

## Conflicting Rules for the International Trade of GM Products: Does International Law Provide a Solution?

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The Vienna Convention on the Law of Treaties was designed to provide guidance regarding the legality of primacy between international agreements. Article 30 of the Convention states that when one party to a previous treaty is not a party to a subsequent treaty, then, “the earlier treaty only applies to the extent that its provisions are compatible with those of the latter treaty.” To date, the implications of this have not been well explored with respect to the World Trade Organization (WTO) Agreements and the Cartagena Protocol on Biosafety (CPB). Given that three of the top five producers of genetically modified crops (Argentina, Canada, and the United States) are not signatories to the CPB, this issue could become contentious. This article provides a detailed assessment of the applicability of the Vienna Convention to the WTO and the CPB. The resulting policy implications and potential trade concerns are highlighted and addressed. The results suggest that formal international law has little to offer in terms of determining which institution—the CPB or the WTO—should take precedent in the case of a dispute. Given that most major exporters of GM crops do not belong to the CPB, but most states (both potential importers and exporters) belong to the WTO, the latter should be the venue where disputes are adjudicated. A WTO panel would likely not consider socio-economic concerns as an acceptable justification for the imposition of trade barriers.

**Key words:** Cartagena Protocol on Biosafety, genetically modified crops, international law, Vienna Convention, World Trade Organization.

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### Introduction

The World Trade Organization (WTO) is the major multilateral organization through which the rules of international trade are agreed and adjudicated. Most large-economy countries belong to the WTO, and its rules cover approximately 97% of global trade (Kerr, 2012).<sup>1</sup> There are, however, other multilateral agreements (mostly multilateral environmental agreements [MEAs]) that contain provisions on international trade—largely in specialized areas such as trade in endangered species or hazardous materials (Kerr & Hall, 2004). While they may have rules that conflict with those of the WTO, in the case of most MEAs, there is sufficient international consensus on the problem being addressed, having alternative trade rules that it has never become an issue of dispute at the WTO (Belcher, 2007). This may not, however, be the case with genetically modified organisms (GMOs). The Cartagena Protocol on Biosafety (CPB), in particular, provides

an alternative set of trade rules for dealing with the introduction and exchange of living modified organisms. In this case, there is neither consensus on the regulation of trade nor on which agreement should take precedence. The rules of trade embedded in the CPB are, in many ways antithetical to those of the WTO (Hobbs, Hobbs, & Kerr, 2005)—and may have been designed with that specific purpose in mind (Holtby et al., 2007). Further, while many countries are members of both the WTO and the CPB, some are only parties to the WTO. In particular, a number of the major countries that have adopted and export GM-products are members of the WTO, but not the CPB. Hence, issues of non-overlapping memberships and how they are dealt with in international law need to be addressed.

While the conflict between the rules of the CPB and the WTO has been recognized since the inception of the CPB (Phillips & Kerr, 2000), the issue is coming to the forefront of public policy for two reasons. First, an ongoing process of asynchronous approvals, whereby more and more GM crops are being approved in some countries and not in others, has led to a rising potential for trade disagreements (Phillips, 2011; Viju, Yeung, &

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1. *Preferential trade agreements such as the North American Free Trade Agreement, the European Union, etc., are covered by the WTO and are expected not to contradict WTO agreements.*

Kerr, 2011). Second, as scientific justifications for placing trade barriers on GM products are fading given widespread adoption without any discernible human health or environmental problems, countries that wish to impose barriers to imports are increasingly relying on socio-economic considerations (SECs) as justifications for the imposition of trade barriers. The CPB allows these as justifications, but the WTO does not. In fact, the Agreement on the Application of Sanitary and Phytosanitary Measures (SPS) of the WTO was put in place to de-politicize decision-making in this area by making science the sole justification for the imposition of trade barriers (Kerr, 2003). The WTO's rules of trade have as a primary motive constraining governments' abilities to extend economic protection to vested interests threatened by foreign competition—in other words socio-economic considerations (Kerr, 2010). Thus, allowing SECs as a reason to impose trade barriers puts the CPB directly at odds with the WTO's central concern—economic protectionism. As a result, there is significant potential for direct conflict between the agreements. Hence, a discussion of how conflicts between agreements are handled in international law is warranted. Clarification is required because regulatory uncertainty is likely to depress investment in further development of GM technology (Phillips, 2011).

### **When International Agreements Conflict—What is the Law?**

The WTO and the CPB are highly divergent regulatory regimes. Given this divergence, and the potential for CPB-related measures to contravene WTO rules, what is likely to occur in the event of a clash? What rules, if any, will take precedence?

As a general principle of international law, when two treaties in the same subject area conflict, the latter treaty prevails in the event of a dispute between two states that are parties to both instruments. While this rule appears to be relatively straightforward, it hides a much more complex set of issues. Indeed, as Sinclair observed (1973, p. 62), “with the post-war growth in international co-operation, accompanied by a massive increase in the numbers and range of international agreements of a law-making character, the problem of incidental conflict between successive treaties has become more acute.”

The International Law Commission has wrestled with this problem in the course of its work on treaties. The result of its deliberations was Article 30 of the Vienna Convention on the Law of Treaties (VCLT; United Nations [UN], 1969), which states:

1. Subject to Article 103 of the Charter of the United Nations, the rights and obligations of States parties to successive treaties relating to the same subject-matter shall be determined in accordance with the following paragraphs.
2. When a treaty specifies that it is subject to, or that it is not to be considered as incompatible with, an earlier or later treaty, the provisions of that other treaty prevail.
3. When all the parties to the earlier treaty are parties also to the later treaty but the earlier treaty is not terminated or suspended in operation under article 59, the earlier treaty applies only to the extent that its provisions are compatible with those of the later treaty.
4. When the parties to the later treaty do not include all the parties to the earlier one:
  - a. as between States parties to both treaties the same rule applies as in paragraph 3;
  - b. as between a State party to both treaties and a State party to only one of the treaties, the treaty to which both States are parties governs their mutual rights and obligations.

The rules in Article 30 were clearly designed to be of a residuary nature, as 30(2) clearly envisions provisions in a treaty relating to its compatibility with other regimes (Sinclair, 1973). In other words, they will only operate in situations where the competing treaties in question are silent in relation to the issue of priority. It should be noted that not all situations where the text of two treaties in the same area diverge are regarded as incompatibilities. This divergence is particularly prevalent in situations where a regional regime and a universal regime operate in the same general subject area, as Sinclair (1973) suggests that the European Convention on Human Rights and the UN Human Rights Covenants do. With respect to the potential incompatibility of WTO rules and those contained in the CPB, however, these general rules of international law are unhelpful. Caldwell (1998, pp. 28-29) notes:

The major difficulty associated with relying on the hierarchical treaty argument is that the later-in-time provision of the Vienna Convention will not adequately serve the GATT/WTO regime or future MEAs. For example, the GATT/WTO regime has a tradition of negotiating additional agreements in new areas of trade liberalization over the course of several years. The latest adoption of the Uruguay Round Final Act clearly

places the GATT/WTO regime as the later-in-time treaty in relation to many of the current MEAs. Similarly the negotiations of future MEAs may result in their achieving priority over the GATT/WTO regime. The final result would be a patchwork of differing treaty priorities and minimal clarification of the relationship between the GATT/WTO regime and the MEAs.

Given the radically different regulatory regimes of the WTO and the CPB, the two treaties cannot be said to be in the same subject area (although their spheres of operation clearly overlap). Even if such a determination were to be made, the residuary character of the rules contained in Article 30 of the VCLT cannot be overlooked. The CPB is far from silent on its relationship with other regimes, although an analysis of these provisions provides little assistance in answering the question of whether it takes priority over WTO rules.

The Preamble to the CPB contains two seemingly contradictory statements that attempt to outline the relationship between the CPB and other international agreements. Initially, the preamble states, “this Protocol shall not be interpreted as implying a change in the rights and obligations of a party under any existing international agreement” (Secretariat of the Convention on Biological Diversity [CBD], 2000, p. 2). However, the next paragraph continues, “understanding that the above recital is not intended to subordinate this Protocol to other international agreements” (Secretariat of the CBD, 2000, p. 2).

These two seemingly contradictory preambular statements represent classic *savings clauses*. Savings clauses are a common feature of many multilateral treaties and they are effectively an enactment of the principle behind Article 30(2) of the Vienna Convention. The effect of a savings clause is to “save the provisions of an earlier agreement that would otherwise be overcome by incompatible provisions of a later agreement” (Safrin, 2002, p. 613).

This rather ‘confusing’ language (Hagen & Weiner, 2000, p. 707) contained in the Preamble of the CPB is the result of a difficult political compromise reached towards the end of the negotiations. As Safrin (2002) notes, the parties had split into three camps in relation to the inclusion of a savings clause in the text of the CPB:

1. A group led by the United States and other major agricultural exporters, who were adamant that the CPB not undermine obligations under existing trade rules and agreements.

2. A group led by the European Union who, in the wake of the *Beef Hormone Decision* of the WTO Dispute Settlement Body [DSB], were fearful that the inclusion of such a savings clause would lend further credence to the belief that a hierarchy of international legal agreements and obligations was developing, where trade concerns and disciplines trumped apparently “subordinate” environmental agreements.
3. A group (the “like-minded group”) who supported a compromise position, which allowed the operation of a savings clause subject to the exception that its operation could not be allowed to “cause serious damage or threat to biological diversity” (Safrin, 2002, p. 614).

The CPB text adopted this third compromise position, thus leading to the rather contradictory preambular statements. In essence, this allowed all parties to claim some form of ‘victory’ but left it virtually impossible to predict the exact outcome of a potential clash between the terms of the WTO and CPB agreements.

While the preamble to a convention does not have the same legal force as the main body of the instrument, it is, nevertheless, a significant aid to interpretation. The objective and purpose of a treaty according to the International Law Commission are primarily to be gathered from the text of the treaty and particularly the preamble (Sinclair, 1984). The main text of the CPB contains similarly contradictory statements. Article 2 allows parties to take action on biosafety that is more protective than that envisaged by the protocol, *subject* to the proviso that such measures will be “consistent with the Parties’ other obligations under international law” (Secretariat of the CBD, 2000, p. 3). However, Article 26 subsequently authorizes parties to “take into account socio-economic considerations arising from the impact of LMOs [living modified organisms] on...biological diversity” (Secretariat of the CBD, 2000, p. 19). As suggested above, SECs are regarded as extraneous by the WTO. Thus, the relationship between the proviso in Article 2 and the authorization contained in Article 26 is at best ambiguous, and at worst, utterly contradictory. In their analysis of these contradictory aspects of the text of the CPB and their relationship with other international obligations (including WTO obligations) Hagen and Weiner (2000, p. 713) conclude:

In some significant instances the Protocol establishes rights and obligations that can be reasonably interpreted as contradictory rather than

**Table 1. Comparison of WTO and CPB: Reasons for trade barriers and avenues to complain.**

Justification for trade barrier	WTO		CPB	
	Complaint	Venue for complaint	Complaint	Venue for complaint
<b>Sanitary or phytosanitary concern</b>				
<b>Science-based threat</b>	Scientific justification insufficiently substantiated	WTO DSM	Scientific justification insufficiently substantiated	No avenue for appeal
<b>Risk level unacceptable</b>	Risk assessment not properly conducted	WTO DSM	Risk assessment not properly conducted	No avenue for appeal
<b>Insufficient scientific information (precaution)</b>	Scientific evidence is sufficient	WTO DSM	Scientific evidence is sufficient	No avenue of appeal
<b>Socio-economic considerations</b>	Not allowed in SPS	WTO DSM	Analysis was flawed	No avenue of appeal
<b>Technical barrier-to-trade requirement</b>				
<b>Novel product</b>	Like product	WTO DSM	Not applicable (by definition, all GMOs can have trade barriers applied)	Not applicable
<b>Production and processing method concern</b>	Not allowed as a justification of trade barrier	WTO DSM	Not applicable (biotechnology is a PPM and the reason for the CBP)	Not applicable
<b>Socio-economic considerations</b>	Benefits outweigh the costs	WTO DSM	Analysis was flawed	No avenue of appeal
<b>Agreement allows trade barrier</b>	WTO does not have jurisdiction	WTO DSM	CBP does not have jurisdiction	International Court of Justice

merely counterbalancing. For example, it is difficult to see how international trade rights and obligations can remain unchanged as the preamble states, if as the Preamble also states, the Protocol is not subordinate to WTO Agreements.

Clearly, the question of the legal priority of the CPB over WTO agreements (or vice versa) is a complex issue that eludes simple explanation, and the issue has spawned a literature that uses rather dramatic descriptors such as ‘collision’ (Safrin, 2002), ‘conflict’ (Candeira et al., 2009; Neff, 2004), and ‘tension’ (Vallely, 2004). However, as with most aspects of international law, the legal subtleties of a given situation are less significant than the political realities. Politically, WTO agreements (and the obligations therein) are generally taken more seriously by states than obligations incurred under other instruments perhaps due to the compulsory jurisdiction of its dispute settlement body. Furthermore, the WTO (and in particular its Committee on Trade and the Environment clearly advocates regimes that negotiate a rapprochement between trade and environmental goals (which could be said to embody ‘sustainable development’) rather than creating incoherent, con-

tested, and consequently unenforceable hierarchies of international legal agreements.

A key factor in determining the future of the CPB, therefore, is its likely treatment by the WTO should any compatibility issues be raised by aggrieved states. In order to provide a plausible answer to the ‘conflict’ question, an analysis of the likely rules governing such a dispute must be undertaken. Prior to that, a discussion of the SEC issue—which is likely to generate the greatest conflict—is instructive.

### Socio-economic Considerations

There are a number of areas where the WTO and the CPB conflict in the establishment of trade barriers and in how complaints regarding those trade barriers can be dealt with (see Table 1). Both the WTO and the CPB allow trade barriers to be put in place to protect human health and the environment. In the case of the CPB, the country that wishes to export applies to a prospective importing country to be allowed market access for its GMO. The importing country is supposed to examine the available scientific evidence and undertake a risk assessment. It then reports its decision to the applicant. It does not have to justify its decision. There is no mech-

anism for the applicant country to appeal the decision. The CPB does not have binding dispute settlements. In essence, the importing country is unconstrained in its ability to establish trade barriers under the CPB (Hobbs et al., 2005). In contrast, the WTO has specific requirements—both criteria and procedural—a country must abide by to put trade barriers in place. Further, the WTO has a binding dispute settlement mechanism (DSM) where countries that do not feel that the justification for the trade barrier is valid can complain and have their complaint adjudicated. The WTO DSM is binding: if a country does not comply with a dispute-panel ruling, then the WTO can authorize the use of trade sanctions by the country suffering the economic loss arising from the trade barrier.<sup>2</sup>

There is a provision in the CPB for disputes to be taken to the International Court of Justice (ICJ). An appeal to the ICJ might arise if an exporting country faced an importing country imposing a trade barrier justified under the CPB, but felt that the product in question did not fall under the ambit of the CPB. This might happen if the exporter used a production method that the member country of the CPB defined as a GMO, but the exporting country did not believe the technology used constituted biotechnology. The appeal would test whether the importing country exceeded the mandate of the CPB.

SECs present the greatest divergence between the agreements. The WTO does not allow SECs as a legitimate justification for SPS measures and only allows SECs in a limited way in the WTO's Agreement on Technical Barriers to Trade (TBT). The TBT covers those areas where technical barriers to trade can be imposed that do not relate to sanitary and phytosanitary justifications for the imposition of barriers. Examples include labeling requirements or import bans justified on the basis of the use of child labor or low animal welfare standards in foreign production. In the case of either sub-agreement, members of the WTO have an avenue for complaints to be adjudicated. In contrast, SECs are explicitly allowed in the CPB and there is no avenue for a complaint to be adjudicated.

Risk (and its mitigation, management, and eradication) is an increasingly nebulous topic. As wealth continues to grow, some societies and their governments have become more focused on risks that were over-

looked during periods when the economy was developing (or recovering from catastrophe). To a large extent, in the immediate post-Second-World-War period, most societies and economies fixated on a 20-year period of rebuilding, an effort to reduce the risks of unemployment, and—in Europe—dependence on food imports. It might be argued that only with Rachel Carson's *Silent Spring* (1962) did the importance of other risks begin to creep into the consciousness of industrial societies. As economic reconstruction concluded, other important risks gained prominence in the social conscience and with public policymakers.

While there are identifiable benefits from the increased focus on risk management and mitigation, one needs to be vigilant to the potential for risk-mitigation strategies to be used as a front for trade distorting protectionist policies. Over time, protectionists have been very adept at co-opting policies that justify the protection of their individual vested interests in the name of social welfare (Kerr & Perdakis, 2003). One area with a long-standing practice of using health and safety as disguised barriers is in the trade of food and agricultural products. Over the past century—since the International Dairy Federation developed new international standards for milk and milk products in 1903—an array of international agreements has narrowed the discretion to use these safety measures to restrict trade. The negotiation and implementation of the SPS Agreement in the WTO in 1995 finally closed off almost all non-scientific justifications in the context of international agri-food trade. While countries continued to justify trade measures using SECs, disputes universally imposed the science-only principle.

Now, with the CPB (especially Article 26), member states are empowered to incorporate SECs into domestic regulatory frameworks (Box 1). While the focus of Article 26 is specifically on biodiversity and impacts on indigenous communities, many countries have broadly interpreted this provision and incorporated SECs that have no apparent connection with reducing the risks to either biodiversity or indigenous communities (Falck-Zepeda, 2009; Falck-Zepeda, Wesseler, & Smyth, 2013; Falck-Zepeda & Zambrano, 2011; Ludlow, Smyth, & Falck-Zepeda, 2014; Smyth & Falck-Zepeda, 2013).

2. *The WTO is the only multilateral organization other than the United Nations Security Council that can authorize the use of trade sanctions (Kerr, 2000).*

**Box 1. Article 26 of the Cartagena Protocol on Biosafety****Socio-economic Considerations**

1. The Parties, in reaching a decision on import under this Protocol or under its domestic measures implementing the Protocol, may take into account, consistent with their international obligations, socio-economic considerations arising from the impact of living modified organisms on the conservation and sustainable use of biological diversity, especially with regard to the value of biological diversity to indigenous and local communities.
2. The Parties are encouraged to cooperate on research and information exchange on any socio-economic impacts of living modified organisms, especially on indigenous and local communities.

Source: Secretariat of the CBD (2000)

There is a heated debate about the appropriateness of this broader reading of Article 26. As part of a review of the socio-economic impacts from GM crops, Lusser, Raney, Tillie, Dillen, and Rodriguez-Cerezo (2012, p. 34) suggest that including SECs as part of the decision-making process provides “more and better information about the technological impact for the decision-making process and may help to avoid the adoption of inefficient technologies.” However, others argue that such decisions should be left to the marketplace. In both theory and practice, all new technologies create both winners and losers. Rejecting a technology or other innovation solely on the basis that some people are worse off than without the technology is often simply another justification for protecting vested interests at the expense of aggregate social welfare; when such a policy is bolstered by barriers to trade, this becomes a case of economic protectionism.

International trade of foodstuffs—both conventional and genetically modified—since 1994 is governed by the overall WTO principles of non-discrimination, binding and transparent commitments, and impartial adjudication. Agri-food trade measures are also explicitly targeted in the SPS agreement, which establishes the appropriate structures for enacting measures related to safety and incorporates by reference the technical standards provided by the *Codex Alimentarius* Commission (Codex), The World Organization for Animal Health (OIE; formerly the Office International des Epizooties),

and the International Plant Protection Convention (IPPC).

The IPPC—the most relevant for GM crops—is a multilateral treaty that seeks to protect natural flora, cultivated plants, and plant products from the spread of pathogens through international trade. Through collaboration between regional and national plant-protection organizations, it provides a forum for international cooperation, dialogue, harmonization, and technical exchange of plant information. The IPPC has addressed the regulation of biotechnology and GM crops through several of the International Standards for Phytosanitary Measures (ISPMs). The ISPMs established by the IPPC allow for the implementation of trade barriers under very specific science-based conditions. If a science-based risk assessment generates verifiable evidence documenting increased risk from allowing a specific traded product to be imported, then trade in that product can be proscribed. Every member country of the WTO is allowed to implement these standards into their domestic regulatory framework without fear of challenge. If a WTO member country implements a regulatory standard that contravenes the IPPC standards, then that country may be accused of using a trade barrier in a case brought to the WTO by any other member country. Countries may have higher standards than the IPPC, but only if there is a scientific justification and a risk assessment that satisfies SPS commitments. Annex A.4 of the SPS Agreement (WTO, 1995) defines risk assessment as:

“The evaluation of the likelihood of entry, establishment, or spread of a pest or disease within the territory of an importing Member according to the sanitary or phytosanitary measures which might be applied, and of the associated potential biological and economic consequences; or the evaluation of the potential for adverse effects on human or animal health arising from the presence of additives, contaminants, toxins or disease causing organisms in food, beverages or feed-stuffs.”

By way of comparison, Annex III of the CPB defines risk assessment as a procedure “to identify and evaluate the potential adverse effects of living modified organisms on the conservation and sustainable use of biological diversity in the likely potential receiving environment, taking also into account risks to human health” (Secretariat of the CBD, 2000, p. 28). Even though risk assessments are to be done to determine

**Table 2. Potential socio-economic considerations implied in CPB.**

Consideration
Coexistence of LMOs
Compliance with biosafety measures, including institutional costs
Cultural, spiritual, and ethical aspects
Economic impacts of changes in application rates and effectiveness of pesticides and herbicides
Economic impacts of changes in pest prevalence due to changes in farm-management practices
Farmers' rights
Food security
Gender impacts
Health-related impacts, including those resulting from changes in the use of pesticides and herbicides
Indigenous and local communities' impacts on livelihoods, knowledge, and biodiversity
Impact on the conservation and sustainable use of biodiversity
Impacts on consumer choice or consumption patterns
Impacts on market access and trade at national and international levels
Labor and employment
Land tenure
Macroeconomic impacts, including those on sustainable development
Microeconomic impacts at the individual, household, or community level
Rural-urban migration

Source: adapted from UNEP (2010)

risks to the environment and human health, some countries are adopting SECs that would appear to clearly violate Article 26's consistency with international obligations. Table 2 lists the SECs identified in a CBD Secretariat expert meeting report, providing examples that parties to the CPB may take into consideration during their decision-making processes. Numerous SECs being incorporated into regulatory frameworks are making operational an extended form of the Precautionary Principle. These are often justified based on the CPB Annex III, which states that "lack of scientific knowledge or scientific consensus should not necessarily be interpreted as indicating a particular level of risk, an absence of risk, or an acceptable risk" (Secretariat of the CBD, 2000, p. 28).

One interpretation is that if a country's domestic regulatory system incorporates measures that do not improve environmental safety or plant, animal, or human health via science-based risk assessment, then it has violated the principles of the SPS Agreement. Under

the WTO, the implementation of new regulations based on the above SECs would constitute a trade barrier in all but a few instances. The SECs in Table 2 that would have the science-based risk assessment justification to be implemented would be in regards to herbicide/pesticide applications and impacts on biodiversity. Risk assessments undertaken on SECs such as ethics, gender impacts, labor, migration, and consumer choice would have no effect on the environment or animal, plant, or human health and, thus, would be considered as unjustified trade barriers.

Disputes by Parties to the CPB will be problematic to resolve due to the absence of a dispute-settlement mechanism. Article 34 indicates that disputes between CPB parties will be addressed through Article 27 of the CBD. That Article suggests that, first, parties will seek to resolve the dispute through negotiation and, failing that, they will move to third-party mediation. If this still does not resolve the issue, then the dispute is to be submitted to the ICJ.

The referral of trade disputes involving the CPB to the ICJ is confusing. Since the ICJ was established in 1945, it has never dealt with a case involving agriculture or trade in agricultural products. The most apparent reason for this is the 1947 establishment of the General Agreement on Tariffs and Trade (GATT) that was purposely created to deal with the problem of how tariffs were being used to affect international trade. Given that GATT's *raison d'etre* was to resolve trade disputes, it would be illogical from the ICJ perspective to duplicate what GATT was doing, and hence, the ICJ and GATT (now the WTO) have managed to ensure that duplication of efforts does not occur. Nevertheless, the IJC might rule on whether a policy exceeded the ambit of the CBP.

The challenge of trade in GM products and growing implementation of SECs is that ultimately trade will be negatively affected. While trade could be disrupted between two countries that have adopted, produce, and export GM products—as some adopting countries have included SECs as part of their regulatory framework (Falck-Zepeda et al., 2013)—it will be more likely that a trade dispute will develop between two countries where one produces and exports GM crops and the other imports and does not use GM crops (possibly because of SECs embedded in regulations). The fact that the United States, Argentina, and Canada, which collectively account for 55% of the area under GM production, are not a party to the CPB, and the United States is not even a party to the CBD, suggests that it is not feasible to have a trade dispute resolved via the dispute-settlement

**Table 3. GM-crop-adopting countries and treaty obligations.**

GM-adopting countries	Adopted and ratified CPB	Adopted and ratified CBD	Member of WTO
USA	No	No	Yes
Brazil	Yes	Yes	Yes
Argentina	No	Yes	Yes
Canada	No	Yes	Yes
India	Yes	Yes	Yes
China	Yes	Yes	Yes
Paraguay	Yes	Yes	Yes
South Africa	Yes	Yes	Yes
Pakistan	Yes	Yes	Yes
Uruguay	Yes	Yes	Yes
Bolivia	Yes	Yes	No
Philippines	Yes	Yes	Yes
Australia	No	Yes	Yes
Burkina Faso	Yes	Yes	Yes
Myanmar	Yes	Yes	Yes
Mexico	Yes	Yes	Yes
Spain	Yes	Yes	Yes
Chile	No	Yes	Yes
Colombia	Yes	Yes	Yes
Honduras	Yes	Yes	Yes
Sudan	Yes	Yes	No
Portugal	Yes	Yes	Yes
Czech Republic	Yes	Approved	Yes
Cuba	Yes	Yes	Yes
Egypt	Yes	Yes	Yes
Costa Rica	Yes	Yes	Yes
Romania	Yes	Yes	Yes
Slovakia	Yes	Approved	Yes

Source: International Service for the Acquisition of Agri-biotech Applications (ISAAA, 2013), CPB (2013), CBD (2013), WTO (2013)

process outlined in the CPB and the CBD. Table 3 provides an overview of the countries producing GM crops and their institutional affiliations.

While the complexities of a trade dispute over GM products involving Bolivia or Sudan would appear to be substantial, given their lack of WTO membership, the larger concern is whether countries could use these two agreements to forum shop. There is significant concern in some quarters that a GM-producing nation could file a case with the WTO regarding a SEC barrier in a non-GM-adopting nation, which could then argue that the CPB should, according to the VCLT, be recognized as the binding agreement by which the dispute should be

administered. The following section examines several SECs that have been proposed for inclusion in regulatory frameworks in some countries to illustrate how trade disputes could arise over their implementation.

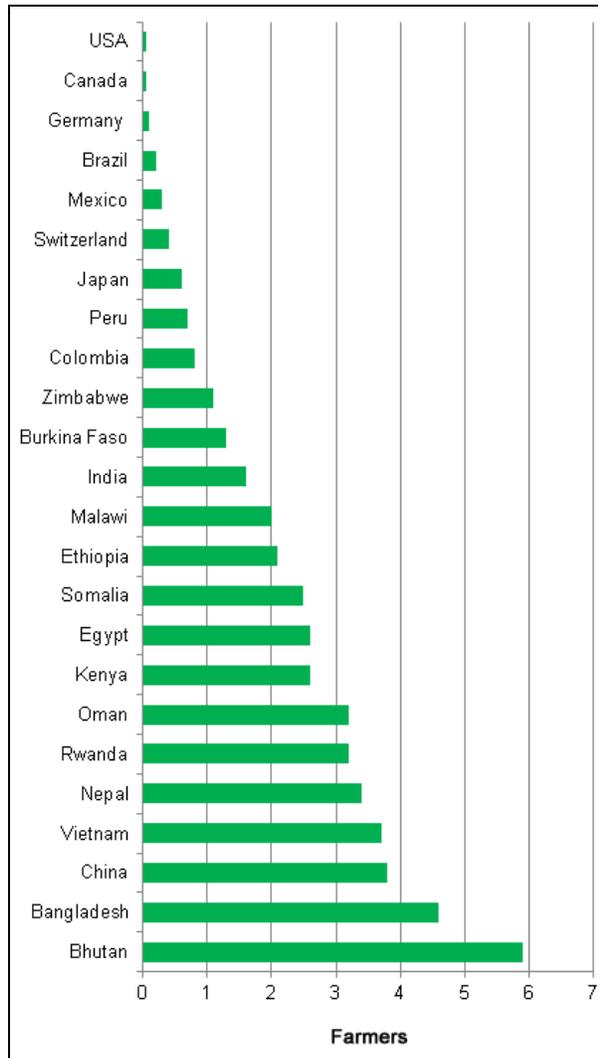
### Critical Assessment of SEC Regulations

Both the WTO and CPB definitions of risk assessment include the ability to evaluate the potential of the risk being assessed. It is posited that the ability to evaluate risks would best be undertaken using the risk assessment as defined by the Food and Agriculture Organization (FAO) where risk assessment is “a scientifically-based process consisting of the following steps: (i) hazard identification, (ii) hazard characterization, (iii) exposure assessment, and (iv) risk characterization” (FAO, 2012, p. 7). Given that Article 26 of the CPB stipulates that all SECs have to be consistent with international obligations, and the WTO requires science-based risk assessments, the following SECs are assessed according to their ability to reduce the risk to the environment or plant, animal, or human health due to the commercial production of GM crops. Those examples unable to verifiably reduce risks of this nature would generally be viewed as violating a country’s WTO commitments and obligations.

### Labor Impacts

Labor is one of the SECs identified by the United Nations Environment Programme (UNEP) report shown in Table 2. The labor market has a long history of being changed by innovative processes and products. Ever since the agricultural revolution, farms have been replacing labor with capital, improved inputs, and machinery to such an extent that agriculture in many developed countries is now a capital and knowledge-intensive activity. Agricultural production in many developing countries remains very labor intensive. The lack of mechanized equipment for seeding, weeding, and harvest and the absence of many labor-saving inputs results in many of these farming activities being done by hand. Several developing countries have more than two workers per hectare of arable land, while at the other end of the scale, countries such as Canada and the United States have only about 0.05 workers per hectare (Figure 1).

The circumstances in South Africa illustrate the challenge of considering labor impacts. Currently, the average small landholder farms only a few hectares. Given the small size of the fields, weeding is done by hand. Gianessi (2009) reports that to prevent weed dam-



**Figure 1. Farm workers per hectare of arable and permanent cropland.**

Source: World Resource Institute (2013)

age, conventional maize requires 276 hours of hand weeding/ha, sorghum 150 hours/ha, cotton 200-400 hours/ha, and rice 200-418 hours/ha. Women typically perform the weeding. Gouse (2012) found that smallholders cultivating GM maize spent on average 267 (sorghum), 177 (cotton), and 152 (rice) hours/ha on manual weeding over three successive seasons. Gouse further found that the labor saving in the maize field enabled them to spend more time at home, caring for children or in their vegetable plots.

Gouse (2014) identifies two methods that can be used to assess labor impacts: computable general equilibrium (CGE) models or a social accounting matrix

(SAM). In an ideal scenario, disaggregated time-series, rural-household data would be available and used to assess the labor impacts of GM crops. Gouse acknowledges that the biggest challenge to undertaking these assessments is the lack of data in most developing countries. In instances where data does exist, it is not sufficiently disaggregated to perform simulations. To address the challenges of these insufficiencies, data would have to be gathered, ideally over two to four years, to undertake appropriate assessments.

While an analysis of this kind provides useful information about labor impacts, it neither directly nor indirectly quantifies how risks to the environment or plant, animal, or human health are affected by the related technology. Given that none of these risks can be quantified through a labor impact assessment, any inclusion of this SEC would arguably be viewed as disguised trade protectionism that would violate a country's WTO obligations.

### **Intellectual Property Rights and Farmers' Rights**

Intellectual property rights (IPRs) are also identified in the UNEP (2010) report as a socio-economic issue that should be taken into consideration as part of the decision-making process for GM products. Currently, there are several sources of IP protection that can be applied to GM crops. Plant breeders rights are available through the Union for the Protection of New Varieties of Plants (UPOV) agreements, while the WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) establishes minimum standards for copyright and related rights, trademarks, geographical indications, industrial designs, patents, layout-designs of integrated circuits, and undisclosed information.

Some argue that the operation of IPRs could have major impacts on developing countries by biasing agri-food production and development towards modern improved varieties. Moreover, it is possible that owners of IP may effectively appropriate or marginalize traditional knowledge in ways that jeopardize landraces or traditional farming practices. The resulting dislocation of indigenous people and practices could, in some circumstances, be linked to effects on biodiversity. Lawson (2014) offers a four-step methodology to undertake an assessment of whether IP can or should be restricted in pursuit of specific SECs: (1) identify what IP is embodied in the LMO, (2) identify who owns the IP, (3) identify whether the IP is enforceable in the jurisdiction, and

(4) determine whether IP triggers any relevant or important socio-economic consideration.

In theory, one could envisage including IP as one consideration in a national risk assessment for a new GM crop or product, but in practice this would limit the access and ability to assess IP data. While the data can be found in various online IP databases in developed countries—such as the European Patent Office, the Canadian Intellectual Patent Office, and the US Patent and Trademark Office—few developing countries have such developed systems. More challenging is the interpretation of the data; patent landscape analysis is a highly technical and sophisticated practice (Bubela et al., 2013; Smyth, Kerr, & Phillips, 2013).

Absent such detailed and sophisticated analysis, assessments of IP often end up being nothing more than an assessment of the distribution of benefits from commercialization. While interesting to know, it in no way would help regulators to identify ways to reduce the risk to the environment or plant, animal, or human health. As such, the inclusion of a SEC based on intellectual property would be in violation of the WTO SPS Agreement.

### **Religious/Cultural Aspects**

While ethics is often included with religious and cultural aspects pertaining to biotechnology, Coe (2014) acknowledges that it can be problematic in trying to separate ethics due to it being quite interwoven with religious and cultural aspects. Coe (2014, p. 249) suggests that two key themes set religious and cultural aspects apart—“the concepts of sacredness and the desire for happiness and well-being.” Given that discussions involving religious and cultural aspects of an innovative technology can be emotionally laden and subject to misinformation, numerous countries have utilized citizen consultations. Table 4 provides a summary of countries that have undertaken democratic engagement methods as a part of addressing social concerns regarding biotechnology.

Democratic engagement is most frequently conducted through consensus conferences or citizens’ juries (Medlock & Einsiedel, 2014). This method involves advertising for citizens willing to participate in such an event. Once the group of citizens is formed, they are given background information and are provided with presentations on various relevant topics, allowing for question and answer periods. Discussions are then held and the citizens write a consensus document that serves as the report of the process. While consensus is not a rigid requirement for the process, it is stressed as an

**Table 4. Democratic engagement on biotechnology.**

Country	Year	Topic
Argentina	2000	GM foods
Australia	1999	Gene technology in the food chain
Belgium	2003	GM foods
Brazil	Not available	GM foods
Canada	1999	Food biotechnology
Denmark	1987	Gene technology in industry and agriculture
Denmark	1992	Transgenic animals
Denmark	1999	GM foods
France	1998	GM foods
India	2000	GM foods
Japan	2000	GM foods
Netherlands	1993	GM animals
New Zealand	1996	Plant biotechnology
New Zealand	1999	Plant biotechnology
Norway	1996	GM foods
South Korea	1998	Safety and ethics of GM foods
Switzerland	1999	Genetic engineering and food
United Kingdom	1994	GM foods
United States	2002	GM foods

Source: *The Loka Institute (2013)*

important part of the process and that considerable time should be devoted to trying to resolve differences prior to moving on and recognizing areas where consensus may not be reached. These areas of irreconcilable differences signal to governments which issues will be most challenging for society to adjust to or to manage.

Given the strictures of the FAO definition of risk assessment, there is no obvious fit between qualitative democratic engagement exercises and the quantification of risk. Therefore, the inclusion of religious and cultural perspectives mediated through democratic engagement processes such as SECs in biosafety assessment would likely violate WTO obligations.

### **Market Access and Trade**

Market access and assurance that international trade will not be disrupted have become dominant socio-economic issues for many developing nations and are judged to be a major reason for the lack of GM crop adoption in Africa (Paarlberg, 2008; Smyth et al., 2013). Inadvertent mixture of bulk agricultural commodities is an inevitable part of international seed and commodity trade, which is why thresholds have been established that

allow for the low-level presence of undesirable items such as weed seeds, stones, insect fragments, and off-type seeds. Some of those tolerances are established through risk assessment, but many are simply market judgements, which vary based on the specific buyers being served.

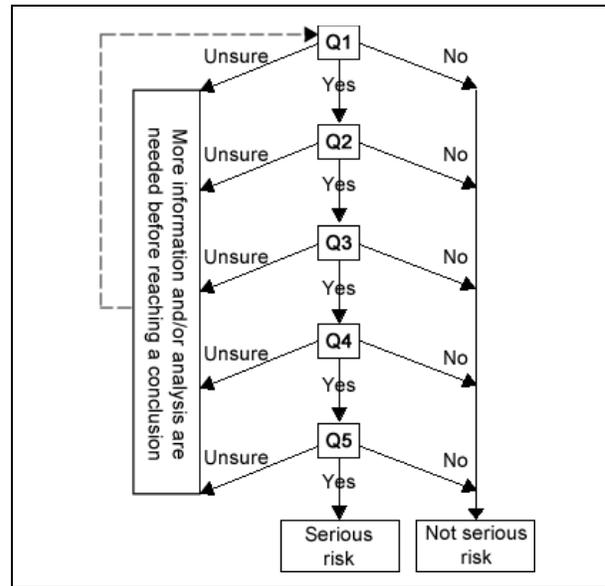
The issue of comingling of GM and non-GM crops has become a serious concern in recent years. Meeting norms for levels of comingling is particularly problematic for African countries that have strong export market connections with the EU given the zero tolerance for GM products not approved for seed, food, or feed use in the EU. Ensuring that comingling is adequately managed to prevent trade problems for those exports destined for non-GM markets also draws on aspects of another SEC that is frequently included—that of coexistence between conventional, GM, and organic crops.

Gruère (2014) suggests different analytical methods would be required to adequately incorporate domestic coexistence and international trade vulnerabilities in a risk assessment. Viju (2014) extends this discourse at the international level, positing three methods can be used to determine if the commercialization of a GM crop would be welfare-enhancing in specific trade markets—partial-equilibrium models, general equilibrium models, and gravity models—which would each offer somewhat different results.

Gruère and Sengupta (2009) offer a logic model to undertake a ‘market’ risk assessment (Figure 2). The proposed five-step process could be used to determine whether (and to what extent) market risk would exist when faced with the commercialization of a GM crop.

The challenge would be that the questions posed at each of the five steps are quite subjective and could be susceptible to manipulation, with the result that the logic model would be more than likely to routinely deliver conclusions that the market risk of commercializing a GM crop would be significantly larger than any adoption benefits. As with any decision to commercialize an innovation, there will ultimately be those that adopt the innovation and gain a share of the benefits and there will be individuals that choose to not adopt the innovation and, in the classical economic sense, be said to be ‘losers’ from the new market circumstances.

While many would conclude that the market response should be a vital part of any decision, the variable and subjective nature of the process leaves it wide open to regulatory capture and exploitation by producers and marketers seeking protection from competition. The lack of a normalized, repeatable process would



**Figure 2. Market risk-assessment decision tree.**

**KEY TO QUESTIONS:** Q1. Is the alleged risk substantiated? Q2. Are export losses likely with the decision? Q3. Are presumed export losses non-negligible for the country? Q4. Is the risk unavoidable? Q5. Is the risk greater than the benefits?

make assessments based on this evidence open to dispute under the WTO.

**Consumer Choice**

The heart of the debate pertaining to consumer choice depends on whether and how a country labels GM foods and products. While Canada and the United States do not mandate labeling of GM products (instead providing guidelines for verifiable claims), the EU (and a large number of other countries) have mandated that all products containing greater than 0.9% GM ingredients must be labeled as GM (the thresholds vary between <1% to 5% in other countries).

The issue of labeling, either mandatory or voluntary, generates a full spectrum of opinions. Environmental groups and critics of biotechnology claim that greater than 95% of consumers responding to surveys indicate that they want GM content to be labeled, but other surveys show that only 2% of unprompted consumers ask for GM labeling. The real demand for labeling lies somewhere between the two; determining whether it is greater or less than 50% is one criterion one might use to determine what type of labeling is optimal. A second-order concern is then determining what threshold makes most sense—zero tolerance, some standard allowance, or variable and specific tolerances by product, market,

and use. Arriving at a repeatable, evidence-based choice related to these two factors appears easy, but has proven otherwise.

There are several survey and experimental methodologies that can be—and *are* being—used to solicit consumer and citizen preferences. These range from in-store surveys to phone, internet, or observational surveys (where consumers are monitored for their choices but not prompted to offer opinions); some of these surveys focus on discrete choices under varying conditions (e.g., variable prices, presentations, budget constraints), while others examine choice in the context of broader grocery purchasing habits. Increasingly economists are using more sophisticated choice experiments (e.g., bid auctions) to identify willingness-to-pay, willingness-to-avoid, and contingent valuations of a range of attributes (Lusser et al., 2012).

Lusk, Jamal, Kurlander, Roucan, and Taulman (2005) undertook a meta-analysis of 25 studies that collectively reported 57 valuations for GM food. Across all studies, consumers on average placed a higher value on non-GM relative to GM foods, ranging anywhere from 42% (unweighted average using all data) to 23% (weighted average excluding one extreme outlier). They then undertook a regression analysis and concluded that a number of factors significantly affect the value estimates. They identified that the method of value elicitation had a significant effect on valuation: when the actual shopper in a family was surveyed, they required a 72% lower premium than non-shoppers; premiums for real products were 40% lower than for hypothetical products; premiums estimated using the willingness-to-avoid method exceeded by 58% premiums estimated by the willingness-to-pay value measure; and conducting the valuation in-person bumped the premiums by 62% as compared to when the valuation was elicited over the phone or by mail, where respondents might try to answer the question in ways they perceive the interviewer is seeking; alternatively, this may simply be because an in-person process forces people to think more about their answers, which amplifies their concerns. The product being analyzed was also found to significantly affect valuations—GM meat premiums would need to be 49% higher than GM oil premiums to make them acceptable, while GM products that were characterized as providing tangible personal benefits, such as increased freshness or nutrition, decreased premiums by between 28% and 49%.

This divergence of results poses significant difficulty for incorporating consumer preferences in a risk assessment—the underlying assumption of risk assess-

ment is that the methods should be transparent, repeatable, and unbiased. Anything less would provide a basis for a challenge at the WTO.

### **Conclusions**

Many developing countries clearly have concerns about agricultural biotechnology and GM crops that extend beyond the normal boundaries of science-based regulation. While it might seem prudent to dismiss these concerns, some process needs to be established so that the full potential of biotechnology is realized in developing countries. In some instances, SECs may have some tangential or consequential effect on “the conservation and sustainable use of biological diversity, especially with regard to the value of biological diversity to indigenous and local communities” (Secretariat of the CBD, 2000, p. 19). Proponents of there being a valid justification for the implementation of trade barriers, hence, must convince their governments that these concerns should be included in the WTO justifications for the imposition of trade barriers. If convinced, their countries could work to have the issue included in the WTO negotiating agenda in some future round. Even among members of the CPB these may be contentious issues, and as there is no adjudication mechanism, such a mechanism could be put on the agenda of the Protocol.

### **Policy Implications**

What happens if a major producer and exporter of GM crops chooses to take action against a state that invokes a measure based on SECs that blocks trade? This section addresses the scenario of an importing state invoking SEC concerns as justification for trade measures that block market access, thus precipitating a trade dispute. To make this a manageable analysis, we have chosen to assume that Canada is the affected party that launches the trade dispute. This raises three main questions. First, if Canada decides to commence formal proceedings, which forum would have jurisdiction to hear the action? Second, once the appropriate forum is determined, which rules would form the substantive and procedural foundation for the dispute? Finally, what would be the likely outcome?

### **Forum**

Regardless of which country has enacted the disputed trade measure, the most likely forum for hearing such a dispute would be the WTO Dispute Settlement Body (DSB). There are several reasons for reaching such a

definitive conclusion. Firstly, as Neff (2004, pp. 277-278) notes:

“Problems may arise as to the forum for dispute resolution depending on whether the Agreements are interpreted as conflicting. This will not be a problem when parties to a dispute are not parties to the same Agreements. For example, the United States is not a Party to the Cartagena Protocol; the EU is a Party. Both are members of the WTO. A dispute will be settled in the forum for the Treaty under which it arises, which will be the Treaty to which both parties are bound.”

As Canada is not a signatory to the CPB then it is likely that, as a matter of course, the WTO DSB would hear the dispute, as the other party is almost certain to be a member of the WTO. However, even anticipating some degree of forum shopping, others also believe that even states in favor of SEC-based measures (who may well be skeptical of the WTO and its perceived biases) might also prefer to have the dispute heard by the WTO because of its “effective and binding dispute settlement system” (Lagomarsino, 2010, p. 545). However, Lagomarsino goes on to suggest that the desire to have the dispute heard by the WTO is not simply because of the remarkably effective DSM (which is something of a rarity in international legal regimes). Rather, those states that may wish to promote SEC-based measures would wish to apply pressure on the WTO because they feel that “the WTO has an obligation or self-interest to address such issues as trade and labor or trade and environment” (Lagomarsino, 2010, p. 545). The nature and extent of this obligation, in Lagomarsino’s view (2010, p. 545), cannot be underestimated:

“The WTO’s ability to reconcile multilateral trade liberalization with other, sometimes conflicting public values, is a central concern to the institution’s legitimacy and is, therefore, vital to further advancing free trade and to realizing its many benefits.”

Lagomarsino also states that it is clear that the WTO Appellate Body interpretations of aspects of the VCLT allow the WTO to use “any relevant rules of international law applicable in the relations between parties” (VCLT, Art 31[3]c), which means that WTO adjudicators are free to apply substantive rules of international law. However, this ability comes with a significant consequence. While it makes perfect sense to use general

rules of international law to assist in the interpretation and development of WTO *lex specialis* it also means that the inclusion of preambular language that advocates attention be paid to non-trade issues opens up the door for such issues to be raised before the DSB. Lagomarsino (2010, p. 548) notes:

“Accordingly, the WTO preamble is often embraced by environmental and human rights advocates as a grand opportunity for the incorporation of substantive norms of other branches of international law.”

Essentially, Lagomarsino argues that if the *raison d’être* of the WTO is to advance trade liberalization, then it is in the best interests of the organization (arguably due to its perceived legitimacy and institutional competence) that it be the body to adjudicate disputes over so-called ‘trade and ...’ issues. However, that opportunity also presents a significant institutional challenge. Lagomarsino (2010, p. 565) concludes:

“The WTO finds itself in an uneasy position where much is expected of it as the dominant legal regime in a fragmented international legal system that lacks a hierarchy of norms. WTO adjudicators must remain increasingly open to interpret trade law relevant to the ever-changing backdrop of international law.”

### **The Applicable Rules**

Even if it is almost certain that any measures based on SECs raised in a dispute between a non-party and a party to the CPB would be heard by the WTO DSB, it is still important to analyze which rules would apply and how.

Article 26.1 of the CPB clearly allows member states to take SECs into account. However, as noted previously, any decisions or measures must also be consistent with their existing international obligations and must be related to the “conservation and sustainable use of biological diversity, especially with regard to the value of biological diversity to indigenous and local communities” (Secretariat of the CBD, 2000, p. 19). Given the breadth of the potential range of measures that can be classified as a SEC, it is important to ascertain which rules will apply when a dispute over such measures is adjudicated.

In a situation where a potential trade barrier to a biotechnological innovation was implemented on SEC

grounds, and a dispute commenced at the WTO, the most likely applicable rules would be the SPS Agreement, which applies to all sanitary and phytosanitary measures likely to impact international trade. As Neff (2004, pp. 269-270) notes:

“The preamble... and the body of the CPB emphasize Parties’ rights and obligations under international law, stating that it does not restrict Parties’ rights to take environmentally protective measures that surpass the requirements of the Protocol, *provided that the measures comply with the Party’s existing international obligations*. Thus, if the provisions of the Protocol are interpreted to conflict with Provisions of the SPS Agreement, the SPS Agreement governs a dispute under such a provision. This holds true for parties to both Agreements *and for parties only to the SPS Agreement*” [emphasis added].

The SPS Agreement places several restrictions on the use of SPS measures, the primary restriction being that the measures must protect animal/human/plant life or health “within the territory of the Member” (WTO, 1995, Annex A.1). Clearly this would, for example, prevent Members attempting to place extra-territorial restrictions on biotechnological innovations in developing countries. In the Shrimp Turtle dispute,<sup>3</sup> the WTO Appellate Body was clear that the extra-territorial application of domestic measures was not an acceptable practice. In addition to this territorial requirement, the SPS Agreement in Article 2.2 mandates Members to “ensure that any sanitary or phytosanitary measure is applied only to the extent necessary to protect human, animal, or plant life or health, is based on scientific principles, and is not maintained without sufficient scientific evidence.” Furthermore, Article 5.1 requires that all SPS measures be based on an assessment of risk that “takes into

account risk assessment techniques developed by the relevant international organizations,” which in this context is most likely to connote Codex, the OIE, and the terms of the IPPC. Finally, while the SPS Agreement does take note of the precautionary principle by allowing Members to take “provisional measures,” as Gruszczynski (2009, p. 58) notes, Article 5.7 stipulates that such measures must conform to four criteria: (i) there needs to be a case of insufficient scientific evidence; (ii) the SPS measure must be based on available pertinent data; (iii) a WTO Member must seek to obtain additional scientific information; and (iv) the measure must be provisional, meaning that it is subject to review within a reasonable period of time. Gruszczynski (2009, p. 58) also reminds us “these conditions are of a cumulative nature, meaning that all need to be met to ensure the measure is consistent with Article 5.7.”

Given the above, it is clear that if Canada were to launch an action against a state for implementing trade restrictions on biotechnology based on SEC-related grounds, then the dispute would be heard by the WTO DSB and the rules of the SPS Agreement would apply. This conclusion is supported by Thorn (2011), who argues that most SEC measures that would apply to the products of biotechnology can be classified as falling under the SPS. He bases his analysis on two main sources. Firstly, at the COP/MOP 5 (Conference of the Parties serving as the meeting of the Parties) in 2010, the UNEP Global Environment Facility (GEF) presented a report (UNEP, 2010) that contained a list of over 20 potential categories of SEC, most of which would encompass any measure deemed necessary to protect animal, human, and plant life or health (reproduced in Table 2). Furthermore, he argues that the reasoning adopted by the WTO Dispute Panel in the European Communities (EC)-Biotech Case (as detailed in Gruszczynski, 2009) supports a finding that almost all SEC-related measures applying to LMOs fall within the terms of the SPS. Thorn (2011, p. 6) concludes:

“It is clear from the legal analysis in the ruling that the Panel would have considered most, if not all, LMO-related measures adopted to address economic, health, or environmental considerations to fall within the scope of the SPS Agreement. ... It is worth noting that many of the items on the GEF list (labor and employment; impacts on consumer choice or consumption patterns; land tenure; farmers rights; intellectual property rights; etc.) have little to do with the impact of LMOs on the conservation and sustainable use of

3. *The sea turtle is listed as a highly endangered species, and a major threat to them is unintended death from shrimp fishing. The United States attempted to protect sea turtles by mandating the use of turtle-friendly technologies on US fishing boats. Further, in 1989 the United States attempted to have this technology used by boats from other countries by embargoing imports of shrimp caught not using turtle-friendly technology. A number of developing countries brought a case to the WTO and the Panel found that the United States was not in compliance with its WTO obligations. The case was very complex. See Isaac, Phillipson, and Kerr (2002) for an accessible summary of the case.*

biological diversity and therefore appear to be outside the scope of Article 26.”

While strong proponents of trade liberalization and those who advocate a strict adherence to trade rules might agree with this proposition, those who are advocates of a broader inquiry and of the incorporation of ‘trade and...’ issues into international law and WTO jurisprudence may disagree. This fundamental disagreement, echoing Lagomarsino’s remarks, will be addressed below.

### **Analysis**

As stated above, the VCLT is regarded as having powers that are ‘residual’ in nature. Therefore, more specific dispute-settlement mechanisms and rules such as the WTO DSB and the SPS Agreement would apply to a dispute brought by Canada against any nation that invoked SEC-related trade measures that affected the products of biotechnology. However, this does not mean that aspects of the VCLT are not relevant. As noted, the WTO DSB has invoked several articles of the VCLT in order to justify its own broader enquiries and to enable it to invoke general principles of international law to add key contextual information to disputes that come before it. As Lagomarsino points out, this then opens the door to advocates for the inclusion of broader, less strictly trade-related analyses (e.g., related to sustainable development and precaution) to be proper realms of inquiry for the WTO DSB via their inclusion in the preambular language of the CBD, the CPB, and even the WTO Agreement.

Further when this use of the VCLT is coupled with the status of the DSB as ‘the only game in town’ in relation to international tribunals with effective dispute-settlement powers, it leads to some significant conclusions. Most notably, it suggests that the WTO *must* embrace such disputes (between states and groups who advocate for differing positions) and act as the arbiter. If the WTO cannot find solutions that provide for some sort of rapprochement, then we are clearly in a highly problematic situation:

“The result is basically a stalemate in terms of trying to resolve these issues at the global governance level. And what is happening at the national level is that both the [United States] and the EU are trying to export their regulatory standards to other countries. The countries that are primarily exporters to the [United States] are

adopting the US position on GMOs, and the countries that desperately need access to the European Market are adopting the EU position. This is an outcome that I have labeled ‘rival standards.’ This is a situation where, if the rivals do not agree, you are not going to see any kind of functioning global regime anytime soon, regardless of what the WTO rules are or whether or not the United States ever ratifies the CPB” (Rausitala, Drezner, Scott, & Echols, 2008, p. 261).

If the WTO is indeed the essential actor to prevent such a damaging stalemate, then Lagomarsino (2010, p. 550) argues that it must adopt a broader approach:

“WTO law must evolve in a manner more cognizant of its own advanced development relative to environmental and human rights law. ... The WTO’s institutional legitimacy requires that greater adjudicative consideration be given to preambular goals; the task remains to define a modernized interpretation of the relationship between the preamble and the rights and obligations of the WTO Agreement. Guidance can be found in ... the Vienna Convention on the Law of Treaties, which requires that a treaty shall be interpreted in good faith in accordance with the ordinary meaning ... of the terms of the treaty.”

While the prime directive of the WTO is—and should be—to improve general welfare via the advancement of trade liberalization, that does not mean that they should totally ignore other considerations. Lagomarsino (2010, p.552) acknowledges that WTO adjudicators should not become the “guardians of environmental and human rights law” but, in accordance with the terms of the VCLT, they can and should interpret preambular language in a way that does not “impair ... achievement of the highest goals that all major international regimes (environmental, human rights, and trade) claim to promote, namely sustainable development and general welfare.”

### **Conclusions**

While the VCLT will not directly assist in resolving trade-related disputes over SECs and biotechnology, its use by the WTO DSM can provide a way forward. WTO clearly has the membership, jurisdiction, mechanisms, and rules needed to adjudicate virtually all likely disputes that could arise between mega-adopters and

exporters (most who are WTO members, but not part of the CPB) and leading importers and parties to the CPB, which invokes SEC in enacting trade measures.

Regardless of one's position on the legitimacy of SEC matters as justifications for trade measures, a key message from this analysis is that the WTO *must* be the body that resolves these conflicts for two reasons. First, it has the institutional competence to do so; its dispute resolution system is continually evolving and well regarded. Second, to ensure the mutual goals of further trade liberalization and the realization of key international imperatives such as sustainable development and the improvement of general welfare, the WTO Appellate body must use its authority to more accurately align the core trade-focused language of the WTO Agreements with its broader preambular language. As Lagomarsino (2010) concludes:

“Given the exceedingly difficult task of adjudicating international trade matters in accordance with terms as extraordinarily dynamic as ‘sustainable development,’ the Appellate Body should be praised for the cautious steps it has taken to evolve the WTO Treaty via case law. Nevertheless, WTO jurisprudence remains unacceptably far adrift from its preamble.”

If Raustiala et al.'s (2008) ‘rival standards’ stalemate is to be avoided, then not only as a matter of law, but as a matter of global necessity, the WTO should attempt to resolve such disputes. While informal settlement is often preferred, the WTO DSBs should not shy away from action. We concur with many commentators that WTO adjudicators should continue their progressive development of trade law through dispute settlement. The goal should be to ensure that trade liberalization continues, all the while seeking ways to realize the lofty goals in the preambular language.

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