

The interaction between the international trade and climate change regimes has potentially major implications for developing countries. While there are positive reasons for exploring synergies between the two regimes and for aligning policies that could stimulate production, trade, and investment in cleaner technology options, instead much focus has been on using trade measures as sanctions in the global climate negotiations.

This focus on sanctions stems mainly from competitiveness concerns in countries that are now racing to reduce greenhouse gas emissions to meet Kyoto 2012 targets and beyond. These concerns have led to proposals for tariff or border tax adjustments to offset any adverse impact of capping carbon dioxide (CO₂) emissions. There is also a concern about “leakage” of carbon-intensive industries into countries that are not implementing the Kyoto Protocol.

The broad objective of bettering current and future human welfare is shared by both global trade and climate regimes. Just as the World Trade Organization (WTO) recognizes the importance of seeking to “protect and preserve the environment,”¹ the Kyoto Protocol states that parties should “strive to implement policies and measures . . . in such a way as to minimize adverse effect on international trade.” The United Nations Framework Convention on Climate Change (UNFCCC) features similar language in several places, and the Doha Communiqué specifically states that “the aims of upholding and safeguarding an open and non-discriminatory multilateral trading system, and acting for the protection of the environment and promotion of sustainable development can and must be mutually supportive.”² Both treaties thus recognize and respect each other’s mandate.

Yet both climate and trade agendas have evolved largely independently through the years, despite their

mutually supporting objectives and the potential for synergies. While the implementation of the Kyoto Protocol may have brought to light some conflicts between economic growth and environmental protection, the objectives of the protocol also provide an opportunity for aligning development and energy policies in ways that could stimulate production, trade, and investment in cleaner technology options.

Recent attempts to bring together the two agendas have been received with a great deal of skepticism. While trade ministers meeting in 2007 at the UNFCCC Bali Conference of Parties widely shared the view that the trade and climate regimes could buttress each other in several areas, they noted that tension between the two could arise, especially in the context of negotiations on post-Kyoto climate commitments after 2012.

A general developing-country perception is that any discussion of climate change issues (and, more broadly, environmental issues) in trade negotiations could eventually lead to “green protectionism” by high-income countries, which would be detrimental to their growth prospects. They have resisted attempts to include climate issues in trade by stating that climate change issues primarily belong and have to be negotiated under the umbrella of the UNFCCC. Even within the WTO there has been a general reluctance to broaden the climate mandate in the absence of a directive from the UNFCCC. Interestingly, despite all the rhetoric, a growing

number of regional trade agreements (many of which include developing countries) now have elaborate environmental provisions. However, there is little evidence to show that they have contributed in any meaningful way to achieving positive environmental outcomes.³ Also, regional trade agreements may have limited value in addressing environmental issues that require global solutions, such as climate change.

New developments

The proposed use of punitive trade sanctions to support domestic climate action remains prominent and has gained ground in the midst of the current financial crisis. All the recent energy and climate policy bills introduced in the U.S. Congress provide for trade sanctions or tariffs (or equivalent instruments) on certain goods from those countries that do not impose controls on carbon emissions. Similarly, the European Commission’s plans to tighten Europe’s greenhouse gas reduction regime also recognizes the risk that new legislation could put European companies at a competitive disadvantage compared to those in countries with less stringent climate protection laws.

The issue of imposing border measures on environmental grounds has been much discussed in the economic and legal literature. The WTO and other trade agreements do allow for “exceptions” for trade measures that might otherwise violate free trade rules but that can be justified as necessary or related to an effort to protect the

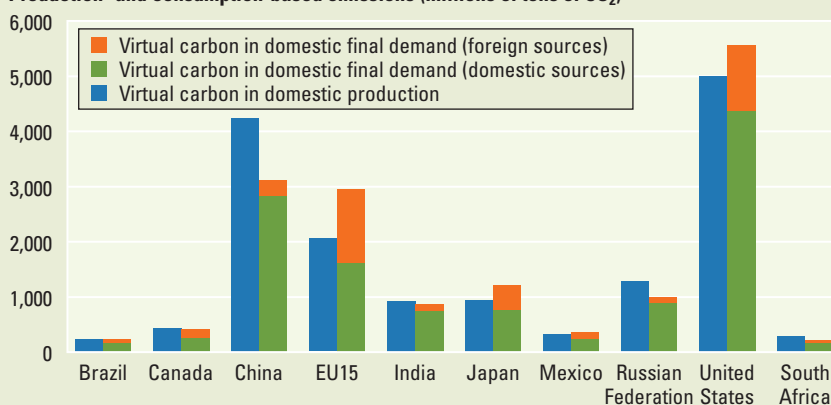
BOX FC.1 Taxing virtual carbon

Should carbon be taxed where it is emitted, or at the point where goods are consumed on the basis of their “embodied” or “virtual” carbon—the amount of carbon emitted in producing and delivering the good? Many major exporting countries argue that they would be penalized by taxing carbon at the point of emission, when in fact much of this carbon is emitted in the production of goods for export—goods that are enjoyed by consumers in other countries. Based on analysis of carbon flows within a multi-regional input-output table, the figure shows that China and the Russian Federation are net exporters of virtual carbon, while the European Union, the United States, and Japan are net importers.

However, countries imposing a carbon tax will be concerned about competitiveness and carbon leakage effects if other countries do not follow suit, and may consider taxing virtual carbon imports to level the playing field. The table shows the effective tariff rates in addition to the existing tariffs that countries would face if a tax of \$50 a ton of CO₂ were placed on the virtual carbon content of imported goods and services.

A carbon price of \$50 a ton of CO₂ is in line with recent experience—emission permits in the European Emission Trading Scheme traded as high as €35 in 2008. The table therefore suggests that virtual

Production- and consumption-based emissions (millions of tons of CO₂)



Source: Atkinson and others 2009.

Note: The height of the blue bar measures total emissions from production of goods and services; the green bar represents how much carbon is emitted domestically to support domestic final demand (virtual carbon from domestic sources); the orange bar represents how much carbon is emitted abroad to support domestic final demand (the virtual carbon from foreign sources). If the height of the blue bar is greater than the sum of the other two bars, then the country is a net exporter of virtual carbon.

carbon tariff rates faced by developing countries could be significant if countries go this route.

Unilateral imposition of virtual carbon tariffs would clearly be a source of trade friction, however, damaging an international trading system that is already being stressed by the current financial crisis. Opening the door to border taxes for climate could lead to a proliferation of trade measures dealing with other

areas where the competitive playing field is viewed as uneven. Accurate measurement of virtual carbon would be highly complex and subject to dispute. Moreover, placing tariffs on virtual carbon could burden low-income countries that have contributed very little to the problem of climate change.

Source: Atkinson and others 2009.

Average tariff on imports of goods and services if virtual carbon is taxed at \$50 a ton of CO₂ (percent)

		Importing countries										
		Brazil	Canada	China	EU15	India	Japan	Mexico	Russian Federation	United States	South Africa	Average
Exporting countries	Brazil	0.0	3.4	3.2	3.2	2.8	4.0	2.7	2.6	3.0	2.9	3.1
	Canada	4.5	0.0	3.4	3.4	3.7	3.2	2.8	2.8	2.6	3.0	2.8
	China	12.1	10.5	0.0	10.5	13.4	10.4	9.9	10.0	10.3	11.1	10.5
	EU15	1.6	1.1	1.1	0.0	1.3	1.2	1.1	1.1	1.2	1.2	1.2
	India	8.3	7.8	9.2	7.7	0.0	6.8	8.1	8.7	7.9	5.3	7.8
	Japan	1.4	1.3	1.5	1.4	1.6	0.0	1.4	1.4	1.2	1.3	1.4
	Mexico	3.5	2.1	4.2	4.0	10.8	4.0	0.0	4.1	1.7	3.5	2.1
	Russian Federation	18.0	14.3	12.4	11.8	12.8	11.3	14.7	0.0	10.4	15.9	11.7
	United States	3.3	3.0	3.1	3.1	3.3	3.0	2.8	2.8	0.0	3.2	3.0
	South Africa	15.9	10.1	10.6	9.8	11.5	11.4	16.6	7.9	8.9	0.0	10.1
	Average	3.7	2.9	2.2	5.0	4.5	4.8	3.3	2.6	3.0	2.9	

Source: Atkinson and others 2009.

Note: The last column is the trade-weighted average tariff faced by the exporting country; the last row is the trade-weighted average tariff applied by the importing country.

environment or conserve exhaustible natural resources and so long as they are “nondiscriminatory” and “least-trade-restrictive.”⁴ Trade measures are often justified as a mechanism to ensure compliance with multilateral environmental agreements (MEAs). Indeed MEAs such as the Convention on International Trade in Endangered Species and the Basel Convention use trade restrictions as a means to achieve MEA aims and these are accepted by all parties to the MEA. In case of climate change, however, a particularly thorny issue in assessing the compatibility of trade measures with climate change policy may arise from the application of unilateral measures based on national policies or product standards based on Processes and Production Methods, or both. The other issue with respect to “border tax adjustments” that has received little attention is what would happen to the revenue that is generated. If it is all given back to the country that is taxed it may have a very different political economy than if it stays in the country imposing the tax.

But legal experts remain divided on whether a tax on embodied carbon would be compatible with international trade regulations, because the WTO so far has not come out with clear provisions on the subject. Nonetheless, the recent proposals could have significant implications for trade in manufactures in developing countries (box FC.1).

Many high-income countries also express concern that any plan that exempts developing countries from emissions limits would not be effective because carbon-intensive industries would simply shift their operations to one of the exempt countries. Carbon leakage, as such a shift is called, not only would undercut the environmental benefits of the Kyoto Protocol but also would affect the competitiveness of high-income-country industries. For energy-intensive industries such as cement and chemicals, international competitiveness is an important con-

cern. This issue has a parallel to the “pollution havens” debate that dominated the trade and environment literature in the 1990s.

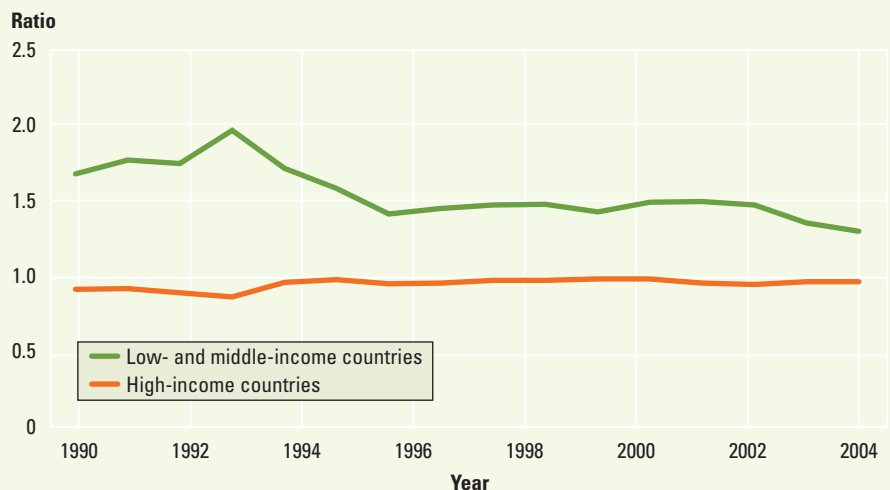
A recent World Bank study examined the evidence for any relocation of carbon-intensive industries attributable to more stringent climate policies, mostly in high-income countries. One of the factors influencing the operations of the energy-intensive sectors generally is the relative energy price in addition to land and labor costs. The study used import-export ratios of energy-intensive production in high-income countries and low- and middle-income countries as a proxy for any shift in production and trade patterns (figure FC.1).⁵ The import-export ratios show an increasing trend for high-income countries and a declining trend for low- and middle-income countries. While not conclusive, this seems to suggest that some relocation of energy-intensive industries may already be happening to countries that do not face caps on their greenhouse gas emissions. However, the ratio is still less than 1 for high-income countries and more than 1 for developing economies, suggesting that high-income countries continue to

be net exporters and developing countries net importers of energy-intensive products.

In a similar vein, firms in some high-income countries are adopting “carbon labeling” as a mechanism for mitigating climate change. Carbon labeling involves measuring carbon emissions from the production of products or services and conveying that information to consumers and those making sourcing decisions within companies. It is possible that well-designed schemes would create incentives for production in different parts of the supply chain to move to lower-emission locations. Thus, carbon labeling could be an instrument that enables consumers to exercise their desire to join the battle against climate change by using their purchasing preferences.

The downside of carbon-labeling schemes is that they are likely to have a significant impact on exports from low-income countries.⁶ Fears have been raised that low-income countries will face greater difficulties exporting in a climate-constrained world where carbon emissions need to be measured and certification obtained to enable participation in carbon-labeled trade. Exports

Figure FC.1 Import-export ratio of energy-intensive products in high-income countries and low- and middle-income countries



Source: World Bank 2008.

from low-income countries typically depend on long-distance transportation and are produced by relatively small firms and tiny farms that will find it difficult to participate in complex carbon-labeling schemes.

There is a significant knowledge gap to be filled regarding scientific studies of the structure of carbon emissions throughout international supply chains that include low-income countries. The small number of existing studies suggests that emissions patterns are highly complex, and an important finding is that geographic location alone is a poor proxy for emissions, because favorable production conditions may more than offset a disadvantage in transport. For example, Kenyan-produced roses air-freighted to and sold in Europe are associated with considerably lower carbon emissions than roses produced in the Netherlands.

The design and implementation of carbon labeling will also need to take into account a number of complex, technical challenges.⁷ First, using secondary data from producers in rich countries to estimate the carbon emissions of producers in low-income countries will not capture the fact that the technologies being applied in rich and low-income countries are substantially different. A second technical issue relates to the use of emission factors—the amount of carbon emitted during particular parts of the manufacture and use of products—and how they should be calculated. A third issue is the choice of system boundaries, which define the extent of processes that are included in the assessment of greenhouse gas emissions. Estimates of the carbon footprint of a system, product, or activity will also depend on where the system boundary is drawn.

The positive agenda

The other area where trade and climate have recently overlapped relates to technology transfer. Given the limitations of the Clean Development Mechanism in delivering the kind and magnitude of

technology transfer needed to deal with increasing greenhouse gas emissions in the developing world (see chapter 6), it has been suggested that broader trade and investment rules could be one way to speed up transfer of technology.⁸ Liberalizing trade in environmental goods and services has been on the agenda of the WTO Doha Round since the beginning. All WTO members agree that environmental goods liberalization should be geared toward environmental protection. Yet very little has been achieved owing to the differing perceptions of high-income and developing countries on what goods are to be liberalized and how to liberalize.

Efforts have been made, including by the World Bank,⁹ to move these negotiations forward by identifying climate-friendly goods and services that currently face tariff and nontariff barriers to trade, and making the removal of these barriers through the WTO negotiations a priority. This effort has proved challenging, because WTO members have yet to agree on a definition of “climate friendly” that both contributes to climate policy objectives and generates a balanced distribution of trade benefits among members. Two particular areas of controversy involve “dual use” technologies that may be used to reduce emissions as well as to meet other consumer needs, and agricultural products, which are mired in a very contentious part of the Doha negotiations.

The other issue that often goes unnoticed is the huge potential for trade between developing countries (South-South trade) in clean technology. Traditionally developing countries have been importers of clean technologies, while high-income countries have been exporters. However, as a result of their improving investment climate and huge consumer base, developing countries are increasingly becoming major players in the manufacture of clean technologies.¹⁰ A key development in the global wind power market is the emergence of China as a significant player, both in manufacturing and in investing in additional

wind power capacity. Similarly other developing countries have emerged as manufacturers of renewable energy technologies. India's solar photovoltaic manufacturing capacity has increased several times in the past four years, while Brazil continues to be a world leader in the production of biofuels. These developments call for liberalizing bilateral trade in clean technologies that could also facilitate buoyant South-South technology transfer in the future.

The way forward on trade and climate change

Countries have generally been reluctant to bring the trade and climate regimes closer for fear of one overwhelming the other. This is unfortunate because trade in clean energy technologies potentially offers an economic opportunity for developing countries that are emerging as major producers and exporters of these technologies.

Progress in the trade regime is possible even on very complex subjects. The success of the WTO's 1997 Information Technology Agreement suggests that implementation of any agreement on climate-friendly goods and technologies will certainly need to follow a phased approach to enable developing countries to deal gradually with implementing liberalization, including increasing the efficiency of customs administration and harmonizing customs classifications for climate-friendly goods. This should be supported through a package of financial and technical assistance measures. Postponing action on the trade and climate agenda until another lengthy round of WTO negotiations beyond the Doha Round is risky because of the imminent danger that climate-related trade sanctions of the variety proposed in the United States and the European Union could become a reality.

If climate-related trade measures bite deeply enough, developing countries can use the trade and climate negotiations to push back, or they may choose to adapt to the new policies and

standards set by their major trading partners, in order to maintain access to their markets. In either case, developing countries will need to build their capacity to better understand and respond to these developments. Further, the need to push for financial and technology transfer as a part of any global deal on trade and climate change could not be more emphasized.

While there could be many benefits to bringing the trade and climate regimes closer, the potential for harm to the international trade regime from actions such as unilateral imposition of border taxes on carbon should not be underestimated, especially since the burden will fall disproportionately on developing countries. It is thus in the interest of developing countries to ensure that the pursuit of global climate objectives is compatible with maintaining a fair, open, and rule-based multilateral trading system as a foundation for their growth and

development. Developed countries also have an important stake in the multilateral trading system and bear a major responsibility for ensuring that the system is maintained.

Notes

1. Preamble to the Marrakesh Agreement that established the WTO in 1995.
2. Quoted in World Bank 2008.
3. Gallagher 2004.
4. See article XX (b) and (g) of the 1947 General Agreement on Tariffs and Trade. WTO 1986.
5. World Bank 2008.
6. Brenton, Edwards-Jones, and Jensen 2009.
7. Brenton, Edwards-Jones, and Jensen 2009.
8. Brewer 2007.
9. World Bank 2008.
10. World Bank 2008.

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