BRIEFING PAPER

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Trade and Climate Change

The issue of climate change has gathered unprecedented political momentum in the past decade. And for good reasons; the scientific community has reached a level of consensus "rarely achieved in science" on its manmade origins and cataclysmic consequences. Citizens too have become increasingly concerned as high profile books, movies and reports on the matter have mobilised public opinion. The new US administration has put climate change on top of its agenda, after years of neglect symbolised in the US' refusal to ratify the Kyoto protocol. All these developments signal renewed political will and determination as well as the possibility of a new, more stringent, Kyoto-type agreement aimed at reducing Greenhouse Gas (GHG) emissions worldwide.

Climate change, or global warming as it is often referred to, is undeniably one of the biggest challenges of the 21st century. It is about sustainable economic growth, the kind of world we want future generations to inherit. The task that lies ahead is daunting: we might very well have to rethink how our economies work and subsequently introduce new pricing mechanisms and market incentives to reflect the true environmental costs of economic activities. Moreover, the need for co-ordination of policies at the supranational level is becoming increasingly evident.

Realising the above, it is necessary to analyse how international trade, the most successful example of mutually beneficial international co-operation in history, might help or hurt the fight against climate change. This briefing paper tries to sketch the relationship between climate change and trade in a concise, yet accessible, manner around four interrelated questions:

- What are the similarities and differences between trade and international climate agreements?
- How does trade liberalisation impact climate change?
- In what ways could both be mutually beneficial?
- How could trade and climate change mitigation efforts come in conflict?

The paper will address each question separately, while trying to link them in a constructive fashion. It demonstrates that, while the goals of the World Trade Organisation (WTO) and those of GHG reduction are not diametrically opposed and, in fact, synergistic in some regards, careful designing future multilateral and national climate change mitigation efforts is a necessity, if conflict areas are to be avoided.

Trade and Climate Regimes: A Comparative Perspective

It is useful to start by conceptualising the relationship between trade and climate change from the point of view of international relations, to get a broader picture of the dynamics at play. Both climate change mitigation efforts and international trade liberalisation take the form of "regimes"[1]. Broadly put, regimes are norms and rules, implicit or explicit, that states agree to in the realm of international politics. The WTO is one example for multilateral trade, the "dirty" floating exchange rates system is another for monetary relations, but regimes can also apply to smaller issues, such as international aviation or fisheries. Many have pointed out that climate and trade regimes are not incompatible. The similarities and potential synergies can be divided along these lines:

- A shared purpose: Both regimes aim at maximising public welfare by enhancing economic efficiency, as stated in the Marrakech Agreement, establishing the WTO, and the Kyoto agreement (Charnovitz 2003, 2).
- Mutual recognition: The WTO does recognise the need for preserving the environment. Indeed, it allows restrictions on trade for environmental reasons. Conversely, the Kyoto protocol states that measures to fight climate change should not unduly distort trade flows.

- Similar concerns: Both regimes face the problem of "free riders". These are actors (countries) benefiting from a public good (by nature non-excludable, like a sidewalk) without incurring any cost. Examples would include a country benefiting from an Most Favoured Nation (MFN) tariff reduction without lowering its own tariffs, or a country benefiting from climate change mitigation efforts without doing anything to curtail its own GHG emissions (Charnovitz 2003, 3).

- Both are works in progress: Both the trade regime and its climate counterpart are in a malleable state and can thus be engineered in ways that enhance mutual benefits and avoid conflict areas[2].

However, there are some fundamental differences that can usher in potential conflict:

- The trade regime is already well established, whereas the climate regime is just emerging. The multilateral trading system is complex with a well institutionalised structure. It has been fine tuned over the past 60 years and its level of sophistication is immense. The climate regime, on the other hand, is just emerging. Just 30 years ago the possibility of a multilateral agreement on climate change existed only in the wildest dreams of environmentalists. This is an important observation, given that pro-climate change measures might clash with WTO principles.

- The purpose of maximising economic welfare is achieved in diametrically opposed manners, the trade regime seeks to accomplish this by correcting government failure caused by protectionist and mercantilist policies, whereas the climate regime does the same by addressing market failure due to externalities or by artificially creating markets in crucial areas, such as emissions, where no markets previously existed (Charnovitz 2003, 3). The possibility that pro-climate change policies could be interpreted as trade distorting protectionist measure under WTO law is thus very real.

- International trade negotiations do not rely on science. Rather, international political bargaining, involving intricate processes of coalition building, bluffing and leveraging, is used. Apart from disputes relating to the health and sanitary measures agreement, there is little space for hard science in the multilateral trading system. By contrast, hard science plays a fundamental role in any international climate change agreement. Scientists and diplomats will have to find a way to coexist[3].

How Does Trade Liberalisation Impact Climate Change?

When thinking about the ways in which trade impacts climate change, it is useful to refer to a taxonomy widely used in the literature. There are four different effects at play that act simultaneously:

1. Scale effect: Simply put, this is the increase in emissions caused by the increase in national income [gross domestic product (GDP)] attributable to trade liberalisation. Numerical estimates of the scale effect take into account the rise in the growth rate post-liberalisation to arrive at estimates of GDP increase attributable to trade liberalisation. The implication of this increase in the GDP for emissions can be calculated on the basis of technological parameters and sectoral compositions in the base state.

2. Composition effect: This refers to the change in emissions resulting from change in sectoral composition of economic activity. In this case, the level of the GDP post-liberalisation is used for the purpose of computation. According to the traditional economic theory, economies will shift towards the production of goods in which they have a comparative advantage with trade. Some of these might be more carbon-intensive, some less. Thus, from a global perspective, it is impossible to say whether this will result in increased GHG emissions.

3. Technique effect: This is where much potential for lowering GHG emissions lies. Trade and investment liberalisation brings new technologies to countries, through either foreign investment or increased competitive pressures, forcing firms to adopt new technologies. These technologies often aim at increased efficiency, notably by reducing energy consumption or waste.

4. The direct transport effect: Increased trade means increased transport. Some modes of transportation are more emission-intensive than others (airfreight compared to sea shipping), but all emit some amount of GHGs.

It is important to keep in mind that no effect is likely to dominate and that some of these effects are useful illustrations, but do not point to any firm conclusion. Focusing on one single effect and ignoring others is likely to lead to wrong and short-sighted policies (see Box 1 for a concrete example). But, most importantly, the conclusion that can be drawn is that more trade does not necessarily mean faster global warming. The section below will give the reader some concrete examples of win-win scenarios for trade liberalisation and climate change.

Box 1 : The "Food Miles" Controversy

The food miles initiative was started in the early 1990s in the UK and then gained popularity amongst western nations. The initiative is meant to encourage consumers to buy locally grown food, by making them aware of the distance their food products travelled by means of a logo. The underlying logic is that the less the food travels the less it contributes to global warming.

Since its appearance, the food miles initiative has been widely criticised by developing nations and academics. Developing nations have found a niche market in air-freighted counter seasonal vegetables and fruits and do not want to see this opportunity vanish. But, more to the point, by focusing simply on the distance the food travels, the food miles logo inaccurately reflects the true carbon content of a given agricultural product. Going back to the four different effects outlined earlier, the food miles initiative focuses solely on number four.

Take the example of tomatoes in the UK. You have the choice between locally grown tomatoes and the ones flown in from Spain. According to the food miles logic, the climate-friendly ones would be the local, UK tomatoes. Not so, if you consider the way these tomatoes have been grown. Indeed, in Spain tomatoes grow in un-heated greenhouses, while in the UK, the same are grown in heated and artificially lighted greenhouses. Thus, even though they are air freighted, the Spanish tomatoes have a smaller carbon footprint.

Numerous studies present countless counter intuitive examples such as this one. Thus, sea-freighted lamb from New Zealand is more climate-friendly than local Canadian lamb. The lesson is that comparative advantage in agricultural goods comes hand in hand with better and more efficient techniques that emit less carbon.

This reveals that a holistic approach is necessary in order to accurately determine the true carbon content of a good. Focusing on transportation alone is not enough and counterproductive. Moreover, the prime supporters of the "buy local" initiative are heavily subsidised western farmers. The food miles coalition is not concerned solely with the environment. It might be the case that this initiative is simply protectionism in "green" disguise.

Trade and Climate: Win-Win Scenarios

A useful and interesting exercise is to see how each measure relates to the aforementioned links. Most of them are aimed at making sure that the climate-friendly potential of the technique and composition effects is not underexploited due to unfair and WTO illegal trade practices.

- Liberalisation of goods and services is the *raison d'être* of the multilateral trade regime. As such, an important contribution to combat against climate change could be made by liberalising environmentally-friendly goods and services. Such a process is already underway in the Doha round, but these are plagued by definition problems (see Box 2). Bio-fuels are one example of climate-friendly goods where tariffs remain incredibly high. Solar panels and windmill technology are further examples of goods that need to be liberalised in order to promote cleaner energy. One could also envision liberalising climate-friendly services, such as high tech energy-efficient engineering. Lowering the tariffs on these goods and services might not suffice, non-tariff barriers (NTBs) should also be negotiated. Both environmentally-friendly goods and services are part of the Doha negotiation mandate.

- Subsidies are also in the WTO's crosshair, as they distort market efficiency and hold back the potential gains from trade. They also constitute unfair trade practices. Negotiating subsidies on fossil fuels, whether at the production stage or at the pump, would undoubtedly make a transition to clean energy faster.

- The mirror image of this measure would involve allowing for environmental subsidies – make these "unactionable" in WTO jargon. This measure already existed, but was not renewed when it expired in 1999. It is also currently in the Doha negotiating mandate.

- There is a need to strengthen Intellectual Property Rights (IPRs) in developing countries: It is not self-evident that IPRs are an integral part of the fight against climate change. However, once one realises the importance of climate-friendly technology transfer to developing countries, in order for them to be able to curve their GHG emissions, the property rights aspect becomes crucial. Indeed, weak domestic laws on property rights often act as a deterrent to technology transfer; foreign firms fear that their innovative technology will be copied, in spite of a patent. Thus, strong IPRs are necessary for enabling developing countries to build capacity in green technologies.

None of these synergistic measures are without problems or controversy. The developed world is home to the most "green" industries, and stands to benefit most from increased market access for green technologies. Some

Box 2: What is an Environmentally-friendly Good?

Definitional problems have plagued the negotiations on environmentally-friendly goods at the WTO (environmentally-friendly goods include climate-friendly ones). Here is a brief account of the problems negotiators have run into.

There are two definitions of environmentally-friendly goods: a broad and a narrow one[5]. The narrow one focuses on the end use of a good and considers it environmentally-friendly when it is used to solve environmental problems – for example, solar panels.

The broader definition encompasses "environmentally preferable products" – goods that are environmentally-friendly by virtue of their process and production methods (PPMs). Negotiators prefer to focus on the narrow definition in order to simplify the negotiation process.

Furthermore, many of the potentially environmentally-friendly goods run into the problem of "dual use". They can be used in an environmentally-friendly manner, but not necessarily so. Pipes, for example, can be used in a renewable energy plant, but also on an oil rig. Whether they should be classified as environmentally-friendly goods is unclear.

analysts point to this fact to explain the EU's increasingly pro-environment stance during multilateral trade negotiations. Less developed nations have been less enthusiastic about liberalising climate-friendly goods and technologies[4]. India, for example, has proposed a "project" approach with regard to climate-friendly technologies – a temporary reduction of tariffs on these goods on a project-by-project basis, instead of a traditional, permanent reduction of tariffs (the "list" approach). The project approach is obviously less ambitious than the list approach.

Border Carbon Adjustment Tax: Example of an Area of Conflict

Perhaps the biggest concern that has arisen and enjoyed media coverage is the issue of border carbon adjustment (BCA). The issue revolves around the possible levy of a carbon tax on domestic industries in the EU or in the US. The more carbon-intensive a good is the higher the tax would be. While this might sound like a good idea, there are several issues with this proposed taxation mechanism:

- Industrial interest groups have pointed out that such a tax would undeniably hurt their competitiveness in the face of imports from countries that do not implement carbon taxation at home. This is a source of much concern for industrialists as well as politicians. Generally speaking, the most vocal opponents of the BCA tax have been energy-intensive industries producing goods for which there exist easy (imported) substitutes and industries for which there is no available "clean technology'' as yet. These would be the most vulnerable to imports from countries without a carbon taxing scheme (Cosbey 2008).

- The so-called "leakages'' are also a concern – for instance, the shifting of carbon-intensive industries to developing nations with poor carbon emissions regulation, similar to the delocalisation of firms to countries with weak labour standards. Although some studies have pointed to the possibility that the cost of reallocation to a foreign country outweighs the cost of carbon taxation (thus undermining the idea that there could be massive "leakages''), such a possibility could undermine, and potentially outweigh, the climate gains of domestic taxation schemes.

Whether this BCA tariff would be compatible or not with WTO law remains a question, the answer to which depends on how the BCA is engineered. It remains an example of potential climate/trade regime clash. However, trade law analysts draw the conclusion that such a BCA arrangement would have to determine the carbon content of a good case-by-case, producer-by-producer, plant-by-plant[6]. In other words, it would certainly be WTO illegal to set a tax on goods from a sector in a country based on the average "carbon intensity" of the exporting country's sector. For example, two different exporters of Chinese bicycles to the US should be taxed at the border according to the carbon

Box 3: Turtles, Shrimps and Global Warming

The possibility of interpreting BCAs as WTO legal was brought about by the "turtle shrimp" case, in which the US was brought to the dispute settlement body for having imposed trade sanctions on a range of shrimps and shrimp products from Asian countries. The US declared that shrimp fishing practices in these countries were harmful to an endangered species of sea turtle and invoked article XX of the General Agreement on Tariffs and Trade (GATT) that provides exceptions to general GATT principles on environmental grounds.

The Dispute Settlement Understanding recognised the validity of the US complaint under various provisions that allow trade sanctions for the protection of "human, animal, or plant life or health" or for "the conservation of exhaustible natural resources".

Why is this relevant to climate change and a possible BCA tax? Because this ruling sets a jurisprudence for the imposition of trade sanctions for environmental purposes according to the PPMs.

intensity of their own individual products, not on the average carbon intensity of the bicycle industry in China.

The sheer complexity of keeping track of the carbon used throughout all the production stages of a given good[7], keeping in mind the limited capacity of statistical agencies in developing countries, renders the prospects for an across the board BCA tax implemented in Europe or the US bleak. Only the sectors most affected by the loss of competitiveness might see a BCA implemented, if ever. Whether this is a good political strategy that does not run the risk of antagonising developing countries, throughout climate change negotiations is another question.

This topic offers plenty of further research opportunities. An area that comes to mind is the link between increased trade and emissions from transportation (the "direct effect" explained under question 2). For example, it is well known that in large countries such as India or China international trade facilitates the avoidance of emissions generated through inland transport. It is also well known that sea shipping (the most common means of international transport for goods) is much less polluting in terms of emissions than land transportation by truck. Therefore, the superiority of internal trade over international trade in reducing climate change depends on the size of the country and regional specialisation within that country. Obviously, these parameters vary from case to case. Moreover, the exact natures of the trade-off in terms of climate change between inter and intra-country trade has not yet been ascertained. Questions like this need much more research before one jumps to one-sided conclusions and demonstrate the fertility of this topic for potential research.

Endnotes

1 The trade regime does not restrict itself to the WTO. It also takes bilateral and regional routes in addition to the multilateral one. However, for the sake of simplicity only the multinational aspect will be considered here

2. Murase (2003), "WTO/GATT and MEAS: Kyoto Protocol and Beyond", available at /www.gets.org/gets/harmony/projectpapers.html.

3 Charnovitz, Steve (2003), "Trade and Climate : Potential Conflict and Synergies", Working Draft, Pew Centre on Global Climate Change

4 Brandt, Urs Steiner and Svendsen, Gert Tinggaard (2003), "Fighting Windmills? EU Industrial Interests and Global Climate Negotiations", IME Working Paper 37, University of Southern Denmark

5 World Bank (2007), "International Trade and Climate change: Economic, Legal, and Institutional Perspectives", World Bank Publications, Washington DC

6 Cosbey, Aaron. (2008), "Border Carbon Adjustment", Background Paper for The Trade and Climate Change Seminar at Copenhagen, June 18-20, International Institute for Sustainable Development

7 Kejun, Jiang, Aaron, Cosbey and Murphy, Deborah. (2008), "Embodied Carbon in Traded Goods", Background Paper for The Trade and Climate Change Seminar at Copenhagen June 18-20, International Institute for Sustainable Development

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