

# International Trade, the Environment, and Climate Change

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Trade liberalization has been a key driving force behind global economic growth since the Second World War. During this period, global environmental degradation reached new heights. Three sets of questions arise from this. First, is the liberalization of international trade responsible for the global ecological crisis, or do freer trade, increased global competition and greater wealth help to promote environmental protection and a more efficient use of scarce resources? Second, do the rules of the international trading system (mainly the World Trade Organization – WTO) help or hinder efforts to protect the environment, and are international environmental agreements consistent with the rules and obligations of the WTO order? Third, with regard to the threat of global warming, does free trade undermine the climate policies of more ambitious countries because of the threat of industrial relocation to laggard countries, and should trade measures be employed as a tool of international climate policy?

These and other questions about the trade–environment nexus have been intensely debated for some time and remain critical to the future of the trading system, particularly with regard to climate change (for a general overview of the debate, see Sampson 2005). This chapter reviews the trade–environment debate and recent scholarship. It opens with a brief discussion of the general relationship between trade, the environment, and climate change; then focuses on the institutional and jurisdictional context for trade and environmental policy-making; and concludes with an analysis of the trade implications of recent developments in climate change policy.

### Links between Trade and the Environment

Are international trade and environmental protection compatible or in conflict? Two types of causal links between trade and environment can be identified: the

first concerns the effect that trade liberalization has on environmental quality in a given country or worldwide; the second reverses the perspective and addresses the impact that environmental protection policies have on international trade. In general, free-trade supporters argue that liberalizing trade has a positive effect on the environment while some environmental measures pose a protectionist threat (Bhagwati and Srinivasan 1996; Hettige *et al.* 1998; Bhagwati 2004). In contrast, environmentalists see free trade as one of the main causes of environmental pollution and advocate that environmental policy should limit free trade where it harms the environment (Daly 1993; Goldsmith and Mander 2001). This second argument has gained new prominence in the context of climate change, where it is sometimes argued that unilateral efforts to reduce carbon emissions might shift industrial activity from countries with strict regulation to those with laxer regulations. This so-called “carbon leakage” is widely regarded to undermine the effect of climate change mitigation policies (Frankel 2009; Gros *et al.* 2010).

Closer examination of the empirical evidence behind these claims reveals a more nuanced picture (Neumayer 2001). Free trade can lead to more polluting production and greater consumption of natural resources, as is the case in countries that specialize in the production of pollution-intensive goods in response to trade liberalization, such as China, which has seen a dramatic rise in air and water pollution caused by the expansion of export-oriented manufacturing (Economy 2004). Free trade can also promote greater efficiency in production and the diffusion of environmental technologies and standards worldwide, as can be seen in more globally oriented companies such as the chemical and steel industries (Reppelin-Hill 1999; Garcia-Johnson 2000). The empirical record is also mixed when it comes to the impact of environmental policies on trade. Environmental protection efforts can disrupt international trade and give rise to disguised protectionism, an accusation often leveled by developing countries at advanced economies (OECD 2005). Other measures, however, can be compatible with the international trading system. Abolishing subsidies for fossil-fuel use, for example, would not only help in the fight against global warming; it would also promote a level playing field in international energy markets (Anderson and McKibbin 2000). Overall, therefore, generalizations about the trade–environment nexus are problematic. Trade liberalization and environmental protection can, but need not, be in conflict, and much depends on specific circumstances and policies under consideration.

A more useful way to think about these connections is, therefore, to focus on particular mechanisms by which trade impacts on the environment. Grossman and Krueger (1993) propose three such mechanisms: The *scale* effect occurs when liberalized trade stimulates economic growth, which in turn increases pollution and resource consumption. The *composition* effect leads to greater specialization between countries and differential rates of environmental degradation, as countries with lower environmental standards will see an expansion of environmentally harmful activity in response to trade-induced specialization. The *technique* effect involves efficiency improvements in the technologies for production and resource extraction, which can raise the level of environmental protection worldwide. Environmentalists add two further mechanisms that tend to be neglected by economic models. The first is *cultural change* in society caused by trade liberalization, which creates shifts not only in production technologies but also in consumption patterns. The spread of

consumerist values and greater availability of goods leads to rising consumption, which may outstrip any efficiency gains from freer trade (Princen *et al.* 2002). The second is the *distancing* effect that is the result of ever longer and more complex chains between geographically dispersed economic actors, from resource extraction and manufacturing to international trade and retailing. This weakens the ability of consumers to identify and accept responsibility for the consequences that their decisions have on the environment in ever more distant locations (Princen 1997).

While the debate over the right way to conceptualize the linkages between trade and the environment continues, international policy-makers are keen to stress the mutual supportiveness of trade and environmental policies. Whether trade and environmental policy-making support each other or clash depends to some extent on how existing international norms and rules are to be interpreted. We thus need to consider how the rules of the GATT/WTO trade system affect environmental policy, and vice versa. Other bilateral and regional trade agreements (e.g. NAFTA) also affect the trade–environment relationship (Gallagher 2004; Heydon and Woolcock 2009: 123–142), but the subsequent analysis focuses on the relationship between multilateral trade rules and environmental policies and regimes.

### International Trade Rules and Environmental Protection

At the time of the creation of the GATT (General Agreement on Tariffs and Trade) in the late 1940s, there was no international environmental agenda to speak of. Understandably, therefore, the GATT did not include any special provisions on the relationship between trade and environmental policy. Still, it recognized that some trade restrictions might be needed in the interest of public health or nature conservation.<sup>1</sup>

The GATT's main objective is to reduce the overall level of tariffs and other trade barriers through a series of multilateral negotiations. Its legal structure is based on a number of fundamental norms, most importantly reciprocity and non-discrimination. Reciprocity in the GATT system is evident from the conduct of negotiations. Rather than lower trade barriers unilaterally, GATT members have only agreed to reduce their levels of protection in return for reciprocal concessions from others. Non-discrimination is expressed in two principles in the GATT agreement: the most-favored-nation (MFN) principle (Article I), which requires each GATT member to accord to all other members the same privileges it has granted to its “most-favored nation”; and the national treatment principle (Article III), which demands that GATT members treat “like products” imported from foreign producers in the same way as those of domestic producers. The concept of “like products” is an important and controversial one in the trade–environment context, even though no definite interpretation of it exists in GATT/WTO law and jurisdiction (Sampson 2005: 82). Internationally traded goods may reflect different designs or production techniques, but are to be considered as “like products” if they share important physical characteristics or are functionally equivalent (e.g. cars by different manufacturers).

Article XX, the only specific environmental provision in the GATT, sets out the conditions for restricting international trade in the interests of human, animal, or plant life or health (Art. XX(b)) and the conservation of natural resources (Art. XX(g)). Such measures are allowed if they do not arbitrarily and unjustifiably

discriminate between countries with similar conditions or constitute a disguised protectionist measure; if (in the case of subclause (b)) they can be considered necessary, that is, no other, less trade-intrusive, measures are available; and if (in the case of subclause (g)) equivalent domestic restrictions are imposed as well. The GATT thus allows environmental exceptions from its trade disciplines but seeks to prevent “green” discrimination or protectionism (Neumayer 2001: 24–25).

As discussed below, the GATT contains provisions that are bound to come into conflict with environmental policies. This is most clearly the case with the non-discrimination rule for “like products,” which prohibits member-states from restricting trade based on the way in which goods have been produced (process and production methods – PPMs). From an environmental perspective, it is often the production process that needs to be regulated (e.g. to reduce greenhouse gas emissions from manufacturing) and many international environmental agreements seek to restrict such environmentally damaging side-effects. Indeed, environmentalists have long complained about the GATT’s “chilling” effect on taking out trade measures focused on polluting production methods (Eckersley 2004).

More recently, the creation of the WTO at the end of the Uruguay Round has signaled a greater willingness in the trading system to recognize the legitimacy of environmental policies (Charnovitz 2007). Thus, the preamble of the Marrakesh Agreement Establishing the WTO lists sustainable development and environmental protection as explicit objectives for the trading system. Although not legally binding, the preamble represents an important departure from the GATT’s previous philosophy of a strict separation of trade and environmental policy. Furthermore, because the WTO also strengthened the GATT’s dispute settlement mechanism and made its rulings legally binding, the evolving WTO jurisdiction on cases involving environmental trade measures has assumed greater importance in balancing the trade–environment relationship.

Other notable achievements of the Uruguay Round include the Agreements on Technical Barriers to Trade (TBT) and on the Application of Sanitary and Phytosanitary Measures (SPS). The TBT agreement sets rules for the use of technical regulations and standards with a view to minimizing their trade-distorting effect (Stein 2009). It recognizes the right of countries to impose such measures to protect human health and the environment, but stipulates that these should be not more trade-restrictive than necessary. For example, an environmental label that informs consumers about the potential health risks associated with a particular product could be considered acceptable under WTO rules, if applied in a non-discriminatory manner, but not if it aims solely at PPM characteristics of a product (e.g. carbon intensity of car manufacturing). However, voluntary measures such as eco-labels created by private actors do not fall under WTO jurisdiction.

The SPS agreement, which deals with measures to protect human, animal, or plant life or health, similarly allows states to take such measures where they do not lead to discrimination or disguised trade restrictions (Charnovitz 1999). The TBT and SPS Agreements both encourage the harmonization or creation of international standards. Article 2.2 of the Agreement further specifies that SPS measures are to be based on scientific principles of risk assessment and sufficient scientific evidence. This requirement can be temporarily suspended where “relevant scientific evidence is insufficient,” but additional scientific information is to be obtained to carry out a full

risk assessment “within a reasonable period of time” (Article 5.7). The SPS Agreement is the only trade agreement that formally recognizes precaution as a justification for taking trade measures where there is scientific uncertainty but some evidence of potential harm. The question that has repeatedly pitted the WTO against environmentalists is whether such uncertainty is only a temporary phenomenon or a more persistent problem that pervades many areas of environmental policy-making, such as food safety and genetically modified organisms (Post 2006; Isaac and Kerr 2007).

### **Multilateral Environmental Agreements, Trade Measures, and the WTO**

Of the over 500 multilateral environmental agreements (MEAs) that have been created in the last four decades, a small but growing proportion includes trade measures among their regulatory instruments. As trade restrictions become more popular in global environmental policy-making, concern is rising that these measures will increasingly come into conflict with WTO rules. The definition of trade measures in MEAs is fairly wide and often imprecise. It most commonly refers to various forms of restrictions on trade for environmental purposes, such as bans on the trade of certain polluting substances or embargoes of specific countries that are in breach of environmental obligations. It may also include other measures that have an indirect trade impact, such as reporting requirements, labeling systems, prior consent requirements, or fiscal instruments (e.g. taxes, subsidies) (Brack and Gray 2003: 5–6). Some MEAs are designed to regulate trade, such as the Convention on Trade in Endangered Species (CITES), while others use trade restrictions as one of several instruments to support their main environmental goal (e.g. the Montreal Protocol on Substances that Deplete the Ozone Layer).

Trade measures have become popular instruments in MEAs for a number of reasons. They broadly serve three purposes (see Brack and Gray 2003: 13–15):

- *Target environmental harm.* Most trade measures in MEAs seek to tackle environmental problems by restricting the international movement of products or species that are potentially harmful or endangered.
- *Promote compliance and regime effectiveness.* Some MEAs use trade measures to ensure the effective operation of an environmental regime. For example, restrictions may be imposed to punish countries that do not fully comply with a regime’s provisions, or to prevent industrial flight to non-parties, so-called “leakage.”
- *Encourage participation in environmental regimes.* Trade restrictions are also seen as a form of pressure on countries that are reluctant to join an environmental regime. For example, the Montreal Protocol’s prohibition of trade with non-parties encouraged some countries to join the agreement to prevent being excluded from the international trade in regulated substances and products containing them.

Trade experts have raised several concerns about trade measures in MEAs. WTO rules require environmental trade measures to be non-discriminatory, that is they should not discriminate between “like products” from different WTO members or between domestic and international production. Where environmental treaties target products because of the underlying process and production methods rather than the

environmental quality of the product itself, any resulting trade interference could be seen to be in breach of WTO obligations. A further area where MEAs and the WTO rules could clash is where one party to a MEA uses trade sanctions against a non-party, but both parties are members of the WTO. In such cases, the party that suffers a trade sanction could take action under the WTO alleging breach of trade rules. As yet, no WTO member has challenged an MEA in the WTO's dispute-settlement mechanism, but with growing use of MEA-based trade measures a future conflict over their WTO compatibility cannot be ruled out. The next section considers what recent WTO dispute settlement cases tell us about the evolution of WTO jurisdiction on trade–environment conflicts.

### **Trends in WTO Jurisprudence**

Only a very small fraction of the over 500 disputes that have been considered under the GATT/WTO dispute-settlement mechanism relate to environmental issues, even though environment-related trade disputes have attracted a great deal of public attention. A closer examination of the most important cases reveals important developments in trade jurisdiction.<sup>2</sup>

#### *Tuna–Dolphin*

One of the earliest and most controversial trade–environment disputes concerned a US ban on certain tuna imports as part of a wider effort to protect dolphins. The 1972 Marine Mammal Protection Act (MMPA) required US fishermen to use dolphin-safe fishing methods to prevent the unwanted trapping of dolphins in purse seine nets. In 1984, the US Congress allowed the US to impose import bans on tuna from countries that did not employ dolphin-safe fishing methods. This trade measure was designed to prevent foreign competition from circumventing the MMPA's provisions and gaining an unjustified competitive advantage over US fishermen. When the USA implemented an embargo on tuna imports from Mexico and a few other countries in 1990, Mexico filed a complaint with the GATT, arguing that the US ban was illegal as it was focused on process and production methods (the type of nets that trap dolphins), rather than the product itself (tuna). Mexico further argued that the USA was not allowed to use GATT Article XX to force other countries to abide by its domestic environmental laws (extraterritoriality). The GATT panel that heard the case decided in Mexico's favor in 1991, but the ruling never became legally binding. In light of the upcoming negotiations on the North American Free Trade Agreement (NAFTA), Mexico decided not to demand the formal adoption of the decision. In any case, the GATT rules gave any party, such as the USA, the right to veto a panel decision. The decision caused uproar among environmentalists and led to a protracted debate in the 1990s about whether the GATT was fundamentally hostile to environmental concerns (Esty 1994).

#### *USA–Gasoline*

In 1990, the USA amended the Clean Air Act (CAA) in an effort to improve air quality by reducing adverse emissions from gasoline use. The law mandated the sale

of “reformulated” (i.e. cleaner) gasoline in heavily populated urban areas but permitted the continued sale of “conventional” gasoline in more rural areas. To prevent a shift in inexpensive but highly polluting gasoline ingredients from urban to rural areas, the law also stipulated that conventional gasoline must remain as clean as it was in 1990 (the “baseline”). By and large, domestic refiners were allowed to use individual baselines that were actually in use in 1990, while foreign producers had to follow an average baseline set by the Environmental Protection Agency (EPA). This, Venezuela and Brazil argued, was in conflict with Article III of the GATT as it discriminated against imported products. In 1996, the WTO Appellate Body decided that the baseline establishment methods were indeed inconsistent with Article III and could not be justified by Article XX, as the US had claimed. However, the Appellate Body found that the US measures were aimed at the conservation of natural resources, and that WTO members were free to set their own environmental objectives, provided they do so in conformity with WTO rules, in particular with regard to the treatment of domestic and foreign products. The dispute settlement body, now operating under the strengthened rules of the WTO agreement, thus took a broader view of the environmental purpose of the trade measure and did not focus solely on the discriminatory nature of the measure (Trebilcock and Howse 2005: 526–528).

### *Shrimp–Turtles*

A similar case to the *Tuna–Dolphin* dispute emerged in 1997, when India, Malaysia, Pakistan, and Thailand filed complaints at the WTO against a US decision to force foreign shrimp trawlers to use so-called “turtle excluder devices” (TEDs) when fishing in areas where sea turtles are present. The plaintiffs argued that this measure, which was based on America’s Endangered Species Act of 1973, was in breach of WTO rules as it threatened foreign producers with a trade ban if they did not comply with US environmental law. Again, the case was decided under the enhanced powers of the WTO agreement and in the context of the WTO’s greater emphasis on balancing free trade with environmental sustainability. In 1998, the dispute settlement body ruled that the US import ban was generally a legitimate policy with regard to provisions under Article XX related to “exhaustible natural resources.” However, it also found that the way the ban operated, and the fact that the USA had previously negotiated treaties on sea-turtle protection with some but not all affected countries, constituted “arbitrary and unjustifiable discrimination” between WTO members. The USA subsequently changed its rules so that they were targeted at individual shipments rather than at countries – a practice that the WTO decided was justified under Article XX. While the USA technically lost the initial case, the decision marked an important shift in WTO jurisdiction as it acknowledged that in certain circumstances, countries can use trade measures with the aim of protecting natural resources. The USA lost the case not because it aimed to protect the environment but because it had designed the measure in a discriminatory way – similar to the above gasoline case. Critically for the debate on whether the WTO and environmental policies are compatible, the ruling also pointed to the possibility that trade restrictions can be based on process and production methods in another country if these restrictions do not arbitrarily and unjustifiably discriminate between different countries (Howse 2002).

### *EU–Biotech*

A series of food and feed safety scares in Europe in the late 1980s and in the 1990s created considerable public pressure for more stringent food-safety measures at the European level. In the second half of the 1990s, NGO campaigns and consumer hostility against genetically modified organisms (GMOs) led the EU to impose a *de facto* moratorium on GMO approvals and imports. Under pressure from their farming and biotechnology sectors, the USA, Canada, and Argentina in 2003 brought a WTO case against the EU's restrictions on the marketing of GMOs. At the heart of the dispute was the question of whether the EU was entitled to act in a precautionary manner even though a high degree of scientific uncertainty surrounded the GMO safety debate. The use of the WTO as a forum to settle a dispute over the appropriate use of precaution in environmental risk regulation proved controversial, not least since the Cartagena Protocol on Biosafety had been adopted in 2000 in the face of US resistance (Falkner 2007). In 2006, the WTO ruled against the EU on procedural grounds, finding that the *de facto* GMO moratorium was in violation of WTO law, but did not pass a substantive judgment on the WTO consistency of the EU's precautionary GMO legislation as such. By the time the ruling was announced, the EU had already revised its regulations on GMOs and lifted its moratorium at least partially, even though its GMO approval process remains complex and prone to substantial delays due to domestic resistance to agricultural biotechnology (Lieberman and Gray 2008).

### *Brazil–Retreaded Tires*

In late 2004, Brazil decided to strengthen its import restrictions on retreaded tires (reconditioned old tires for further use) from non-Mercosur countries, arguing that the disposal of such tires creates environmental and human health problems. A year after Brazil imposed these restrictions, the EU asked for a WTO panel to consider whether they conformed to WTO rules. Brazil claimed that its import restrictions were justified under Article XX and that it was obliged to exclude Mercosur countries from the restrictions according to the rules of the customs union. The EU countered that the exemption of Mercosur countries from the import restriction constituted a breach of the WTO's non-discrimination rule, among others. Both the Panel and the Appellate Body ruled in 2007, albeit for different reasons, that Brazil's import restrictions were inconsistent with WTO rules and could not be justified by Article XX. As in earlier rulings such as *US–Gasoline* or *Shrimp–Turtles*, the Appellate Body argued that import bans can be justified on environmental grounds, but that the chapeau (introductory provisions) of Article XX stipulates that they must not lead to "arbitrary and unjustifiable discrimination between countries." Brazil complied with the DSB's request to revise its laws to make them conform to WTO rules.

### *Overall Trends in WTO Jurisdiction*

Over the past two decades, GATT/WTO jurisdiction on environment-related trade measures has changed considerably. While earlier rulings (*Tuna–Dolphin* case) rejected trade restrictions aimed at process and production methods (PPMs) outside a



country's own jurisdiction, the *US–Gasoline* case marked the cautious beginning of a less restrictive interpretation of environmental measures. In this case, the WTO panel stressed that trade measures must not discriminate among countries but acknowledged that they can be based on grounds of environmental protection. The *Shrimp–Turtle* case further strengthened this shift in the WTO's interpretation of environmental trade measures. The decision almost reversed the earlier *Tuna–Dolphin* decision by arguing that a trade measure based on PPMs *can* be directed at other countries under Article XX, and that animals can qualify as an “exhaustible natural resource” that may be protected through trade bans. In the *EC–Biotech* case, the WTO Panel reinforced the importance of non-discrimination and the proper application of regulatory procedures, but acknowledged the importance of scientific uncertainty in justifying trade restrictions, arguing that a moratorium amidst scientific uncertainty need not necessarily violate international trade law. Thus, WTO jurisdiction has gradually come to accept that trade-restricting measures under Article XX can be justified for environmental reasons, but continues to insist that they must not constitute an arbitrary and/or unjustifiable discrimination. Indeed, the primary reason why environmental measures in *Gasoline*, *Shrimp–Turtle*, and *Retreaded Tires* were found to be in breach of WTO rules was not the ultimate objective of these measures but the way in which they had been applied (DeSombre and Barkin 2002).

### Climate Change and International Trade

Climate change has added a new and urgent dimension to the debate on trade and the environment: whereas previous trade–environment conflicts usually focused on only a limited number of industries or countries, global warming affects virtually every country and all aspects of economic life. Addressing climate change creates fundamental questions of current and inter-generational fairness, equity, and freedom, and involves global collective action combined with unprecedented degrees of market failure and scientific uncertainty (Stern 2007). Rich industrialized countries are largely responsible for causing global warming in the past, but the majority of future greenhouse gas emissions will come from rapidly industrializing emerging economies such as China and India. In 2007, China overtook the USA as the world's largest emitter, and in 2008, China and India together produced almost twice as much CO<sub>2</sub> as the 27 European Union countries combined.<sup>3</sup>

If some countries decide to reduce CO<sub>2</sub> emission without similar commitments from others, international trade allows industrial activity to simply shift from the former to the latter. This so-called “carbon leakage” can occur in three ways: energy-intensive industries physically relocate to countries with less stringent regulations; domestic producers lose market share to foreign competitors that increase production; or a lower demand for fossil fuels in high-regulation countries decreases the overall price for these fuels and thus leads to increased consumption in low-regulation countries (Frankel 2009; Weber and Peters 2009). Other factors such as transportation costs, local market conditions, and the cost of capital and labor are often equally or more important reasons behind industrial relocation (World Bank 2008; Weber and Peters 2009). However, where industries move to avoid carbon regulations, such “leakage” undermines the goal of reducing global emissions and discourages ambitious climate policies. Depending on the type of emission reduction scheme,

leakage rates (i.e. the increase in emissions in low-regulation countries as a share of reductions in high-regulation countries) have been estimated at as high as one fourth for the iron and steel sector and up to one third for the cement industry (Reinaud 2008). When European countries ratified the Kyoto Protocol and introduced the EU Emissions Trading Scheme (ETS), for instance, there was great concern over whether the refusal of the USA to ratify the Kyoto Protocol would allow it to be a “free rider” on Europe’s climate policy (Biermann and Brohm 2005), with some arguing that the US rejection of Kyoto can be interpreted as a hidden subsidy for its industry and may thus conflict with trading rules (Stiglitz 2007).<sup>4</sup>

Against this background, some have called for trade measures to be used to discourage carbon leakage and free-riding (Stern 2007; Stiglitz 2007). As Barrett (2010: 3) put it bluntly: “If trade measures can enforce trade agreements, why not use trade measures to enforce climate agreements?” A common line of argument is that since the WTO has the strongest compliance system of any international regime, it could strengthen international climate policies (Biermann and Brohm 2005; Frankel 2009). Two specific proposals for climate-related trade measures have been put forward. A first proposal involves taxing imports from countries that apply less stringent carbon emission limits. A so-called “border tax adjustment” (BTA) forces importers to pay a fee that reflects the costs of carbon emissions while exporters may obtain a tax credit to avoid double taxation (Frankel 2009; Kaufmann and Weber 2011). A second proposal envisions requirements to purchase emission permits in a cap-and-trade system so that foreign and domestic producers pay the same price for emitting a ton of CO<sub>2</sub>. France, the USA, and the EU have already tabled proposals for how to incorporate trade measures into climate change legislation in the form of BTAs or the mandatory purchase of emission permits (Biermann and Brohm 2005; Cosbey 2008; Tarasofsky 2008).

Ideally, since all current economic activity in one way or another produces carbon emissions, trade measures ought to cover the largest possible range of products. One way to do this would be to consider the carbon footprint of each individual product, possibly with the help of a standard developed by the International Organization for Standardization (ISO 14067; see also Gros *et al.* 2010). While this would ensure that a large share of international trade is covered, developing a comprehensive method to quantify the carbon content of every traded product for tax purposes is difficult: national authorities may not have the capacity to collect data, producers have an incentive to underestimate carbon content, and complex international supply chains make tracing the carbon content of each individual component of a product cumbersome (Cosbey 2008). It would certainly be easier to target only a limited range of internationally traded energy-intensive materials such as aluminum, cement, steel, paper, glass, iron, and chemicals. This approach, however, may disproportionately harm manufacturers in technologically advanced countries who import these materials for further processing without significantly reducing emissions of energy-intensive manufacturing in heavily polluting countries (Cosbey 2008; Weber and Peters 2009). Moreover, the quantity of emissions associated with basic materials very much depends on the source of energy with which they were processed (e.g. fossil fuels versus hydropower) (Cosbey 2008).

Measuring carbon content poses further difficulties. A system that seeks to count the emissions of individual firms may be too complicated to work, given the

complexity of international supply chains. Establishing carbon content on the basis of industry averages would be easier to achieve but raises the question of whether industrialized or emerging-economy standards are used as a point of reference or whether actual emissions count. Any aggregate national measure raises the question of how to quantify and compare different types of emission reduction policies. Should the carbon intensity per capita or per unit of economic output count? How will changes in emission policies be reflected in trade measures? How can a situation be avoided where trade is simply redirected via a third country with nominally stricter emission targets (Weber and Peters 2009)?

Finally, a critical question concerns the relationship between such measures and international trade law. On this, there seems to be agreement that many of these climate policies could, *in principle*, be seen to conform to WTO rules (Bhagwati and Mavroidis 2007; Frankel 2009). In a joint report, the WTO and UNEP (2009: xix) argue that international trade rules permit, “under certain conditions, the use of border tax adjustments on imported and exported products.” The conditions, however, are crucial, as are the trade rules under which conformity is claimed. For instance, aiming trade measures at a country as such is likely to fall foul of the most-favored-nation (MFN) principle, and the WTO has in the past been skeptical of measures that seek to directly influence policies in another country (Tarasofsky 2008; Messerlin 2012). Equally controversial is the idea of trade measures aimed at process and production methods (PPMs). Although the WTO Appellate Body found in the asbestos case that “consumer preferences” are a valid consideration for distinguishing products that would normally be treated as “like” products (Kaufmann and Weber 2011), it is questionable whether products can be treated differently based on the energy and emissions profile of production processes which do not affect the final product as such (Weber and Peters 2009). Furthermore, growing reliance on national or regional emissions trading schemes has led to situations in which governments provide direct or indirect subsidies to domestic companies (e.g. by allocating low-cost permits or offering subsidies to compensate for the costs of permits), which may violate provisions of the WTO’s Agreement on Subsidies and Countervailing Measures (Henschke 2012). Alternatively, the compulsory inclusion of foreign companies in such emissions trading schemes can be seen as a unilateral act that falls foul of the WTO’s restrictions on the extraterritorial application of domestic environmental laws, as can be seen in the international spat over the EU’s plan to include foreign airlines in its emissions trading scheme.

On the other hand, it has been argued that many climate measures would conform to Article XX of the GATT on the depletion of natural resources (Biermann and Brohm 2005; Kaufmann and Weber 2011). The outcome of the *Shrimp–Turtle* case can be interpreted to have “legalized” trade measures aimed at process and production methods, and the decision in the *US–Gasoline* case defined clean air as an exhaustible natural resource. Together, these two decisions may have paved the way for trade-related climate measures to be consistent with world trade law (Bhagwati and Mavroidis 2007). Indeed, since climate change also affects biodiversity, the “clean air” decision might not even be a necessary condition for a trade measure to conform to WTO statutes (Wiers 2008). Thus, while CO<sub>2</sub>-related trade measures are technically difficult to implement,<sup>5</sup> they may not necessarily conflict with world

trade law. Still, imposing climate-related trade restrictions would be politically controversial, which may explain why climate leaders such as the EU have been reluctant to introduce BTAs or the mandatory purchase of emission allowances for importers.

Since any long-term solution to the challenge of climate change requires close international cooperation, there is considerable concern that unilateral trade measures would undermine international political processes and could prove counterproductive (Cosbey 2008; Weber and Peters 2009; Barrett 2010). After all, the UNFCCC stipulates that emerging economies have “common *but differentiated* responsibilities,” and in the run-up to the 2009 Copenhagen climate conference, a group of developing countries warned that:

Parties shall not resort to any form of unilateral measures, including fiscal and non-fiscal border measures, against goods and services imported from other Parties, in particular from developing country Parties, on grounds of stabilization and mitigation of climate change (Ad Hoc Working Group 2009).

Indeed, Charnovitz (2003) argues that political concern over trade measures has already led to a “chilling effect” in environmental negotiations (see also Cosbey 2008: 6). Proposals for compensating developing countries by transferring the revenue from such trade measures (Biermann and Brohm 2005; Weber and Peters 2009) may go some way to assuage their concerns but may not solve the underlying problem of carbon leakage and shifts in competitiveness. Furthermore, trade experts warn that unilateral measures would lead to a “slippery slope” towards an abuse of climate change for protectionist purposes (Bhagwati and Mavroidis 2007; Frankel 2009). Still, climate leaders will be tempted to use trade measures as a “stick” in negotiations to put pressure on other countries to join a global agreement.

### **Conclusion: Global Policy Implications**

The trade-environment nexus remains a controversial and challenging issue on the international trade agenda. Some progress has been made in identifying the circumstances in which international trade and environmental protection can be mutually compatible, but several areas of contention and conflict remain.

The first area relates to the WTO’s general approach to environmental policy. Some observers call on the WTO to become more engaged with environmental issues, not least since the WTO already adjudicates cases that involve conflicts between environmental measures and international trade law. Given the WTO’s *de facto* impact on global environmental policy, they argue that the WTO should take on more formal environmental responsibilities, even though details of such a closer engagement with the global environmental agenda remain sketchy. On the other hand, concerns have been raised that environmental protection might actually take a back seat on the international trade agenda due to an increasing use of bilateral agreements instead of multilateral ones and a generally low interest among some countries in issues related to environmental protection (Neumayer 2004). The WTO has so far trod a careful path through this debate, stating repeatedly that, while it aims to contribute to sustainable development, it does not consider itself as an environmental protection agency (WTO 2004).

The second area relates to the interpretation of existing legal provisions. Despite an evolving mandate and institutional framework, the WTO has had significant impact on certain environmental measures, as outlined above. Past decisions have clarified what a “necessary” environmental measure is; what is meant by “exhaustible natural resource”; whether measures can extend extraterritorially; and how “arbitrary” and “unjustifiable” should be interpreted under the chapeau of Article XX. Disagreement still exists, however, with regard to environmental measures aimed at PPMs, especially when they are “unincorporated,” that is, when they cannot be detected in the final product. The definition and use of precaution remains equally contested, as has been illustrated by the *EC–Biotech* case and the question of “sound” science as a criterion for policy-making versus a broader interpretation of the evidence basis for risk assessment.

The third area relates to the question of inclusiveness and transparency of decision-making. While the CTE has been tasked with addressing the relationship between MEAs and the WTO, both in institutional and jurisdictional terms, there remains considerable debate on how to integrate the two, especially when the former continue to employ trade-restricting measures that remain vulnerable to challenges under WTO law (Eckersley 2004; Palmer and Tarasofsky 2007). Another contentious point is the access of external stakeholders, especially civil society and NGOs, to WTO decision-making processes. While the WTO has promoted dialogue with interested organizations, NGOs continue to raise concerns about the lack of transparency in the WTO’s deliberations and negotiations, especially with regard to environmental issues.

The fourth and final area relates to the increasingly important impact of the climate-change debate on international trade. As states explore different options for reducing greenhouse gas emissions and global climate governance becomes increasingly fragmented (Falkner *et al.* 2010), it is becoming clear that trade measures will be part of the international effort to combat global warming. This could be in the form of border tax adjustment to address international competitiveness issues, preferential treatment of climate-friendly goods and services, renewable energy subsidies and product labels indicating carbon content, among others (Brewer 2010). Efforts to enforce international climate policy through trade measures may test the scope of Article XX (Frankel 2009), and a push to target carbon content in internationally traded goods may test the WTO’s willingness to accept unilateral trade measures that are based on PPMs (Hufbauer and Kim 2009). The WTO itself recognizes its responsibility in the international community to address climate change as part of its sustainable development agenda, but sees its role primarily as an arbiter of conflicts. The challenge will be to avoid the trap of green protectionism, where general trade restrictions are used to seek compliance with quite distinct climate goals. Climate policy may yet prove to be the biggest challenge for the WTO’s ability to manage the trade–environment relationship.

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## Notes

- 1 A comprehensive guide to WTO law and jurisdiction in relation to environmental matters can be found in Bernasconi-Osterwalder *et al.* (2006).
- 2 An overview of these and other environment-related cases, as well as panel and appellate body reports, can be found at: [http://www.wto.org/english/tratop\\_e/dispu\\_e/dispu\\_status\\_e.htm](http://www.wto.org/english/tratop_e/dispu_e/dispu_status_e.htm) (accessed October 20, 2012).
- 3 United Nations Statistics Division (UNSTATS), available at <http://mdgs.un.org/unsd/mdg/SeriesDetail.aspx?srid=749 & crid=> (accessed 20 October, 2012).
- 4 Bhagwati and Mavroidis (2007), however, disagree and argue that for a subsidy in the form of a tax rebate to conflict with world trade law, a country must first signal that it intends to impose a tax but then refrain from doing so. In the case of the Kyoto Protocol, this was not the case for the USA.
- 5 Gros *et al.* (2010) argue that there are no “insurmountable practical obstacles” to introducing a CO<sub>2</sub> border tax.

## References

- Ad Hoc Working Group on Long-Term Cooperative Action under the Convention. 2009. “Report of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention on its Seventh Session, Held in Bangkok from 28 September to 9 October 2009, and Barcelona from 2 to 6 November 2009,” <http://unfccc.int/resource/docs/2009/awglca7/eng/14.pdf> (accessed October 20, 2012).
- Anderson, K. and W.J. McKibbin. 2000. “Reducing Coal Subsidies and Trade Barriers: Their Contribution to Greenhouse Gas Abatement.” *Environment and Development Economics*, 5(4): 457–481.
- Barrett, S. 2010. “Climate Change and International Trade: Lessons on their Linkage from International Environmental Agreements.” Background paper for “Thinking Ahead on International Trade (TAIT),” 2nd Conference Climate Change, Trade and Competitiveness: Issues for the WTO, Geneva, June 16–18.
- Bernasconi-Osterwalder, N., D. Magraw, M.J. Oliva *et al.* 2006. *Environment and Trade: A Guide to WTO Jurisprudence*. London: Earthscan.
- Bhagwati, J. 2004. *In Defense of Globalization*. Oxford: Oxford University Press.
- Bhagwati, J. and P.C. Mavroidis. 2007. “Is Action against US Exports for Failure to Sign Kyoto Protocol WTO-Legal?” *World Trade Review*, 6(2): 299–310.
- Bhagwati, J. and T.N. Srinivasan. 1996. “Trade and Environment: Does Environmental Diversity Detract from the Case for Free Trade?” In *Fair Trade and Harmonization: Prerequisites for Free Trade?*, ed. by J. Bhagwati and R. Hudec, 159–223. Cambridge, MA: MIT Press.
- Biermann, F. and R. Brohm. 2005. “Implementing the Kyoto Protocol without the USA: The Strategic Role of Energy Tax Adjustments at the Border.” *Climate Policy*, 4: 289–302.
- Brack, D. and K. Gray. 2003. *Multilateral Environmental Agreements and the WTO*. London: Royal Institute of International Affairs.
- Brewer, T.L. 2010. “Trade Policies and Climate Change Policies: A Rapidly Expanding Joint Agenda.” *World Economy*, 33(6): 799–809.
- Charnovitz, S. 1999. “Improving the Agreement on Sanitary and Phytosanitary Standards.” *Trade, Environment, and the Millennium*, ed. G.P. Sampson and W.B. Chambers, 171–194. Tokyo: United Nations University Press.

- Charnovitz, S. 2003. *Beyond Kyoto: Advancing the International Effort against Climate Change*. Arlington, VA: Pew Center on Global Climate Change.
- Charnovitz, S. 2007. "The WTO's Environmental Progress." *Journal of International Economic Law*, 10(3): 685–706.
- Cosbey, A. 2008. *Border Carbon Adjustment*. Winnipeg, Manitoba: International Institute for Sustainable Development.
- Daly, H.E. 1993. "The Perils of Free Trade." *Scientific American*, 269(5): 50–57.
- DeSombre, R. and J.S. Barkin. 2002. "Turtles and Trade: The WTO's Acceptance of Environmental Trade Restrictions." *Global Environmental Politics*, 2(1): 12–18.
- Eckersley, R. 2004. "The Big Chill: The WTO and Multilateral Environmental Agreements." *Global Environmental Politics*, 4(2): 24–50.
- Economy, E.C. 2004. *The River Runs Black: The Environmental Challenge to China's Future*. Ithaca, NY: Cornell University Press.
- Esty, D. 1994. *Greening the GATT*. Washington, DC: Institute for International Economics.
- Falkner, R. 2007. "The Political Economy of 'Normative Power' Europe: EU Environmental Leadership in International Biotechnology Regulation." *Journal of European Public Policy*, 14(4): 507–526.
- Falkner, R. and N. Jaspers. 2012. "Environmental Protection, International Trade and the WTO." In *The Ashgate Research Companion on International Trade*, ed. Kenneth Heydon and Stephen Woolcock, 245–260. Aldershot: Ashgate.
- Falkner, R., H. Stephan, and J. Vogler. 2010. "International Climate Policy after Copenhagen: Towards a 'Building Blocks' Approach." *Global Policy*, 1(3): 252–262.
- Frankel, J.A. 2009. "Addressing the Leakage/Competitiveness Issue in Climate Change Policy Proposals." In *Climate Change, Trade, and Competitiveness: Is a Collision Inevitable?*, ed. I. Sorkin and L. Brainard, 69–82. Washington, DC: Brookings Institution Press.
- Gallagher, K.P. 2004. *Free Trade and the Environment: Mexico, NAFTA, and Beyond*. Palo Alto, CA: Stanford University Press.
- Garcia-Johnson, R. 2000. *Exporting Environmentalism: U.S. Multinational Chemical Corporations in Brazil and Mexico*. Cambridge, MA: MIT Press.
- Goldsmith, E. and J. Mander, eds. 2001. *The Case against the Global Economy: And for a Turn Towards Localization*. London: Earthscan.
- Gros, D., C. Egenhofer, N. Fujiwara et al. 2010. *Climate Change and Trade*. Brussels: Centre for European Policy Studies.
- Grossman, G.M. and A. Krueger. 1993. "Environmental Impacts of a North American Free Trade Agreement." *The US–Mexico Free Trade Agreement*, ed. P. Garber, 13–56. Cambridge, MA, MIT Press.
- Henschke, L. 2012. "Going It Alone on Climate Change. A New Challenge to WTO Subsidies Disciplines: Are Subsidies in Support of Emissions Reductions Schemes Permissible under the WTO?" *World Trade Review*, 11(01): 27–52.
- Hettige, H., M. Mani, and D. Wheeler. 1998. *Industrial Pollution in Economic Development: Kuznets Revisited*. World Bank Development Research Group Working Paper, No. 1876. Washington DC: World Bank.
- Heydon, K. and S. Woolcock. 2009. *The Rise of Bilateralism: Comparing American, European and Asian Approaches to Preferential Trade Agreements*. Tokyo: United Nations University Press.
- Howse, R. 2002. "The Appellate Body Rulings in the *Shrimp/Turtle* Case: A New Legal Baseline for the Trade and Environment Debate." *Columbia Journal of Environmental Law*, 27(2): 491–521.
- Hufbauer, G.C. and J. Kim. 2009. *The World Trade Organization and Climate Change: Challenges and Options*. Washington, DC: Peterson Institute for International Economics.
- Isaac, G.E. and W.A. Kerr. 2007. "The Biosafety Protocol and the WTO: Concert or Conflict?" In *The International Politics of Genetically Modified Food: Diplomacy, Trade and Law*, ed. R. Falkner, 195–212. Basingstoke: Palgrave Macmillan.

- Kaufmann, C. and R.H. Weber. 2011. "Carbon-Related Border Tax Adjustment: Mitigating Climate Change or Restricting International Trade?" *World Trade Review*, 10(4): 497–525.
- Lieberman, S. and T. Gray. 2008. "The World Trade Organization's Report on the EU's Moratorium on Biotech Products: The Wisdom of the US Challenge to the EU in the WTO." *Global Environmental Politics*, 8(1): 33–52.
- Messerlin, P.A. 2012. "Climate and Trade Policies: From Mutual Destruction to Mutual Support." *World Trade Review*, 11(01): 53–80.
- Neumayer, E. 2001. *Greening Trade and Investment: Environmental Protection without Protectionism*. London: Earthscan.
- Neumayer, E. 2004. "The WTO and the Environment: Its Past Record is Better than Critics Believe, but the Future Outlook is Bleak." *Global Environmental Politics*, 4(3): 1–8.
- OECD. 2005. *Environmental Requirements and Market Access*. OECD Trade Policy Studies. Paris: Organisation for Economic Co-operation and Development.
- Palmer, A. and R. Tarasofsky. 2007. *The Doha Round and Beyond: Towards a Lasting Relationship between the WTO and the International Environmental Regime*. London: Chatham House.
- Post, D.L. 2006. "The Precautionary Principle and Risk Assessment in International Food Safety: How the World Trade Organization Influences Standards." *Risk Analysis*, 26(5): 1259–1273.
- Princen, T. 1997. "The Shading and Distancing of Commerce: When Internationalization is Not Enough." *Ecological Economics*, 20: 235–253.
- Princen, T., M. Maniates, and K. Conca, eds. 2002. *Confronting Consumption*. Cambridge, MA, MIT Press.
- Reinaud, J. 2008. *Issues behind Competitiveness and Carbon Leakage: Focus on Heavy Industry*. IEA Information Paper. Paris: International Energy Agency.
- Reppelin-Hill, V. 1999. "Trade and Environment: An Empirical Analysis of the Technology Effect in the Steel Industry." *Journal of Environmental Economics and Management*, 38(3): 283–301.
- Sampson, G.P. 2005. *The WTO and Sustainable Development*. Tokyo: United Nations University Press.
- Stein, J. 2009. "The Legal Status of Eco-Labels and Product and Process Methods in the World Trade Organization." *American Journal of Economics and Business Administration*, 1(4): 285–295.
- Stern, N. 2007. *The Economics of Climate Change: The Stern Review*. Cambridge: Cambridge University Press.
- Stiglitz, J.E. 2007. *Making Globalization Work*. New York: W.W. Norton.
- Tarasofsky, R.G. 2008. "Heating Up International Trade Law: Challenges and Opportunities Posed by Efforts to Combat Climate Change." *Carbon and Climate Law Review*, 1: 7–17.
- Trebilcock, M.J. and R. Howse. 2005. *The Regulation of International Trade*, 3rd edn. New York: Routledge.
- Weber, L.C. and G.L. Peters. 2009. "Climate Change Policy and International Trade: Policy Considerations in the US." *Energy Policy*, 37: 432–440.
- Wiers, J. 2008. "French Ideas on Climate and Trade Policies." *Carbon Climate Law Review*, 1: 18–32.
- World Bank. 2008. *International Trade and Climate Change: Economic, Legal, and Institutional Perspectives*. Washington, DC: World Bank.
- WTO. 2004. *Trade and Environment at the WTO*. Geneva: World Trade Organization.
- WTO and UNEP. 2009. *Trade and Climate Change. WTO–UNEP Report*. Geneva: World Trade Organization.