INTERNATIONAL TRADE LAW AND THE U.S.-EU GMO DEBATE: CAN AFRICA WEATHER THIS STORM?

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I. INTRODUCTION

The emergence of trade barriers within multilateral trade agreements and the potential conflict between those restrictions and the General Agreement on Tariffs and Trade (GATT)[1] have become central arguments in an ongoing debate between those trying to uphold principles of unrestricted international trade and those trying to prevent environmental harm. Trade barriers have long been utilized by countries involved in international trade, primarily in an effort to strong-arm environmental compliance.[2] Although discriminatory trade barriers may be justified under the environmental exceptions of GATT,[3] those exceptions have historically been narrowly interpreted.[4] With such a strict standard imposed on restrictive trade measures, current members of the World Trade Organization (WTO)[5] have expressed both criticism and growing concern regarding their inability to regulate international trade to protect human health and the environment.[6]

Recent advancements in biotechnology, including the creation of genetically modified foods, have caused the debate to expand. In response to the placement of genetically modified food products into the international trade arena, a large number of WTO members, including the member states of the European Union (EU), have enacted trade regulations prohibiting or restricting

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[1] General Agreement on Tariffs and Trade, Oct. 30, 1947, 61 Stat. A-11, T.I.A.S. 1700, 55 U.N.T.S. 194 [hereinafter GATT]. As a result of the Uruguay Round of trade negotiations in 1994, the GATT organization became the World Trade Organization (WTO) on January 1, 1995. General Agreement on Tariffs and Trade: Multilateral Trade Negotiations Final Act Embodying the Results of the Uruguay Round of Multilateral Trade Negotiations, April 15, 1994, LEGAL INSTRUMENTS—RESULTS OF THE URUGUAY ROUND, vol. 1 (1994), 33 I.L.M. 1125 (1994) [hereinafter WTO Agreement]. WTO Agreement Annex 1A incorporates a document labeled GATT 1994, which is essentially GATT 1947, as amended through Uruguay Round, along with all the ancillary agreements pertaining to GATT 1947, as modified.

[2] Thomas J. Schoenbaum, *Trade and Environment: Free International Trade and Protection of the Environment: Irreconcilable Conflict?*, 86 AM. J. INT'L L. 700 (1992).

[3] *See* GATT art. XX.

[4] Chris Wold, *Multilateral Environmental Agreements and the GATT: Conflict and Resolution?*, 26 ENVTL. L. 841, 847 (1996).

[5] *See* World Trade Organization, *The 128 Countries That Had Signed GATT by 1994, at* http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm (last visited Nov. 8, 2003).

[6] *See* Hilary Ross, *Genetically Modified Food: The EU Regulatory "Maize"*, 18 NAT. RESOURCES & ENV'T 9, 9-11 (2003) (discussing EU member states response to the introduction of GM foods into Europe, which included the separation of GM foods from their traditional counterparts, stringent labeling requirements, and eventually the placement of a de facto moratorium that restricts the processing of GM foods).

the importation and use of genetically modified organisms (GMOs) in the name of human health and environmental safety.[7] With continued GMO support from the United States, the EU has attempted to utilize the precautionary principle to uphold its use of protective restrictions on genetically modified products absent specific proof of actual GMO harm.[8]

While there is a consensus among most countries regarding the need to provide these safeguards for consumers and the environment, the scientific uncertainty surrounding biotechnology has hindered the ability to accurately predict potential harms accurately.[9] Although it is evident that risks do exist, including allergic and toxic human reactions to the genetically altered products,[10] supporters of genetically modified products remain positive about the overall benefits provided by this scientific advancement.[11] Skeptics warn, however, that so many unknown risk factors could cause long-term and irreparable damage to our existing ecosystem.[12]

In reconciling the conflict between promoting international trade and protecting the environment, "the question which must be addressed by future policy makers is not which aspect should prevail, but rather how to create harmony between the two."[13] With the emergence of GMOs on the global market, fundamental principles of international trade are being hampered by

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[7] *See* Mary Lynne Kupchella, Note, *Agricultural Biotechnology: Why It Can Save the Environment and Developing Nations, But May Never Get a Chance*, 25 WM. & MARY ENVTL. L. & POL'Y REV. 721, 735 (2001).

[8] *See* Center for Progressive Regulation, *The Precautionary Principle*, *at* http://www.progressiveregulation.org/perspectives/precaution.html (last visited Nov. 8, 2003) (discussing the EU Treaty that adopted the precautionary principle as the guide for environmental policy, and describing the principle as one that "applies where scientific evidence is insufficient, inconclusive or uncertain and preliminary scientific evaluation indicates that there are reasonable grounds for concern that the potentially dangerous effects on the environment, human, animal or plant health may be inconsistent with the high level of protection chosen by the EU").

[9] *See* Jonathan A. Glass, *The Merits of Ratifying and Implementing the Cartagena Protocol on Biosafety*, 21 NW. J. INT'L L. & BUS. 491, 512 (2001).

[10] *See* Mickey Z., *GM Food for Thought*, *at* http://www.alternet.org/story.html?StoryID=16317 (July 2, 2003).

[11] *See* Darren Smits & Sean Zaboroski, *Trade and Genetically Modified Foods: GMOs: Chumps or Champs of International Trade?*, 1 ASPER REV. INT'L BUS. & TRADE L. 111, 113 (2001); *see also* Brett Grosko, Note, *Genetic Engineering and International Law: Conflict or Harmony? An Analysis of the Biosafety Protocol, GATT and the WTO Sanitary and Phytosanitary Agreement*, 20 VA. ENVTL. L.J. 295, 299 (2001).

[12] *See* Grosko, *supra* note 11, at 301-02.

[13] Jennifer A. Bernazani, Note, *The Eagle, the Turtle, the Shrimp and the WTO: Implications for the Future of Environmental Trade Measures*, 15 CONN. J. INT'L L. 207, 208 (2000).

an inability to reconcile this new technology with existing trade provisions. With no consistent standard imposed by the WTO, members on opposing sides of this dispute are wary about relying on outdated dispute settlement mechanisms when both consumer and environmental safety are at risk.[14]

At the center of this conflict over GMOs are fundamental legal and cultural differences that have placed the United States and the European Union on opposite sides of the debate.[15] Recently, the U.S.-EU debate over GMO restrictions has prompted a situation that skeptics warn could ultimately become a full-scale trade war: several developing countries in Africa have emerged as middlemen being forced to choose between the two powerhouses, greatly compounding the fight.[16] While concern surrounding this debate initially focused only on the U.S.-EU conflict, the real harm resulting from this conflict seems likely to fall upon those developing countries that lack the economic and political standing necessary to take a strong position on the trade and environmental issues at stake.[17]

In addition to cultivating GMOs domestically for sale both at home and on the world market, the United States is also the largest contributor of relief food to the World Food Program (WFP), an organization that provides food aid to developing countries.[18] United States officials do not deny that a majority of the food products it provides for use and consumption by developing countries, including several within Africa, have undergone some level of genetic modification.[19] However, severe trade restrictions being imposed by countries within Europe against those who utilize GMO technology to create biotech crops has prompted a backlash by both critics of biotechnology and the

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[14] *See id.* at 212-13.

[15] *See* Heather Berit Freeman, Note, *Trade Epidemic: The Impact of the Mad Cow Crisis on EU-U.S. Relations*, 25 B.C. INT'L & COMP. L. REV. 343, 365 (2002).

[16] *See* Wambui Chege, *Africa Mulls GMO as Debate Rages, Hunger Claws, Reuters*, *at* http://www.planetark.org/dailynewsstory.cfm/newsid/17120/newsDate/1-Aug-2002/story.htm (Aug. 1, 2002) (discussing the much needed, and largely genetically-modified, food aid offered by the United States to those starving in southern Africa, and the potential backlash by the EU should that food aid be accepted).

[17] Anup Shah, *Free Trade and Globalization: The WTO and Free Trade*, *at* http://www.globalissues.org/traderelated/freetrade/wto.asp (last updated Dec. 27, 2001) (discussing criticism towards the WTO by various groups and third world countries for limiting public participation and, ultimately, creating barriers to free trade); *see generally* Lewis Machipisa, *Africans Worried US to Force Unlabeled GE Foods on Them: US-EU Dispute Over GMO Worries Consumers*, *at* http://www.organicconsumers.org/gefood/africans092401.cfm (Sept. 21, 2001).

[18] Chege, *supra* note 16.

[19] *See id.*

potential recipients of food aid who blame the United States for "inflam[ing] a debate in starving southern Africa about the gene-altered foods."[20]

Developing countries in Africa that are impacted by an ongoing hunger epidemic remain concerned that the EU could halt ongoing trade essential to their economies.[21] They fear that the genetically modified foods offered by the United States to help eliminate harmful food shortages could contaminate Africa's remaining food and grain supply.[22] Furthermore, GMO opponents within Africa remain concerned that the prophesied environmental harm could be realized, contaminating plants, animals, and humans alike. GMO proponents, however, are frustrated by the ongoing refusal by many African countries to accept the U.S. offer of food aid since many believe that the benefits of GMO technology, which could provide food aid to over thirteen million people currently starving in Africa, outweigh the potential harms.[23] The difficulty in finding some resolution to the GMO dispute is further compounded by the ongoing "intergovernmental squabbling" within the EU.[24] Furthermore, the current EU position appears to stand in direct opposition to the WTO's underlying principal encouraging free trade among all of its members.[25]

These fundamental differences between the United States and the EU appear to be laying the foundation for the next WTO dispute, likely in the form of opposition by the United States to the EU's use of GATT's subsidiary Sanitary and Phytosanitary (SPS) Agreement[26] as the basis for imposing overly restrictive trade measures on GMOs. While the underlying purpose of the SPS Agreement is to prevent restrictions on international trade disguised as health

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[20] *Id.*

[21] *See* Franz Kruger, *GM Food for Thought* (Radio Netherlands radio broadcast, Aug. 19, 2002), *at* http://www.rnw.nl/hotspots/html/gmo020826.html (last visited Nov. 8, 2003).

[22] *See id.* (discussing Zimbabwe's fear that "GM grain meant as food could sprout, and end up contaminating the country's own domestic varieties").

[23] *See* Chege, *supra* note 16.

[24] Editorial, *A Harvest of Discord*, WASH. TIMES, Oct. 15, 2002, at A16, *available at* http://www.thecampaign.org/News/oct02x.htm (last visited Nov. 8, 2003) (discussing the internal dispute among some EU members centering on the amount of genetically modified material that must be present in food before a label is required; Sweden has reportedly demanded a "zero tolerance" policy, while other Member States have suggested a slightly more generous allowance).

[25] *See generally* Shah, *supra* note 17 (stating that the WTO is "the primary international body to help promote free trade, by drawing up the rules of international trade").

[26] Agreement on the Application of Sanitary and Phytosanitary Measures, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, art. 2, para. 5, *available at* 1994 WL 761483 [hereinafter SPS Agreement].

and safety measures, many GMO opponents assert that the SPS Agreement lacks an ability to deal with the complex scientific issues created by biotechnology.[27] If the SPS Agreement is unable to resolve the conflict that has resulted, the Cartagena Protocol on Biosafety (Biosafety Protocol)[28] promises to fill in the gaps. Drafted and implemented by parties to the Convention on Biological Diversity,[29] the Biosafety Protocol is the first agreement promising hope for those countries concerned about GMO contamination, and ultimately GMO regulation.[30] The Protocol provides protection by incorporating (1) a requirement for "advance informed agreement" for international trade of genetically modified products, (2) inclusion of a precautionary principle, and (3) a bio-safety "clearing house" where countries will share information about genetically modified products and technology.[31]

On October 16, 2002, legislation expected to bring an end to a four-year moratorium on the sale and use of GMOs within the EU took effect throughout that region.[32] Along with the new legislation will come what is described as the "toughest GM licensing laws in the world—[that] will ensure that all GM food and crops undergo a series of rigorous risk assessment tests before they are authorised for sale, marketing, or even planting anywhere in the EU."[33] Media reports indicate that "U.S. officials have left open the possibility of bringing a legal case before the WTO, which, after lengthy litigation, could

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[27] Kara-Anne Yaren, *Trade and Genetically Modified Foods: Frankenfears: A Call for Consistency*, 1 ASPER REV. INT'L BUS. & TRADE L. 149 (2001).

[28] Cartegena Protocol on Biosafety to the Convention on Biological Diversity, Jan. 29, 2000, 39 I.L.M. 1027, *available at* http://www.biodiv.org/biosafety/protocol.asp (last visited Nov. 8, 2003) [hereinafter Biosafety Protocol].

[29] *See* Secretariat of the Convention on Biological Diversity, *Sustaining Life on Earth: How the Convention on Biological Diversity Promotes Nature and Human Well-being*, at 2 (Apr. 2000), *available at* http://www.biodiv.org/doc/publications/cbd-sustain-en.pdf (last visited Nov. 8, 2003) (discussing the 1992 Earth Summit held in Rio de Janeiro, at which the Convention of Biological Diversity was adopted "[establishing] three main goals: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable sharing of the benefits from the use of genetic resources").

[30] *See* Centre for Science and Environment, *Biosafety Protocol Watered Down by U.S. Interests*, *at* http://www.corpwatch.org/issues/PID.jsp?articleid=575 (Feb. 29, 2000) (discussing the new international framework that has been created to regulate GMOs).

[31] *Id.*

[32] *See* Andrew Osborn, *New EU Rules to End Ban on GM Food*, GUARDIAN, Oct. 16, 2002, *available at* http://www.guardian.co.uk/gmdebate/Story/0,2763,813200,00.html.

[33] *Id.*

eventually impose a politically embarrassing judgment and stiff economic penalties on Europe."[34]

Fearing possible repercussions from the EU for failure to comply with the new GMO labeling and production requirements, developing countries may begin to require the same stringent labeling on all food and grain products imported into their region if the pending EU legislation should come into force.[35] United States opponents to the strict labeling rules believe that forcing compliance would not only limit the reach of this cutting edge technology, keeping a large portion of GMOs out of the hands of the developing countries that are so desperate for food aid, but would also cost U.S. companies an estimated $4 billion a year.[36] Furthermore, the pending legislation would be costly in terms of both the actual process of labeling and the scientific testing necessary to guarantee accuracy.[37]

The long-argued debate over GMO technology, originally limited to developed countries, seems to be causing newfound internal conflicts among various developing countries.[38] While "[m]ny developing-country governments are reluctant to accept the *broadening* of WTO rules to more clearly enshrine the 'precautionary principle,' and the ability of governments to restrict or label imports on health or environmental grounds . . . [they] wish to restrict GM crop imports themselves."[39] This is because the expansion of existing WTO rules "may further restrict developing countries' access to export markets where they are already struggling to meet international health and environmental standards," and potential WTO expansion is considered by some developing-country governments to be "a potential Trojan horse[40] for protectionism by developed countries."

In examining the impact of GMO trade restrictions in light of existing legal mechanisms created by the WTO to provide protection to member states, this

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[34] Alan Sipress & Marc Kaufman, *U.S. Challenges EU's Biotech Food Standards*, WASH. POST, Aug. 26, 2001, *available at* http://www.gene.ch/genet/2001/Aug/msg00079.html.

[35] *See* National Foreign Trade Council, Inc., *Biotech Barriers Hurt Poor, Says NFTC, at* http://binas.unido.org/binas/news/2003-05_12.html (last visited Nov. 8, 2003) (discussing the potential repercussions in the form of trade barriers imposed by the EU should developing countries not place these stringent safeguards into place).

[36] *See* Machipisa, *supra* note 17.

[37] *Id.*

[38] Oxfam, *Genetically Modified Crops, World Trade and Food Security, at* www.oxfam.org.uk/what_we_do/issues/trade/trade_gm.htm (date of original publication Nov. 1999) (full paper on file with author).

[39] *Id.*

[40] *Id.*

Note will focus on the impact of these international laws on developing countries, with a particular focus on those within Africa. This analysis will show that neither GATT nor the SPS provide the WTO's under-developed and developing members with the ability to take an independent position regarding GMO imports against those countries upon which they must rely for ongoing trade.

After analyzing the role of GATT with regard to GMO technology and discussing the more applicable SPS Agreement, this Note will identify the fundamental differences that divide the United States, the European Union, and the developing countries of Africa on the issues of GMO production and use. Next, this Note will consider the GMO debate in light of what some believe may be the most applicable doctrine yet—dealing specifically with the transboundary movement of GMOs—the Biosafety Protocol.[41] By clarifying the relationship between the U.S.-EU conflict and its impact on developing countries, including those within Africa, the necessity for urgent resolution will become clearer.

This Note will identify various domestic regimes being proposed and implemented among African countries—which attempt to combat the developing nations' status as middlemen in the U.S.-EU tug-of-war—in an attempt to reconcile them with existing international trade regulations. Analysis of these regimes will show that current WTO regulations do not adequately protect the interests of developing countries caught in this potential trade war. In conclusion, this Note will call for the urgent reconciliation of existing WTO Agreements with the Biosafety Protocol, a congruence that is vital to the satisfactory resolution of this ongoing trade dispute.

II. BACKGROUND OF THE WORLD TRADE ORGANIZATION

Central to resolving this ongoing debate, and the possible implications that could result from developing countries currently in the middle of this dispute, is the need for a basic understanding of the historical use of GATT provisions to justify trade barriers in the name of environmental protection. For almost

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[41] *See* Mark King, *The Dilemma of Genetically Modified Products at Home and Abroad*, 6 DRAKE J. AGRIC. L. 241, 253 (2001) (stating that "[t]he first agreement directly regulating trade in GMOs is a response from growing worldwide fear from the growth of the GMO industry," and that it seeks to implement (1) a precautionary principle to protect the environment, (2) a biosafety clearing-house where information may be gathered and centrally located, and (3) labeling requirements for "shipments that 'may contain' bioengineered commodities"); *see also* Smits & Zaboroski, *supra* note 11, at 124.

sixty years, GATT has remained the fundamental agreement underlying successful international trade.[42] Although GATT panel decisions made in conjunction with prior international disputes have been anything but predictable,[43] the long-term interpretation of GATT's language by the WTO indicates a likely outcome in the event a trade dispute over the EU's current restrictions on GMOs should arise.

A. GATT: The Uruguay Round

Drafted in 1947, GATT is "the foundation for a multilateral trading system encompassing more than 100 member states."[44] GATT signatory members have a basic obligation not to discriminate among other members in the form of tariffs or trade barriers.[45] Founded on the principle of comparative advantage, the GATT system implements liberal trade policies, which in turn allows the best goods and services to be sold at the lowest prices.[46] In response to trading needs, producers remain under competitive pressure to increase both product and service quality while simultaneously lowering the cost.[47] The economic effect of comparative advantage is an increase of total world wealth.[48] Although the GATT originally lacked an administrative body, and thus had no effective mechanism to enforce compliance, it was an overall success.[49]

Almost fifty years after GATT was originally drafted, the effectiveness of this trade-liberalizing document appeared to be fading. Some member states would deviate from their most-favored-nation and national treatment

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[42] *See* World Trade Organization, *GATT 1994: What is it?*, Background: The Two GATTs, *at* http://www.wto.org/english/thewto_e/whatis_e/eol/e/wto02/ wto2_4.htm (last visited Nov. 9, 2003) (explaining that GATT 1947 provided the basic rules for international trade beginning January 1, 1948).

[43] Carrie Wofford, Note, *A Greener Future at the WTO: The Refinement of WTO Jurisprudence on Environmental Exceptions to GATT*, 24 HARV. ENVTL. L. REV. 563, 572 (2000).

[44] Bernazani, *supra* note 13, at 214.

[45] Dale Arthur Oesterle, *The WTO Reaches Out to the Environmentalists: Is It Too Little, Too Late?*, 1999 COLO. J. INT'L ENVTL. L. & POL'Y 1, 3-4 (2000).

[46] Kevin C. Kennedy, *The GATT-WTO System at Fifty*, 16 WIS. INT'L L.J. 421, 424 (1998).

[47] *Id.*

[48] *Id.*

[49] Joseph N. Eckhardt, Note, *Balancing Interests in Free Trade and Health: How the WHO's Framework Convention on Tobacco Control Can Withstand WTO Scrutiny*, 12 DUKE J. COMP. & INT'L L. 197, 200-01 (2002).

obligations using waivers to bypass the international regulations.[50] Other members employed import and export quotas, and in effect ignored their obligations under GATT.[51] And prior to the 1994 creation of the WTO, those who objected to GATT violations had no effective means of resolution because no real dispute settlement mechanism had ever been instituted.[52] Importnatly, the original GATT provisions left undefined any requisite scientific standard to be applied when a dispute did arise and therefore left no true means to resolve any scientifically based conflicts.[53] Resolution of many of these problems came in the Uruguay Round.[54]

In 1994, the WTO was formally created, and with it came better mechanisms for dispute settlement among member states.[55] The Dispute Settlement Understanding (DSU) established a comprehensive mechanism by which to settle conflicts.[56] In light of the various trade barrier disputes that were already underway by the early 1990s, GATT 1994 spoke for the first time directly to the controversy between trade and the environment.[57] The preamble to GATT 1994 states the WTO's primary objective of:

> allowing for the optimal use of the world's resources in accordance with the objective of sustainable development, seeking both to protect and preserve the environment and to enhance the means for doing so in a manner consistent with their respective needs and concerns at different levels of economic development.[58]

Trade barriers that were traditionally considered violative of basic GATT provisions have more recently been considered justified when used to promote

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[50] Kennedy, *supra* note 46, at 442.

[51] *Id.*

[52] *Id.*

[53] Theofanis Christoforou, *Settlement of Science-Based Trade Disputes in the WTO: A Critical Review of the Developing Case Law in the Face of Scientific Uncertainty*, 8 N.Y.U. ENVTL. L.J. 622, 625 (2000).

[54] *Id.*

[55] George E.C. York, Note, *Global Foods, Local Tastes and Biotechnology: The New Legal Architecture of International Agriculture Trade*, 7 COLUM. J. EUR. L. 423, 459-60 (2001).

[56] *Id.*

[57] *See* Bernazani, *supra* note 13, at 214.

[58] Agreement Establishing the World Trade Organization, Apr. 15, 1994, 33 I.L.M. 1144, pmbl. (1994).

and protect human and environmental welfare.[59] When GATT was re-drafted in 1994, conditional exceptions were included in Article XX that "may be applied to justify environmentally inspired rules that collide with trade."[60] The most common method of environmental protection used by WTO members is adoption of an environmental trade measure (ETM)—a restriction on international trade to promote an environmental objective.[61] Though variations do exist, trade measures currently utilized in the name of human and environmental protection typically include standards, tariffs, import/export restrictions and sanctions.[62] Before further examination of the trade restrictions permitted by GATT, it is important to understand the goals and policies underlying GATT.

B. GATT's Pillars: Articles I, III, and XI

Articles I and III, which contain the two non-discrimination principles[63] considered central to the success of international trade, form the basic framework of GATT's trade-protective mechanisms.[64] The most-favored-nation principle contained within Article I demands equal treatment of like products between all contracting parties, and extends beyond the product themselves to include equal treatment of customs charges and duties, internal taxes, and other regulations imposed prior to and during distribution.[65] Article III, on the other hand, embodies the national treatment principle and requires equal internal treatment of both imported and domestic products.[66] GATT requires that imported products must be given "treatment no less favourable

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[59] Thomas J. Schoenbaum, *International Trade and Protection of the Environment: The Continuing Search for Reconciliation*, 91 AM. J. INT'L L. 268, 273-74 (1997) (discussing the recent use of GATT 1947 Article XX to "justify environmentally inspired rules that collide with trade").

[60] *Id.* at 273.

[61] *See* Bernazani, *supra* note 13, at 209.

[62] *Id.*

[63] Non-discrimination principles utilized by the WTO have two components, and include most-favoured-nation (MFN) treatment (which involves "treating one's trading partners equally") and national treatment (which requires "equal treatment for foreign and domestic goods and services"). These principles prevent "the abuse of environmental [policies] and their use as protectionism in disguise." *See* World Trade Organization, Relevant WTO Provisions: Descriptions, *at* http://www.wto.org/english/tratop_e/envir_e/issu3_e.htm (last visited Nov. 9, 2003) [hereinafter WTO Provisions].

[64] *See* GATT art. I, III.

[65] Schoenbaum, *supra* note 59, at 271.

[66] *See* GATT art. III.

than that accorded to like products of national origin."[67] This phrase has been interpreted to require that imported products be given a chance to equally compete with domestic products.[68] In addition, GATT Article XI restricts contracting parties from placing any quantitative restrictions, such as quotas, on imports.[69]

These non-discrimination provisions of GATT are often mentioned when disputes over the discriminatory impact resulting from restrictions on trade arise.[70] However, trade measures intended to protect health and the environment may be permitted, regardless of any discriminatory effect, if they are found to actually serve the stated objective of health or environmental protection.[71] Still, those who wish to utilize restrictive barriers to trade as protective mechanisms, while remaining in compliance with existing GATT provisions, must meet a high burden of proof to justify their use.[72] Although past WTO decisions involving violations of Articles I, III, and XI have shown a tendency to uphold the non-discrimination principles central to GATT,[73] recent advances in biotechnology leave uncertainty about the outcome should the dispute over GMOs ever arrive before the WTO.[74]

C. GATT Article XX

When environmental trade measures act as discriminatory barriers to free trade, they must be justified under one of the Article XX exceptions.[75] Recently, the controversy between trade and the environment has called increasing attention to the "green exceptions" contained in Article XX.[76]

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[67] *Id.* para. 2.

[68] Schoenbaum, *supra* note 59, at 272.

[69] *Id.*

[70] *See generally id.* at 271-74 (discussing GATT's two nondiscrimination principles, the most-favored-nation principle and the national treatment principle, which require equality of treatment among like products, and the quota provisions, which also applies to "other measures" that may be imposed on the import or export of goods).

[71] *Id.* at 274.

[72] John S. Applegate, *Sustainable Development, Agriculture, and the Challenge of Genetically Modified Organisms: The Prometheus Principle: Using the Precautionary Principle to Harmonize the Regulation of Genetically Modified Organisms*, 9 IND. J. GLOBAL LEGAL STUD. 207, 238 (2001).

[73] *See* Schoenbaum, *supra* note 59, at 271-74.

[74] *See id.*

[75] *See* Bernazani, *supra* note 13, at 215.

[76] *See id.*

Although WTO members may use the exceptions to justify environmentally protective measures that restrict international trade, past WTO panel decisions indicate that qualifying restrictive trade barriers under Article XX is difficult.[77] Historically, GATT panels have narrowly construed the language in Article XX in favor of trade and against non-tariff barriers to trade.[78] Because the language has been so narrowly interpreted, restrictive trade measures enacted under the guise of environmental protection often fail to qualify as ETMs.[79] Reasons cited most often by the panels when overruling a restrictive measure are the discriminatory impact of a barrier and the availability of less discriminatory measures.[80]

Of the ten exceptions enumerated under GATT Article XX, the public health and safety exception and the exception for conservation of natural resources relate most directly to the pursuit of environmental protection.[81] Specifically, Article XX, sections (b) and (g) allow members to enact measures that would ordinarily violate their obligations under GATT.[82] Specifically, GATT allows that:

> Subject to the requirement that such measures are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade, nothing in this Agreement shall be construed to prevent the adoption or enforcement by any contracting party of measures: . . .
> (b) necessary to protect human, animal or plant life or health; . . .
> (g) relating to the conservation of exhaustible natural resources if such measures are made effective in conjunction with restrictions on domestic production or consumption; . . . .[83]

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[77] *See* Schoenbaum, *supra* note 59, at 274 (discussing how the "burden of showing that an Article XX exception applies . . . has not been carried often, largely because of the strictness with which its provisions are interpreted").

[78] *See id.*

[79] *See id.*

[80] *See* Kennedy, *supra* note 46, at 459.

[81] *See generally id.* at 436-38 (discussing the ability of WTO members to impose restrictions on free trade when necessary to protect health).

[82] *See* GATT art. XX(I)(b), (g). Editors Note: These two provisions are commonly referred to as paragraphs (b) and (g) of Article XX, and this Note follows that convention, through the provisions are subsection within paragraph I of Article XX.

[83] *Id.*

In addition to qualifying under paragraphs (b) and (g), measures must also meet the standards set up in the introductory paragraph of Article XX, traditionally known as the chapeau, which prohibits: (1) arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or (2) a disguised restriction on international trade.[84] While many ETMs appear to be justified under one exception of GATT or another, member states must still overcome the more stringent requirements of Article XX's chapeau.[85] What has resulted is the notion that a restrictive trade measure enacted to support health and environmental safety will be held to violate the chapeau of Article XX if its effect is the differential application of a measure as to domestic and foreign products.[86]

1. Article XX(b)

Article XX(b) of the GATT allows WTO member states to discriminate against products that pose a threat to human, animal, or plant life or health.[87] When restrictive trade measures are intended to protect public health or safety, paragraph (b) requires that they be strictly necessary for the objective being pursued.[88] However, members are prevented from utilizing the exception as a disguised trade barrier or an arbitrary form of discrimination against imports.[89]

In trying to determine whether a restriction qualifies under the XX(b) exception, it is helpful to use a three prong-test.[90] This test will help determine whether the measure (1) is necessary, with no less restrictive alternative

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[84] Schoenbaum, *supra* note 59, at 274; *see also* Bernazani, *supra* note 13, at 222.

[85] *See* Schoenbaum, *supra* note 59, at 274-75 (citing *Standards for Reformulated and Conventional Gasoline*, Appellate Body Report, 35 I.L.M. 603 (1996) (discussing the Appellate Body findings upholding the use of Article XX(g) to support the distinction made between the composition of foreign and domestic gasoline, but finding that the application of such a standard served as a disguised restriction on international trade and thus violated the chapeau)).

[86] *See generally id.* at 272-74 (explaining that measures, which qualify under a GATT Art. XX exception, may not be justified if it is found to be either "arbitrary or unjustifiable discrimination between countries where the same conditions prevail" or "a disguised restriction on international trade").

[87] GATT art. XX(I)(b).

[88] Philip Bentley Q.C., *A Re-Assessment of Article XX, Paragraphs (b) and (g) of GATT 1994 in the Light of Growing Consumer and Environmental Concern About Biotechnology*, 24 FORDHAM INT'L L.J. 107, 112 (2000).

[89] *See* James F. Smith, *From Frankenfood to Fruit Flies: Navigating the WTO/SPS*, 6 U.C. DAVIS J. INT'L L. & POL'Y 1, 5-6 (2000).

[90] Schoenbaum, *supra* note 59, at 276.

available, (2) does not unjustifiably or arbitrarily discriminate between countries, upholding both the most-favored-nation and the national treatment principles, and (3) does not act as a disguised restriction on international trade.[91] Under the current interpretation, for a measure to qualify as necessary under the current interpretation of XX(b), it must be "among the measures reasonably available to it, that which entails the least degree of inconsistency with other GATT provisions."[92]

2. Article XX(g)

Article XX, paragraph (g) of the GATT permits restrictive trade measures that are intended to protect against the exhaustion of natural resources.[93] Unlike the Article XX(b) health and safety exception, there is no requirement in paragraph (g) that the restrictive measures be necessary to protect those resources.[94] In the past, panels have created an uncertain standard with their varying interpretation of the phrase "relating to." The varying lingual interpretations have included: (1) restrictions qualify under Article XX(g) as long as the effect actually "serves the purpose of conservation," and (2) Article XX(g) requires a restriction to be "necessary or essential."[95] Another question has been raised by those who oppose restrictive trade measures permitted by the Article XX(g) exception, since the language is unclear regarding the specific inclusion of "exhaustible natural resources."[96] In deciding the scope of coverage for the exhaustible natural resources protected by Article XX(g), past decisions have qualified gasoline, clean air, and even sea turtles as being protected.[97]

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[91] *See* Kennedy, *supra* note 46, at 437, 457.

[92] Report of the GATT Panel, United States—Restrictions on Imports of Tuna, *reprinted in* 33 I.L.M. 839 (1994).

[93] *See id.*

[94] *See id.*; *see also* Bentley, *supra* note 88, at 112.

[95] Schoenbaum, *supra* note 59, at 278.

[96] *See id.* at 277-78.

[97] *Id.*

D. Agreement on the Application of Sanitary and Phytosanitary Measures (SPS)

Successfully completed in 1994, the Uruguay Round reaffirmed the WTO commitment to GATT's open trade objective.[98] Unable to amend substantive portions of GATT, the WTO also sought to elaborate on provisions that lacked necessary clarity. The result was an adoption by the WTO of two agreements intended to address the existing "gray areas" left by GATT's provisions that included the Article XX exceptions.[99]

The SPS Agreement was an attempt by the WTO to elaborate on the existing health and safety exception contained in Article XX(b).[100] Opponents, however, will quickly point out that "the SPS is a trade agreement, not a health agreement . . . which targets only the overuse of national health regulation . . . while containing no minimum standard for food safety or for applying science to the food production process."[101] Although GATT provided general guidance for handling sanitary and phytosanitary measures in Article XX(b), the SPS Agreement attempts to elaborate on general procedural requirements to be followed by those member states seeking protection of human, animal, or plant life or health.[102]

In defining the coverage of its measures, the SPS Agreement includes protection from the "establishment or spread of pests, diseases, disease-carrying organisms or disease causing organisms," and the "risks arising from additives, contaminants, toxins or disease-causing organisms in foods, beverages or feedstuffs."[103] Unlike any existing provisions of GATT, the SPS Agreement also requires that restrictive trade regulations be founded upon scientific evidence.[104] The agreement seeks to "ensure that an SPS measure is in fact a scientifically-based protection against the risk asserted by the member imposing the measure, and not a disguised barrier to trade."[105]

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[98] *See* Kennedy, *supra* note 46, at 442-43; *see also* WTO Agreement.

[99] *See* Schoenbaum, *supra* note 59, at 299.

[100] York, *supra* note 55, at 457.

[101] *Id.*

[102] *See* Christoforou, *supra* note 53, at 625.

[103] York, *supra* note 55, at 457-58.

[104] *See* Robert Howse & Petros C. Mavroidis, *Europe's Evolving Regulatory Strategy for GMOs—The Issue of Consistency with WTO Law: Of Kine and Brine*, 24 FORDHAM INT'L L.J. 317, 321 (2000).

[105] Kevin C. Kennedy, *Resolving International Sanitary and Phytosanitary Disputes in the WTO: Lessons and Future Directions*, 55 FOOD DRUG L.J. 81, 83 (2000).

Fundamental to the success of the SPS Agreement is a risk assessment that must be performed by any WTO member intending to impose sanitary or phytosanitary measures.[106] While conducting the risk assessment, the member state must "provide evidence probative of causal relationship between the SPS measure it is about to enact and the disease it wants to address, in the sense that its measure will be the antidote to the identified risks."[107] Mirroring the language from Article XX's chapeau, the SPS Agreement requires this risk assessment in order to ensure that the restrictive trade measures are not simply disguised restrictions on international trade.[108] When the available scientific evidence is insufficient, a precautionary exception permits members to adopt a temporary restrictive measure once certain other requirements are met.[109]

E. Agreement on Technical Barriers to Trade (TBT)

Built upon the Tokyo Round Standards Code,[110] the Agreement on Technical Barriers to Trade (TBT Agreement)[111] established guidelines by which members could "implement legitimate standards and the procedures for assessing product conformity."[112] This agreement aspired to balance "national interest in product standards against their unjustified use to protect a domestic industry."[113] Similar to the basic provisions outlined under GATT, the TBT Agreement employs a non-discrimination test to ensure appropriate compliance.[114]

The SPS and TBT Agreements remain mutually exclusive; TBT pertains mainly to voluntary and mandatory labeling requirements that are not covered

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[106] York, *supra* note 55, at 458.

[107] *See* Howse & Mavroidis, *supra* note 104, at 331.

[108] *See* Bentley, *supra* note 88, at 113-14.

[109] Smith, *supra* note 89, at 10-11.

[110] *See* World Trade Organiztion, *TBT: Why An Agreement?* From the Tokyo Round Standards Code to the WTO TBT Agreement, *at* http://www.wto.org/english/thewto_e/whatis_e/eol/e/wto03/wto3_4.htm (last visited Nov. 19, 2003).

[111] *See* Agreement on Technical Barriers to Trade, Apr. 15, 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, art. 1.5, 1994 WL 761483 [hereinafter TBT Agreement].

[112] Kennedy, *supra* note 46, at 460.

[113] *See* King, *supra* note 41, at 250.

[114] Central to the TBT Agreement is the principle that requires member states to refrain from discrimination "in the preparation, adoption and application of technical regulations, standards, and conformity assessment procedures . . . ." WTO Provisions, *supra* note 63.

by the SPS.[115] The TBT Agreement makes specific reference to Annex A of SPS,[116] making "the SPS Agreement, [and] not the TBT Agreement, applicable to labeling requirements directly related to food safety."[117] The SPS Agreement governs situations where "human, animal, or plant life or health are jeopardized by pests, diseases, disease-carrying organisms, additives, contaminants, or toxins,"[118] and therefore is central to resolving this GMO debate.

III. BIOTECHNOLOGY AND GMOS

"Nowhere is the convergence of, and conflict between, international agricultural trade and food safety regulation more dramatically demonstrated than in the case of biotechnology."[119] Among food producers, the phenomenon of selectively breeding both plants and animals in an effort to isolate and replicate the most favorable attributes has occurred for centuries.[120] However, the 1973 discovery of cell cloning propelled this process beyond existing scientific expectations.[121] In 1992, the first genetically altered foods were put up for sale on the open market.[122] What has resulted since the introduction of GMOs into the international trade arena has "brought international agricultural exporters to the brink of a trade war."[123]

Considering this widespread concern and potential for international conflict, many may wonder what initially compelled scientists to toy with Mother Nature. Ultimately, the promise of economic, health, and environmental rewards motivated them. Although the initial reception for GMOs seemed promising, the considerable resistance exhibited by many key players in the international agricultural import/export sector has resulted in some unexpected consequences.[124] For example, resistant European consumers and environmentalists have successfully campaigned for strict government regulations where

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[115] Arthur E. Appleton, *The Labeling of GMO Products Pursuant to International Trade Rules*, 8 N.Y.U. ENVTL. L.J. 566 (2000).

[116] *See* TBT Agreement, at 138.

[117] *See* Appleton, *supra* note 115, at 572.

[118] *Id.*

[119] York, *supra* note 55, at 425.

[120] *See* Smits & Zaboroski, *supra* note 11, at 112.

[121] *Id.*

[122] *Id.*

[123] York, *supra* note 55, at 425; *see also* Smits & Zaboroski, *supra* note 11, at 146.

[124] York, *supra* note 55, at 426.

GMOs are involved.[125] Proponents of GMO technology hope that both cost reduction and improvement of product quality will have a positive societal impact, especially within developing countries.[126] Opponents, on the other hand, fear that GMO supporters are overly ambitious and remain cautious about the potential harms currently being predicted.[127] Seemingly unable to compromise on any point, it appears that GMO critics and advocates may never find a middle ground upon which to meet.

A. Benefits of Biotechnology

GMO supporters have long hailed the benefits achievable through biotechnology, which promise the potential to "increase world food output and reduce food insecurity by improving crop yields and reducing crop loss."[128] More importantly, biotech supporters believe that "[c]onsumers in developing countries will benefit if biotech crops are less expensive or more nutritious than traditional crops."[129] Proponents urge that those benefits far outweigh potential risks.[130] They also tout biotechnology as the best way to benefit those developing countries that do not have the quality of land to sustain traditional agricultural growth, or the quantity of land to improve existing agricultural production.[131] With the promise of reducing a malnutrition epidemic that exists in both under-developed and developing countries, the benefits promised by GMO advocates include (1) improved nutritional value in the food itself, (2) an ability to treat and prevent disease at a drastically reduced cost, and (3) the anticipation of improved agricultural success.[132]

B. Risks of Biotechnology

While proponents of GMOs support the many benefits being realized by this technological advancement, its critics broadcast the inevitable risks that seem likely to result. An underlying concern at the heart of those who resist

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[125] *See id.* at 425.

[126] *See id.* at 429.

[127] *See* Smits & Zaboroski, *supra* note 11, at 114.

[128] Lorraine Mitchell, *Biotechnology and Food Security*, USDA Economic Research Service, Agriculture Information Bulletine Number 765-11 (June 2001).

[129] *Id.*

[130] *See* York, *supra* note 55, at 429.

[131] *Id.*

[132] *Id.* at 431.

GMO technology is an ethical resistance to "playing God."[133] Fearful that scientists have failed to anticipate harmful consequences, many believe it is the immediate promise of economic return that has caused many to turn a blind eye on "potentially devastating results."[134] GMO opponents have several areas of concern, which include the potential for (1) "unintended changes in the competitiveness, virulence, or other characteristics of the target species,"[135] (2) "adverse impacts on non-target species (such as beneficial insects) and ecosystems,"[136] (3) "weediness in genetically modified crops (where a plant becomes more invasive than the original, perhaps by transferring its genes to wild relatives),"[137] and (4) "the possibilities that a gene will lose its effectiveness or will be re-transferred to another host)."[138] In addition, many fear that biotechnology is unlikely to significantly, or even sufficiently, address the existing problem of malnutrition.[139]

Because genetic modification has advanced beyond "traditional science," the testing necessary to confirm or deny any potential for long-term negative side effects resulting from the genetic manipulation could take years.[140] Investors have already spent large sums of money to produce these genetically altered products, which must await acceptance before they go bad.[141] GMO proponents also point to the urgency of assisting developing countries with the starvation and malnutrition epidemic that currently exists.[142]

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[133] *See* Smits & Zaboroski, *supra* note 11, at 114.

[134] *Id.*

[135] *See* Biosafety Protocol, *supra* note 28, at Section a-6 (discussing potential risks of biotechnology in question (a)(6) of the Frequently Asked Questions).

[136] *Id.*

[137] *Id.*

[138] *Id.*

[139] *See generally* Carmelo Ruiz-Marrero, *Biotechnology's Third Generation, From Golden Rice to Anti-Viral Tomatoes—Good Health or Good Marketing?*, Corpwatch, *at* http://www.corpwatch.org/issues/PID.jsp?articleid=2228 (last visited Nov. 11, 2003).

[140] *See Genetically Engineered Crops, at* http://www.tdc.ca/gecrops.htm, tdc Marketing and Management Consultation (last visited Nov. 11, 2003) (discussing the fact that long-term effects associated with using this technology are relatively unknown, and short-term effects are only recently becoming known).

[141] *See* Lee Egerstrom, *Altered States: Awaiting the Evidence*, ST. PAUL PIONEER PRESS, *available at* http://www.tao.ca/~ban/200ARpprage.htm (last visited Nov. 11, 2003) (discussing the "Multinational chemical and pharmaceutical firms [that] have spent more than $100 billion buying and consolidating seed genetics companies over the past five years in a race to lead the biotech revolution").

[142] *See generally* John Vidal, *U.S. 'dumping unsold GM food on Africa'*, GUARDIAN, *available at* http://www.guardian.co.uk/gmdebate/Story/0,2763,805825,00.html (Oct. 7, 2002)

Environmentally, genetic manipulation could have unintended consequences within the ecosystem. GMO opponents worry about the impact that biodiversity may have on existing plants, animals, and insects.[143] Both cross pollination and outbreeding create the threat of altering, or completely losing, large-scale non-GM agriculture and species.[144] In addition, the threat of "super pests" exists, which would result if insects, weeds, or bacteria adapted to those resistant traits that have been modified within existing GMOs.[145] Ultimately, many critics feel that it is poverty, rather than inadequate agriculture, that remains the basis for hunger among the people of developing countries.[146] More expensive to purchase and maintain, genetically modified crops therefore appear unlikely to solve the large-scale problem that currently exists in underdeveloped areas of the world.[147]

C. Are the Benefits and Risks Reconcilable?

GMO supporters argue that GMO regulations, when enforced with the same intensity as those regulations governing other food products, should adequately protect consumers.[148] This would be especially true if the standard procedures used to protect human health, outlined by the SPS Agreement, were followed. With equally strong opponents to GMO technology, however, this conflict could ultimately ignite into a full-blown trade war.[149] While the outcome remains unpredictable, a great deal of focus has been placed on whether existing trade mechanisms, such as the GATT and the SPS and TBT Agreements, provide adequate recourse for WTO members seeking to protect consumer and environmental interests.

(last visited Nov. 11, 2003) (stating that the food crisis, which currently affects more than fourteen million people in six countries, mandates outside assistance).

[143] York, *supra* note 55, at 433.

[144] *Id.*

[145] *Id.* at 433-34.

[146] *Id.* at 434.

[147] *Id.*

[148] *See* Bill Lambrecht, *Petition to Stop Food Genetic and Bio Engineering*, ST. LOUIS POST-DISPATCH, *available at* http://www.heall.com/medicalfreedom/foodengineering.html (last visited Nov. 11, 2003) (discussing the FDA position that "food from new plant varieties is 'generally recognized as safe' and that it is no different than conventionally bred food in nutrition or in requirements for storage and handling").

[149] *See* Steve Schifferes, *New US-EU trade war looms*, BBC NEWS, *available at* http://news.bbc.co.uk/1/hi/business/2534179.stm (last visited Nov. 11, 2003).

IV. CARTAGENA PROTOCOL ON BIOSAFETY

As it stands, the WTO is the key governing body responsible for overseeing and implementing international trade laws involving both market access and safety regulations of GMOs.[150] With uncertainty about the effectiveness of existing protective trade mechanisms mounting, it becomes important to consider whether alternative provisions aimed at providing human and environmental protection in light of biotechnological advancement are reconcilable with existing WTO legal authority.

The Cartegena Protocol on Biosafety (Biosafety Protocol) was established by the United Nations subsequent to the 1994 conclusion of the Uruguay Round in response to the increasing conflicts over biotechnology.[151] Adopted by the Conference of the Parties to the Convention of Biological Diversity on January 29, 2000,[152] the Biosafety Protocol seeks to resolve concerns involving trade restrictions that are intended to protect health and the environment by creating "rules regulating the transboundary movement of GMOs."[153] Though the Biosafety Protocol lacks the force of international law, the requisite fifty member states had ratified it by June 13, 2003.[154] On September 11, 2003, the Protocol officially entered into force among those countries that consented to be bound by it.[155]

Positioned on opposite sides of the debate since the argument began, the United States and the EU remain head to head even after the implementation of the Biosafety Protocol. However, the language in the Protocol includes what some argue is "a lot of 'creative ambiguity,' which has resulted in claims of victory from both sides of the Atlantic."[156] With developing countries, including those of Africa, now placed squarely in the center of this conflict, there appear to be no consistent international guidelines upon which to rely. Once ratified by fifty member states, the Biosafety Protocol implemented

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[150] *See* York, *supra* note 55, at 455.

[151] *See The Cartagena Protocol on Biosafety*, 8 ECON. PERSP. 3 (Sept. 2003), *at* http://usinfo.state.gov/journals/ites/0903/ijee/cartagena.htm (last updated July 21, 2003) (discussing the Biosafety Protocol's ratification process and its subsequent entry into force on Sept. 11, 2003) [hereinafter *Cartagena Protocol*].

[152] *Id.*

[153] King, *supra* note 41, at 253; *see also* Smits & Zaboroski, *supra* note 11, at 124.

[154] *See generally Cartagena Protocol*, *supra* note 151.

[155] *Id.* (indicating that the requisite number of member states had signed the Protocol, and it would subsequently enter into force on September 11, 2003).

[156] King, *supra* note 41, at 253.

several new guidelines intended to help regulate the transboundary movement of GMOs, including (1) an Advanced Informed Agreement (AIA) procedure intended to "ensure that countries are provided with the information necessary to make informed decisions before agreeing to the import of GMOs into their territory,"[157] (2) reference to a precautionary principle, and (3) establishment of a Biosafety Clearing-House.[158]

Generally limited in scope to Living Modified Organisms (LMOs), the Protocol currently defines included products more narrowly and is not intended to include GMOs that are merely food or feed incapable of reproduction.[159] LMOs must, however, utilize labeling requirements whereby shipments declare that they either contain, or potentially contain, genetically modified products. Finally, the Protocol dictates the process by which nations may create rules and procedures to deal with liability and reparation in the event damage ultimately results from the transboundary movement of GMOs.[160] Although the Biosafety Protocol is not intended to regulate food or feed such as corn, soybeans, and other agricultural products deemed unable to reproduce, a multitude of developing countries have urged that the possibility of spillage or other environmental contamination by already cultivated genetically modified products could make the Protocol applicable to GMOs not currently classified as "living" organisms.[161] The Protocol may, therefore, apply to a greater portion of GMOs than originally believed. If ratified and implemented, the Biosafety Protocol will likely become a key piece in the ongoing debate over Africa's potential acceptance of food aid in the form of genetically altered maize and grain.[162]

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[157] *See Responsible management of GMOs: Commission proposes EU implementation of Cartagena Protocol on Biosafety*, Commission Press Release (IP/02/299), *at* http://www.foodlaw.rdg.ac.uk/news/eu-02020.htm (last visited Feb. 11, 2003); *see also* Grosko, *supra* note 11, at 296.

[158] *See Responsible management of GMOs: Commission proposes EU implementation of Cartagena Protocol on Biosafety*, *supra* note 157; *see also* Alex Kirby, *Doubts Beset Biosafety Treaty*, BBC News Online, May 27, 2003, *at* http://news.bbc.co.uk/2/low/science/nature/2941036.stm (last visited Nov. 11, 2003) (discussing establishment by the Protocol of a clearing-house in Montreal, Canada).

[159] *See* Grosko, *supra* note 11, at 304.

[160] *Id.* at 297.

[161] *Id.* at 319.

[162] *See id.* at 319.

V. INTERNATIONAL TRADE LAWS AND THE GMO CRISIS: A LEGAL ANALYSIS

Within existing international trade law, both GATT and the SPS Agreement remain in force and applicable to this expanding GMO debate.[163] With no long-term historical evidence to use as a guideline, however, it is difficult to reach any definitive conclusion regarding the outcome of a WTO dispute over GMO regulations, should one actually arise. The last decade has seen an enormous attempt by the WTO—though deemed by many to be unsuccessful—to implement protective trade mechanisms that simultaneously provide some level of recourse with regard to health and environmental concerns.[164]

GATT permits exceptions to free trade to be made when health and environmental risks exist.[165] Within the context of international law, however, both the SPS and TBT Agreements take precedence over GATT.[166] "If the requirements of the SPS Agreement are satisfied, the requirements of GATT Article XX(b), as well as its chapeau, are presumed to be met."[167] The SPS Agreement requires member states to "ensure that any sanitary or phytosanitary measure is applied only to the extent necessary to protect human, animal or plant life or health"[168] and further demands that any protective measure be "based on scientific principles . . . not maintained without sufficient scientific evidence."[169] In the tradition of GATT, the SPS Agreement also prohibits arbitrary or unjustified discrimination among its members.[170]

Unlike the GATT, the SPS Agreement requires member states to take into account available scientific evidence to determine the legitimacy of restrictive trade measures.[171] However, GMO proponents remain concerned about the applicability of SPS to the GMO debate since it specifies its primary objective as one "minimizing negative trade effects"[172] and further requires members to

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[163] *See* Schoenbaum, *supra* note 59 *passim*.
[164] *Id.*
[165] *Id.*
[166] Appleton, *supra* note 115, at 571.
[167] *Id.*
[168] SPS Agreement, art. 2 para. 2.
[169] *Id.*
[170] *Id.* para. 3.
[171] *Id.* art. 5, para. 2.
[172] *Id.* art. 5, para. 4.

"ensure that such measures are not more trade-restrictive than required to achieve their appropriate level of sanitary or phytosanitary protection."[173]

Particularly relevant to this analysis is the portion of the SPS Agreement that discusses Special and Differential (S&D) Treatment of developing countries.[174] Within the framework of Article 10 of the SPS Agreement, developing countries are permitted to extend the time allocated for SPS compliance and may violate certain restrictions instituted by developed countries.[175] The committee governing the SPS Agreement is also permitted to make additional exceptions for developing countries when "their financial, trade and development needs" so dictate.[176] Ultimately, the SPS Agreement encourages its members to help "facilitate the active participation of developing country Members in the relevant international organizations."[177]

With the inclusion in the SPS Agreement of a provision dictating preferential treatment for developing members, some might argue that one need look no further for effective legal guidelines regarding international GMO trade laws. GMO opponents, however, point to the potentially devastating harms that could result from this advanced technology, which supports their proposition that uniform international guidelines over GMOs are needed immediately.

A. Developed Countries: U.S./EU Perspectives on GMO Technology

Varied reactions by the United States and the EU to GMO technology and other technological developments within the food industry dramatically illustrate the contrast between their legal positions. EU members that oppose open trade of genetically modified food products cite multiple reasons for implementing protective mechanisms restricting GMO trade, including (1) fear of globalization leading to U.S. domination of the world food market, (2) a desire for consumers to have an informed choice, (3) environmental concerns regarding genetic manipulation and potentially harmful consequences to the ecosystem, and (4) health concerns over the unknown damage that could result from long-term human consumption.[178] Alternatively, the United States seems

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[173] *Id.* art. 5, para. 6.

[174] *Id.* art. 10.

[175] *Id.* art. 10, para. 2.

[176] *Id.* art. 10, para. 3.

[177] *Id.* art. 10, para. 4.

[178] Citizens for Health, *Policy and Politics: GMO Regulation and Labeling*, Citizens for Health, *at* http://www.citizens.org/Food_water_safety/geneticengineering/gmo/Policy/GMO

propelled by a desire to increase productivity and gain a competitive edge over international agricultural trade.[179] If these two international competitors are unable to find some middle-ground, it appears that predictions of a trade war resulting in a dispute brought before the WTO may be realized sooner rather than later.

Unlike the United States, which supports GMO production and use, the EU has implemented various pieces of internal legislation to restrict production and importation of genetically altered foods and products. Council Directive 97/35/EC (formerly Council Directive 90/220/EEC) is the primary EU legislation dealing with the release of GMOs into the environment.[180] Before any person in the EU may release GMOs into the environment, they must notify authorities within the country where release is to occur.[181] The EU legislation has a dramatic impact on international trade, since the importation/use of genetically modified plant seeds must be reported.[182] In addition to requiring notice to the appropriate authorities, the notification itself must be submitted with a "full risk assessment, appropriate safety and emergency response measures, and in the case of products, precise instructions and conditions for use, plus a proposal for labelling and packaging."[183] In its attempt to provide uniform domestic regulations regarding GMOs, the EU has also adopted novel food regulations,[184] and labeling regulations.[185]

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policy.htm (last visited Nov. 8, 2003) (on file with author).

[179] *See* Marsha A. Echols, *Food Safety Regulation in the European Union and the United States: Different Cultures, Different Laws*, 4 COLUM. J. EUR. L. 525, 529 (1998).

[180] Lisa Oladotter Sandblom, Genetically Modified Organisms (GMOs): A Transatlantic Trade Dispute (2000) (unpublished M.A. thesis, Monterey Institute of International Studies) (on file with the Monterey Institute International Commercial Diplomacy Project), http://www.commercialdiplomacy.org/ma_projects/ma_sandblom4.htm (last visited Nov. 8, 2003).

[181] *Id.*

[182] *See id.*

[183] *Id.*

[184] European Parliament/Council Regulation 258/97, 1997 O.J. (L 43) 1 (requiring labels to identify foods (1) with additives or flavorings from GMOs (2) that raise health or ethical concerns, or (3) not equivalent to their traditional counterparts).

[185] *See* Council Regulation 1139/98, 1998 O.J. (L 159) 4. This regulation requires the "labeling of foodstuffs containing or derived from Monsanto's RR soy and Novartis' sBt-Corn to ensure the mandatory labeling of any food products that contain protein or DNA resulting from genetic modification." *Id.*

B. "The Middlemen": Developing Countries of Africa

While many concede that African countries are "increasingly finding themselves in the crossfire between the United States and the EU over Genetically Modified food,"[186] African countries simultaneously have specific views on the subject and an agenda of their own concerning their position in the international agricultural trade arena. Various African countries[187] have been forced into the middle of this debate because of their limited ability to compete with developed countries' quality and quantity of agricultural production.[188] Furthermore, the hunger epidemic throughout Africa, which African countries have thus far been unable to resolve on their own, might be solved if U.S. food aid currently being offered were to be accepted.[189] Those individuals starving throughout the developing regions of Africa seem reluctant to refuse the offered aid, but those opposed to GMO technology fear that accepting the assistance might ultimately prove to be at too great a cost. While the GMO crisis is global in scope, "it is a common view that developing countries, especially in Africa, cannot afford to reject GM-crops while food shortages and crop failures remain prevalent."[190]

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[186] Izama Angelo et al., *Africa's Dilemma in Genetically Modified Food War*, MONITOR, May 29, 2003, http://www.biotech-info.net/africas_dilemma.html (last visited Nov. 8, 2003) (identifying developing countries' placement between those developed countries engaging in this soon-to-be international trade war).

[187] African countries that remain in the middle of this conflict based upon their inability to produce sufficient amounts of food to eradicate the existing hunger epidemic include Zimbabwe, Zambia, Malawi, Lesotho, Swaziland and Mozambique. *See* Judy Aita, *World Food Program Says African Food Crisis Threatens 38 Million*, WASH. FILE OFFICE OF INT'L INFO PROGRAMS, U.S. DEP'T OF STATE, Dec. 3, 2002, *available at* http://www.useu.be/Categories/Sustainable%20Development/Dec0302WFPAfricaFamine.html (last visited Nov. 11, 2003).

[188] World Trade Organization, *Agriculture Negotiations: Backgrounder Phase 1: Developing Countries, at* http://www.wto.org/english/tratop_e/agric_e/negs_bkgrnd09_develop_e.htm (last visited Nov. 11, 2003).

[189] "The United States has pledged $266 million worth of food to southern Africa this year as well as more than $10 million worth of non-food aid needed for regional management and logistics, agriculture, therapeutic feeding, emergency health needs and cholera response and prevention." Aita, *supra* note 187.

[190] Stephanie G. Burton & Don A. Cowan, *Development of Biotechnology in South Africa*, 5 ELECTRONIC J. OF BIOTECHNOLOGY (2002), *at* http://www.ejbiotechnology.info/content/vol5/issue1/issues/03/.

1. Africa and International Trade Law

While most legal discussion on the debate surrounding open international trade of GMOs focuses on the existing U.S.-EU conflict, the region most affected by potential implementation of international GMO regulations may well be those developing countries that lack the authority to effectively contest such policies. Existing WTO regulations included in the SPS Agreement appear inadequate for developing countries that have little recourse against the placement of genetically modified products into their markets by developed nations like the United States.[191] Furthermore, trade restrictions imposed in accordance with other multilateral agreements, including the Biosafety Protocol, threaten to push developing countries like those of Africa, whose domestic agricultural markets remain behind developed countries in the world market, out of the agricultural trade arena altogether.[192]

WTO agreements like the SPS provide those opposed to strong GMO regulation with some means to bypass them.[193] "GMO exporters are using the WTO system to get the international trading rules that will maximise their profit and minimise the possibility of government intervention."[194] Furthermore, GMO proponents (namely the United States) have "threatened to use existing WTO agreements to undermine calls by developing countries for strong rules on GMOs."[195] Traditionally, the WTO accorded special treatment to developing countries in the form of reduced standards on certain agricultural products.[196] The potential risks posed by GMOs, however, indicate that compliance with elevated international standards must be achieved by all GM food producers.[197] Even if the WTO agreements allow developing countries

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[191] *See* Martin Khor, TWN Africa, *NAM Summit Proposes Economic and WTO Reforms*, Feb. 26, 2003, *at* http://www.twnafrica.org/news_detail.asp?twnID=294 (last visited Nov. 11, 2003) (discussing the "imbalance and asymmetries that have been apparent in the course of implementation of the WTO Agreements").

[192] *See generally id.* (citing concern over the "lack of market access for products of special interest to developing countries, non-realisation of the provisions for special and differential treatment, and the curtailment of developing countries' ability to pursue policy instruments and promote development").

[193] *See* World Development Movement, *GMOs and the WTO: Overruling the right to say no* (Nov. 1999), *at* http://www.wdm.org.uk/cambriefs/gmos/GMOs_WTO.htm (last visited Nov. 11, 2003).

[194] *Id.*

[195] *Id.*

[196] *See id.*

[197] *See id.*

to stray from labeling and testing requirements currently being suggested, the Biosafety Protocol would permit developed countries to restrict imports of those products not meeting uniform international standards.[198] With two conflicting bodies of law providing guidance, uncertainty abounds as to whether the existing WTO trade agreements are reconcilable with the Biosafety Protocol.

Prior to 1994, the WTO permitted certain member states S&D Treatment intended to "accord developing countries special rights to nurture infant industries, preferential access to developed-country markets and non-reciprocity in trade negotiations."[199] Following the Uruguay Round in 1994, "member governments adopted the 'single undertaking' approach that required both developed and developing countries to adhere to nearly the same set of agreements on trade rules."[200] Although WTO members were urged to provide assistance to developing countries implementing SPS following the 1994 Uruguay Round, it seems little has come of the suggestion.[201] For example, in the highly specialized area covered by the TBT Agreement, "little effort has been made to implement the commitment to help developing countries tackle the special difficulties they face in the formulation and application of standards."[202] With ineffective assistance provided to developing countries by the various WTO agreements, the Biosafety Protocol's potential treatment of developing nations becomes an important consideration.

2. *Africa and the Biosafety Protocol*

"The [Biosafety Protocol] represents an example . . . of the highly complex nature of the legal disputes occurring at the interface between free trade and environmental protection."[203] Implementation of the Protocol on a national

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[198] *Id.*

[199] Kiichiro Fukasaku, UNU World Inst. for Dev. Econ. Research, *Special and Differential Treatment for Developing Countries: Does It Help Those Who Help Themselves*, 1 (Sept. 2000), *at* http://www.wider.unu.edu/publications/wp197.pdf (last visited Nov. 11, 2003) (stating that "[t]he principle of non-reciprocity legitimized 'free-riding' on the part of developing countries and allowed them to opt out of MFN-based liberalization commitments" in trade negotiations).

[200] *Id.*

[201] Peter M. Gerhart, *Slow Transformations: The WTO as a Distributive Organization*, 17 AM. U. INT'L L. REV. 1045, n.88 (2002).

[202] Peter Lichtenbaum, *"Special Treatment" vs. "Equal Participation": Striking a Balance in the Doha Negotiations*, 17 AM. U. INT'L L. REV. 1003, 1019-20 (2002).

[203] Grant E. Isaac et al., *International Regulation of Trade in the Products of Biotechnology: Executive Summary*, 9, Estey Centre for Law and Economics in International Trade (Nov. 2001),

level "may prove difficult for many Parties, particularly developing countries, which typically lack trained personnel, technology, and the infrastructure necessary for complex regulatory regimes. The Protocol does, however, impose obligations upon the Parties to provide financial and other capacity building assistance."[204]

The Protocol entered into force internationally on September 11, 2003 (although it still lacks the force of international law retained by the WTO Agreements).[205] Many believe, however, that along with the recent ratification of the Protocol will come a great deal of pressure placed upon those currently engaged in international trade to ensure compliance with this new Agreement.[206] Drafted in an era of scientific advancement, many speculate that the Protocol will prove more successful than its predecessor WTO agreements in providing the necessary assistance that developing countries currently lack and greatly need.[207]

One feature included in the Protocol that is considered tremendously beneficial for developing countries is the much heralded Precautionary Principle, which allows a country to place protective restrictions on GM products absent specific scientific data supporting any danger.[208] Although "many European and developing countries wanted the pact to supercede World Trade Organisation (WTO) rules," the United States and other GMO proponents argued that allowing the Protocol to override WTO agreements might permit protectionist restrictions on trade.[209] Importantly, the WTO will be required to attempt some level of reconciliation between the Biosafety Protocol and its own science-based rules when resolving disputes over import restrictions.[210] Even consideration of the Protocol by the WTO Dispute Panel, however, does not guarantee that future decisions made by the organization

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at http://www.esteycentre.ca/regoftrade.doc.

[204] Paul E. Hagen & John Barlow Weiner, *The Cartagena Protocol on Biosafety: New Rules for International Trade in Living Modified Organisms*, 12 GEO. INT'L ENVTL. L. REV. 697, 715 (2000).

[205] *See Cartagena Protocol*, *supra* note 151.

[206] *See generally* AGRICULTURAL BIOTECHNOLOGY SUPPORT PROJECT, *Biotechnology & International Agreements* (discussing the "pressure of compliance with these international agreements . . ."), *at* http://www.iia.msu.edu/absp/biotech-int.html (last visited Jan. 27, 2004).

[207] *See* Sustainable Development International, *Biosafety Protocol Signed by 63 Nations*, *at* http://www.sustdev.org/industry.news/052000/0238.shtml (last visited Nov. 13, 2003).

[208] *See Protocol Watered Down*, *supra* note 30.

[209] *Id.*

[210] *Id.*

responsible for regulating international trade will fairly consider non-scientific evidence, essentially favoring protection of human health and the environment.

3. Domestic and International Implications for Africa

In Africa, both "ethical and metaphysical ideas have, over the ages, been shaped and coloured by its ecological, biological and cultural diversity."[211] In addition to the ethical concerns that abound, economic constraints in Africa continue to halt the progress of biotechnology in Africa's agricultural arena.[212] "[D]espite the importance of its share in GDP and its share in the total labour force, the agricultural sector has in many countries [in Africa] been overlooked as the major focus in economic development and has suffered from underinvestment."[213]

Even among the various African countries, the possibility for internal conflict appears likely. Africa's desire to strengthen its position on the international trade market as an agricultural exporter may be irreconcilable with the desire to protect citizens who fear the long-term repercussions of internal use of GM products. In addition, the ongoing hunger epidemic that remains unresolved by Africa's own agricultural production is likely to worsen if immediate action, such as acceptance of GM food aid from the United States, is not taken.

Even while taking a stand regarding labeling and indicating their desire for superior-quality food imports, several countries in Africa[214] have begun to participate in agricultural genetic engineering and are actively researching, developing, and producing GM foods themselves.[215] Those African countries can be divided into three distinct groups based on their level of production. They are (1) countries that use genetic engineering to generate products ultimately placed into the open market for international trade (Egypt, South

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[211] Darryl Macer, *Bioethics*, BIOTECHNOLOGY AND DEVELOPMENT MONITOR, No. 32, Sept. 1997, at 25, http://www.biotech-monitor.nl/3202.htm.

[212] Carliene Brenner, *Agricultural Biotechnology R&D in Africa: Structural Constraints*, African Centre for Technology Studies (Sept. 27-29, 1999), *at* http://www.acts.or.ke/Biotech%20-%20BRENNER.pdf (last visited Nov. 13, 2003).

[213] *Id.*

[214] Countries currently engaging in various levels of biotechnology include Egypt, South Africa, Zimbabwe, Ghana, Kenya, Uganda, and Tanzania. *See* P. Kameri-Mbote, *Biotechnology and Food Security in Africa: Some Policy and Institutional Considerations*, International Environmental Law Research Centre, IELRC Briefing Paper 2002-4, *at* http://www.ielrc.org/Content/BP02041T.html (last visited Nov. 13, 2003).

[215] *Id.*

Africa, and Zimbabwe), (2) countries engaging only in biotechnology research and development but not production (Ghana, Kenya, and Uganda), and (3) counties engaged in minimal biotechnology activities such as tissue culture (Tanzania and Uganda).[216]

Although some regions of Africa are independently involved in the production of genetically engineered food products, a complaint has been made that may be the underlying reason for Africa's newfound desire for independence from biotechnology. It has been said that "[t]he globalization of the world economy and the emergence of the giant transnational corporations (with economic potential greater than that of a group of developing countries put together) are shaping the development of countries in Africa and elsewhere in the developing world."[217] Fearing a loss of agricultural control, Africa's recent position supporting the EU proposition that adheres to strict labeling and control appears more justified.

In the absence of a ratified Biosafety Protocol, African countries recently began passing their own domestic legislation to regulate genetically engineered products.[218] In 1997, South Africa's Parliament passed the Genetically Modified Organisms Act,[219] which has been heralded by some as legislation surpassing the Biosafety Protocol with regard to the issues it addresses.[220] Through their domestic legislation and the position they have taken refusing food aid, many African countries remain concerned about (1) increasing EU resistance to importation of GMO's, (2) developing countries being abused by biotech companies looking for new testing ground for their GM products, (3) risks to the African population following long-term consumption, (4) ethical issues raised by religious beliefs that restrict the use of animal genes in modified agricultural products, and (5) the general harms that may result in both humans and the environment after exposure to genetically manipulated products.[221]

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[216] *Id.*

[217] *Id.*

[218] *Id.*

[219] Genetically Modified Organisms Act, Minister for Agriculture and Land Affairs, *at* http://www.gautengleg.gov.za/ (last visited Nov. 26, 2003) (S. Afr.).

[220] THIRD WORLD NETWORK, *The long, winding road to a Biosafety Protocol—a South African view*, *at* http://www.twnside.org.sg/title/mariam-cn.htm (last visited Nov. 13, 2003).

[221] *Id.*

C. WTO Versus the Biosafety Protocol: Is Resolution in Africa Feasible?

Perhaps the most important aspect of this analysis is the potential for reconciliation of existing WTO agreements and the Biosafety Protocol. Legally, there are significant differences between the goals promoted by the WTO and those cited by the Biosafety Protocol, leaving open the door for an abundance of conflict between the two.[222] Within the confines of international law, there is no fundamental principle that indicates "which regime would prevail in the event of a conflict."[223] Although trade restrictions exist within other Multilateral Environmental Agreements (MEAs)[224] often conflict with the free-trade goals of the WTO, none of them have yet been formally challenged. Some fear, however, that WTO members will not continue to "tolerate the incompatibility of the BSP [Biosafety Protocol] due to the significant institutional differences that exist" between the two.[225] If a conflict is ultimately brought before the WTO and involves its member states, it is unlikely that the Biosafety Protocol would hold significant weight in any WTO decision.

Significant differences between the Biosafety Protocol and other MEAs that conflict with the WTO could cause some to wonder how a GMO dispute brought before the WTO might be resolved. The most obvious and fundamental differences include such things as the Protocol's (1) lacking "popular support accorded to other incompatible MEAs," (2) remaining unsigned by the U.S., which dominates the world biotechnology market as its largest producer and consumer, and (3) being ratified primarily by those countries that are largely insignificant producers and consumers of GM products.[226] Though the WTO may be willing to "accept certain trade-distorting measures in limited circumstances, their preference is clearly for multilaterally agreed

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[222] Isaac et al., *supra* note 203.

[223] *Id.* at 9.

[224] *Id.* (discussing that

> [t]o date, none of these MEAs has been challenged at the WTO. It appears that the basis for tolerating this ongoing incompatibility stems from the popular support for the MEAs (the Basel Convention has been ratified by 148 countries and 180 countries have signed the Montreal Protocol) and from the unwillingness of countries to force a choice between trade and the environment under international law).

Id.

[225] *Id.*

[226] *Id.*

standards."[227] It seems unlikely, therefore, that the WTO will entertain resolutions that have long-term potential of hindering free trade.

D. Solutions and Alternatives

Today, more than 100 WTO members are considered developing countries.[228] "Their development concerns thus must be adequately taken into account in the global trade rules."[229] Though heavily contested by the United States, trade restrictions on GMOs and heightened requirements concerning scientific testing and clear labeling seem a certain part of the future. In the past, the WTO's ultimate objective to promote free international trade has allowed it to give preferential treatment to developing countries that lacked the resources necessary to remain competitive on the world market. There now needs to be some attempt by those governing international trade laws to merge the varying interests of those on opposite sides of this debate.

If the WTO looked in the direction of Cartagena, it might discover that the Biosafety Protocol, which builds in an abundance of protective mechanisms in light of scientific uncertainty, also appears to suggest potential ways to bring developing countries onto a level playing field in international trade. By requiring member states to provide assistance in one form or another, the Biosafety Protocol more effectively guarantees developing countries will be included in ongoing international trade. Rather than allowing developing countries like those in Africa to skirt the GM product requirements because they cannot afford to comply, the WTO would be much better regarded if it called for developed members to assist developing countries by providing the means that would ensure ongoing compliance with health and safety standards.

VI. CONCLUSION

For decades, trade barriers have been used in the name of human health and environmental safety.[230] While some discriminatory trade measures may be justified under the environmental exceptions of GATT, narrow interpretation by the WTO leaves significant doubt regarding the outcome should a dispute

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[227] *Id.* at 10.

[228] Fukasaku, *supra* note 199, at 1.

[229] *Id.*

[230] Stephanie Carlston, *The World Trade Organization Millenium Conference in Seattle: The WTO Recognizes a Relationship Between Trade and the Environment and Its Effect on Developing Countries*, 1999 COLO. J. INT'L ENVTL. L. 33).

officially be brought before the WTO. The ongoing need for some means to regulate international trade has been compounded by recent advancements in biotechnology, which include the highly disputed creation and trade of genetically modified foods. In response to GM food products being placed on the international market, many WTO members have begun placing trade restrictions on genetically modified organisms.[231] With scientific advancements that have yielded GM food products comes uncertainty about possible long-term implications to both human health and environmental safety.

Propelled by proponents who hail the abundance of benefits as a solution to many problems, especially with the famine problem felt by many developing countries, the United States has gained a competitive edge over other developed countries in the arenas of genetic engineering and biotechnology.[232] Select developed countries, including members of the EU, however, remain fearful of the unknown repercussions of playing God with nature. Until now, this explosive international conflict has remained unresolved by any body governing international trade law.[233] Likely fearful of the possible outcome, no developed country has yet formally approached the WTO with any specific complaints over the trade restrictions currently being placed upon genetically modified products. Until recently, it was believed by many that this ongoing dispute over international trade remained limited to developed countries, with a specific focus on the conflict that has developed between the United States and the EU. Recently, however, this GMO debate has begun to involve an entirely unexpected group—developing countries—causing the debate to take a sudden and dramatic turn.

Stranded in the middle of this conflict over GMO technology and food products are those developing countries that struggle for inclusion in the international agricultural trade arena. Lacking the resources to comply with many of the trade restrictions being imposed, countries like those within Africa have been left with limited alternatives for market participation. Most recently, some African countries have been forced to choose whether to accept food aid that has undergone genetic engineering from the United States, or give up the aid to ensure future trade prospects with the EU.[234] As this debate over GMO technology continues to rage between those proponents who seek an end

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[231] *See* Kupchella, *supra* note 7.

[232] *See* Bob Swientek, *GMOs and HMOs* (Jan. 2000), *at* http://www.preparedfoods.com/archives/2000/2000_01/0001.toc.htm (last visited Nov. 13, 2003).

[233] *See id.*

[234] *See id.*

to famine in various African countries and the opponents who consider the possible havoc that may be wrought upon their ecosystems, the decisions over whether to accept this controversial food becomes more difficult.[235]

Looking to international trade law and its primary governing organization, existing protections provided to developing African countries appear inadequate. Existing WTO agreements, which include GATT, the SPS, and the TBT, have not yet been able to effectively assist developing countries in adapting to the elevated trade standards required by developed nations.[236] Intended to provide guidelines on genetically engineered products, the SPS required certain scientific standards while the TBT guaranteed testing and labeling for all genetically altered products.[237] Neither agreement, however, provides any means by which developing countries could achieve these lofty and expensive goals.[238] Where WTO agreements failed to provide effective guidance to developing countries attempting to maintain a position in international agricultural trade, the Biosafety Protocol was born.

Although it deals more specifically with protecting countries from possible biotechnological harm, the Biosafety Protocol might provide the WTO with guidelines for potential mechanisms to regulate its developing members. In addition to the requirement that its developed members provide assistance to those that are not developed, the Biosafety Protocol includes the precautionary principle, which allows countries to implement trade barriers in the absence of the scientific proof of harm that the WTO often requires.[239] However, some fear that developing countries may need more than mere economic assistance as they lack the training, technology, and foundation necessary to be successful in this new area of international trade.[240]

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[235] *See* A. Bennett, *GM technologies—opportunities and threats of applying GM technology in less developed and developed countries*, *at* http://www.bsas.org.uk/meetings/annlproc/Pdf2003/212.pdf (last visited Nov. 13, 2003) (discussing the theory that "costs of getting GM technologies into the market place are already higher than more traditional technologies; for many developing countries these costs and capacities needed are beyond their means").

[236] *See* Mustafizur Rahman, *Market Access Implications of SPS and TBT Agreements*, Centre for Policy Dialogue, *available at* http://cuts.org/sps-analysis-marketaccess.htm (last visited Nov. 13, 2003).

[237] *See* Appleton, *supra* note 115, at 572.

[238] *See id.*

[239] Hagen & Weiner, *supra* note 204, at 714.

[240] Press Release 01/31, Food and Agriculture Organization of the United Nations, FAO Director-General Stresses Benefits of Biotechnology in Fighting Hunger and Malnutrition and Calls for Open Debate on Potential Risks (May 14, 2001) (discussing the need among developing countries for assistance in (1) learning how to properly implement field testing of

Even if the WTO looks to the Biosafety Protocol for guidance, existing WTO Agreements and the Protocol may not be fully reconcilable in the event an international trade dispute ultimately emerges. Significant legal differences create a great potential for conflict, and neither regime can be labeled a clear winner.[241] In its current form, the Biosafety Protocol might be helpful if considered by the WTO in the event of a trade dispute.[242] Since the WTO is under no obligation to follow the guidelines set out in the Protocol, it seems unlikely that it would entertain the incompatible doctrine.[243] Even if a dispute brought before the WTO were to be considered in light of the Biosafety Protocol, many environmentalists remain concerned that any WTO decision would ultimately weigh most heavily in favor of free trade.

With more than 100 WTO members currently classified as developing countries, existing trade rules must be adjusted to account for potential differential treatment in the name of genetic engineering.[244] While the United States disagrees, public opinion throughout the world remains largely in favor of ongoing scientific testing and possible labeling of genetically modified products. International laws govern trade, but consumers truly control the international trade market. With ongoing scientific discovery and inevitable advancement sure to continue, it seems clear that this debate has no clear end in sight. In the meantime, the WTO would be wise to consider the environmental concerns upheld by those currently standing in full opposition to genetic engineering and food alteration. Attempting to reconcile the goals of international trade with potential human and environmental risks, therefore, remains both prudent and necessary if developing countries caught in the middle of this conflict are to receive any effective assistance in this fight.

GM crops, and (2) researching policy and management issues relating to biotechnology and genetic engineering) (on file with the author).

[241] *See* Tom Ato, *Biosafety and Genetic Engineering—49 countries ratify Cartagena Biosafety Protocol* (May 28, 2003), *at* http://portland.indymedia.org/en/2003/05/265512.shtml (last visited Jan. 27, 2004) (identifying the Biosafety Protocol's direct conflict with existing WTO rules, which permit import restrictions only when clear scientific evidence of potential human or environmental harm exists).

[242] *See* Isaac et al., *supra* note 203, at 9.

[243] *See id.* at 9.

[244] *See* Fukasaku, *supra* note 199, at 1-2.