing countries would result in a trade gain of up to 7 per cent. The trade gain could be boosted by as much as 13 per cent if non-tariff barriers on those technologies were also removed. These gains, which were calculated based on a static trade analysis, were considerably underestimated because they failed to take into account the dynamics of these EGs (i.e. trends in growth of their export levels and the size of their world export market). In addition to the trade gains, using these more climate-friendly technologies and products to replace those that are more GHG-polluting will translate into a significant reduction in GHG emissions. Therefore, clearly, liberalizing trade in low-carbon goods and technologies would serve both trade and climate mitigation interests.

A “procedural” area of accelerated liberalization relates to products, technologies and services used in small-scale CDM projects (e.g. micro-hydro projects, efficient cooking and efficient lighting) and programmatic CDM.<sup>3</sup> The CDM has been partially successful (Zhang, 2008): the global number of CDM projects registered and in the pipeline by

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<sup>3</sup> Van der Gaast and Begg (2009) argue that programmatic CDM is highly suited to energy efficiency improvement projects in households (e.g. cooking, lighting) and industry (e.g. one technology applied within an industrial sector at different locations but under similar circumstances).

October 1, 2009 totalled 4,673 (UNEP Risoe Center, 2009) – well above what was envisioned by countries when they negotiated, designed and launched this mechanism. However, the lion’s share of these CDM projects has gone to a handful of major developing countries like China and India, whereas many countries, especially those in sub-Saharan Africa, have been left out. One of the main reasons is that the transaction costs associated with the CDM project cycle have seriously hampered small-scale CDM projects in these countries. Although registration fees are set considerably lower for small-scale CDM projects, and simplified methodologies and procedures are also set for those projects, many other transaction costs are independent of project size and will thus have a bigger relative impact on small-scale CDM projects. Programmatic CDM, which bundles together small-scale CDM projects or a programme of activities, makes a better contribution to sustainable development and communality empowerment than a single CDM project, but it entails high transaction costs. Thus, liberalizing products, technologies and services in this area could reduce equipment costs and contribute to lowering transaction costs for potential investors. This would facilitate capitalizing on the untapped potential of programmatic CDM and extend the mechanism’s reach in terms of both project type and geographical spread.<sup>4</sup>

Even in these two areas, developing-country concerns about the possible impacts of liberalization on their domestic industries would need to be addressed before a deal could be hammered out. This applies particularly to environmental goods and technologies that developing countries are not competitive in producing. For example, with regard to wind turbines, India has imposed very high tariffs with the aim of encouraging domestic production and jobs, and China has put in place a local content requirement (Alavi, 2007; Zhang, 2008). These policies act as barriers to foreign suppliers of wind turbines, and are seen as beneficial for local wind turbine makers. Indeed, the three largest local turbine makers in China – Sinovel Wind, Goldwind Science and Technology, and Dongfang Electric – account for an increasing share of total new installations in the country. Together they now supply over 50 per cent of a market once dominated by foreign firms until 2008. However, such policies hurt home countries in financial terms. While being less costly, domestic wind turbines in China break down more often and their overall capacity factors are several percentage points lower than those of foreign models. Such a few percentage points difference might not seem significant, but could well make a difference between a wind farm that is economically viable and one that is not (Zhang, 2009b). Thus while the local content requirement may be considered necessary when the domestic market is dominated by foreign firms, it becomes questionable when local turbine makers begin to dominate the market as is now the case in China. This clearly

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<sup>4</sup> In liberalizing trade in EGS, priority should be given to products, technologies and services used in small-scale CDM projects and programmatic CDM. In other words, such products, technologies and services should be included in any list of EGSs for accelerated liberalization. While the motivation would be to facilitate small-scale CDM projects and programmatic CDM, any agreed tariff reduction or elimination would apply to all these EGSs, irrespective of whether these are used for CDM projects. This makes it conceptually different from the Indian proposal for a project-approach that ties the liberalization of any EGS to specific projects.

exemplifies challenges ahead and uncertainty about whether a deal can be concluded on a desired level of trade liberalization. Needless to say, the objective of having an agreement on EGs or a subset of EGs – such as climate-friendly goods – under WTO should be pursued as the best choice. However, should WTO members fail to reach such an agreement, then alternative options, ideally still under the Doha Round, need to be explored, although business groups have even suggested removing EGs from the Doha agenda.<sup>5</sup>

An agreement similar to the Information Technology Agreement (ITA) is one option to consider. However, it would require a certain number of members representing a minimum percentage of trade in climate-friendly goods and services to join<sup>6</sup> in order for it to come into effect (World Bank, 2007). Such an agreement would be open to voluntary participation, and once in effect, the benefits of trade liberalization in climate-friendly goods and technologies would extend to all WTO members on an MFN basis. The ITA has incorporated a mechanism for review of product coverage every three years. This may have tempered the disappointment of many countries with the initial exclusion of certain products. Given that developing countries are currently not significant suppliers of climate-friendly goods and technologies, priority should be given to additional products being submitted by developing countries for inclusion in a future review. However, the downside of this ITA mechanism is that no new products have ever been added since 1997. Thus developing countries may be suspicious of this offer for review, and feel reluctant to join.

Another option is a plurilateral agreement in this area, similar to the WTO Agreement on Government Procurement. WTO members could opt to sign up to such an agreement or not, but the benefits of trade liberalization would extend only to participating members on an MFN basis, unlike the aforementioned ITA-type Agreement which would extend MFN treatment to non-signatory WTO members as well. While such a plurilateral agreement would not be ideal, it would still have value, particularly if the key trading parties were involved. Such an agreement could eventually be made multilateral once a certain number of members representing a minimum percentage of trade in climate-friendly goods and services joined.

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<sup>5</sup> In a letter to United States President Barack Obama on August 3, 2009, the National Foreign Trade Council and eight other United States business groups urged his Administration to “use all possible channels” to pursue an agreement on reducing barriers to trade in EGSs, even if that meant going outside the Doha Round (Palmer, 2009).

<sup>6</sup> It would make more sense in the context of climate change mitigation to define critical mass as a share of emissions rather as a share of trade. After all, any agreement on climate-friendly goods aims to cut GHG emissions by providing more choices at lower costs. However, this approach depends on how such climate-friendly goods are produced and what goods they would replace. However, it is much more difficult to calculate emissions than to calculate trade value/volume, and it is an area unfamiliar to WTO negotiators. Taken together, while the approach sounds very appealing theoretically, these complications would make it hard to implement, in practice.

Other options for this sort of agreement may be within the context of regional or bilateral trade agreements. Such agreements aim to liberalize substantially all goods at the HS six-digit level. As a result, product classification and the dual-use problems associated with WTO negotiations on EGs and services may be less of a concern. These agreements would liberalize EGs fully. However, the downside of the regional or bilateral trade agreement approach is that trade may be diverted from countries that are most efficient at producing certain EGs but are excluded from those agreements. Moreover, by entailing generally the zero rating of all products, this approach would remove any tariff differential between EGs and their non-preferable like products. Whether such an elimination of tariffs in EGs would be enough to encourage their larger utilization in a competitive environment with other non-EGs would depend on their relative prices and the stringency of environmental policy in the home countries. Even if the prices of energy-efficient EGs were higher than those of their non-preferable like products, this would not necessarily put those EGs at a disadvantage. Provided energy subsidies are removed and costs are attached to emissions reductions, any higher initial costs of energy-efficient EGs may well be compensated by cost savings through energy savings over their lifetimes. The demonstration of new EGs (technologies) that a country is not yet familiar with but has a high potential to replicate plays a role in this context as well: it is the first but crucial step in showing the effectiveness of these new EGs in cutting pollution and supporting its spin-off to the rest of the economy.

This paper focuses on liberalizing climate-friendly goods and technologies through the reduction or elimination of tariffs. Undoubtedly, the results of such a tariff reduction or elimination would be positive, but would not be significant for increased uptake of these goods and technologies in developing countries. Many African countries already have very low tariffs on many environmental goods, but import few, if any, of them because of a lack of purchasing power and technical assistance. Also, as tariffs in developed countries are already very low – generally less than 3 per cent for EGs on the OECD list (Vykhylaev, 2003) – and as not all EGs are sensitive to tariff reductions,<sup>7</sup> the access of developing countries to developed-country markets would depend more on reduction or removal of trade restrictions in terms of NTBs, such as technical standards and certification requirements, labelling requirements, and tied-aid that grants tariff preference for a donor country's goods and services, as well as tax and subsidy measures. All these NTBs are considered significant impediments to developing countries' access to developed-country markets. Developing countries constantly refer to intellectual property rights as a barrier to access much-needed and advanced low-carbon technologies, in addition to their high licensing fees or royalty payments. All this suggests that high tariffs are only one of the factors that determine access to and affordability of climate-friendly goods and technologies, and thus that action beyond tariff reduction or elimination is also needed.

Therefore to serve the best interests of developing countries and enable them to access both climate-friendly goods and technologies at an affordable price and developed-

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<sup>7</sup> An analysis by Jha (2008) of 84 energy supply products in the Friends' 153 EGS list reveals that only 30 per cent of those products are sensitive to a tariff reduction.

country markets, there is a need to consider other efforts rather than adopting an exclusive focus on tariff reductions or elimination. Special and different treatment provisions will also be essential to take into account the concerns of developing countries. These include less than full reciprocity and flexibility in terms of longer implementation periods – or both – for developing countries, and optional participation for least developed countries. In addition, a package of technical and finance assistance is badly needed to ensure that all developing countries are able to benefit from the rapidly growing world market for climate-friendly goods and technologies. At least one WTO developed-country member – Canada – in its submission has recognized the importance of such assistance and has pledged to provide it. All these aforementioned initiatives could be made part of the EGs package for it to work. Moreover, WTO EG and services talks need a boost from other areas. Effective technology transfer and financial mechanisms are widely believed to have played a decisive role in making the Montreal Protocol work effectively (Zhang, 2009a). Given that the scope of economic activities affected by a climate regime is several orders of magnitude larger than those covered by that Protocol, technology transfer and deployment, financing and capacity-building are considered to be even more essential components of any post-2012 climate change agreement that developing countries would agree upon to succeed the Kyoto Protocol. If and when such a post-2012 climate change deal is reached, it would significantly enhance the possibilities of a breakthrough in reaching an EGs and services deal under the WTO.

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