Markets, Monocultures, and Malnutrition: Agricultural Trade Policy through an Environmental Justice Lens

by Carmen G. Gonzalez

Introduction & Executive Summary

On January 1, 1994, hundreds of indigenous Mexican peasants took part in the Zapatista uprising in Chiapas, Mexico, to protest Mexico’s participation in the North American Free Trade Agreement (NAFTA) as well as the Mexican government’s repeal of a constitutional provision safeguarding the right to land reform. In the eyes of the Zapatista rebels, NAFTA was the codification of economic policies that marginalized and impoverished Mexico’s indigenous peasantry by depriving them of cultivable land in order to promote large-scale agro-export production. The rebels feared that cheap food imports from the United States and the elimination of government-guaranteed agricultural prices would threaten the livelihoods of Mexico’s small corn producers, undermine food security, and increase migration to the United States. Subsequent studies documenting the adverse impact of trade liberalization on food security, on the environment, and on the livelihoods of Mexican corn farmers have confirmed the validity of these concerns.

Trade liberalization under NAFTA has accelerated the trend toward large-scale, export-oriented, chemical-intensive agricultural production at the expense of small-scale subsistence farms. Mexican farmers have experienced a 70-percent decline in real corn prices since 1994 as a consequence of the influx of cheap, subsidized corn from the United States. This catastrophic drop in corn prices has coincided with the virtual disappearance of Mexican government agricultural subsidies and price supports. Finding that the cost of corn production exceeds the revenue produced by selling the corn, many Mexican farmers have hired themselves out as laborers or have migrated to northern Mexico or to the United States in order to earn the cash necessary to support their families. Ironically, the drop in corn prices has not been passed on to Mexican consumers. On the contrary, the price of tortillas (a staple of the Mexican diet) increased three-fold in real terms between 1994 and 1999. The decline in corn prices depressed rural incomes, increased poverty and unemployment, reduced food security, and produced higher levels of migration from rural areas. Trade liberalization in the corn sector also accelerated environmental degradation, as wealthy farmers increased the use of pesticides and fertilizers while poor farmers responded to depressed corn prices by extending cultivation to more marginal lands. Finally, the NAFTA-induced decline in corn prices jeopardized the genetic diversity of the Mexican corn sector by undermining the rural institutions upon which traditional maize-growing is based.

The Zapatista uprising in Chiapas, Mexico, is an example of fierce resistance by local and indigenous farming communities to development strategies that threaten their lands, their livelihoods, and the health of local ecosystems. Similar struggles have been waged in many other countries, including Indonesia, Malaysia, Brazil, Madagascar, Argentina, and India. In Sarawak, Malaysia, for example, hunters and farmers organized blockades and demonstrations to preserve their forests from commercial logging, which had already contaminated rivers, exposed soils to erosion, and destroyed plants and animals used as

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sources of food. Similarly, in the Brazilian Amazon, rubber tappers joined forces with indigenous communities to preserve millions of acres of forest from conversion to pastureland.

These grassroots struggles in developing countries over the ecological necessities of life (land, water and food) have been referred to as “the environmentalism of the poor,” or simply “environmental justice,” and have been studied extensively by scholars working in the interdisciplinary field of political ecology. Like the environmental justice movement in the United States, these social movements in developing countries draw their activist base primarily from those who are directly affected by environmental abuse and who view the environmental conflict as part of a larger struggle against political and economic marginalization. What these ecological movements in the developing world have in common is the emphasis on the survival needs of the poor, defined in terms of adequate and equitable access to food, water, and living space.

Much of the literature on environmental justice struggles in the United States and in developing countries has highlighted the disproportionate concentration of environmental hazards in poor and marginalized communities. However, it is equally important to evaluate how human societies distribute access to environmental necessities. Food is a quintessential environmental necessity that is critical to human survival. Indeed, the right to food is recognized as a basic human right in the Universal Declaration of Human Rights and in the International Covenant on Economic, Social and Cultural Rights. The obligation of states to provide adequate food is also contained in the United Nations Convention on the Rights of the Child. Food production, however, poses significant human health and environmental risks, including exposure to toxic agricultural chemicals, excessive freshwater utilization, soil degradation, deforestation, and pollution of water supplies by agricultural runoff. According to the United Nations’ 2005 Millennium Ecosystem Assessment Synthesis Report, natural resource degradation is occurring most rapidly in the world’s poorest regions and is likely to impede efforts to combat poverty, disease and hunger in the developing world.

Proponents of liberalized trade in agricultural products claim that removing agricultural trade barriers will alleviate poverty and hunger in the developing world by increasing global agricultural output and by promoting economic growth and environmental protection in developing countries. Agricultural trade liberalization promises to open up markets in industrialized countries to developing-country farmers, to remove subsidies that result in the over-exploitation of land and the excessive use of pesticides and fertilizers, and to reduce industrialized country surplus production that enters world markets at low prices and undercuts developing-country farmers. According to a recent World Bank report, if all regions of the world eliminated agricultural subsidies and import barriers, the projected global income gain for 2015 is estimated to be $265 billion, with nearly half of that gain accruing to developing countries.

Critics of trade liberalization emphasize that the real cause of hunger is poverty. Indeed, even the World Bank has recognized that global food production has outpaced population growth for the past several decades, but that the poor simply lacked the resources to purchase what was produced. Consequently, the critics contend, measures that purport to alleviate world hunger must be evaluated based on their effect on poverty and inequality. In addition, the environmental impact of these measures must be assessed in order to ensure that they do not
degrade the natural resource base necessary for food production.37

The environmental justice movement has long emphasized that environmental justice is inextricably linked to social and economic justice,38 and environmental justice scholars have attempted to make these connections explicit in their writings.39 This paper continues that tradition by exploring the economic, social and environmental consequences of agricultural trade liberalization in poor communities in developing countries.

The paper begins with a description of the extent of undernourishment in the developing world and an explanation of its underlying causes and the relationship between hunger and environmental degradation. The paper then brings agricultural trade policy into the analysis. Most food-insecure developing countries tend to rely on agricultural exports as a major source of foreign exchange earnings, and the paper explores the causes and consequences of this pattern of trade and production. In particular, it explains that this economic specialization promotes food insecurity and environmental degradation by diverting prime agricultural lands to export production, concentrating land ownership in the hands of a few wealthy landholders, relegating the majority of farmers to less productive and often ecologically fragile lands, and encouraging chemical-intensive, monocultural farming techniques that produce serious ecological harm. In addition, economic specialization in agricultural exports deprives many developing countries of the income needed for productive investment by subjecting export revenues to the vicissitudes of world market prices for agricultural commodities and to the declining terms of trade for agricultural products in relation to manufactured goods.

The paper next examines the impact of the free market economic reforms imposed on developing countries by the International Monetary Fund (IMF), the World Bank, and the World Trade Organization (WTO) during the last 25 years on the patterns of agricultural trade and production prevalent in food-insecure developing countries. These economic reforms institutionalized a double standard in the rules governing agricultural trade that permits protectionism in the industrialized world while requiring developing countries to open their markets to foreign competition. This double standard allows the United States and the European Union to dump highly subsidized agricultural commodities on developing country markets while depriving developing countries of the tools needed to protect resource-poor farmers from unfair competition. The influx of cheap, subsidized food discourages domestic food production in developing countries and undermines the livelihoods of small farmers, who comprise the vast majority of the developing world's malnourished people. In addition, the export-oriented policies promoted by the IMF and the World Bank to guarantee debt repayment accelerate the utilization in many developing countries of chemical-intensive, monocultural agricultural production techniques—to the detriment of human health and the environment.

The existence of this double standard raises the question whether “leveling the playing field”—i.e., imposing the same free market reforms on both developed and developing countries—will alleviate poverty, promote food security, and enhance environmental stewardship in the developing world. This paper explains that, although such reforms would produce short-term benefits, they would ultimately reinforce the patterns of trade and production that produce food insecurity and environmental degradation in the developing world. The paper concludes with a discussion of alternative strategies that developing countries might adopt in order to protect the environment, promote economic development, and enhance food security.

I. Poverty, Hunger and Environmental Degradation: Root Causes and Critical Linkages

According to the most recent survey by the United Nations Food and Agriculture Organization (FAO), there are approximately 852 million chronically undernourished people in the world, of whom 815 million reside in developing countries.40 Food insecurity in the developing world
kills more than five million children every year, produces enormous human suffering, costs developing countries billions of dollars in foregone economic activity, and contributes to outbreaks of violent conflict. Despite the pledge by member countries of the United Nations to cut world hunger in half by 2015 (using 1990-1992 as a baseline), progress in hunger reduction has stalled in recent years, and the number of malnourished people is growing in most of the developing world.

Hunger in the developing world is often exacerbated by unsustainable farming practices that degrade the natural resources necessary for food production. Chemical-intensive, monocultural farming practices have triggered a wide range of environmental problems in both developed and developing countries, including diminution of agricultural productivity, soil degradation, contamination and depletion of freshwater reserves, and loss of biodiversity. Environmental degradation in developing countries has also increased poverty, provoked mass migrations, intensified racial and ethnic tensions, and incited violent conflict over dwindling access to vital natural resources.

In order to understand the underlying causes of undernourishment and environmental degradation in the developing world, it is necessary to begin with four key propositions.

First, contrary to popular misconception, hunger is not a function of food scarcity. Based upon economist Amartya Sen’s pioneering study of famine and on the World Bank’s influential 1986 report on world hunger, it is now widely accepted that lack of access to food rather than inadequate supply is the primary cause of hunger. Indeed, food production world-wide has kept far ahead of population growth for the last several decades, and many of the developing countries experiencing chronic undernourishment are net food exporters. People go hungry because they are poor – because they lack the resources with which to grow or purchase food. Consequently, efforts to solve the problem of hunger in the developing world must target poverty and inequality.

Second, poverty and undernourishment in developing countries are concentrated in rural areas. Approximately 75 percent of the poor in the developing world are rural dwellers. Most are small farmers whose livelihoods depend on selling their agriculture output. Thus, policies and programs that provide food to developing countries free of charge or at subsidized prices may exacerbate hunger by depressing agricultural commodity prices and depriving poor farmers of the income needed to pay taxes and to buy vital consumer goods not produced on the farm.

Third, economic diversification and industrialization are essential to poverty alleviation and to the promotion of food security. A food-secure country is one that can grow, import, or obtain as aid the food necessary to meet the needs of its population. The most food-insecure developing countries are those that rely on a small number of primary agricultural commodities to finance the importation of food products and manufactured goods. Poor harvests, fluctuations in world market
prices for agricultural products, and the declining terms of trade for agricultural commodities vis-à-vis manufactured goods can interfere with the ability of these countries to purchase food and other essential items in international markets and can deprive these countries of export earnings needed for productive investment. According to the U.N. Food and Agriculture Organization, as many as 43 developing countries in sub-Saharan Africa, Latin America and the Caribbean depend on agricultural exports for over half of export revenues and depend on a single agricultural commodity to generate over 20 percent of total foreign exchange earnings.

Fourth, biological diversity is necessary for ecosystem health and for the integrity of the world’s food supply. The cultivation of uniform crop varieties (in lieu of planting diverse crops and diverse genetic strains of a particular crop) increases vulnerability to pest and disease infestation, depletes the soil of vital nutrients, promotes dependence on harmful agrochemicals, increases the risk of catastrophic crop failure in the event of a blight, and adversely affects human nutrition by reducing the variety of foods consumed. Thus, economic policies that directly or indirectly promote monocultural production techniques jeopardize the biological diversity necessary to protect the health and resilience of the world’s agroecosystems.

In order to understand the relevance of these points to contemporary trade and agricultural policy, it is important to examine the historic roots of hunger and ecologically unsustainable farming practices in the developing world.

II. The Colonial Legacy: Agricultural Trade and Production in Historical Context

The patterns of trade and production that produce undernourishment and environmental degradation in the developing world have their origins in colonialism. Colonialism relegated the colonized “periphery” to production of raw materials for the benefit of the colonizing “core.” By the late 19th century, places as diverse as India (cotton producer), Cuba (sugar producer), Egypt (cotton producer), Argentina (beef and wheat producer), and Ghana (cocoa producer) had come to specialize in the production of primary agricultural commodities for export. After political independence, many developing countries continued to specialize in agro-export production and to import manufactured goods. This economic specialization diverted prime crop land in developing countries from food production to cash crop production and encouraged reliance on food imports to satisfy domestic nutritional requirements. Economic specialization in agro-export production also degraded the environment by replacing biodiverse agroecosystems with monocultures that required large amounts of chemical pesticides and fertilizers. This economic specialization deprived developing countries of the stable and steady revenue stream needed for productive investment by subjecting their export earnings to the vagaries of the weather, the fluctuations in world markets for agricultural commodities, and the declining terms of trade for agricultural commodities in relation to manufactured goods. Finally, in the developing countries that practiced plantation agriculture, colonialism concentrated land ownership in the hands of the rural elite (and subsequently foreign and domestic agro-export enterprises), and relegated small farmers to marginal, ecologically fragile lands.

In the aftermath of the Second World War, the Green Revolution extended monocultural production techniques in developing countries from cash crops to food crops. As a consequence of the Green Revolution, the world’s food supply came to rely on an increasingly smaller number of crops and on a narrower genetic base. Farmers throughout the developing world abandoned traditional biodiverse cultivation techniques in favor of uniform seeds, chemical fertilizers, and synthetic pesticides manufactured by transnational corporations headquartered in the industrialized world. In developing countries, the environmental and food security consequences of the Green Revolution included agrochemical contamination of surface waters and groundwater, increased pesticide-related death and illness, soil degradation, loss of ecosystem
biodiversity, loss of traditional food crops, and increased vulnerability of the food supply to pests and disease.75

The Green Revolution was an immense success from the standpoint of food production,76 but it exacerbated hunger in the developing world by aggravating poverty and inequality.77 First, the Green Revolution was inherently biased against poor farmers in developing countries because the new seeds only produced high yields in response to the application of expensive inputs unaffordable to many farmers, including synthetic fertilizers, chemical pesticides, and irrigation systems.78 Second, the increase in food production resulting from the Green Revolution depressed agricultural prices, and thus deprived small farmers in developing countries of the cash income necessary to purchase agricultural inputs, pay taxes, and purchase goods not produced on the farm.79 Many small farmers abandoned the land, and rural poverty and hunger increased.80 Indeed, one review of over 300 published reports on the Green Revolution concluded that 80 percent of these reports found that the Green Revolution aggravated rural poverty and inequality in developing countries.81 Third, the Green Revolution’s emphasis on increasing food production was often promoted as an alternative to land reform and other redistributive measures82 — the very reforms that have been credited in subsequent studies with poverty alleviation, rural development, and enhanced food security in the developing world.83

The pauperization of small farmers in the developing world was exacerbated by United States Public Law 480 (the so-called “Food for Peace Program”),84 which depressed agricultural prices in developing countries by making U.S. surplus agricultural production available to developing countries at reduced prices or free of charge as food aid.85 Furthermore, farmers in the developing world were harmed by the lavish agricultural subsidies maintained by the United States and other industrialized countries (which placed additional downward pressure on world agricultural commodity prices) and by the tariff and non-tariff import barriers that impeded developing country farmers from obtaining access to developed country markets.86 In sum, the Green Revolution, Public Law 480, and the subsidies and import barriers maintained by the United States and other industrialized countries increased hunger in the developing world by depressing food prices, rendering small farmers destitute, and depriving developing countries of badly needed export earnings.87

The following section examines the impact on undernourishment and environmental degradation of the free market economic reforms adopted by developing countries in the 1980s and 1990s under the auspices of the IMF, the World Bank, and the WTO. While these economic reforms did not create the patterns of agricultural trade and production that promote hunger and environmental degradation in the developing world, the reforms nevertheless reinforced these harmful trade and production patterns.

III. The IMF, the World Bank and the WTO: Institutionalizing a Double Standard in Agricultural Trade

In the decades following World War II, the United States and other industrialized countries generously subsidized domestic agricultural production, and utilized a wide array of tariff and non-tariff import barriers to protect domestic farmers from foreign competition.88 By contrast, the majority of developing countries lacked the resources to subsidize agriculture and generally taxed farmers in order to finance industrialization.89 The 1947 General Agreement on Tariffs and Trade (1947 GATT) contained a variety of exceptions and omissions that compromised its ability to curb industrialized countries’ agricultural subsidies and import restrictions.90 Thus, free market reforms in the agricultural sector did not commence until the imposition of structural adjustment programs on developing countries by the IMF and the World Bank in response to the debt crisis of the 1980s and until the entry into force of the WTO Agreement on Agriculture in the mid-1990s.91

The debt crisis of the 1980s had its origins in the 1973 quadrupling of petroleum prices by the Organization of Petroleum Exporting Countries
In response to OPEC price increases, many non-oil-producing developing countries borrowed money from the major commercial banks in order to finance the importation of petroleum-based agricultural inputs as well as the petroleum needed for industrialization. Eager to earn interest on the oil revenues deposited in their coffers by OPEC nations, the commercial banks actively encouraged developing country borrowing. Regrettably, many of the loans were contracted at variable interest rates, and the loan proceeds were often misappropriated by developing country elites or squandered on ill-conceived industrialization projects and weapons purchases. When the second OPEC oil price increase in 1979-80 caused interest rates to skyrocket, many developing countries borrowed money simply to repay the debt on old loans. Agro-exporting countries were particularly affected by rising oil prices, soaring interest rates, and mounting debt because the 1979-80 oil price shock coincided with a sharp decline in world market prices for agricultural commodities. As foreign exchange earnings dropped, many developing countries were unable to repay their debts. By the mid-1980s, nearly three quarters of Latin American countries and two thirds of African countries were operating under structural adjustment programs overseen by the World Bank and the IMF in order to guarantee loan repayment.

The structural adjustment programs mandated by the IMF and the World Bank exacerbated the problem of agro-export specialization in the developing world by requiring developing countries to increase agricultural exports in order to boost the foreign exchange earnings available to service the foreign debt. Structural adjustment had a negative impact on food security and the environment in developing countries. First, the withdrawal of agricultural subsidies, the reduction of extension services, and the elimination of subsidized credit slashed the income of poor farmers and made agricultural inputs increasingly unaffordable. Second, the reduction or elimination of import barriers undermined the livelihoods of small farmers by subjecting them to unfair competition from highly subsidized U.S. and EU agricultural producers. Third, structural adjustment reduced food security at the national level by glutting world markets with competing developing country exports, thereby depressing the foreign exchange earnings required by developing countries for the purchase of food and other essential items not produced domestically. At the same time, the one-sided nature of structural adjustment permitted industrialized countries to continue to exclude developing country farmers from developed country markets and to use subsidies to undermine the competitiveness of developing country exports in world agricultural markets. Finally, the emphasis on agro-export production harmed the environment in developing countries by promoting the expansion of chemical-intensive, monocultural production technique.
The express objective of the WTO Agreement on Agriculture was to “establish a fair and market-oriented agricultural trading system” by requiring the reduction over time of subsidies and tariffs.\textsuperscript{110} However, the Agreement perpetuated the double standard discussed above by permitting developed countries to continue to utilize certain trade-distorting agricultural subsidies (subject to reduction over a specified period) while prohibiting developing countries that did not historically employ these subsidies from doing so in the future.\textsuperscript{111} Indeed, the Agreement was riddled with ambiguities that enabled developed countries to evade the Agreement’s subsidy and tariff reduction requirements and to maintain high levels of agricultural protectionism.\textsuperscript{112} Total subsidies for agriculture in industrialized countries increased after the Agreement on Agriculture came into effect—from $304 billion in 1986-88 to $324 billion in 2001-2003.\textsuperscript{113} In addition, tariff barriers in developed countries for imported agricultural products remained high.\textsuperscript{114} Tariffs in developed countries were particularly high on processed food products, thereby depriving developing countries of the opportunity to diversify their economies by moving into higher value-added processed agricultural commodities.\textsuperscript{115} By contrast, many developing countries had already eliminated non-tariff barriers and significantly reduced tariffs on imported agricultural products pursuant to IMF and World Bank-mandated structural adjustment policies.\textsuperscript{116} In effect, the WTO Agreement on Agriculture institutionalized the pre-existing double standard in world agricultural trade: protectionism in developed countries; trade liberalization in developing countries.\textsuperscript{117}

As a consequence of this double standard, the United States and the European Union are currently wreaking havoc on the livelihoods of poor farmers in the developing world by dumping agricultural products on world markets at below the price of production.\textsuperscript{118} For example, the United States is exporting wheat at prices 28 percent below the cost of production; soybeans at prices 10 percent below the cost of production; corn at prices 10 percent below the cost of production; cotton at prices 47 percent below the cost of production; and rice at prices 26 percent below the cost of production.\textsuperscript{119} Industrialized country subsidies and protectionism cost developing countries approximately $24 billion per year in foregone agricultural and agro-industrial income.\textsuperscript{120} Notwithstanding its historic advocacy of agriculture-led development strategies, even the World Bank has acknowledged in a recent publication that “a development strategy based on agricultural commodity exports is likely to be impoverishing in the current agricultural policy environment . . . .”\textsuperscript{121}

\textbf{IV. Will Eliminating the Double Standard Solve the Problem?}

Many proponents of agricultural trade liberalization would agree with much of the above analysis, but would argue that the solution is to “level the playing field” by requiring the United States, the European Union, and other industrialized countries to curtail and eventually eliminate agricultural subsidies and to reduce tariffs on imported agricultural products.\textsuperscript{122} In other words, the claim is that free market reforms, if implemented in an even-handed manner in both developed and developing countries, would address the market distortions and inequities identified in Part III.\textsuperscript{123}

Reducing industrialized country agricultural subsidies and import barriers would benefit developing country farmers in the short run, but would ultimately reinforce the patterns of trade and production that contribute to hunger and environmental degradation in the developing world. The short-term benefits of agricultural trade liberalization include higher prices and higher revenues for farmers, enhanced incentives for domestic food production, increased export earnings, and diversification into food processing (if industrialized country tariffs that escalate according to the degree of processing are eliminated).\textsuperscript{124} However, formal equality among vastly unequal trading partners is likely to sharpen rather than reduce existing inequities.\textsuperscript{125} Trade liberalization, even if applied in an even-handed manner to both developed and developing countries, is likely to perpetuate hunger and environmental degradation in developing countries in the long run for three reasons.
First, the trade-liberalization requirements imposed under the auspices of the WTO Agreement on Agriculture and pursuant to IMF and World Bank-sponsored structural adjustment programs are designed to address market distortions caused by government intervention, but fail to address the market distortions caused by the domination of agricultural trade by a small number of transnational corporations. For example, five agrochemical companies control over 65 percent of the global pesticide market. Five grain-trading corporations control over 75 percent of the world’s cereals trade. Similar market concentrations exist for other commodities. The market power of these corporations allows them to extract monopolistic prices for key agricultural inputs and to dictate prices for agricultural outputs – to the detriment of small farmers who are essentially price-takers caught in the vise of two groups of powerful transnational enterprises. Even if industrialized-country agricultural subsidies and import barriers are lifted, developing country farmers cannot compete effectively with transnational agribusiness. Structural adjustment and the WTO Agreement on Agriculture constrain the ability of developing countries to use subsidies to nurture domestic agro-export or food processing industries or to use import barriers to protect domestic farmers from foreign competition. By ignoring the distortions caused by market concentration in the agricultural sector and by depriving developing countries of important tools to mitigate this problem, agricultural trade liberalization reinforces the economic dominance of transnational agribusiness at the expense of the poor in the developing world.

Second, developing countries will be required to make significant economic concessions in order to persuade industrialized countries to reduce agricultural subsidies and import barriers. Many of these concessions, such as further reductions in industrial tariffs and greater market access for manufactured goods, threaten to erode the already limited ability of developing countries to intervene in the economy in order to promote those industries most likely to contribute to economic development. Contrary to the free market prescriptions of the IMF, the World Bank, and the WTO, nearly all industrialized countries (including the United States, Germany, France, Japan, and the United Kingdom) achieved their economic might through the use of a broad array of state interventionist measures, such as subsidies, tariffs, state financing of important industries, and even state-sponsored acquisition of intellectual property through industrial espionage. Most recently, the Newly Industrializing Countries of South Korea and Taiwan successfully industrialized their economies through the use of tariffs, subsidies, technology transfer requirements, and regulation of foreign investment. Under the guise of “leveling the playing field,” the free market reforms advocated by international trade and financial institutions (even if applied prospectively in an even-handed manner to both developed and developing countries) will reinforce the economic subordination of the developing world by depriving developing countries of the protectionist tools used by developed countries to diversify and industrialize their economies. These tools include the deliberate promotion of those industries most likely to enhance long-term national economic welfare based on contemporary market conditions (as opposed to historically imposed patterns of raw material production) and based on each country’s unique endowment of natural and human resources. Thus, the economic concessions that developing countries must make in order to secure agricultural trade liberalization are likely to perpetuate the patterns of agro-export specialization rooted in the colonial past that contribute to poverty and hunger.

Third, the reduction or elimination of agricultural subsidies and tariff barriers is anticipated to make farming less remunerative in the United States and the European Union and to produce a shift of large-scale agro-export production to lower cost producers in the developing world. The expanded cultivation of export monocultures in developing countries would likely produce serious ecosystem harm by eroding crop diversity, accelerating deforestation, and encouraging the over-utilization of pesticides, fertilizers, and irrigation water. Increased agro-export production in developing countries is also likely to benefit large-scale, highly capitalized
commercial growers at the expense of small farmers, thereby increasing poverty and hunger. Because market prices for agricultural commodities do not reflect these “externalities,” it would be a mistake to regard the shift of agro-export specialization to the developing world as “efficient.” Indeed, such an approach would disregard the ways in which agro-export specialization impoverishes developing countries, destroys the livelihoods of small farmers, and degrades the natural resource base necessary for food production.

Neoclassical trade theory is largely based on David Ricardo’s theory of comparative advantage, which advocates specialization by each country in those commodities best suited to it by virtue of natural or historical circumstances and trade among countries for the commodities not produced domestically. Thus, from a neoclassical trade theory perspective, countries with abundant natural resources and little capital should capitalize on their “comparative advantage” by specializing in the production of primary agricultural commodities and purchasing manufactured goods from industrialized countries.

Unfortunately, the agro-export specialization promoted by neoclassical trade theory is fundamentally at odds with the economic diversification required for food security and with the biological diversity necessary for ecosystem health. Neoclassical trade theory neglects to recognize that extending the principle of specialization from the factory to the field jeopardizes long-term agricultural production by degrading the soil, depleting freshwater resources, increasing the vulnerability of the food supply to pests and disease, and encroaching upon forests and wetlands that provide valuable ecosystem services. Similarly, rigid adherence by the IMF and the World Bank to neoclassical notions of “comparative advantage” in agro-export production have condemned many developing countries to poverty and hunger by precluding the implementation of forward-looking development strategies designed to achieve economic diversification and industrialization. Thus, even if the playing field were “leveled” by removing agricultural subsidies and import barriers in developed countries, the economic specialization promoted by neoclassical trade theory would nevertheless produce poverty, hunger, and environmental degradation in the developing world.

V. Alternative Approaches to Promote Environmental Justice

Reform of international trade policy must begin by re-conceptualizing trade as a means to important social ends (such as food security and ecological sustainability) rather than an end in itself. The right to food is enshrined as a basic human right in the Universal Declaration of Human Rights and in the Covenant on Economic, Social and Cultural Rights. Likewise, the Convention on Biological Diversity recognizes the intrinsic value of biodiversity, its important role in providing for the food, health and other needs of human beings, and the paramount obligation of each state to protect the practices, knowledge and innovation of indigenous and local communities relevant for the conservation and sustainable use of biodiversity. International trade law must be harmonized with the right to food and with the related goal of protecting biodiversity. For the reasons explained in the preceding section, international trade law cannot be reconciled with food security or ecological sustainability as long as its single-minded objective is the elimination of government intervention in order to maximize agro-export specialization.

Second, the promotion of food security in developing countries requires economic diversification and industrialization. Eliminating the double standards that systematically benefit transnational agribusiness at the expense of small farmers in the developing world is an important first step in a larger reform agenda, but it will not achieve food security in developing countries in the absence of measures to facilitate economic diversification and industrialization. Rather than restricting the ability of developing countries to engage in strategic intervention in order to foster long-term economic development, the rules governing international trade should be changed to permit developing countries to utilize the very protectionist instruments historically used by developed countries to achieve their economic might. Developing countries must secure
the flexibility to utilize a wide array of protectionist instruments to nurture infant domestic industries, promote food security, protect the environment, preserve the livelihoods and ways of life of small farmers and indigenous communities, and forge dynamic links between foreign investment and the local economy.

Third, the rules governing international trade should address the distortions in global agricultural markets caused by transnational corporations. International agricultural trade is conducted by a handful of large corporations – not by farmers or countries. In order to ensure that international trade benefits farmers, consumers and developing countries, international trade rules should be modified to target the concentrations of corporate power that can lead to monopolistic abuse.

One way to implement the proposals outlined above is for developing countries to work collectively in the current round of WTO negotiations to modify the rules governing international trade. Indeed, developing countries walked out of the WTO negotiations in Cancun, Mexico, in September 2003, to protest the intransigence of the United States and the EU on the question of agricultural subsidies. The negotiations did not resume until the United States and the EU made concessions on this point. Developing countries have also pressed for an exception to the WTO rules that would permit developing countries to use protectionist measures designed to promote food security and rural development. Notwithstanding the small victory in Cancun, it is immensely difficult to hold together a coalition of highly heterogeneous developing countries with conflicting interests and priorities in the face of intense pressure from the United States and the EU for further economic concessions.

A second approach is for developing countries in the Western Hemisphere to band together into a regional trade pact as a counterweight to the economic power of the United States and the European Union. Some commentators have pointed to the key role of Brazil in the collapse of the WTO negotiations in Cancun, Mexico, and in the ongoing negotiation of the Free Trade Area of the Americas (FTAA), and have suggested that Brazilian president Inacio Lula da Silva is actively promoting a vision of regional integration in Latin America as an alternative to the FTAA. Regrettably, the Lula administration has been mired in a corruption scandal, and the prospects of bold initiatives on the part of the Brazilian president have therefore dimmed.

A third approach is for individual developing countries to defy free market orthodoxy. Cuba, for example, achieved an unprecedented degree of food security in the last fifteen years by rejecting agro-export specialization as a development strategy, promoting economic diversification, prioritizing food production for the domestic market, and endorsing and supporting organic and semi-organic farming techniques. However, Cuba’s unique national experiment with sustainable agriculture was a response to the economic crisis occasioned by the collapse of the socialist trading bloc and the tightening of the U.S. economic embargo, and was facilitated by Cuba’s economic isolation, including its exclusion from major trade and financial institutions (such as the IMF, the World Bank, and regional trade agreements). It is uncertain whether this experiment will survive once the U.S. embargo is lifted and Cuba is reintegrated into the world trading system. Most recently, Argentina’s extraordinary recovery from its December 2001 economic collapse was attributed, at least in part, to the decision by the Peronist-led
government to disregard some of the policy prescriptions of the IMF.\textsuperscript{156}

Finally, even if developing countries are able to obtain some measure of policy flexibility to protect the environment, promote food security, and diversify and industrialize their economies, there is no guarantee that national elites in developing countries will in fact adopt measures that serve the common good rather than their own narrow self-interest. It is therefore important to vindicate the right to food and the emerging right to a healthy environment in both domestic and international tribunals\textsuperscript{157} – and in the popular discourse. Human rights law and human rights discourse can serve as valuable tools to empower civil society to demand reforms at the national and international level to protect the basic right of all human beings to sufficient, safe, and nutritious food and to preserve the health of the ecosystem upon which human survival depends.

\textbf{Conclusion}

Using agricultural trade as an example, this paper has conducted an environmental justice analysis of the impact in developing countries of the neoliberal policy prescriptions of the IMF, the World Bank, and the WTO. The paper has examined the complex ways in which the rules governing international trade in agricultural products and the structural adjustment programs of the IMF and the World Bank have reinforced pre-existing patterns of trade and production that have had a significant adverse impact on the lives and livelihoods of farmers in the developing world and on local ecosystems. These rules and programs have also frustrated the right to food and the international obligation to preserve biodiversity.

These insights, however, are not confined to the agricultural sector. Rather, the environmental justice principles and the analytical methodology deployed in the paper can be utilized to assess the ecological and socioeconomic impact of trade agreements affecting other economic sectors as well as international lending and development assistance. Indeed, the systematic assessment through the lens of environmental justice of trade agreements, development assistance programs, and the economic policies imposed by multilateral financial institutions could facilitate the early identification of negative ecological and socioeconomic consequences as well as inconsistencies with international legal instruments designed to protect human rights and the environment. Such assessments could also serve as a valuable tool to promote transparency and public participation.

\textbf{Notes}


5. See Audley et al., \textit{supra} note 4, at 76-77. Indeed, the Mexican agricultural sector has been characterized by a growing economic divide between large-scale, vertically integrated export-oriented farms (the beneficiaries of NAFTA) and small-scale subsistence
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12. See NADAL, supra note 4, at 90; Audley et al., supra note 4, at 71-72. Another important threat to Mexico's enormously diverse varieties of corn is the possibility that genetically modified corn crops might cross-pollinate with indigenous varieties. Despite Mexico's 1998 ban on the import of genetically modified corn seeds, genetically modified corn has been found in Mexican fields, sparking scientific concern and public debate about genetic contamination. Id. at 71.

13. See, e.g., Genevieve Michon et al., The Damar Agroforests of Kru, Indonesia: Justice for Forest Farmers, in PEOPLE, PLANTS & JUSTICE: THE POLITICS OF NATURE CONSERVATION 159-203 (Charles Zerner, ed. 2000) (describing the resistance of Indonesian farmers to the conversion of their forests to specialized oil palm or acacia plantations); Aidan Rankin, “The Land of our Ancestor’s Bones”: Wichi People’s Struggle in the Argentine Chaco, in GREEN GUERRILLAS: ENVIRONMENTAL CONFLICTS AND INITIATIVES IN LATIN AMERICA AND THE CARIBBEAN 40-46 (Helen Collinson, ed., 1997) (describing the struggle of the Wichi Indians of northern Argentina to claim the land cultivated by their ancestors for thousands of years); Lucy Jarosz, Defining Deforestation in Madagascar, in LIBERATION ECOCOLOGIES: ENVIRONMENT, DEVELOPMENT AND...
SOCIAL MOVEMENTS 148-164 (Richard Peets and Michael Watts, eds. 1996) (explaining how peasants in Madagascar resisted government efforts to deprive them of their livelihoods by blaming shifting cultivators for the country’s massive deforestation while failing to address the devastating impact on Madagascar’s forests of coffee cash-cropping); MADHAV GADGIL AND RAMACHANDRA GUHA, ECOLOGY AND EQUITY: THE USE AND ABUSE OF NATURE IN CONTEMPORARY INDIA (1995) (describing social conflicts in India over access to and control of natural resources); RAMACHANDRA GUHA, ENVIRONMENTALISM: A GLOBAL HISTORY 99-100, 117 (2000) (describing the efforts of Malaysian hunters and farmers to halt commercial logging of their forests and analyzing the struggles of the Brazilian rubber tappers to preserve the Amazon rain forest).

14. See GUHA, supra note 13, at 99-100.

15. See id. at 117.


19. See GUHA, supra note 13, at 105-106 (describing the key features of the environmentalism of the poor in the developing world); LUKE W. COLE & SHEILA R. FOSTER, FROM THE GROUND UP: ENVIRONMENTAL RACISM AND THE RISE OF THE ENVIRONMENTAL JUSTICE MOVEMENT 17-18; 32-33 (describing the characteristics and goals of environmental justice activists in the United States).


22. See Hornborg, supra note 21, at 128. A relatively small portion of the environmental justice literature in the United States has focused on access to environmental necessities, such as food and water, or access to environmental amenities, such as open space in urban areas. See, e.g., Catherine O’Neill, “Variable Justice: Environmental Standards, Contaminated Fish, and “Acceptable” Risk to Native Peoples, 19 STAN. ENVTL. L.J. 3 (2000); Samara Swanston, Environmental Justice and Environmental Quality Benefits: The Oldest, Most Pernicious Struggle and Hope for Burdened Communities, 23 VT. L. REV. 545 (1999).


28. The United Nations’ Millennium Ecosystem Assessment is an effort by over 1300 ecologists and other researchers from 95 countries to assess the capacity of the world’s ecosystems to perform vital functions like water filtration, flood control, soil formation, crop pollination and food provision. Millennium Ecosystem Assessment Synthesis Report 9-12 (2005), available at www.milleniumassessment.org. The report concluded that over 60 percent of these functions have been impaired by human activity and that the most rapid deterioration is taking place in the world’s poorest regions. Id. at 16-17, 90-99.


30. See Thomas J. Schoenbaum, Agricultural Trade Wars: A Threat to the GATT and Global Free Trade, in GATT AND TRADE
LIBERALIZATION IN AGRICULTURE 88-89 (Masayoshi Homma et al. eds., 1993).


32. See Schoenbaum, supra note 30, at 88-89.


35. See WORLD BANK, POVERTY AND HUNGER: ISSUES AND OPTIONS FOR FOOD SECURITY IN DEVELOPING COUNTRIES 1 (1986). Accord, LAPPE, supra note 34 at 9, 16-17.

36. See LAPPE, supra note 34, at 40.

37. See supra note 34.


43. See MADELEY, FOOD FOR ALL, supra note 34, at 26-30.


47. WORLD BANK, POVERTY AND HUNGER, supra note 36, at 1.


49. See WORLD BANK, POVERTY AND HUNGER, supra note 36, at 1; LAPPE, supra note 34, at 8.

50. See LAPPE, supra note 34, at 9.

51. See, GEORGE KENT, FREEDOM FROM WANT: THE RIGHT TO ADEQUATE FOOD 11-12 (2005); WORLD BANK, POVERTY AND HUNGER, supra note 36, at 1; MADELEY, FOOD FOR ALL, supra note 34, at 32-34; CONWAY, supra note 48, at 4-5.

52. FAO, State of Food Insecurity 2004, supra note 40, at 25; FAO, State of Food Insecurity 2003, supra note 42, at 4. Furthermore, the undernourished urban dwellers in the developing world are frequently migrants from rural areas who have not yet succeeded in finding a means of earning a living in cities ill-equipped to handle the influx of newcomers. See MARCEL MAZOYER, PROTECTING SMALL FARMERS AND THE RURAL POOR IN THE CONTEXT OF GLOBALIZATION ch. 2.2 (2001), available at http://www.fao.org/documents/show_cdr.asp?url_file=/DOCREP/007/Y1743E/Y1743E00.HTM.


55. See, e.g., JAMES WESSEL, TRADING THE FUTURE: FARM EXPORTS AND THE CONCENTRATION OF ECONOMIC POWER IN OUR FOOD SYSTEM 168 (1983) (discussing how food aid to developing countries undercuts the...
prices received by poor farmers in low-income countries and exacerbates poverty); *Harvesting Poverty: The Unkept Promise,* N.Y. TIMES, Dec. 30, 2003 (explaining that the dumping of cheap, subsidized food on world markets by the United States has undermined the livelihoods of poor farmers in the developing world).


59. See PETER ROBBINS, STOLEN FRUIT: THE TROPICAL COMMODITIES DISASTER 2-3; 7-15 (2003); JAMES M. CYPFER & JAMES L. DIETZ, THE DETERIORATION OF ECONOMIC DEVELOPMENT 86 (1997); FAO, STATE OF FOOD INSECURITY 2004, supra note 40, at 12-13; YOUNG, supra note 48, at 41-42. The deterioration in the terms of trade for agricultural commodities vis-à-vis manufactured goods was first identified approximately 50 years ago by economists Raul Prebisch and Hans Singer, and has been confirmed by subsequent empirical data. See FAO, STATE OF FOOD INSECURITY 2004, supra, at 12-13; CYPHER & DIETZ at 87 (Box 3.5), 177-180. As a result of this phenomenon, countries that rely on agricultural exports to generate foreign exchange earnings have experienced severe economic losses and mounting debt. See FAO, STATE OF FOOD INSECURITY 2004, at 12, 20-21.

60. See FAO, STATE OF FOOD INSECURITY 2003, supra note 42, at 17.

61. See THRUPP, LINKING BIODIVERSITY AND AGRICULTURE, supra note 44, at 5-20.

62. See id. at 26-32; FOWLER & MOONEY, supra note 23, at 82-83.


64. See YOUNG, supra note 48, at 41-42.

65. See ERIC R. WOLF, EUROPE AND THE PEOPLES WITHOUT HISTORY 140-141, 310-315 (1997); MADELEY, FOOD FOR ALL, supra note 34, at 13; FOWLER & MOONEY, supra note 23, at 40-41; VANDANA SHIVA, MONOCULTURES OF THE MIND: PERSPECTIVES OF BIODIVERSITY AND BIOTECHNOLOGY 78-79 (1993). As John Stuart Mill candidly observed, “Our West Indian colonies, for example, cannot be regarded as countries . . . The West Indies . . . are the places where England finds it convenient to carry on the production of sugar, coffee, and a few other tropical commodities.” John Stuart Mill,

Principles of Political Economy, with Some of their Applications to Social Philosophy, in 2 COLLECTED WORKS OF JOHN STUART MILL 693 (J.M. Robson, ed. 1965).


67. See YOUNG, supra note 48, at 41.

68. See WESSEL, supra note 55, at 166-167.

69. See SHIVA, supra note 65, at 78 (discussing how colonization resulted in the displacement of biodiversity in the colonized regions of the world with monocultures of raw materials for the benefit of European industry); FOWLER & MOONEY, supra note 23, at 180-181 (describing the plunder by the colonial powers of natural resources from one colony in order to establish plantations in another and explaining how the vulnerability of genetically uniform crops required the use of costly and ecological harmful agrochemicals).

70. See ROBBINS, supra note 59, at 2-3; 7-15; CYPHER & DIETZ, supra note 59, at 86; FAO, STATE OF FOOD INSECURITY 2004, supra note 40, at 12-13; YOUNG, supra note 48, at 41-42.

71. See FOWLER & MOONEY, supra note 23, at 95-96; YOUNG, supra note 48, at 66.

72. See FOWLER & MOONEY, supra note 23, at 56-60 (describing the Green Revolution’s promotion of uniform high-yielding seeds in order to increase food production).

73. See id. at 63-81 (examining the world-wide loss of crop diversity in the aftermath of the Green Revolution).

74. See id. at 75-76, 130-131; THRUPP, LINKING BIODIVERSITY AND AGRICULTURE, supra note 44, at 35.

75. See CONWAY, supra note 48, at 86-104; FOWLER & MOONEY, supra note 23, at 76; THRUPP, LINKING BIODIVERSITY AND AGRICULTURE, supra note 44, at 32-33.

76. See CONWAY, supra note 48, at 44-45; KEITH GRIFFIN, ALTERNATIVE STRATEGIES FOR ECONOMIC DEVELOPMENT 148 (1990).


79. See MAZOYER, supra note 52, at 14; LAPPE ET AL., supra note 34, at 62.


85. See WESSEL, supra note 55, at 152-155; 168


87. An analysis of the ecological and socioeconomic consequences of agricultural trade policy would be incomplete without some discussion of the rapidly expanding commercial cultivation of genetically modified crops. Because a full assessment of the unique risks and benefits of biotechnology is beyond the scope of this paper, biotechnology will be discussed only to the extent that it raises environmental and food security issues directly relevant to issues raised by conventional agricultural trade and production. For example, the cultivation of a small number of genetically modified crops threatens to reproduce and accelerate the monocultural production techniques introduced by colonialism and favored by the Green Revolution, thereby reducing the genetic base of the world’s food supply and increasing dependence on inputs (including seeds, fertilizers and pesticides) produced by transnational agribusiness. See generally, LIZ ORTON, GM CROPS – GOING AGAINST THE GRAIN (May 2003), Available at http://www.actionaid.org.uk/792/gm_crops.html (discussing the ecological and socioeconomic implications of biotechnology in the developing world). Biotechnology also introduces new environmental risks, such as gene transfer from genetically modified crops to wild relatives and the acceleration of resistance to pesticides and herbicides (as a consequence of the cultivation of crops genetically modified to produce herbicide tolerance and insect resistance). See generally Jules Pretty, The Rapid Emergence of Genetic Modification in World Agriculture: Contested Risks and Benefits, 28(3) ENVTL. CONSERVATION 248 (2001).


89. See THE GATT URUGUAY ROUND, supra note 88, at 154-157; Aksoy, supra note 88, at 37.

90. See Gonzalez, Institutionalizing Inequality, supra note 86, at 440-446 (explaining why the measures adopted by industrialized countries to protect the agricultural sector were largely permitted under the 1947 GATT); Jonathan Carlson, Hunger, Agricultural Trade Liberalization, and Soft International Law: Addressing the Legal Dimensions of a Political Problem, 70 Iowa L. Rev. 1187, 1222-1257 (1985)(analyzing the 1947 GATT’s failure to curb agricultural protectionism).

91. See Carmen G. Gonzalez, Trade Liberalization, Food Security and the Environment: the Neoliberal Threat to Sustainable Rural Development, 14 J Transnat’l L. and Contemp. Problems 419, 457-460 (2004) (explaining that free market reforms in the agricultural sector were imposed on the developing world initially pursuant structural adjustment programs and subsequently pursuant to the WTO Agreement on Agriculture).


94. See PEET ET AL., supra note 92, at 71-72.; GEORGE, supra note 93, at 29. Because low-income developing countries were generally regarded as more risky, they tended to borrow from multilateral lenders (such as the World Bank and the IMF) rather than from commercial banks. DAVID M. ROODMAN, STILL WAITING FOR THE JUBILEE: PRAGMATIC SOLUTIONS FOR THE THIRD WORLD DEBT CRISIS 155 WORLD WATCH PAPER 8 (2001).


96. See GEORGE, supra note 93, at 14-24. 27-28; ROODMAN, supra note 94, at 8.

97. See GEORGE, supra note 93, at 28; PEET ET AL., supra note 92, at 72.

98. See PEET ET AL., supra note 92, at 72, 74-75.

99. See id. at 75.

100. See GEORGE, supra note 93, at 59-60; MADELEY, FOOD FOR ALL, supra note 34, at 117.

101. See MICHEL CHOSSUDOVSKY, THE GLOBALISATION OF POVERTY: IMPACTS OF IMF AND WORLD BANK REFORMS 62-63 (1997); GEORGE, supra note 93, at 52


104. See Gonzalez, Trade Liberalization, Food Security and the Environment, supra note 91, at 458.

105. See MADELEY, HUNGRY FOR TRADE: HOW THE POOR PAY FOR FREE TRADE 77 (2000); STRUCTURAL ADJUSTMENT PARTICIPATORY REVIEW INT'L NETWORK (SAPRIN), THE POLICY ROOTS OF ECONOMIC CRISIS AND POVERTY: A MULTI-COUNTRY PARTICIPATORY ASSESSMENT OF STRUCTURAL ADJUSTMENT 116-118 (2002), available at http://www.saprin.org/SAPRI_Findings.pdf. The SAPRIN study was a multi-country analysis of structural adjustment sponsored by the World Bank and by a network of civil society groups. Based on a on a four-year process of consultation and research in nine countries located in four continents, the study analyzed the economic and social consequences of structural adjustment in seven distinct areas: manufacturing, finance, employment, agriculture, mining, state enterprise privatization, and education and health care. Id. at i-ii. One of the chief criticisms voiced in the chapter on agricultural trade was the failure of policy-makers (the IMF; the World Bank, and the relevant national ministries) to consult with the communities most directly affected by the structural adjustment policies. Id. at 113.

106. See MADELEY, FOOD FOR ALL, supra note 34, at 119-120 (explaining that the ability of developing countries to utilize exemptions in the WTO Agreement on Agriculture to protect small farmers from highly subsidized U.S. and EU agribusiness was constrained by IMF-imposed structural adjustment policies and discussing the devastating impact on small farmers of the influx into the developing world of cheap imported food); MICHAEL E. CONROY ET AL., A CAUTIONARY TALE: FAILED U.S. DEVELOPMENT POLICY IN CENTRAL AMERICA 14 (1996); MADELEY, HUNGRY FOR TRADE, supra note 105, at 76-77.

107. See ROBBINS, supra note 59, at 29-30; MADELEY, FOOD FOR ALL, supra note 34, at 154-155; GEORGE at 60-61; COOTE, supra note 95, at 34-35.

108. See THE GATT URUGUAY ROUND, supra note 88, at 155-156. Indeed a study published in 1990 concluded that developing countries incurred losses of approximately $35 billion per year as a consequence of industrialized country protectionism. See World Trade Talks Near Collapse over Farm Subsidies Row, FIN. TIMES, Oct. 19, 1990, at 1.

109. SAPRIN, supra note 105, at 124-126. In response to the glut of certain traditional agricultural export products on world markets, many developing countries diversified their agricultural exports and began to cultivate non-traditional agricultural commodities, such as fruits, vegetables, oils, and nuts. While this strategy may have eased the decline in export earnings, the farms themselves were planted in monocultures and thus required high levels of ecologically harmful agrochemical inputs. See CONROY ET AL., supra note 106, at 13-14, 18-19,138-139; Reed, supra note 103, at 17; LORI ANN THURUPP, BITTERSWEET HARVESTS FOR GLOBAL SUPERMARKETS: CHALLENGES IN LATIN AMERICA'S AGRICULTURAL EXPORT BOOM 17-18, 94-95 (1995).

110. Agreement on Agriculture, April 15, 1994, Preamble para. 2, at http://www.wto.org [hereinafter Agreement on Agriculture]; see Gonzalez, Institutionalizing Inequality, supra note 86, at 452-458 (discussing the main provisions of the Agreement on Agriculture).

111. See Gonzalez, Institutionalizing Inequality, supra note 86, at 463-468.

112. See id. at 459-468 (explaining why the Agreement on Agriculture enabled industrialized countries to maintain high levels of protectionism).


114. See Gonzalez, Institutionalizing Inequality, supra note 86, at 460-463 (discussing why the market access requirements of the Agreement on Agriculture produced little change in tariff barriers in industrialized countries).

115. See id. at 461-462; Aksoy, supra note 88, at 52.

117. See Gonzalez, Trade Liberalization, Food Security and the Environment, supra note 91, at 471.

118. See SOPHIA MURPHY ET AL., INST. FOR AGRIC. AND TRADE POLICY, WTO AGREEMENT ON AGRICULTURE: A DECADE OF DUMPING 1 (2005), available at http://www.aftopolicy.org/output/resource/IPRL.pdf. In addition to the harm caused by the double standard in the rules governing international agricultural trade, two other WTO agreements threaten to advance the interests of U.S. agribusiness at the expense of small farmers and the environment in the developing world. The WTO Agreement on the Application of Sanitary and Phytosanitary Measures forbids government restrictions on the importation of genetically modified seeds in the absence of “sufficient scientific evidence.” See Agreement on the Application of Sanitary and Phytosanitary Measures (SPS Agreement), art. 2.2, April 15, 1994, available at http://www.wto.org. The SPS Agreement is arguably in conflict with the Cartagena Protocol on Biosafety, which recognizes the precautionary principle and allows such restrictions even in the absence of strict scientific proof of harm. Cartagena Protocol on Biosafety to the Convention on Biological Diversity, art. 10.6, Jan. 29, 2000, available at http://www.biodyv.org/doc/legal/cartagena-protocol-en.pdf. In May 2003, the United States, Canada and Argentina initiated challenges before the WTO to the EU’s de facto moratorium on the importation of genetically modified organisms. See John W. Boscariol & Orlando E. Silva, Genetically Modified Organisms at the Centre of Major WTO Disputes, LAW. W. KLY., Mar. 26, 2004. In September 2006, the WTO dispute settlement panel issued its long-awaited final decision. The panel concluded that the EU had applied a de facto moratorium on the approval of biotech products between June 1999 and August 2003, and that this moratorium resulted in “undue delay” in the EU’s GMO pre-marketing approval procedures in violation of the WTO SPS Agreement. The panel’s ruling was based on narrow procedural grounds and did not address the relationship between SPS Agreement and the Cartagena Biosafety Protocol. See Panel Report, European Communities — Measures Affecting the Approval and Marketing of Biotech Products, WT/DS/291, WT/DS/292 and WT/DS/293 (Sept. 29, 2006). Another WTO agreement, the WTO Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS), requires developing countries to give genetically modified seeds patent-like intellectual property protection, thus protecting the profits of transnational corporations at the expense of the traditional rights of farmers to save, sell, and breed seeds. See Agreement on Trade-Related Aspects of Intellectual Property Rights, art. 27.3(b), Apr. 14, 1994, available at http://www.wto.org. See generally, Ruchi Tripathi, Food Patenting — A Threat to Food Security 3-4 (July 2001), available at http://www.actionaid.org/resources/pdfs/patenting.doc (explaining why many developing countries have resisted U.S. pressure to provide strong intellectual property protection to the products of the seed industry).

121. See A. Ataman Aksoy & John C. Beghin, Introduction and Overview, in GLOBAL AGRICULTURAL TRADE AND DEVELOPING COUNTRIES, supra note 33, at 3.

122. Indeed, the New York Times published a series of editorials in 2003 and 2004 decrying the damaging impact in the developing world of industrialized country agricultural protectionism. The editorials advocated free market reforms in the United States and other developed nations in order to establish “a fairer playing field.” The editorials are available at http://www.nytimes.com/harvestingpoverty. See also van der Mensbrugge & Beghin, supra note 33, at 118-136 (quantifying the benefits of agricultural trade liberalization in both developed and developing countries).

123. See, e.g., Carlson, supra note 90, at 1209-1220.

124. See Gonzalez, Trade Liberalization, Food Security and the Environment, supra note 91, at 488.

125. See id. at 489-490.

126. See Halweil, supra note 44, at 68 (Table 3-2).

127. See id.

128. See id.


133. See HA-JOON CHANG, supra note 132, at 258-259, 276-277; HA-JOON CHANG, KICKING AWAY THE LADDER: DEVELOPMENT STRATEGY IN HISTORICAL PERSPECTIVE 19-51; 59-66 (2002); Ha-Joon Chang, The Market, the State and Institutions in Economic Development, in RETHINKING DEVELOPMENT ECONOMICS, supra note 56, at 43.


135. See HA-JOON CHANG & ILENE GRABEL, RECLAIMING DEVELOPMENT: AN ALTERNATIVE ECONOMIC POLICY MANUAL 70-80 (2004) (explaining the important role of the state in shaping industrial development and critiquing the view that industrial development should be left to the dictates of the market).

136. See Howard Stein, Rethinking African Development, in RETHINKING DEVELOPMENT ECONOMICS, supra note 56, at 156.

137. See Van der Mensbrugghe &. Beighn, supra note 33, at 130.

138. See Kym Anderson, Effects on the Environment and Welfare of Liberalizing World Trade: the Cases of Coal and Food, in THE GREENING OF WORLD TRADE ISSUES 152-154 (Kym Anderson & Richard Blackhurst, eds., 1992). For example, during the last decade, the explosive growth of agro-export production in Brazil has coincided with accelerated deforestation (as forests are converted to farm land and pasture land) and with increased use of agrochemicals. See Larry Rohter, South America Seeks to Fill the World's Table, N.Y. TIMES, Dec. 12, 2004, at A1, A22.

139. See COOTE, supra note 95, at 194-195; MURPHY, MANAGING THE INVISIBLE HAND, supra note 129, at 8; MADELEY, HUNGRY FOR TRADE, supra note 105, at 76-77; THRUPP, BITTERSWEET HARVESTS FOR GLOBALAL SUPERMARKETS, supra note 109, at 67-71.

140. See PAUL SAMUELSON, ECONOMICS 630 (11th ed. 1980).


142. See id. at 289-290.

143. See Stein, supra note 165, at 156.


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