FONDATION POUR LES ÉTUDES ET RECHERCHES SUR LE DÉVELOPPEMENT INTERNATIONAL

Working Paper 23 August 2011 Development Policies

Climate, Trade and Water: A "Grand Coalition"?

Patrick Messerlin

Patrick Messerlin is Professor of economics at Sciences Po and Director of the Groupe d'Economie Mondiale at Sciences Po, Paris.
contact patrick.messerlin@sciences-po.fr

Abstract

The paper argues first that the climate, trade and water communities should leave aside their prejudices, and it provides clear evidence that the three communities confront the same vested interests when trying to solve their common problem of free riding. Then, it argues that such strong similarities speak in favour of "sister" world regimes in these three domains. These sister regimes should first share the key principles of non-discrimination (national treatment and most favored nation) embodied in the WTO. Second, by contrast, the climate and water communities should review the other WTO rules in order to adapt them to their specific demands when needed. Interestingly, when doing so, these two communities may provide much needed inspiration for improving some rules of the current trade regime. Finally, the climate and water regimes may also adopt provisions on pricing that are not needed by the trade regime which deals mostly with well functioning markets.

JEL Classification: F13, F18, F5, Q4, Q56, Q58
Keywords: Non-discrimination, national treatment, most-favored nation, tariffs, carbon border tariffs and taxes, subsidies, export measures, technical barriers to trade, sectoral agreements.

This paper has been prepared for the workshop on "Climate Changes Policies and the World Trading System: The Challenges Ahead", Paris 24 June 2011. I would like to thank Jim de Melo for his great help, Doaa Abdel Motaal, Tancrede Voituriez and all the participants to the workshop for their useful comments. All remaining errors are mine.

Climate, Trade and Water:
A "Grand Coalition"?

Patrick Messerlin[1]

1 August 2011

Abstract

The paper argues first that the climate, trade and water communities should leave aside their prejudices, and it provides clear evidence that the three communities confront the same vested interests when trying to solve their common problem of free riding. Then, it argues that such strong similarities speak in favour of "sister" world regimes in these three domains. These sister regimes should first share the key principles of non-discrimination (national treatment and most favored nation) embodied in the WTO. Second, by contrast, the climate and water communities should review the other WTO rules in order to adapt them to their specific demands when needed. Interestingly, when doing so, these two communities may provide much needed inspiration for improving some rules of the current trade regime. Finally, the climate and water regimes may also adopt provisions on pricing that are not needed by the trade regime which deals mostly with well functioning markets.

JEL Classification: F13, F18, F5, Q4, Q56, Q58

Keywords: Non-discrimination, national treatment, most-favored nation, tariffs, carbon border tariffs and taxes, subsidies, export measures, technical barriers to trade, sectoral agreements.

[1] Patrick MESSERLIN is Director, Groupe d'Economie Mondiale at Sciences Po, Paris. This paper has been prepared for the workshop on "Climate Changes Policies and the World Trading System: The Challenges Ahead", Paris 24 June 2011. I would like to thank Jim de Melo for his great help, Doaa Abdel Motaal, Tancrede Voituriez and all the participants to the workshop for their useful comments. All remaining errors are mine. Contact: patrick.messerlin@sciences-po.fr

1. INTRODUCTION

The climate, trade and water communities have a long history of mutual distrust. In the past, each community has seen its topic as the most important policy issue which could suffer no constraints from other quarters. But, the recent years have sent the same grim signal to the three communities. The world negotiations on trade (Doha Round) and on climate (the COP 15 and 16) are much closer to failure than to success (Messerlin, 2010; Lloyd, 2011). Serious international discussions on water have not even started, despite the fact that, if nothing is done, severe water scarcity is expected to occur more rapidly than climate changes (Brabeck-Letmathe, 2008) with such risks being compounded if climate will change as forecasted.

This paper argues that, in contrast with this long history of prejudices, the three communities should realize that they have many deep interests in common, hence that they have strong incentives to envisage mutually beneficial actions and that they should start serious trust-building actions in the years to come. The paper suggests a few concrete initiatives as illustrations of what could be done if every side realizes how close are their core interests.

Section 2 spells out key common points between the climate, trade and water issues which will be the sources of strong incentives to work together. First, the three communities face the very similar fundamental economic problem of free-riding. Second, even more crucially from a policy perspective, they face the same friends and foes. This critical feature—rarely mentioned despite strong evidence—opens the way to a "Grand Coalition" which could mobilize the leverage needed to speed up the international negotiations on the three topics that none of these communities has been able to achieve alone on its own topic.

Sections 3 and 4 go one step further by looking at what all these similarities mean when one tries to design the world climate and water regimes. In this paper, a 'regime' is defined as a set of rules which makes countries confident enough to negotiate joint targets (such as cuts in CO2 emissions, in tariffs or in water over-use) to enforce them in good faith, and to settle their disputes on implementation when such disputes arise. The world trade regime already exists, with the text of the General Agreement on Tariffs and Trade (GATT) setting the rules and the World Trade Organization being the forum to negotiate cuts in tariffs (or other trade barriers) and the place to settle disputes. Sections 3 and 4 argue that the climate and water regimes should be 'sisters' of the trade regime. The term 'sister' underscores the fact (i) that each community should have its own world regime (i.e., rules and institution), (ii) that these regimes should share some key rules, but (iii) that they should also keep some degree of freedom by adopting tailor-made rules in order to address specific demands in their respective domains.

Focusing on 'regimes'—that is, on 'setting the rules'—is essential. Giving too much precedence on negotiations over setting rules is a dangerous game in the long run, as currently illustrated in the trade area. The Doha Round saga with its incredibly stubborn fights on tiny tariff cuts is generating a rancorous environment which risks undermining the core GATT rules (disciplines). The GATT founding fathers understood these disciplines as the most valuable component of the world trade regime. This view (largely forgotten today) has proven right in 2008-2009. During these troubled years, the GATT rules on tariff commitments have been essential to avoid a trade crisis on top of a financial crisis. There is another reason to focus on setting the rules. Climate and water regimes are necessary if one wants to avoid that disputes in these two domains would be settled under WTO law, a situation that the climate and water communities are unlikely to accept.

2. THE BASIS OF A GRAND COALITION: SIMILARITIES

The current relations between the climate, trade and water communities are often dominated by prejudices. The climate and water communities see trade as an activity exacerbating their problems and the world trade regime as imposing intolerable constraints, while the trade community perceives the constraints imposed by the climate and water issues as obstacles to freer trade, one of the most powerful engines of growth.

This section develops briefly the similarities by expanding an earlier work on the similarities between climate and trade (Messerlin, 2010) to the water case. As a result, it begins by providing some basic information on trade and water issues.

a. 'Virtual trade' in water

There are three ways to trade water. First, water can be traded under the directly saleable form of bottled mineral waters and other beverages. This represents a tiny share of traded water. Second, 'freshwater' can be traded via pipelines (as best illustrated by California and its neighboring US States or by pharaonic projects from Southern to Northern China) or ships (attempts to trade water from Southern France to Catalonia). The volume of this trade is even tinier than mineral waters, and more importantly there are serious doubts on the economic and environmental efficiency of the available technologies. Interestingly, some preferential trade agreements (PTAs) ban this kind of water trade, as best illustrated by the Canadian ban in the NAFTA context. Lastly, freshwater can be traded as a key input included in other products which are essentially farm products. It is estimated that 70 to 80 percent of the water used in the world is used by farmers. This feature makes the 'virtual trade' of water occurring under the form of trade in farm products by far the largest share of traded water. It also reduces the cases of market failures with a purely local impact (for such cases, see WTO Report, 2010).

As any trade, water trade disconnects production and consumption. A country could thus reduce the use of its own water (by having more water-efficient farm domestic production) and at the same time it could increase the use of 'foreign' water (by importing more foreign farm products). This situation has been observed in the climate context, for instance with Britain cutting its CO2 emissions by 14 percent while increasing its CO2 consumption by 20 percent (Barrett, 2011). That said, interestingly, it is estimated that compared to autarchy current international trade allows substantial savings in terms of world water amounting to roughly 20+ percent of total water use (Chapagain et al., 2006). This figure gives a crude estimate of the opportunity cost of rejecting the GATT-based trade regime in the water context, despite the current very distortive domestic water policies characterized by no pricing/taxing mechanism, no recognition of externalities and, even worse, by a routine implementation of policies subsidizing the use of water (hence accelerating its scarcity) in many countries, as best illustrated by the recent drought in France and a few other EU Member States.

This brief presentation on trade in water deserves a further comment. The treaties sharing the water of the rivers among the countries having access to the same river (Danube, Nile, etc.) do not deal with water trade, i.e. they do not deal with the non-navigable use of water in the rivers because of the opposing interests of upsteam and downstream riparians. Rather, they consist in imposing water quotas ("water rights") among the countries concerned to be used for domestic productions in these countries. These water-sharing treaties deserve a last remark. It could be argued that, assuming everything else constant, the misuse of such treaties (with a country keeping more water from a river than it should) could be counter-balanced, partially or even totally, by virtual trade in water under the form of farm exports from the misbehaving country to the other countries along the river.

b. The basis of a Grand Coalition

Table 1 identifies three levels of similarities: those related to a common problem, and those related to common foes and to common friends, the latter two being crucial from a policy perspective.

Table 1. The basis of a Grand Coalition

	Climate	Trade	Water
Common problem			
public good	world	world	local/world
instrument	tax/price	tax (tariff)	tax/price
optimal level	positive but unknown	zero and known	positive but unknown
one world/multilateral	multilateral (COPs)	multilateral (WTO)	not yet clear, (only regional level)
Common foes (interests opposed to an economically sound solution to the problem)			
	steel, chemicals, etc.	steel, chemicals, etc.	
		farmers	farmers
Common friends (interests favoring an economically sound solution to the problem)			
	exporters of clean goods and countries developing comp. advantages	exporters	'efficient' farm exporters (water costs included)

Starting with the common problem, economic analysis suggests a well known basic similarity: climate is a world public good while water is a local public good (a "common pool resource" Perry et al., 1997; Le Vernoy, 2010) with water resources becoming rivalrous only once the level of water exhaustion is reached. As all public goods, climate and water are thus subject to free-riding in the absence of efficient property rights. As water is a local public good, property rights may be more easily managed by collective action, such as the centuries-old water irrigation systems of 'bisses' in the Swiss Valais region or 'Dujiangyan' in the Sichuan province of China.

Surprisingly, the fact that "free trade" is also a public good is less often recognized. However, it is clearly subjected to the free-riding instinct which re-emerges time and again when, despite robust economic analysis and history, countries believe that they would be better off by imposing tariffs on their imports while getting free access to the markets of the rest of the world. Such a free-riding behavior is due to the fact that trade liberalization benefits each country as a whole, but generates some losers within the country (the so-called Stolper-Samuelson theorem). These domestic losers are the natural force behind the free-riding instinct of every country which is likely to stay with us forever.

The fact that few observers realize today that freer trade is a public good is largely due to the existing world trade regime, that is, the GATT/WTO principles which have been very successful in limiting countries' deep free-riding instincts in trade matters, and in inducing them to move together in a process of 'multilateral' liberalization.

In addition to the public good aspect, Table 1 shows that the three communities rely on similar instruments (taxes or prices). There is a vast debate on the costs-benefits of taxes vs. prices in the climate context (Tirole, 2009; de Melo, 2011) and it is beyond this paper to summarize this literature. In order to remain as simple as possible, this paper assumes the use of taxes. A treatment in terms of prices may raise additional issues (Monjon and Quirion, 2010) but would not change the basic points addressed in the paper.

Table 1 also shows that the political environment of the three communities is increasingly similar. Interestingly, all three communities have gone through the same evolution. At the beginning, each wanted to take action at the world level, before recognizing that sovereign states remain the '*incontournable*' actors. The 19th century was dominated by the idea of 'universal' free trade, but the GATT is built on the recognition that the path to freer trade will be a long road paved by multilateral agreements. Until COP 15, the climate community was largely convinced that a "world" tax/price was the solution. Since COP 15, it has largely been realized that countries are in the driving seat, and that a multilateral approach is the only one politically achievable for a very long time. In the water case, as the realization of the challenge ahead is much less advanced in most countries, the level of action is yet undefined. But, the fact that 'virtual water' occurs on very long distances—as virtual trade in CO2 does—could could only facilitate the recognition of a 'multilateral' framework as the key source of decision.

That said, there is one notable difference between the climate/water communities and the trade community which is the optimal level of taxation (or pricing). The trade community enjoys a better position than the two other communities because it knows that the optimal level of tariff is zero percent (if one excludes the case of 'large' exporting or importing countries and other quantitatively unimportant externalities) and because it has the additional advantage that, from a political perspective, cutting taxes is generally less difficult than raising taxes. By contrast, the level of the tax/price is "unknown" in the climate and water cases, except that it should be positive, hence politically costly to impose. Being unknown, this optimal level has thus to be achieved by a trial and error process, which makes the political process even more difficult, particularly in the climate case (the local dimension of water as a public good may soften these difficulties).

c. Building a coalition: Common foes

Would it be alone, a common problem would not be a motive strong enough from a political perspective to serve as a basis for building a coalition. Much stronger is the fact that the communities share the same foes and friends. There is considerable evidence that it is the case for the three communities at stake, with a strong correlation between CO2-intensive sectors (climate), water-intensive sectors (water), and protectionist industrial and farm interests (trade).

Table 2 provides additional complementary information. It lists the CO2-intensive and water-intensive sectors, that is, the sectors which will constitute the bulk of the opposition to increasing taxes for climate and for water reasons. It also lists the sectors which are the most active in seeking more protection as revealed by the frequency of their use of conditional protection (antidumping, antisubsidy and safeguard measures). It suggests a clear correlation between CO2- or water-intensity and protectionist pressures (very few CO2 or water-intensive sectors do not exhibit strong or notable protectionist pressures).

Table 2. Common foes to climate or water and trade, selected sectors

CO2-intensive sectors		**Water-intensive sectors**	
Sectors [a]	Protectionist pressures [b]	Sectors [a]	Protectionist pressures [b]
Highly intensive sectors			
Aluminum	***	Beverage	(high tariffs)
Cement	***	Farm, food	(high tariffs)
Chemicals	***		
Pulp & paper	***		
Steel & iron	***		
Moderately intensive sectors			
Aviation	[d]	Apparel	*** [c]
Boards	***	Electronics Hitech	***
Ceramics		Electricity/Energy	[d]
Copper		Forest products	***
Expanded clay		Metals & mining	***
Glass	**	Pharmaceuticals	
Magnesite	***		
Manganese	***		
Man-made fibres	***		
Nickel	*		
Potassium	**		
Starch	***		
Textiles	***		
Tyres	***		
Zinc			

Sources: European Commission (2009) for CO2-intensive sectors. Morrison et al. (2009) for water-intensive sectors. Author's assessment of protectionist pressures. Notes: [a] Underlined sectors are particularly CO2- or water-intensive. [b] Protectionist pressures are estimated by the frequency of antidumping, antisubsidy or safeguard measures granted to the sector (the higher the number of stars, the most frequent these measures are; sectors with no star have not used these tpyes of measures in a noticeable way). [c] Some agricultural raw products used in textiles can be highly water-intensive, as best illustrated by cotton.

Table 3 gives more detail on the common foes of the trade and water communities by splitting the farm sector into crops and animal products. The average tariffs on these farm and food-processed products are several times higher than the tariffs on industrial products for the OECD countries. This observation suggests two remarks.

First, it underscores the fact that the trade and water communities face the same foe—the farm sector. This result is strongly reinforced if the subsidies granted to the farm sector by OECD countries, and increasingly by some emerging economies (such as China recently) are taken into account, as shown by the calculations of the producers and consumers subsidy equivalents (OECD, 2011).

Table 3. Implicit tariff rates on virtual water, 2007

	Applied tariffs (%)			Bound tariffs (%)		
	OECD countries	Developing countries	All countries	OECD countries	Developing countries	All countries
All agricultural goods	16.7	15.3	15.5	31.3	60.9	57.5
Crops	12.5	17.0	12.6	23.7	58.9	43.8
water requirements [a]	*2992*	*5753*	*4536*	*2992*	*5753*	*4536*
Animal products	13.5	14.2	9.6	19.4	58.1	40.2
water requirements [a]	*6587*	*10066*	*8396*	*6587*	*10066*	*8396*
All industrial goods	3.3	9.9	9.2	5.6	33.1	30.1

Source: WTO Tariff Profiles 2010, WITS. Note: [a] Average water requirements (cubic meters per ton). The tariffs for all industrial goods may be higher than the average of the tariffs on crops and animal products because tariffs on tobacco and beverages tend to be very high.

Second, Table 3 suggests that trade liberalization in the farm sector would have an important impact on water use. If water scarcity or CO2 emissions are not properly reflected in the costs of production of the food or industrial goods, countries may appear to have comparative advantages in certain productions that they do not have in reality (a variant of this argument is taken up in the context of PTAs, see below). Hence, there is a need to accompany trade liberalization with the appropriate water policies. Such policies should focus on the supply and demand for food. Supply policies would range from the adoption of more economically sound agricultural policies to the adoption of those creating the necessary mechanisms (markets and/or collective action) for an appropriate pricing of the water used by farmers. Demand policies would consist in a wide range of health policies aiming to balance the increased demand for food fuelled by higher incomes in the emerging economies and increased concerns for healthy diet (avoiding heart diseases, overweight, etc. caused by unbalanced and/or excessive food consumption).

d. Building a coalition: Common friends

So far, the picture is less clear for the common friends than for common foes—largely because the situation is evolving rapidly. As exporters of environment-friendly products are still a small share of all exporters, they are only starting to mobilize constituencies for supporting their interests. However, some industrial and advanced emerging economies (Germany, Sweden, China) have begun to be aware of their emerging comparative advantages in environment-friendly products, and are increasingly eager to negotiate on such a basis. The situation is more complex in the water case, where there are emerging intra-national conflicts

between water-saving farmers and water-wasting farmers, and competition between farmers and industrial and household water-users.

Another important source of evolution is the converging views on growth in the three communities. On the one hand, the climate and water communities are increasingly aware that poor countries badly need growth and that they are unwilling to sacrifice it on the altar of climate or water all the more because, for the many poor countries which are also small, the future climate or water situation is only very marginally dependent on their actions in these domains. On the other hand, the trade community is increasingly conscious that growth and climate or water are not necessarily antagonistic. Some industrial economies which were still recently emerging economies—such as Korea—are actively pursuing policies combining growth and climate/water concerns—the so-called 'Green Growth' approach (Lee, 2010; Lee and al., 2011; Young, 2011).

3. SHIFTING FROM LITIGATION AND NEGOTIATIONS TO SETTING THE RULES

When looking at the potential connections between the existing world trade regime and the in-the-making international climate and water regimes, the existing literature does not take into account the above–mentioned similarities. Rather, the vast literature on climate (Charnovitz, 2003; Pauwelyn, 2007; Houser et al., 2008; de Melo and Mathys, 2010; Hufbauer and Kim, 2010; Kommerskollegium, 2009; Moore, 2010; Horn and Mavroidis, 2010; Low et al., 2010; Kleen, 2011) and the limited one on water (Yang and Zehnder, 2007; Hoekstra, 2010) have entirely focused on all the potential conflicts and litigation issues that could happen between trade on the one hand, and climate or water on the other hand.

a. From litigation to negotiations: the General Agreement to Reduce Emissions

The few papers which have made a more 'friendly' reference to GATT when examining the climate-trade nexus have given precedence to negotiations, as best illustrated by the proposal of a General Agreement to Reduce Emissions (GARE, Talbot and Antholis, 2011). GARE '*would perform the GATT-like function of setting the rules, arbitrating disputes and creating incentives for still other countries to coordinate in reducing emissions*.' The problem is that the reference to GATT is largely formal. The authors do not specify the GATT-like content of GARE. The similarity that they stress between GARE and GATT boils down to the "A" component of the acronyms—the fact that GARE would be an 'agreement' as GATT was. The reason is that the adoption of an agreement would require only 60 votes in the US Senate while the adoption of a treaty would require 67 votes. As critical as US constitutional constraints might be, they cannot be the key argument when building a world climate regime.

The GARE proposal is entirely focused on the negotiations on cuts in CO2 emissions. It argues that the best way to make progress in these negotiations would be to limit them among the eight or so largest economies, with a progressive involvement of more countries. This approach does not fit well the GATT history. In 1947-1948, it is true that the agreed tariff

cuts (the equivalent of cuts in CO2 emissions or in water use) involved a limited number of industrial GATT Members. But the GATT text itself was signed by a much wider group of countries, many of them being small or middle-size economies. Shifting to the most recent years, the Doha Round negotiations have repeatedly shown that negotiations on tariff cuts limited to the largest economies (Brazil, China, the EU, India and the US) are far easier to conclude than negotiations involving a larger (multilateral and plurilateral) set of countries.

b. Focusing on setting the rules: the case for 'sister' institutions

In contrast to the existing literature, the rest of this paper focuses on 'setting the rules' by raising three questions. First, should the key WTO principle of non-discrimination be adopted by the climate and water international regimes? Second, do other WTO rules (such as those on subsidies, on conditional protection, on technical barriers to trade, etc.) fit the legitimate needs of the climate and water communities, and, if not, what should be done? Finally, is there a need for specific regulations addressing the specific demands of the climate and water communities?

In a nutshell, this section argues for three answers illustrated by pillars 1, 2 and 3 of Figure 1, respectively. First, the basic principle of non-discrimination on which the world trade regime is based is shown to be also crucial for the international climate and water regimes (pillar 1). Second, when (and if) they are needed, the other WTO rules should be adjusted to address the specific problems faced by the international climate and water regimes (pillar 2). Lastly, the climate and water regimes may need to develop some specific rules because they deal with incomplete markets (pillar 3).

Figure 1. Sketching the world climate and water institutions

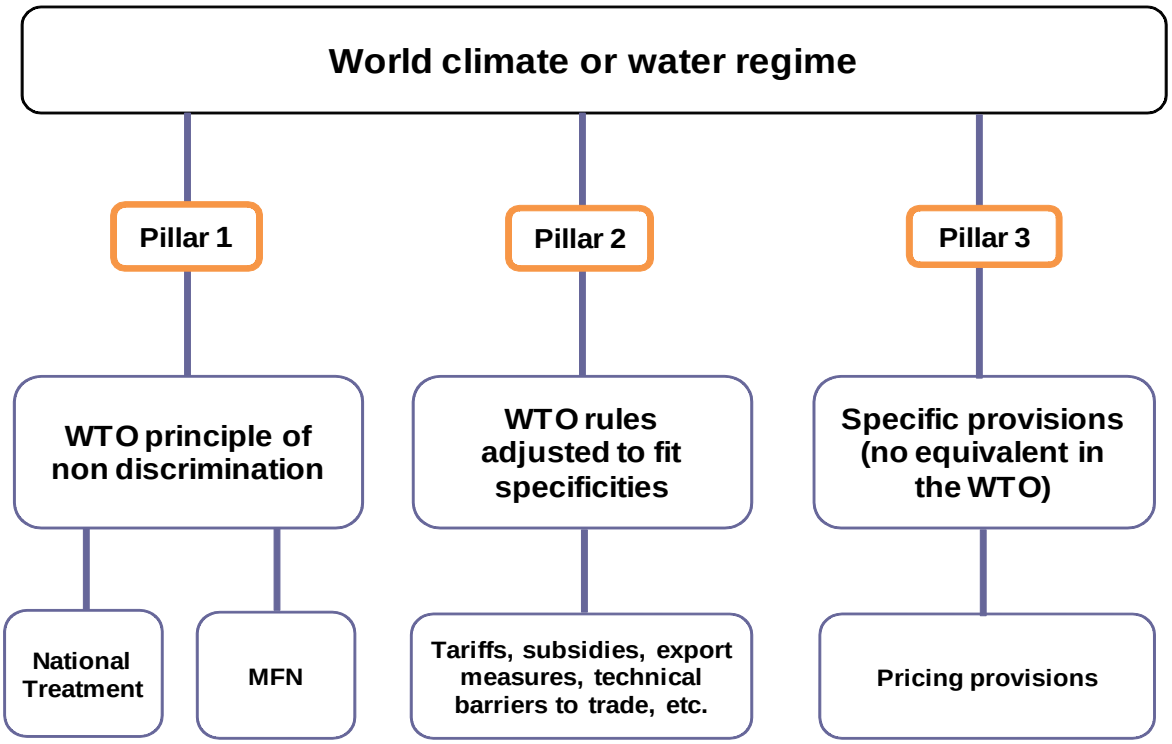

Figure 1 deserves a preliminary remark. It may give the impression that the 'sister' climate and water regimes are derived from the trade regime, and that there are no influences in the other direction, that is, from climate or water to trade. Leaving such an impression (WEF, 2010) would miss a crucial point in the building of a world global architecture. As stressed below, there are a number of badly designed provisions in the world trade regime that would require serious redrafting. The best illustration is the various instruments of conditional protection (antidumping, antisubsidy and safeguard). All these instruments were conceived as means to face potential trade shocks and to permit the necessary adjustments—in short, the price to be paid for making trade liberalization smoother. But, during the last five decades, they have shown notoriously negative consequences often in opposite direction of their initial intent. In this context, drafting better provisions on adjustment policies in the climate and water international regimes would be a welcome help for the trade community to review these badly written GATT/WTO provisions.

4. DEVELOPING THE CONTENT OF THE SISTER INSTITUTIONS

This section suggests some elements of the content of Pillars 1, 2 and 3. It has no pretention of exhaustivity, nor of suggesting the right solutions. It simply aims to offer suggestions which could be worth to explore in more detail.

a. Pillar 1: Sharing the fundamental principle of non-discrimination

Many members of the climate and water communities perceive the 'non-discrimination' principle of the trade regime as an unacceptable obstacle to the goals that they would like to achieve in their respective domain. In the GATT/WTO context, this principle has two components—'most-favored nation' (MFN) and 'national treatment' (NT) (Horn and Mavroidis, 2011).

- The MFN principle (GATT Article I) requires that a country imposes the same tariff on the imports of a given good independently from the country of origin of the imports.
- The NT principle (GATT Article III) requires that a country imposes the same domestic tax(es) on the goods imported and on the "like-products" produced domestically. In other words, NT intends to create a level playing field between foreign and domestic products in domestic tax matters (once tariffs are paid).

(i). The current situation

As of today, these two principles are *de facto* largely applied in the climate and water context in an indirect way. This is clearly the case for the NT principle: imported farm and industrial goods are widely subjected to the same domestic taxes than their domestic like-products, with no consideration for their relative CO2- or water-intensities.

The situation is more complex for the MFN principle. Most tariffs imposed on farm products are MFN-based since very few preferential trade agreements (PTAs) cover such products. By contrast, the MFN principle seems restricted in the case of industrial products by the many PTAs which cover systematically these products. However, this restriction is much less severe than it seems at a first glance. This is because the last two decades have witnessed substantial unilateral and multilateral tariff cuts, meaning that the tariff differences between countries which are parties to a PTA and those which are not are often small or negligible. Today, less than 17 percent of world trade is eligible for preferences while no tariffs are imposed on 45-55 percent (China, EU, US) to 80 percent (Japan) of the imports of the large economies (Carpenter and Lendle, 2010). If preferential tariff margins from PTAs are larger for US and EU exporters (2.8 percent and 4.9 percent respectively), it is because they reflect the higher tariffs imposed by the emerging and developing countries. However, it remains that preferential tariff margins can be large in a few sectors (for example, 15.8 percent of US exports receive preferences above 5 percent, another 2.5 percent above 10 percent, and another 1.2 percent above 20 percent).

Interestingly, the climate, trade and water communities should share very similar views on PTAs. It is well known that the trade community has ambivalent feelings on PTAs. It perceives them as potential contributors to the new trade rules that are needed by globalized economies (on investment, norms and technical barriers to trade, etc.) and that seem too hard to design in the WTO forum. But, the trade community perceives also PTAs as a potential threat to the multilateral (GATT/WTO based) trading system since PTAs have the capacity to distort trade flows—not so much by tariff differences (for the reason mentioned above) but by non-tariff barriers of all kinds (from rules of origin to technical norms to regulations, etc.).

The climate and water communities have good reasons to share the concerns of the trade community. After all, a good produced by a country using a CO2/water-intensive technique could face no tariff when entering a country if this country is a PTA partner, whereas a similar good produced with a CO2/water-minimizing technique by a country not party to the PTA could face a tariff. In short, PTAs may favor excessive CO2 emissions or water use.

(ii) Looking at MFN and NT as a 'package deal'

What follows argues that the climate and water international regimes should adopt the non-discrimination principle because the conjunction MFN-NT offers the best joint disciplines on two symmetrical threats—carbon tariffs and carbon border taxes (CBTs)—which are already widely felt in the climate context and which are nascent in the water case. In fact, the MFN-NT can be seen as a package deal between the developing and industrial countries.

(iii) Carbon tariffs and the MFN principle

The emerging countries feel threatened by 'carbon tariffs' which are tariffs that industrial countries would impose on their imports from countries having 'not comparable' climate policies. This threat has been often expressed by many Western Leaders during the last couple of years. The targeted countries are unspecified, but they are clearly the emerging (efficient) economies. By definition, such carbon tariffs will be discriminatory since they will target specific countries.

Interestingly, this kind of discrimination is not acceptable for the climate or water community for the following reason. Such carbon tariffs would not mirror the 'right' CO2- or water-intensity since they are calculated on a country basis, not on a product basis, meaning that goods with low CO2- or water-intensity will be charged the same tariff than products with high CO2- or water-intensity. In other words, they have very little chance (if any) to be an acceptable second-best solution for the climate and water communities. Claiming that such carbon tariffs could at least be 'useful threats' forcing countries to join an climate or water regime is not a strong argument. Set too low, such carbon tariffs are unlikely to exert a credible threat. Set too high, they are also unlikely to be credible because they will harm all the countries, including the countries initiating the threats. Last but not least, in both cases, the trade community feel entitled to look at such carbon tariffs as purely discriminatory measures since they do not bring positive 'trade-offs' in terms of reducing externalities, that is, CO2-emissions or water over-uses.

As a result, the emerging economies have a strong incentive to be demandors of the MFN principle in the climate and water regimes in order to eliminate the threat of the carbon tariff instrument, and they should receive the support of the three communities. This conclusion does not mean that nothing should be done to reduce the externalities. It simply means that such actions should abide by the NT principle as argued now.

(iv) Carbon border taxes and the NT principle

The industrial countries feel threatened to lose any capacity to move ahead on CO2/water policies if they are unable to impose 'carbon border taxes' (CBTs) on certain imported goods. CBTs are very different from carbon tariffs. They are based on a mechanism similar to the one that, during the last fifty years, has routinely solved the existing differences among countries in domestic taxes, such as the value-added taxes (VAT). They require two (not one) synchronized adjustments: the exporting countries remove the carbon taxes (if any) that they impose on their goods when they are exported; and the importing countries impose their domestic carbon taxes (if any) on the goods they import (as well as on those they produce). This mechanism ensures the full respect of the NT principle of non-discrimination since imported and domestic products are taxed at the same level. Industrial countries would feel reassured if they could enforce such a mechanism (again routinely implemented in the VAT case).

As a result, industrial countries have incentives to be demandors of the NT principle. However, the NT principle is more complex than the MFN principle, and it generates more balanced views in the trade, climate and water communities.

The trade community fears that CBTs will be a backdoor to protection under environmental excuses. This fear is nurtured by the complexity of calculating CBTs which could easily fuel 'excessive' CBTs (Jensen, 2009). The key question to ask is whether there is an alternative to CBTs in the existing arsenal of trade instruments, and whether this alternative would be more costly, or not, than CBTs. Indeed, there are available instruments: antidumping, antisubsidy or safeguard procedures could easily be adapted to cover 'unfair' competition for climate or water reasons. And for the protectionist interests, these instruments have a huge advantage on CBTs: they can be triggered by individual complaining firms, hence can be tailor-made to the precise needs of the plaintiffs. By contrast, CBTs have to be calculated for a product made from different production processes operated by a number (possibly many) of different firms, hence will require lots of negotiations and compromises among the many vested interests involved. In short, the (much) lower discriminatory capacity of the CBTs compared to the antidumping, antisubsidy and safeguard instruments is a good incentive for the trade community to accept CBTs (conditional to the fact that antidumping, antisubsidy and safeguard measures based on environmental concerns could not be imposed on top of CBTs).

The climate and water communities fear that the NT principle will limit 'too much' the sovereignty of a country willing to price or tax CO2 emissions and water use, and that CBTs will solve only partially the problem of 'leakage'. However, such fears seem to have recently receded under various forces.

- The prevalent notion of a world tax/price for the CO2 in the climate community logically implies that, for a given product, a ton of CO2 in a foreign country should be treated the same way as a ton of CO2 in the domestic economy—hence that these two tons should not be subjected to some kind of discrimination. This evolution is reinforced by two factors: the growing realization that the burden sharing of the 'past'

emissions should be addressed by international transfers (not by trade rules) and the increasing recognition that the values attached to CO2 emissions in industrial and emerging economies appear much closer when one looks to the actions taken by these countries rather than to their rhetoric.

- In the water case, the fact that water is a local public good has two opposite effects. On the one hand, it makes it easier to solve the property rights allocation problem and to price/tax water in a proper way. On the other hand, it makes it less easy for the water community to realize that all these local taxes/prices will be subjected to a dynamic process of convergence towards some 'world' tax/price for a drop of water from any origin (adjusting for the 'quality' of the water). This is because water is an input to farm products which are interconnected by world trade.
- Last but not least, both the climate and water communities are realizing that governments are not 'benevolent despots' capable to take the right decisions from a collective perspective when there is a strong opposition from vested interests. The trade community has had ample time to realize how governments are often unable to discipline such interests by exerting their 'internal' sovereignty. The history of trade policies is an endless tale of governments captured by their domestic interests, unable to balance the various domestic interests in a fair way under the pressure of aggressive (even if tiny) lobbies. The recent years have shown similar limits in the climate and water cases. The COP 15 has been a painful wake up call for the climate community, and a similar lesson can be drawn by the water community from the recent draughts in Europe.

(v) Summary on the MFN-NT 'deal package'

To conclude, pillar 1 could witness a major deal on setting the rules: the emerging economies have a strong interest to be protected by the MFN principle, while the industrial countries have a strong interest to get the NT principle—meaning that the climate and water world regimes should be built on the same non-discrimination principle than the trade regime.

That said, building trust among the three communities on the NT principle emerges as a critical issue for the coming years. It will benefit from the ongoing evolutions of the thinking of the three communities on the benefits and costs of the NT principle. It could also immensely benefit from careful work on the topics and provision under pillar 2.

b. Pillar 2: Adjusting the other WTO rules when needed

The fact that the non-discrimination principle offers a robust framework to be shared by the international climate, trade and water regimes does not mean that the other WTO rules should share the same fate. The public good feature of climate and water issues is likely to require some notable adjustments of certain WTO rules. What follows focuses on several key candidates for such adjustments: tariffs, subsidies, export measures and technical barriers to trade. This is not an exhaustive list. For instance, it leaves aside the core issue of 'like-products' because it is thoroughly examined by Horn and Mavroidis (2011) and it does not

examine independently the case of public procurement (most of the points developed below for subsidies could be used for public procurement).

Pillar 2 issues deserve a preliminary remark. They should *not* be conceived as requiring the design of a complete international climate or water regime from Day One. Of course, it could happen that, as in 1947-1948 for the trade regime, all countries would be able to agree on a fully-fledged international climate or water regime in one international conference.

But, it may well be the case that the world is not ready for such a bold move. After all, GATT benefited from a century of international trade treaties promoting trade liberalization, starting with the 1860 Free Trade Treaty between France and the United Kingdom. There is no equivalent for the climate and water cases. It seems thus more plausible that building the international climate or water regime would require a sequence of agreements, an evolution which fits better the recent history of the international environmental treaties (Barrett, 2011). It could thus be the case that countries would first agree, say, on a code on subsidies in the climate or water regime, then on a code on export taxes, etc. All these steps will require building increasing trust and confidence among the three communities. Note that, even in this perspective, the world trade regime remains interesting not so much because it provides useful references (provisions to adopt or to adjust) but because it gives a broad sense of the global framework which should ultimately be achieved.

(i) Tariffs and CBTs

The GATT text does not define a 'tariff'. Only recent WTO documents have paid some attention to this issue because, during the Uruguay Round, it was realized that such a missing definition was costly (particularly in the context of farm liberalization) for the following reason. Tariffs can be expressed in two main ways: in *ad valorem* terms (as a percent of the price of the product free of duty) or in specific terms (in euro, dollar, etc. per physical unit of the product). These two definitions have a markedly different impact on the effective level of protection: more precisely, specific tariffs (frequent in agriculture) have potentially a much larger protectionist impact than *ad valorem* tariffs—hence the will to shift to *ad valorem* tariffs since the Uruguay Round.

The climate and water communities should thus be careful when introducing the notion of CBTs which is so critical for a mutually acceptable use of the NT principle: a too loose definition of CBTs would favor industrial countries while a too strict definition would favor emerging economies. More precisely, defining CBTs would require some agreement on at least two parameters.

- First is whether CBTs should be defined in *ad valorem* or specific terms. As already argued (Messerlin, 2010), the definition in *ad valorem* terms offers the best balance between the opposite interests of the industrial countries and of the emerging and developing countries. This would not be an easy decision to take since the domestic climate or water regimes tend to use prices or taxes which are expressed in specific terms.

- The other key parameter is the 'base' on which CBTs should be calculated. Today trade flows are routinely expressed in 'gross' terms, an inaccurate measure as illustrated by the well known iPod case. When firms export the iPods that they assemble in China, tariffs are levied on the gross value of the iPods which is the sum of the value of the components made in other countries (Japan, Korea, the US, etc.) and of the value added made in China where these components are assembled. It is estimated that the gross (commercial) value of an iPod in 2010 (290 US dollars) can be decomposed into 275 US dollars of components produced out of China and 15 US dollars of value added created in China (Jara 2010). Using gross trade flows has thus two clear flaws. First, it distorts heavily the world trade picture—in the iPod case, it massively overstates China's exports of goods. Second, it makes difficult for observers to realize that taxing imports of iPods from China has a detrimental effect on exports of iPod components from Japan, Korea and the US, hence on these economies.

These conclusions are key for this paper because gross trade flows are equally inappropriate from a climate (or water) perspective. CBTs based on gross trade flows would tax value added (hence CO2 emissions) made in Japan, Korea and the US when producing components as if it were CO2 emissions made in China. Rather, CBTs should focus on the CO2 emitted in China. Hence, they should be levied only on the value added made in China when assembling the iPod components into the final product. This approach is the only one which makes sense from a climate perspective—particularly if, as often, assembling is not the most CO2-intensive activity.

The world climate or water regime should thus include provisions (or a code if a piecemeal approach is adopted for building the climate/water regimes) which would clarify the definition of the CBTs and the base on which they will be calculated. It seems logical that these provisions would be designed at the same time as the adoption of the MFN/NT principles since they play such a key role in the way the NT principle will be used. Note in passing that the trade community should welcome such provisions in the climate/water regimes since they would help to clarify tariffs, and hence to improve the quality of the existing and future tariff commitments.

Another interesting aspect of a trust-building exercise among the three communities is the meaning of 'applied' and 'bound' tariffs. In the trade regime, negotiations deal only with bound tariffs (those that a country is committed to enforce after GATT/WTO negotiations, with the need to compensate or the risk to be subjected to retaliations in case of non-compliance). Under GATT/WTO rules, a country is free to implement 'applied' tariffs lower than its bound tariffs. But, such applied tariffs play no role in WTO tariff negotiations: they are usually decided after such negotiations (often unilaterally) and they have few connections with them.

In the climate case, it makes sense to combine these two notions, as indeed already done by several countries since COP 15 (such as Australia). A country could announce unilateral 'bound' cuts in CO2 emissions as the minimal cuts in CO2-emissions that the country is

legally committed to enforce independently of the outcome of the ongoing or future negotiations. At the same time, the country could also announce its readiness to 'apply' more ambitious cuts if the ongoing negotiations happen to be successful. And it should specify the conditions for enforcing these 'applied' cuts (how long it will enforce them without a successful outcome of the negotiations, how it will come back to the initial situation in case of failure of the negotiations, etc. Such a feature would be very useful for the world climate regime, particularly if there is a sense of urgency (a condition which does not exist in the trade case). A similar approach could be envisaged in the water case in terms of improved pricing of the water resources. For instance, a country could table bound and applied shares of its water resources that it will subject to a pricing/tax system.

(ii) Subsidies: 'good' and 'bad'

The current WTO rules on subsidies date back from the Uruguay Round, that is, from a time where it was felt necessary to impose strict disciplines on subsidies. This strict approach was generated by the repeated experiences of massive and utterly inefficient subsidies during the two or three decades before the Uruguay Round (1970s and 1980s). However, the Uruguay Round text included some exceptions to this strict discipline, the so-called 'non-actionable' subsidies used for research and development, environmental protection and regional development. The window for these exceptions was limited to five years (ending by December 1999) and was not extended. The deadlock of the Doha Round makes it impossible to review this situation, as requested by the developing countries at the beginning of the Doha Round.

The climate/water communities have a clear interest in allowing 'good' subsidies, that is, those necessary for ensuring the emergence of enough renewable and clean energies and a sustainable water use. For instance, Deutsche Bank has recently estimated at Euros 500 billions per year the amount of investments in all forms of water (including drinking water and sanitation) and a substantial share of these huge investments is likely to be delivered with some kind of subsidization linked to public-private partnerships (Deutsche Bank Research 2011). Such subsidies are candidates for being examined as 'non-actionable' in the WTO context.

Would these exceptions pose problem to the trade community? No, if they are carefully crafted—that is, if they will be exclusively devoted to climate/water management and if they will be granted in a non-discriminatory way ensuring the choice of the most efficient firms or operators for achieving the targeted goal(s).

Once again, the key point is that such conditions are equally crucial for the climate or water communities. The recent Australian Productivity Commission's (2011) estimates of the implicit abatment subsidies per ton of CO2 suggest huge differences among alternative technologies, with relatively low estimates for the 'emission trading schemes', higher (several times) estimates for large scale renewables (biomass, wind, etc.) and considerably higher (up to one hundred times) estimates for solar panels. And for the same technology, these

estimates also vary in huge proportion among the countries—for instance, in the proportion of one to six for solar panels between China or Japan (the least subsidized solar panels) and Australia, Germany or Korea (the most subsidized panels).

In such a context, talking again about 'industrial policy' (Aghion et al., 2011) is very counter-productive. None of the three communities should be interested in an industrial policy. There are already illustrations of costly mistakes where the climate subsidies turn out to be industrial (or farm) subsidies, such as those granted to the first-generation biofuels (in the EU and in the US) or to certain solar panels (Germany). Rather, the climate, trade and water communities should look for subsidies well targeted to precise climate/water goals. This will not be an easy task. Arrow and al. (2008) provide a non-exhaustive list of key criteria to be met: stable commitments over a long period of time; a wide coverage, including the fundamental capacity to perform research in the future (for example, education and laboratory capacities); tolerance of failures that could provide valuable information and institutions (such as independent agencies, peer reviews, multi-year appropriations, payments based on progress and outputs rather than cost recovery) that minimize the risk of capture of research and development subsidies by public or private vested interests. Striking the right balance would greatly benefit from good cooperation between the three communities while, absent such a cooperation, vested interests will be able to distort their subsidies in their favor.

That said, it is important to stress that 'bad' subsidies do exist in the context of the climate/water regimes. In such a case, the WTO strict disciplines on subsidies with an impact on trade remain very useful, and they should be adopted by the climate/water communities without hesitation.

Indeed, there is a long list of subsidies which have been able to survive to the WTO ban and that the climate, trade and water communities should fight. After all, eliminating current economically unsound policies may be among the best solutions to the current climate/water challenges. The lavish US and EU farm subsidies are among the prime targets. For instance, it has been estimated that cutting the EU farm subsidies would expand the land devoted to forest by 7 percent—a substantial contribution to climate mitigation (Jomini et al., 2009). Similar actions could be taken against the huge subsidies to fossil fuels (Global Subsidies Initiative, 2010) or against those inducing farmers to over-use water.

Disciplines on subsidies raise the important corollary question of the anti-subsidy measures (the measures to be taken if a country subsidizes unduly) to be allowed by the international climate/water regimes. As is well known, the anti-subsidy rules existing in the world trade regime are unsatisfactory. They do not require the subsidizing country to eliminate its subsidies (as the EU law does). Rather, they allow importing countries to impose anti-subsidy duties on the subsidized products from trading partners. It happens that the procedures for determining these anti-subsidy measures are biased, hence grant excessive protection to the domestic producers of the importing countries. Such an outcome is clearly not desirable for the trade community. But it is not desirable either by the climate/water communities. For instance, such anti-subsidy measures do not reduce (or not enough) the CO2 emissions or the

water use of the subsidizing country simply because they leave a lot of export markets—those with no domestic competitors induced to push for anti-subsidy measures—open to the goods benefiting from subsidized CO2 emissions or water use. As a result, the climate/water communities should make serious efforts to draft better anti-subsidy instruments than those in the GATT text—another illustration of how an appropriate design of the anti-subsidy rules in the climate/water context could help the trade community to review its own approach.

(iii) Export measures

The current world trade regime on export measures is inconsistent: it bans export quantitative restrictions (export quotas) but it allows export taxes which have the same effect of reducing exports than export quotas. This loophole is undesirable from the trade perspective, as illustrated by two cases. The export taxes adopted by several countries which are large exporters of farm products (such as Argentina for soybean, India for rice and Russia for wheat) may have improved the terms of trade of these exporting countries, but at the costs of amplifying the 2007-2008 food crisis by raising artificially food prices with severe adverse effects on the poorest importing countries. The export taxes imposed by China on some CO2-intensive products may have preempted the risk of carbon tariffs to be imposed by industrial countries and shifted the potential tariff revenues to the Chinese government, but with similar adverse effects on the rest of the world.

In all these cases, these loopholes are unlikely to have a desirable impact from the climate or water perspective because cutting exports is far from reducing domestic production for several reasons—hence, they cannot be considered as being satisfactory second-best instruments (cutting CO2-emissions or water over-use). First, an export tax on a good is an implicit subsidy to the domestic consumption of this good. For instance, the above-mentioned export taxes are implicit subsidies to water use and CO2 emissions embedded in the products domestically consumed in the exporting country. Second, the impact on production is further reduced if the export taxes are limited to the exports to the countries which could impose carbon tariffs (in this case, they are implicit subsidies to the consumption of the products concerned by the countries which are not seen as likely to impose carbon tariffs). Lastly, the impact on production is even more negligible if products can be stocked (as often in the case of farm products) with all the risks of waste associated to food stocks.

In short, adopting the rule of banning export quotas and taxes would make a lot of sense from a climate/water perspective. The case for such a ban is reinforced if there is the full set of appropriate domestic policies directly targeting the desired reduction of CO2-emissions and of water use. Finally, once again, the adoption of a ban on export taxes by the climate/water communities would help the trade community to establish the similar, much needed discipline on export taxes in the GATT/WTO text.

The case of ban of export taxes has a last interesting dimension: it involves PTAs in addition to the GATT/WTO text. Recent PTAs have often included such bans (this is one of the rare legally-binding rules that PTAs have been able to provide on the top of GATT/WTO rules).

However, bilateral commitments in this matter may make the rest of the world worse off if a PTA member imposes higher taxes on its exports to non-PTA members in order to counter-balance to its inability to tax its exports to its PTA partner(s) by cutting more its exports to its non-PTA partners. Once again, the climate, trade and water communities have good reasons to work together to make the ban of export taxes a multilateral discipline.

(iv) Sectorals and Technical Barriers to Trade

As suggested by Barrett (2011) an interesting option for building an international climate regime would be to break up the big climate problem into smaller agreements. (To our knowledge, there is no equivalent proposal in the water case although this option looks also promising in the water context.) There are already agreements of this type (seals, tunas, ozone depleting chemical substances, air transport fuel, marine pollution from ships) and some of them such as the Montreal Protocol (on ozone depleting chemical substances) have been successful. Barrett suggests five additional possible sectoral agreements: HFCs, fuel for aircrafts, iron and steel, automobile emissions, and electricity generation.

All these agreements share three features. First, they are 'sectorals' targeting well-defined sectors. Second, they boil down to the adoption of common technical norms at the world level. Third, they may include some trade ban, including with non-compliant countries. What follows analyzes these features from the trade community perspective.

The trade community may feel somewhat ambivalent about 'sectorals' because it tends to think in terms of the whole 'universe' of products and services in trade matters. But, the world trade regime itself is based on several layers of successive texts devoted to goods (GATT 1948), public procurement (Tokyo Code 1981), services (GATS 1995) and trade-related intellectual property rights (TRIPs 1995) to mention the most important ones. Indeed, such a piecemeal approach will continue and prosper in services, with the breaking up of the many different regulatory problems raised by services liberalization into sectoral agreements as already observed (financial services, telecommunications, etc.).

A substantial source of the discomfort of the trade community vis-à-vis sectorals comes from the bad memory of sectorals which have fragmented the main GATT/WTO trade regime and have been hard to re-integrate into it. It took fifty years to remove (still very imperfectly) the waiver on agriculture (1955), the massive *de facto* sectoral exceptions in textiles and clothing (with substantial remnants in provisions included in PTAs), the *de facto* exceptions on steel and iron (which have been eroded by market changes and international investment, but which could be easily reignited) and GATT Article IV on special provisions for cinematograph films (which is still untouched).

Would the climate/water sectorals generate a similar danger? The risk that it would be the case depends on two factors which are working in opposite direction.

On the one hand, climate sectorals would have a feature that the trade community should perceive as very positive: they establish common technical norms. In other words, they can eliminate radically one of the most contentious, hardest to crack problems in today's world trade, that is, technical barriers to trade (TBT). The only TBT they could generate is that the universal norms they impose may eliminate potential producers too poor to adjust to these norms. For instance, developing countries would be unable to afford the costs of introducing the Hlsarna process in iron and steel, to sustain air-carriers requiring airplanes new enough to comply to the new fuel norms, etc. As stressed by Barrett, such a problem can be largely solved if the sectorals grant enough time to the developing countries for adjusting to the new norms or if they can be made to qualify for financing under the Clean Development Mechanism or its successor.

On the other hand, climate sectorals may include trade restrictions conceived as a way to enforce participation in the agreement. For instance, the Montreal Protocol has provisions banning imports and exports of the ozone-depleting substances at stake between parties and non-parties. Such provisions are likely to fuel concerns from the trade community. In the Montreal Protocol case, this provision was a success in the sense that it ensured full participation to the Protocol without having been used once. However, similar trade bans which have been included in other agreements did not ensure the success of the agreements (an undesirable result for the environmental community) while they risked to disrupt trade flows (an undesirable result for the trade community).

The threat of trade bans is thus a feature which deserves careful attention. At first glance, there are two main cases.

- When the production of the products at stake is relatively concentrated (as in the ozone case where the EU was by far the largest exporter of the banned chemicals) and/or when it is based on networks (as in airlines or shipping lines), trade bans may represent a threat credible enough for ensuring full participation without requiring to be effectively used. In other words, the risk raised by trade bans may be acceptable in such cases.
- By contrast, when the production is widely dispersed, the risk of trade bans with a negative impact on world trade looks high while their capacity to ensure full participation looks limited. In such cases, there is a need to consider the value of the solutions in the absence of a trade ban. Fisheries may illustrate this second group of cases. A solution to the unsuccessful trade bans in the past fisheries agreements may be to specify the mechanism that each country would agree to implement for ensuring sustainable fisheries. For instance, such a mechanism could consist in a national catch quota to be split among the domestic fishermen (individual licenses) with these individual licenses being tradable among the domestic fishermen alone, or (probably better from an economic perspective, if not easier from a political point of view) among all the fishermen of the signatory countries. (Indeed, the EU and the US have enforced similar mechanisms in the ozone depleting chemicals.) If such a mechanism is expected to improve the efficiency of the signatories' fishing industries via consolidation (as it was the case in Iceland) compared to the fishing industries in the

countries reluctant to sign, then it may represent a credible threat to the latter countries, hence it may contribute to ensure their participation.

Once again, all these cases will represent serious challenges for trust-building exercises among the three communities. Such exercises should not be limited to the time of drafting the agreements. They should be pursued with an elaborate (possibly pre-defined) system of review of the agreements in order to assess their quality (whether these agreements have achieved their climate or water targets at minimal costs in terms of trade, hence of growth) and their fairness (whether the initial agreement has not favored implicitly too much the initial signatories for some unforeseen reason).

c. Pillar 3: Pricing provisions

As the climate/water issues are characterized by the absence of a simple tax/pricing mechanism, the climate/water communities often tend to promote international management in terms of quantities rather than management based on prices or taxes. For instance, it is argued that the limited availability of freshwater in the world calls to impose a ceiling on human kind's water footprint with a 'fair' sharing of the global water stock among countries. This could be achieved by creating an international water-footprint permit system allowing to issue 'permits' per country (Hoekstra, 2010).

The trade community has a long history of failures of such quota-based management dealing with a broad range of products (for instance, water is a component of a huge array of food products). Failure has two main sources. The first is political. It is hard to imagine that water-rich countries would surrender their sovereignty on their 'excess' domestic stocks of water. As a result, such broad initiatives risk to be quickly fragmented into a complex web of initiatives with a much narrower focus in terms of products, ending up in a chaotic system (as best illustrated by the textile case). The second source is the allocation process of the 'permits'. The half century-long experience of the trade community is that quotas (permits) are the most difficult instrument to handle for allocating scarcity in an international environment because they often end up as an unfair and perverse tool. Unfair because they tend to favor the countries which were the most powerful at the time of the creation of the allocating device (Whalley, 2011). Perverse because they create rents that give to their initial beneficiaries a massive leverage (power and money) for keeping unchanged the initial scheme while the world is changing.

As a result, it may then be attractive to include in the climate or water international regimes provisions providing internationally recognized pricing guidelines ensuring the efficient climate or water management at the local and national level in a broad 'bottom up' approach. Such provisions would not be easy to design because they are likely to trigger the opposition of the CO2-intensive or water-intensive vested interests. For instance, the water community is facing a huge opposition to "pay for water" (Catley-Carlson, 2010). This opposition is declining among the developed countries' households who are increasingly conscious of the need of pricing/taxing water and who then focus rather on the question of whether the existing

pricing system is well conceived and/or implemented (rather than on the principle to pay as such). But, it remains that a strong exception to this positive evolution comes from the farmers who consume 70-80 percent of freshwater.

Such pricing guidelines will be hard to negotiate from scratch. They are more likely to emerge from successful national or regional schemes. For instance, the World Bank or key regional banks (Asian Development Bank, etc.) could lay down more systematically the basic guidelines they use for their own operations, creating a healthy competition among the various alternative pricing guidelines. Such international guidelines on pricing in the climate and water world regimes would not be inconsistent with the WTO as long as they do not create discrimination among countries, a condition that the climate or water communities have no reason to object to the extent that it is very likely that it will enhance the efficiency to achieve the desired objectives.

4. CONCLUDING REMARKS

The current international situation has more difficulties to deliver international agreements than the one prevailing until the mid-1990s. The four decades following the Second World War were characterized by easier problems to solve and a cozier atmosphere than today. The economic problems were largely limited to progressive market opening which could be largely handled by market forces; the US was an open-minded hegemon capable to limit the free-riding behavior of the limited number of countries having some weight in the world trade system; the world economic fora were *de facto* homogeneous since they were largely limited to rich countries; growth occurred at a sustainable pace for natural resources; last but not least, the "Cold War' was increasingly a *de facto* freeze in the geo-political world situation.

All this has evaporated, and today's world situation is characterized by many more volatile and unknown factors. Some key economic problems—climate and water being the most prominent—have a much heavier dose of free-riding, hence require more collective action. There is no benevolent hegemon on the horizon, and there are at least six or seven existing or emerging heavy-weight countries resulting in a multi-polar world. Moreover, the growth of the vast emerging and developing economies happens at such a rapid pace that it imposes considerable stress on the natural resources under the currently available technologies. Last but not least, there is an ongoing huge tectonic shift in the geo-political world situation (World Bank (2011). In short, even though Whalley (2011) argues that the expanded bargaining set afforded by greater interaction between countries might lead to more positive outcomes for the provision of public goods, the economic problems tend to become more difficult to solve while the political environment is less prone to collective action.

This paper has argued that such circumstances call for a determined renunciation to their respective prejudices by the three main communities involved—climate, trade and water—and for an urgent trust-building exercise among them. Fortunately, as discussed here, there is a solid basis for a deep change of mind which is to be found in the basic similarities of the problem faced by the three communities, and of their foes and friends.

The first consequence of these similarities is that they require a similar structure for the three international regimes. This common structure is limited to the non-discrimination principle which emerges as the necessary common corner stone for the three international regimes. The paper makes an effort to go further than this first step by suggesting joint actions that would fulfill the needs of the three communities. The list of such common actions is already substantial, reflecting how deep the similarities are. It would include: (i) the definition of tariffs and carbon border taxes; (ii) the definition of the necessary exceptions to the current WTO ban of subsidies for the 'good' subsidies required by the climate or water policies; (iii) the upholding the WTO bans on the other subsidies; (iv) the common fights on the existing very costly 'bad' subsidies (agricultural subsidies, biofuels, fossil fuels, etc.); (v) a better definition of anti-subsidy measures and (vi) more generally of domestic adjustment policies; and (vii) the development of an approach in terms of sectoral agreements breaking up in solvable questions the broad problem of climate and water at a minimum cost for growth. Of course, this 'positive' view on the relations between the three communities requires a sense of modesty among the members of each community as a prerequisite for trust building.

REFERENCES

Aghion, P., J. Boulanger and E. Cohen (2011), Rethinking industrial policies, Policy brief 2011/04 (Bruegel, Brussels).

Arrow, K., Cohen L., David P., Hahn R., Kolstad C., Lane L., Montgomery W., Nelson R., Noll R. and Smith A. (2008), "A Statement on the appropriate role for research and development in climate policy," Reg-Markets Center, Retrieved at: http://ssrn.com/abstract=1313827.

Australian Productivity Commission (2011), *Carbon emission policies in key economies, Research report*, May, Productivity Commission, Canberra. http://www.pc.gov.au.

Barrett, S. (2011), Rethinking climate change governance and its relationship to the world trading system, Paper prepared for the workshop on "Climate Changes Policies and the World Trading System: The Challenges Ahead", Paris 24 June 2011.

Brabeck-Letmathe, P. (2008), A water warning, The Economist, November 19, 2008, htpp://www.economist.com/the worldin/PrinterFriendly.cfm?story_id=12494630.

Carpenter, T. and A. Lendle (2010), 'How Preferential is World Trade?' Working paper 2010-32, Graduate Institute, Geneva.

Catley-Carlson, M. (2010), Ten random thoughts: Might the world be able to find ways to talk about water and trade? Paper prepared for the workshop on "Accounting for water scarcity and pollution in the rules of international trade", Amsterdam 25-26 november 2010.

Chapagain, A.K. and Hoekstra, A.Y. (2008), The global component of freshwater demand and supply: An assessement of virtual water flows between nations as a result of trade in agricultural and industrial products, *Water International* 33(1): 59-110.

Charnovitz, S. (2003), Trade and climate: potential conflicts and synergies, Working draft, *Pew Center on Global Climate Change*, Washington, DC.

European Commission (2009), Decision of determining, pursuant to Directive 2003/87/EC of the European Parliament and of the Council, a list of sectors and subsectors which are deemed to be exposed to a significant risk of carbon leakage. http://www.europa.eu.

Deutsche Bank Research (2011), Water: Investments of EUR 500 bn required—every year!, Research Briefing, June 6, 2011 (Deutsche Bank).

Global Subsidies Initiative (2010), Untold billions: Fossil fuel subsidies, their impacts and the path to reform (Global Subsidies Initiative and IISD), Geneva.

Hoekstra, A.Y. (2010), The relations between international trade and freshwater scarcity, Staff Working Paper ERSD-2010-05, January 2010 (World Trade Organization).

Horn, H. and P. Mavroidis (2008), The permissible reach of national environmental policies, Mimeo 24 May 2008, ENWINED project.

Horn, H. and P. Mavroidis (2011), To B(TA) or not to B(TA)? On the legality and desirability of border tax adjustments from a trade perspective, Paper prepared for the workshop on "Climate Changes Policies and the World Trading System: The Challenges Ahead", Paris 24 June 2011.

Houser, T., R. Bradley, B. Childs, J. Werksman and R. Heilmayr (2008), Leveling the carbon playing field (Peterson Institute for International Economics and World Resources Institute, Washington, DC).

Hufbauer, G.C. and J. Kim (2010), Climate change and trade: Searching for ways to avoid a train wreck, Second Conference on climate change, trade and competitiveness (The Graduate Institute Geneva, Center for Trade and Economic Integration).

Jara, A. (2010), Keynote speech, World Input-Output Database Conference, May 26, 2010, Vienna, Available on the WTO website (http://www.wto.org).

Jensen, M.F. (2009), Leveling or mining the playing field? Implementation problems of carbon-motivated adjustment taxes, Mimeo, November, Global Trade and Finance Architecture GTFA (World Bank and DFID).

Jomini, P., P. Boulanger, X. Zhang, C. Costa and M. Osborne (2009), The Common Agricultural Policy and the French, EU and Global Economies, October (Groupe d'Economie Mondiale at Sciences Po). http://gem.sciences-po.fr.

Kleen, P. (2010), Border carbon adjustements: A real threat or a storm in a teacup? Working paper, December (Groupe d'Economie Mondiale at Sciences Po), http://gem.sciences-po.fr.

Kommerskollegium (Swedish National Board of Trade) (2009), Climate measures and trade: legal and economic aspects of border carbon adjustment (Stockholm, Sweden).

Lee, J. (2010), Green Growth: Korean initiatives for Green Civilization, National Research Council for Economics, Humanities and Social Sciences & Random House (Seoul, Korea).

Lee, J., J.H Hong, C.H. Park, J.S. Lim, W. Oh, S. Shin and J.J. Kim (2011), Green Growth: Issues and Policies, Green Forum 2010, National Research Council for Economics, Humanities and Social Sciences & Random House (Seoul, Korea).

Le Vernoy, A. (2010), Water, trade and geography, PhD Thesis, Sciences Po Paris.

Lloyd, P. (2011), Multilateralism after the failure of the DDR and climate change negotiations, mimeo (University of Melbourne).

Low, P., G. Marceau and J. Reinaud (2010), The interface between the trade and climate change regimes: Scoping the issue, Second Conference on climate change, trade and competitiveness (The Graduate Institute, Center for Trade and Economic Integration, Geneva).

Melo, J de and N. Mathys (2010), Trade and Climate Change: The Challenge Ahead, Discussion Paper Series # 8032 (CEPR, London).

Melo, J. de (2011), Climate change policies and the world trading system: Introduction to the Symposium, Paper prepared for the workshop on "Climate Changes Policies and the World Trading System: The Challenges Ahead", Paris 24 June 2011.

Messerlin, P. (2010), Climate change and trade policy From mutual destruction to mutual support, Policy Research Working Paper WPS 5378, July (World Bank, Washington).

Monjon, S. and P. Quirion (2010), How to design a border adjustment for the EU Emissions Trading Scheme (CIRED-CNRS, Paris).

Morrison, J., M. Morikawa, M. Myrphy and P. Schulte (2009), Water scarcity and climate change: Growing risks for businesses and investors, A Ceres Report, Ceres and Pacific Institute. http://www.ceres.org and http://www.pacinst.org.

Moore, M.O. (2010), Implementing carbon tariffs: A fool's errand? Mimeo, April, Department of Economics and Elliot School, Institute for International Economic policy, (George Washington University, Washington, DC).

Pauwelyn, J. (2007), US federal climate policy and competitiveness concerns: The limits and options of international trade law, Nicholas Institute for Environmental Policy Solutions, (Duke University).

Perry C. J., M. Rock, and D. Seckler (1997), Water as an economic good: A solution, or a problem? Research Report 14, Colombo, (Sri Lanka: International Irrigation Management Institute).

OECD (2011), Producer and consumer support estimates database, Available online at http://www.oecd.org/agriculture/pse.

Talbot, S. and W. Antholis (2010), Fast forward : Ethics and politics in the age of global warning (Brookings Institution Press).

Tirole, J. (2009), Politique climatique: Une nouvelle architecture mondiale, Conseil d'Analyse Economique (Documentation française, Paris).

Yang, H., and A. Zehnder (2007), "Virtual water": An unfolding concept in integrated water resources management, *Water Resources*. Res. 43, W12301.

Young, S. (2011), Remarks at the Korean-French-Mexican Conference on the French G20, Sciences Po, Paris. Available on http://gem.sciences-po.fr

Whalley, J. (2011), What role for trade in a post 2012 global climate policy regime? Paper prepared for the workshop on "Climate Changes Policies and the World Trading System: The Challenges Ahead", Paris 24 June 2011.

World Bank (2011) "Global Development Horizons 2011: Multipolarity: The New Global Economy (World Bank, Washington, DC)

WEF (World Economic Forum) (2010), From collision to vision: climate change and world trade, A discussion paper, November (WEF, Geneva).

World Trade Organization (WTO) (2007), Trade and environment at the WTO (WTO, Geneva).

World Trade Organization (WTO) (2010), Trade and environment at the WTO (WTO, Geneva).

FERDI

Créée en 2003, la **Fondation pour les études et recherches sur le développement international** vise à favoriser la compréhension du développement économique international et des politiques qui l'influencent.

Contact
www.ferdi.fr
contact@ferdi.fr
+33 (0)4 73 17 75 30