



CLIMATE AND TRADE

Links Between the Kyoto Protocol and WTO



BY JEFFREY FRANKEL

SOME VIEW THE WORLD TRADE ORGANIZATION (WTO) AND THE KYOTO PROTOCOL—the multilateral institutions designed to address trade and global climate change—as opposing regimes. But do they actually conflict with each other? The question is important, but the answer is not simple. After all, even the broad linkages between issues of trade policy and global environmental issues have received insufficient careful analysis. The narrower question of how the rules and procedures of WTO mesh with the rules and procedures of the Kyoto Protocol has received even less attention. Yet it is becoming increasingly important to find ways to harmonize trade and the environment—a key aim of the burgeoning sustainable development movement.

WTO, the institution that embodies the multilateral regime of rules governing international trade, set up shop in Geneva, Switzerland, in 1995. Although its forerunner, the General Agreement on Tariffs and Trade (GATT) had been in existence for some time, GATT's rules had in some ways been loose. For example, under GATT, a member could choose simply not to accept a panel ruling that went against it. WTO was the outcome of eight years of negotiation, under the Uruguay Round, to put more teeth into the global trading regime. It is too soon to know how successful the first round of negotiations to take



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Some fear globalization will allow industries like this European petrochemical plant to skirt the Kyoto Protocol by simply relocating. But trade and the institution that governs it—the World Trade Organization—may be more of a boon to the treaty than many environmentalists believe.

place under WTO (the ongoing Doha Round) will be at attaining its goal of further lowering trade barriers. Nevertheless, WTO is considered one of the most consequential of multilateral organizations.

The Kyoto Protocol, embodying the multilateral regime to address the problem of global climate change, was also the outcome of years of discussion. The negotiations culminated in Kyoto, Japan, in 1997, just two years after the birth of WTO. Like WTO, the Kyoto Protocol had forerunners: The Rio Treaty of 1992 had established goals for limiting emissions of greenhouse gases, pursuant to the earlier United Nations Framework Convention on Climate Change. But the goals of the Rio Treaty were not at all binding on its members. It was for this reason that the Kyoto Protocol established binding numerical limits to emissions (on the part of industrialized countries, including much of Eastern Europe). The protocol

entered into force only recently, in February 2005. It is too soon to know how successful it will be at its goal of reducing emissions of greenhouse gases in the “budget window” of 2008–2012. But, for better or worse, it constitutes the one multilateral policy instrument we have to address the problem of global warming.

Although both regimes have strident critics, an examination of the potential conflicts and complementarities of the World Trade Organization and the Kyoto Protocol reveals an overall picture more optimistic than they may fear.

Two Multilateral Regimes

Global climate change policy is a large and complicated subject. It cuts across many academic disciplines, agencies, interest groups, and so on. When confronted with the world of trade and WTO,

it may be tempting for scientists and decisionmakers focused on climate and the Kyoto Protocol to react along the following lines: “Things are complicated enough already. Our efforts to address global climate change are legitimate and important. If trade policy and WTO are sincere and legitimate, they should not create obstacles or constraints to what we are doing. So we should be able to ignore them and they should be able to work around us.” Those who live full time in the world of trade policy view environmental policy with a similar attitude: “Trade policy is important and complicated enough as it is. If environmental policy is sincere and genuine, there is no reason why its instruments should involve discrimination against some countries’ exports. So let them work around us.” Unfortunately, while they do indeed complicate things, the interconnections between climate policy and trade policy cannot be ignored

entirely. They are sufficiently deep and numerous that proponents of trade and climate policy need to be aware of each other, and some amount of collaboration is desirable.¹

Free traders, who include almost all economists, fear that talk about environmental protection will be used as an excuse by some economic sectors to gain protection for themselves against competition from abroad. The fear is symmetric to that of environmentalists, who worry that free trade will be used as an excuse to give inadequate weight to environmental goals and excessive weight to maximization of market-measured gross domestic product (GDP). Because both fears have a significant element of truth to them, both areas of policy need to acknowledge

the legitimate concerns of the other. The good news is that, if they do, international institutions and multilateral trade can help achieve greater environmental protection for a given economic cost, a higher GDP for given environmental goals, or some of both.

Trade and the Atmosphere

Before turning to the question of how WTO meshes or conflicts with the Kyoto Protocol, it is helpful to look at a broader, related question that has likewise received insufficient attention: Is trade good or bad for the environment?

The many possible effects of trade on the environment can be divided into two

categories: those that operate via GDP in the same manner as investment, technology, and other sources of economic growth; and those that are peculiar to trade alone and thus hold even for a given level of GDP. Within each category, there are beneficial and detrimental effects. The overall bottom line depends on what dimension of environmental quality is at stake. For concentrations of sulfur dioxide (SO₂)—which is a common air pollutant linked to respiratory illness and other health effects and is also a precursor to acid rain—statistical studies give a relatively clear answer, on average, across countries. Regarding the effect via income, air pollution peaks at a per-capita income of around \$5,700 a year. After that, further economic progress tends to result in cleaner air—the famous Environmental Kuznets Curve. It is not that the market solves the problem entirely on its own; rather, as people grow richer, they demand cleaner air and—in a country with a responsive and competent government—the result is effective regulation (see Table 1 on the left).

What about the effect of openness to trade, holding constant the level of income? Do fears about competitiveness put downward pressure on national regulation? In the case of SO₂, the overall statistical effect, on average across countries, is the opposite. Evidently openness to trade helps reduce air pollution, whether via accelerated innovation, an international ratcheting up of standards, empowerment of the consumer, or some other channel.³

One cannot be as sanguine for many other measures of environmental quality, especially emissions of the greenhouse gas carbon dioxide (CO₂). The estimates in a recent paper in *Review of Economics and Statistics* found no statistical evidence of a tendency for a country's per-capita emissions to peak at some level of income and then to turn down; rather,

Table 1. Is trade good or bad for the environment?

Effects of trade on the environment		Via growth in income	Given a constant level of income
Harmful effects		Larger scale of economic activity	"Race to the bottom" in national regulation
Beneficial effects		Shifts to cleaner techniques and composition of economic activity	"Gains from trade": ratcheting up of standards, innovation, consumer power
Statistical evidence on the bottom line, looking across countries	for sulfur dioxide (SO ₂)	Environmental Kuznets Curve: After an income per capita of about \$6,000, further growth tends to reduce pollution (presumably via national regulation).	Other things equal, the beneficial effects of trade on SO ₂ seem to dominate over the harmful effects.
	for carbon dioxide (CO ₂)	There is no sign that total emissions turn down on their own (presumably because CO ₂ is a global externality: little regulation is possible at national level).	Trade, if anything, may increase CO ₂ emissions, even for a given level of income.

SOURCE: Statistical estimates collected from J. Frankel and A. Rose, "Is Trade Good or Bad for the Environment? Sorting Out the Causality," *Review of Economics and Statistics* 87, no. 1 (February 2005).

this paper says they just keep rising. Furthermore, openness to trade appears to exacerbate emissions more than do other sources of growth. This is what would be predicted by the race-to-the-bottom hypothesis: individual countries are inhibited in regulating their industries out of fear of adverse effects on international competitiveness.⁴ (Table 1 summarizes the global effects of trade on the environment.)

It is not hard to explain why trade and growth could help reduce local air pollution and yet exacerbate greenhouse-gas emissions. The latter constitutes a global externality. Due to the international "free

eration that comes from a multilateral regime of regulation—along the lines of the Kyoto Protocol.

Mutual Respect

Drafters of the Kyoto Protocol and WTO have shown more enlightened consideration for each other than has sometimes been shown by the rank and file of environmentalists and free traders. The text of the Kyoto Protocol says parties should "strive to implement policies and measures . . . in such a way as to minimize adverse effects . . . on international trade," and the Framework Convention on

no more than lip service. Partly as a result, the Preamble to the Marrakech Agreement, which established WTO in 1995, recognizes the importance of seeking "to protect and preserve the environment." In addition, the Doha Communiqué of 2001, which kicked off a new round of negotiations, judged that "the aims of upholding and safeguarding an open and non-discriminatory trading system, and acting for the protection of the environment and the promotion of sustainable development can and must be mutually supportive."⁷ The question becomes, are these noble sentiments practical, or must the trade and climate regimes in reality clash?

Win-Win Examples

It is certainly not inevitable that the trade and climate regimes always pull in opposite directions. Three examples—one recent, one under consideration, and one hypothetical—show the possibility of the win-win idea.

First, in May 2004, Russia announced it would ratify the Kyoto Protocol. The Russian decision to ratify was no small matter, as it meant the difference between the protocol going into effect or failing. Prior to signing, Russia had been at best lukewarm about the Kyoto Protocol, perhaps because it considers itself to be one of the few countries that might actually benefit from global warming. It is fairly clear that President Vladimir Putin decided to go along as a quid pro quo for European Union (EU) support of Russia's application to accede to WTO.⁸ In this case, each party has gotten what it most wants—Europe wanted Russia to be a signatory of the protocol, and Russia wanted to become a member of WTO.

Second, a multilateral liberalization of capital equipment and services used in environmental efforts (for example, waiving tariffs on trade in windmill turbines) would again serve both kinds of goals,



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Openness to trade can help to reduce local air pollution yet can exacerbate greenhouse gas emissions.

er problem," regulation at the national level is inadequate to address it: Each country individually would have little incentive to cut back emissions because it would bear the economic costs alone even though the benefits would accrue to all. We need not only the will and economic resources to address global climate change but also the international coop-

Climate Change features similar language in several places.⁵

Meanwhile, the trade regime is equally solicitous. Article XX of GATT explicitly allows for exceptions to its trade rules to protect health and conservation of resources. In such famous cases as the tuna-dolphin dispute,⁶ environmentalists complained that Article XX was receiving

economic and environmental. Indeed the U.S. government in early 2003 proposed that the Doha Round of trade negotiations include commitments concerning market access and national treatment in this sector. There is a precedent: When the United States ended restrictive tariffs and quotas on imports of Japanese automobiles, which tended to be small and fuel-efficient, the consumer pocketbook and air quality both benefited.⁹

Third, an international ban on subsidies to fossil fuels would achieve the environmental goal of reducing carbon emissions and the economists' goal of removing an economic distortion and contributor to deficit spending. While coal subsidies are not as large as they once were, they are still important. A ban at the national level or, better yet, globally, would satisfy many goals. Indeed, the Kyoto Protocol specifically mentions that as one of the measures to help achieve their emission targets, parties could adopt "progressive reduction or phasing out of market imperfections . . . and subsidies in all greenhouse gas emitting sectors that run counter to the objective of the Convention."¹⁰ Unfortunately, there are no plans to discuss this issue in the Doha Round.¹¹ A ban on fossil fuel subsidies would nevertheless be a great initiative for the G8 and World Bank to undertake.¹²

How Might Kyoto Come into Conflict with WTO?

Despite the potential for such win-win situations, pro-environment critics worry that WTO could undermine the Kyoto Protocol, while free-trade proponents fear that Kyoto could challenge WTO. The specific sort of legal conflict that is likely to come up is the adoption, as part of a country's climate change policy, of tariffs or other measures that discriminate against producers in certain



Demonstrators protesting the 1999 WTO meetings in Seattle were concerned that the international shrimp trade was harming sea turtles.

trading partners. If the discrimination favors other trading partners, it would be a potential violation of the Most Favored Nation principle of GATT's Article I. If the discrimination favors "like products" from domestic producers, it would be a potential violation of the national treatment provision of Article III. Either way, if a targeted country files a WTO complaint alleging such a violation, the question is then whether the measure under dispute is permissible under Article XX. This section allows for exceptions to the nondiscrimination principles for environmental reasons (among others), provided that the measures in question are not "a means of arbitrary or unjustifiable discrimination" or a "disguised restriction on international trade."¹³ Under WTO procedures, an international panel of experts is designated to make a legal ruling, which the parties can then appeal. It is these panels that most seem to draw the ire of

antiglobalization critics. But the criticism is often based on misunderstanding.

Turtles, PPMs, and WTO Panel Decisions

It has frequently been observed that intellectual nuance and consistency are lost in oversimplified public debates and media events; however, the misunderstandings regarding WTO panel decisions go much deeper than this. Consider for a moment the shrimp-turtle case: Some of the demonstrators protesting the 1999 WTO ministerial meeting in Seattle were concerned that international trade in shrimp was harming sea turtles because of the nets used to catch the shrimp. They felt that a WTO panel had, in the name of free trade, negated the ability of the United States to protect the turtles, simultaneously undermining the international environment and national sovereignty.

However, perceptions regarding the WTO panel ruling on the shrimp-turtle case are not entirely accurate. In reality, the U.S. ban on shrimp imports from countries without adequate regulatory regimes in place was unnecessarily selective and restrictive. The WTO panel and appellate body decided that the U.S. application of the law, in a variety of ways, was arbitrarily and unjustifiably discriminatory against the four plaintiff countries (the Asian shrimp suppliers). The United States had unilaterally and inflexibly banned shrimp imports from countries that did not have in place for all production a specific turtle-protection regime of its own liking.¹⁴

The case should in fact have been considered a victory for environmentalists, in that the WTO panel and the appeals body in 1998 explicitly stated that the United States could pursue the protection of endangered sea turtles against foreign fishermen. This was an important precedent because of the distinction between products on the one hand and production

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processes on the other. The case supported the principle that WTO rules allow countries to pass judgment on other countries' processes and production methods (PPMs) even if it means using trade controls to do so, provided only that the measures are not unnecessarily discriminatory.¹⁵ Under earlier GATT rules, the trade regime usually assumed that it was no business of one country what production techniques its trading partners followed to produce a given product and that it could only block imports of products that hurt its own environment. Subsequent to the panel ruling, the United States allowed more flexibility in its regulation and made good-faith efforts to negotiate an agreement with the Asian producers. The WTO panel and appellate body in 2001 found the new U.S. regime to be WTO compliant.¹⁶

But the legal principle that PPMs are fair game is still quite fragile. Some developing countries would still like to argue that measures that target their PPMs violate WTO. When environmentalists fail to realize the progress they have made in these recent WTO panel cases, they may thereby miss an opportunity to consolidate those gains.¹⁷ Perhaps the precedent is limited to PPMs with environmental effects that cross borders: The turtles swim virtually around the globe. The subject of this article is greenhouse gas emissions, which generate entirely cross-border effects; thus the shrimp-turtle precedent does indeed seem relevant.

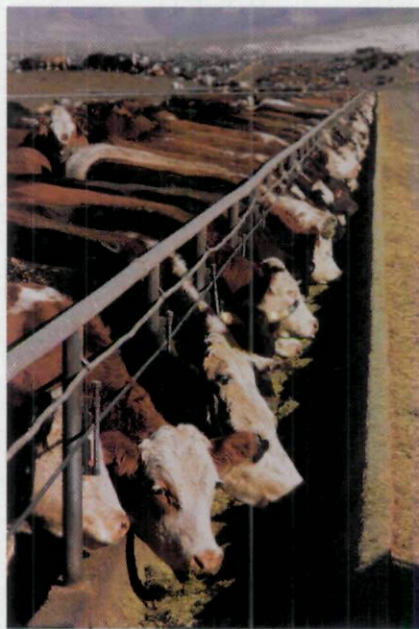
Two Areas Where Conflict Is Less Likely

An exhaustive list of potential conflicts between provisions of the Kyoto Protocol and provisions of WTO would be a very long list, as international environmental policy experts Steven Charnovitz and Thomas Brewer point out.¹⁸ What are the bigger and more interesting issues?

Two areas that might have turned out to be the most important points of con-

flict are in fact less likely to come up as issues at all, given the recent history. The first is related to what is perhaps the best feature of the Kyoto Protocol—permit trading—and the other to what is perhaps the protocol's biggest shortcoming—lack of trade sanctions or other means of enforcement.

It may seem commonsensical to think the subject of international trade in permits constitutes an intersection between the Kyoto Protocol and WTO. However, WTO applies only to international trade



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Under the Agreement on Agriculture, WTO could allow subsidies for the reduction of methane emissions.

in goods and services, while in the views of many,¹⁹ an emission permit (like a security) is neither. Thus permit trading is yet another major example of a potential win-win situation. It is far better to achieve the national targets that were agreed to at Kyoto by allowing firms or governments in countries where it would be expensive to reduce emissions to buy them from countries where it is cheaper to do so. Not only does it mean

a lower economic cost of achieving the given environmental goal, but by keeping the costs reasonable, permit trading also makes it more likely that countries will meet their targets honestly rather than through accounting tricks, that serious emission targets can be agreed to in the subsequent budget periods, and that other countries will be willing to join.²⁰ In this light, perhaps some Europeans were shortsighted in opposing the U.S. position for unrestricted permit trading (for example, at the Hague in 2000).

Next, the issue of trade sanctions or controls: Perhaps the biggest practical shortcoming of the Kyoto Protocol is that so many important countries are not participating and there is no mechanism to encourage them to join. The problem is not just that the world's largest and fastest-growing emitters are not members. There may be what is called "leakage," whereby carbon-intensive industry relocates to the nonmember countries. In addition, the fear of losing competitiveness to the free riders can sap the will of the members to adhere honestly to their targets. Trade sanctions are perhaps the most powerful multilateral inducement that can be applied to shirkers, short of military force. Thus some might have favored the use of trade penalties against nonjoiners as a mechanism to encourage participation, at least for trade controls related to the energy/greenhouse gas sector. If there had been any serious political weight behind this proposal, we would now have had to consider the potential for conflict with the international trade regime, there being nothing in WTO to block multilateral environmental treaties from adopting trade controls to encourage countries to join.²¹ Indeed, the Montreal Protocol on stratospheric ozone depletion has them, ran into no problems under international trade rules, and is generally considered to have been successful in achieving its goals.²² Other examples

include treaties on hazardous waste, fisheries, and endangered species.²³

Admittedly, there is a lot of resistance to using trade to solve the free-rider problem in environmental agreements. Most governments do not favor international environmental agreements that are so aggressive as to include trade sanctions. The failure does not mean that globalization and global institutions like WTO are the problem and national sovereignty the victim, as the Seattle demonstrators seemed to believe. Rather, it is the other way around: Globalization is the ally, and national sovereignty is the obstacle. In any case, because no government pushed for trade sanctions, or even trade controls, to be written into the Kyoto Protocol, the question is largely moot—unless some party proposes such penalties in future agreements.

Equally absent from the agreement negotiated at Kyoto was any specific mechanism to enforce compliance by members. What penalty is to be applied to a country that misses its targets? Suppos-

edly the penalty is that the country is to cut its emissions even more in the subsequent budget period, but this has never sounded at all credible. One logical possibility is trade controls, which would again require a consideration of WTO implications. But it seems more likely that deficient countries will try to fill their emission gaps with generous accounting interpretations of, for example, sinks or Clean Development Mechanism/Joint Implementation (CDM/JI) projects. The membership will probably not respond with aggressive sanctions, particularly in light of the fact that the United States and other nonrati-fiers are getting off scot-free.

Potential Conflict from Four Categories of Border Taxes

Even without trade sanctions or controls in the Kyoto Protocol, complaints about violations of the WTO nondiscrimination rules are likely to arise if a member country seeks to impose border tax adjustments to offset the effects of

specific domestic greenhouse gas taxes on the competitiveness of its own industry vis-à-vis foreigners. For example, if a tax is imposed on domestic coal production, it is reasonable that a similar tax should be imposed on imports of coal from abroad. European countries do not yet seem to be busy formulating plans for such offsetting border adjustments. However, it seems likely that political pressure will eventually push in this direction, coming from industries worried about higher energy costs that burden them domestically and that give competitors in nonmember countries (especially in the United States) an unfair advantage. They will surely ask their governments to level the playing field.²⁴

The box on this page lists four categories of offsetting border tax adjustments that national governments might enact to achieve the quantitative targets of the Kyoto Protocol—without losing economic competitiveness vis-à-vis nonparticipants. These include taxes that are implicated in raising greenhouse gas emissions

FOUR TYPES OF BORDER TAX ADJUSTMENTS UNDER THE KYOTO PROTOCOL THAT COULD CONFLICT WITH WTO

If a country enacted offsetting border tax adjustments in an effort to level the playing field for its industry while pursuing reductions in its own greenhouse gas emissions, what form would these measures take? There is a whole range of possible examples, depending first on whether the discrimination is explicitly targeted against nonmembers of the protocol, and second, on the product in question. These examples can be boiled down to four categories: those that are

- implicated in raising greenhouse-gas (GHG) emissions in the importing country—such as trade in coal-burning equipment or trade in coal itself;
- implicated in GHG emissions in the exporting country—such as the purchase

of aluminum that has been smelted in another country or the purchase of electric power generated from coal-burning in a neighboring country;

- relevant for the reduction of emissions in the importing country—such as the purchase of alternative-technology automobiles or of goods and services used in the generation of renewable energy or in carbon sequestration; or
- not particularly relevant to emissions, except in the respect that the exporting country is not abiding by the Kyoto Protocol. One could always put up tariffs against any export of a nonmember country and claim the justification that the product uses energy or other inputs where the cost has been unfairly

reduced by the country's refusal to participate in climate change mitigation.

In all four cases, if the measure explicitly discriminated against exports of nonmembers, at least part of the motivation, inevitably, would be to punish the trading partner and give it an incentive to join in the future. In the latter two cases, this would be the only motivation. In the first two cases, there would be an additional motivation, more directly related to the environmental goal. In other words, both motivations would be present, no doubt imprecisely mixed together under the rubric of "fairness," but there is nothing inherently wrong in having multiple motivations for one policy.



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Trade sanctions could encourage such nonparticipants as the United States to help strengthen or even accede to Kyoto Protocol provisions—the key is to pick the most effective sanctions.

in the importing country; those that are implicated in greenhouse gas emissions in the exporting country; those that are relevant for the reduction of emissions in the importing country; and those that are only relevant in the respect that the exporting country is not abiding by the protocol. If these measures were to come into conflict with WTO, what form would the conflict take? How should the legitimacy of these four kinds of trade barriers be viewed?

The Montreal Protocol on stratospheric ozone depletion is a good precedent. Its

trade penalties had both motivations discussed in the box: to encourage countries to join and to minimize leakage with trade sanctions if substantial numbers of countries had nevertheless remained outside the protocol.²⁵

Looking back over the list of four categories in the box, in the first case, barriers against imports of dirty products such as coal, the relevance to climate change mitigation is direct and obvious. This is not to say that a country could put up tariffs against coal imports if domestic coal production were not similarly taxed,

but as part of a regime of penalizing all coal, a border tax would be legitimate. Even if the importing country does not produce coal, it would still be allowed to apply tariffs. A precedent is the WTO panel decision supporting France's policy of keeping out asbestos on environmental grounds, denying a complaint from exporter Canada.

In the second case, the environmental motivation is to avoid leakage: The main goal of the Kyoto Protocol will be subverted if all the carbon-producing activities such as coal burning and aluminum

smelting simply relocate to nonmember countries, thus offsetting the reduction in emissions among members. The usual view is that WTO makes it much less clear that a country can in the name of the environment target others' PPMs than it can their export products. But the precedent of the WTO shrimp-turtle panel arguably establishes the validity of measures targeting PPMs, particularly in the case of PPMs that create global externalities such as ozone-depleting chemicals or greenhouse gases. One could ask what business it is of one country whether another wants to exploit its prison labor, for example, or pollute its own water or air. But in the case of the global externalities, a country's actions are quite clearly everyone's business. Paradoxically, the argument for targeting greenhouse gas emissions in the exporting country, even though it is a PPM issue, may be even stronger than in the first case: For a member to ban imports of coal from a nonmember would do little to advance the goal of the protocol, in the sense that the member's emissions are already capped. In fact, boycotting such coal will lower its world price and cause more to be burnt by nonmembers. Discouraging leakage of emissions to nonmembers, on the other hand, is essential to the goals of the protocol, and WTO recognizes the legitimacy of such goals.

The third and fourth cases seem more dubious. Here no direct environmental goal is accomplished, beyond attempting to punish nonmembers and perhaps encouraging them to join the regime. The record shows that unilateral sanctions are seldom successful. Furthermore, the parties at Kyoto specifically declined the opportunity to put multilateral sanctions into the protocol, which is a strike against the legality of unilateral sanctions.²⁶ Admittedly, it is hard to say where the dividing line is, for example, in the case of barriers against the following types of exports: aluminum from a nonmem-

ber if the smelting process uses carbon-intensive power generation and nonmember exports that are removed by several stages from the emissions created by the energy to produce them or other inputs. It is important to realize that there are limits to the argument that the inputs were polluting. Imagine a very clean product (such as hydrogen produced in a non-polluting way and destined for use in a hydrogen-powered vehicle). One would not want to allow a ban on the product's import under the argument that some of the workers in the other country commuted to work by means of carbon-emitting transportation.²⁷ If a nonmember "unfairly" gains competitiveness in sectors that are more carbon-intensive than the average, it also loses competitiveness in the least carbon-intensive sectors.²⁸

Recommendations

How should multilateral governance proceed? It is helpful to begin the answer by examining some of the more specific institutional contexts in which border tax adjustments might arise. The next question is, what other potential conflicts might arise between Kyoto and WTO? Finally, what are some priorities for proactive policy initiatives?

Applications to Specific Climate Mitigation Measures

Proceeding through the four border-tax cases spelled out in the box, it is possible to come to a rough judgment in each case as to what decision would best balance the competing objectives.

First is the case where a member country implementing its reductions in domestic carbon emissions through an efficient carbon tax (for example) seeks offsetting border measures to tax imports from nonmembers—and to exempt exports. The

case is clear for applying the same tax to the burning of imported coal as domestic coal²⁹ and almost as clear for taxes on gas-guzzling automobiles (low-mileage cars are not the same product as high-mileage cars, in the eyes of WTO³⁰) as well as fuels according to carbon content. There is also a good case for applying a tax to imports of electricity that has been generated in a carbon-emitting way, notwithstanding that it is a PPM. A tax at the next stage—for instance, on the carbon content of imported aluminum—even seems reasonable, particularly if it were a border tax adjustment applied by a country that was itself taxing its own industry on the energy content of its production.³¹ But at subsequent stages of production, the carbon content becomes sufficiently indirect that no penalty against imports should be allowed.

Second, many countries adopt energy efficiency standards as part of their programs to reduce emissions. For example, fuel-efficiency standards for automobiles are common. These are permissible, even if they have the side effect of benefiting, say, Japanese products over EU or U.S. exports, providing there is no needless discrimination.³²

Third, there has been a proposal to punish free-riding countries by screening Clean Development Mechanism projects according to whether the capital goods, say turbines to be installed in a power plant in China, are produced in a member country.³³ If this proposal were enacted as a multilateral trade sanction, in the protocol itself, there would not necessarily be a problem.³⁴ The idea would be to help generate a sorely needed business constituency in potential new members like the United States. However, it does not follow that individual national governments can do it. Rather, there is a need that multilateral rules governing CDM be developed so as to be as consistent as possible with WTO.³⁵

Other Potential Conflicts

There are other aspects of WTO that could come into play besides those relating to discrimination against countries' exports.³⁶ For example, there is a WTO Agreement on Subsidies and Countervailing Measures that went into force in 1995. Under this agreement, when Kyoto parties exempt particular favored industries from an energy tax, give out domestic emission permits in a non-neutral way, or reward their companies with credits for CDM and JI projects, they might be liable to complaints under the subsidies agreement. (Credits and permits are virtually equivalent to money.³⁷) There is also an Agreement on Agriculture, which brought agricultural protection and subsidies inside WTO, and it is anticipated that the Doha Round, if truly successful, would involve substantial limits on what are currently massive agricultural subsidies. Payments under environmental programs are exempt from restrictions on subsidies. Subsidies for carbon sequestration in forestry or for the reduction of methane emissions in agriculture should be permitted, but exemptions for hand-outs to favored sectors such as ethanol subsidies should not be allowed unless they have been found scientifically to be environmentally beneficial.

Then there is the issue of labeling requirements. The Technical Barriers to Trade Agreement clearly allows non-discriminatory labeling of products, for example, according to energy efficiency. WTO law could be interpreted as not allowing a government to require labels specifying greenhouse gas content in the production process.³⁸ However, letting consumers decide some issues with the aid of eco-labeling gives those who want to express their views an option stronger than voting but less extreme than the window breaking that has occurred at some antiglobalization protests. Although there

is always the risk that such labeling is politically manipulated, it is less intrusive than import restrictions. Thus, it would be desirable for WTO to establish rules for labeling.

A Few Priorities

It is appropriate that WTO focuses on trade and that other institutions focus on the environment. Trade policy is not the right tool and WTO is not the right place to bear the primary responsibility for pursuing environmental quality.

Global governance would be simplified were it possible to make the decentralization or delegation of tasks complete, with each agency going its separate way. However, there are enough inherent linkages between trade policy and climate change policy that the two multilateral institutions—WTO and the Kyoto Protocol—need to take some account of each other. This does not mean that the goals of global environmental quality and economic growth through trade need always be in tension or that partisans of each need compromise with the goals of the other. Win-win initiatives are possible and will help further sustainable development goals.

Within the Kyoto Protocol membership, a top priority regarding the linkage to trade should be to facilitate a uniform approach to taxation of energy and greenhouse gas emissions, particularly with respect to border adjustments for exports and imports.³⁹ This would help avoid the perception and reality that climate measures might be used as an excuse for protectionist discrimination. Forums outside Kyoto are relevant as well—particularly in the case of the United States, should it in the future choose to take any positive steps to reverse its current abdication of leadership in this area.

In WTO and other multilateral fora, negotiations to ban subsidies of fossil

fuels would be one excellent win-win initiative, with the rich countries taking the lead and the rest encouraged to do so via the World Bank. It would also be wise and mutually beneficial for WTO to renew the now-expired subsidies agreement provision, originally negotiated in the Uruguay Round, that allowed subsidies for adaptation of existing facilities to new environmental regulations.⁴⁰ In the Doha Round, negotiations to liberalize trade in climate-friendly goods and services would be another win-win initiative.⁴¹ In these and other ways, the trade and climate regimes can be made to work in harmony rather than conflict.

Jeffrey Frankel is the James W. Harpel Professor of Capital Formation and Growth at Harvard University's Kennedy School of Government. His primary field is international economics. In the capacity of member of the President's Council of Economic Advisers, he worked on U.S. policy with respect to the Kyoto Protocol during 1996–1999. He may be contacted at Jeffrey_Frankel@harvard.edu. This article originated in a speech presented at Broadening Climate Discussion: The Linkage of Climate Change to Other Policy Areas, a conference organized by Massachusetts Institute of Technology and the Eni Enrico Mattei Foundation in Venice, Italy, 20 June 2004. The author would like to thank Joe Aldy, Thomas Brewer, Steve Charnovitz, and Gary Sampson for exceptionally thorough and useful comments on an earlier draft, Maral Shamloo for research assistance, and The Savitz Family Fund for Environmental and Natural Resource Policy for research support.

NOTES

1. G. Sampson, "WTO Rules and Climate Change: The Need for Policy Coherence," in B. Chambers, ed., *Global Climate Governance: A Report on the Inter-Linkages Between the Kyoto Protocol and Other Multilateral Regimes* (Tokyo: United Nations University, 1999).

2. Among those who have found the Environmental Kuznets Curve for sulfur dioxide are G. Grossman and A. Krueger, "Environmental Impacts of a North American Free Trade Agreement," in P. Garber, ed., *The U.S.-Mexico Free Trade Agreement* (Cambridge: MIT Press, 1993); G. Grossman and A. Krueger, "Economic Growth and the Environment," *Quarterly Journal of Economics* 110, no. 2 (1995): 353–77; T. Selden and D. Song, "Environmental Quality and Development: Is There a Kuznets Curve for Air Pollution Emissions?" *Journal of Environmental Economics and Management* 27 (1994): 147–62; N. Shafiq, "Economic Development and Environmental Quality: An Econometric Analysis," *Oxford Economic Papers* 46 (1994): 757–73; and J. Frankel and A. Rose, "Is Trade Good or Bad for the Environment? Sorting out the Causality," *Review of Economics and Statistics* 87, no. 1 (2005): 85–91.

3. In theory, there is the possibility of a pollution haven effect that trade raises pollution in poor countries and simultaneously lowers it in rich countries, with no necessary effect on the global total. But Frankel and Rose, *ibid.*, and W. Antweiler, B. Copeland, and M. S. Taylor, "Is Free Trade Good for the Environment?" *American Economic Review* 91, no. 4, (2001): 877-08 find the opposite for the case of sulfur dioxide, perhaps because rich countries are more capital intensive.

4. The results are from Frankel and Rose, note 2 above, which includes the instrumental variables technique to correct the estimates for endogeneity of trade and income.

5. Article 2.3 of The Kyoto Protocol to the Convention on Climate Change (Bonn: Climate Change Secretariat, 1998), and Articles 3.5 and 4.2 of the United Nations Framework Convention on Climate Change (United Nations, 1992), respectively. See also T. L. Brewer, "The Trade Regime and the Climate Regime: Institutional Evolution and Adaptation," *Climate Policy* 3, no. 4 (2003): 329-41, specifically page 332; and S. Charnovitz, "Trade and Climate: Potential Conflicts and Synergies," in *Beyond Kyoto: Advancing the International Effort Against Climate Change* (Pew Center on Global Climate Change, 2003), 141-67, specifically page 142.

6. For a description of this dispute, see L. H. Gulbrandsen, "Mark of Sustainability? Challenges for Fishery and Forestry Eco-Labeling," *Environment*, June 2005, 15.

7. Cited by Brewer, *ibid.*, page 332.

8. E. Arvedlund, "Europe Backs Russian Entry Into W.T.O.," *The New York Times*, 22 May 2004.

9. Brewer, note 5 above, page 330.

10. Article 2.1 of the Kyoto Protocol. Cited in Brewer, note 5 above, page 334.

11. World Trade Organization (WTO) members apparently are, however, talking about restricting fishing subsidies, a comparable win-win initiative.

12. With regard to six developing countries, see International Energy Agency (IEA), "Looking at Energy Subsidies: Getting the Prices Right" in *World Energy Outlook 1999 Insights* (Paris: IEA, 1999). But the G8 would need to lead the way on a ban of fossil fuel subsidies.

13. Or, in the case of discrimination among services, see General Agreement on Trade in Services, Article XIV (Geneva: WTO, 1995).

14. For example, the Asian suppliers had been given only four months' notice, thus discriminating against them and in favor of Caribbean suppliers.

15. For a full explanation of the legal issues, see S. Charnovitz, "The Law of Environmental 'PPMs' in the WTO: Debunking the Myth of Illegality," *The Yale Journal of International Law* 27, no. 1: 59-110. See also M. Weinstein, "Greens and Globalization: Declaring Defeat in the Face of Victory," *The New York Times*, 22 April 2001.

16. Charnovitz, *ibid.*, pages 98-99.

17. S. Charnovitz and M. Weinstein, "The Greening of the WTO," *Foreign Affairs* 80, no. 6 (2001): 147-56.

18. I hasten to state that I am not at all an expert in international law of any sort. This section relies in part on the writings cited in endnote 5 of Steven Charnovitz, a professor of law at George Washington University, and Thomas Brewer, a professor of business administration at Georgetown University.

19. J. Werksman, "Greenhouse Gas Emissions Trad-

ing and the WTO," *Review of European Community and International Environmental Law* 8, no. 3 (1999): 251-64.

20. I supported the Kyoto Protocol, parting company from most American economists, for precisely the reason that it incorporated the flexibility mechanisms such as permit trading. Thus, even if the Kyoto Protocol were to fail, it would be a step forward because it would establish the utility of the flexible mechanisms. See J. Frankel, "You're Getting Warmer: The Most Feasible Path for Addressing Global Climate Change Does Run through Kyoto," in J. Maxwell and R. Reuveny, eds., *Trade and the Environment in the Perspective of the EU Enlargement* (London: Edward Elgar Publishers, Ltd., 2005).

21. Some experts believe that even multilateral trade penalties against nonmembers might not be permissible under WTO. See G. P. Sampson, *Trade, Environment, and the WTO: The Post-Seattle Agenda* (Washington, DC, and Baltimore, MD: Overseas Development Council and John Hopkins University, 2000), 87; cited in Charnovitz, note 5 above, page 156.

22. The Montreal Protocol prohibits trade in controlled substances with countries that do not participate. See J. Frankel, "Globalization and the Environment," in M. Weinstein, ed., *Globalization: What's New* (New York: Columbia University Press, 2005), 158-59. But Charnovitz (note 5 above, page 156) emphasizes the distinction between trade controls, which fall on environmentally relevant sectors, and trade sanctions, where the targeted products are arbitrary and unrelated to the noncompliant act (and are used multilaterally only by WTO and the UN Security Council). The Kyoto Protocol has neither.

23. One of the early precedents establishing the principle that Multilateral Environmental Agreements are compatible with the General Agreement on Tariffs and Trade (GATT) even if they restrict trade was the Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES) in 1973.

24. F. Bierman and R. Brohm "Implementing the Kyoto Protocol Without the United States: The Strategic Role of Energy Tax Adjustments at the Border," *Climate Policy* (forthcoming 2005); and Government of Sweden, National Board of Trade, *Climate and Trade Rules—Harmony or Conflict?* (Stockholm, 2004).

25. D. Brack, *International Trade and the Montreal Protocol* (London: The Royal Institute of International Affairs and Earthscan Publications, Ltd., 1996). One might say that the Montreal Protocol also worked to bolster the principle that process and production methods (PPMs) were not necessarily incompatible with GATT: the agreement threatened nonparticipants not only with a ban on trade in ozone-depleting chemicals themselves, but also a potential ban on trade in goods manufactured with such chemicals (in the sense that governments were required to determine the feasibility of such a ban). But it never proved necessary to try these threats out, in that virtually all relevant countries joined.

26. Cited in Charnovitz, note 5 above, pages 153-54.

27. In the shrimp-turtle case allowing the targeting of PPMs, the WTO Appellate Body emphasized the importance of a "close and real" causal relationship between the import ban and the harmful PPM, as opposed to general punitive trade barriers. Charnovitz, note 5 above, page 154.

28. This nonintuitive result of trade theory follows because the expansion of the former sectors eventually pulls labor and other resources away from the latter.

29. Whether the tax on domestic coal is applied when it comes out of the mine or when it is burned in a power plant should determine whether the tax on imported coal is applied when it crosses the border or when it is burned.

30. 1994 GATT panel ruling, Charnovitz, note 5 above, page 146.

31. P. Fontaine, "Global Warming: The Gathering Storm," *Public Utilities Fortnightly*, August 2004, 50-55.

32. Beyond the nondiscrimination articles of WTO, there is a Technical Barriers to Trade agreement that is more restrictive, favoring the use of widely accepted international standards. T. L. Brewer, "The WTO and the Kyoto Protocol: Interaction Issues," *Climate Policy* (forthcoming 2005), 12-13; and Charnovitz, note 5 above, page 149.

33. B. Muller, "The Kyoto Mechanisms: Linking Technology and Ratification," *Journal of World Trade* 36, no. 1 (2002): 57-66; described by in Brewer, note 32 above.

34. Charnovitz, note 5 above, page 155.

35. I have never been a big fan of the Clean Development Mechanism (CDM), because I think that the requirement that emission reductions be *additional* is impossible to implement in a country that has not agreed to targets in the first place. Thus, I would be skeptical of any attempt to say what would be the appropriate penalty for the carbon content of imported inputs to a CDM project.

36. Brewer, note 32 above; and Charnovitz, note 5 above, pages 147 and 151.

37. There is an argument to the contrary—that credits and permits are *not* equivalent to money—cited by Charnovitz, note 5 above page 152.

38. Cited by Charnovitz, note 5 above, page 151.

39. T. L. Brewer, "The Trade Regime and the Climate Regime: Institutional Evolution and Adaptation," *Climate Policy* 3, no. 4 (2003): 329-41; T. L. Brewer, "Multinationals, the Environment and the WTO: Issues in the Environmental Goods and Services Industry and in Climate Change Mitigation," in S. Lundan, A. Rugman and A. Verbeke, eds., *Multinationals, the Environment and Global Competition* (Oxford, UK: Elsevier, 2004); and Charnovitz, note 5 above, pages 142-43 and 160.

40. Charnovitz, note 5 above, page 161.

41. Brewer 2004, note 39 above.

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