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THE ENVIRONMENTAL JUSTICE IMPLICATIONS OF BIOFUELS

*Carmen G. Gonzalez**

ABSTRACT

Analyses of the viability of biofuels as alternatives to fossil fuels have often adopted a technocratic approach that focuses on environmental consequences, but places less emphasis on the impact that biofuels may have on vulnerable populations. This Article fills the gap in the existing literature by evaluating biofuels through the lens of environmental justice – including climate justice and food justice. The Article examines the impact of biofuels on the global food system and on the planet’s most food-insecure populations. It concludes that the laws and policies promoting the cultivation of biofuels have contributed to global malnourishment by raising food prices and accelerating the large-scale acquisition of arable lands in poor countries that deprive local communities of the land and water necessary to grow food (a phenomenon known as land-grabbing). Ironically, the life cycle greenhouse gas emissions of many biofuels exceed those of the fossil fuels they replace. Instead of mitigating climate change, the promotion of biofuels threatens to intensify an industrial model of agricultural production that degrades local ecosystems, exacerbates climate change, and intensifies food insecurity. The Article concludes by discussing governance strategies to foster a more equitable and sustainable approach to bioenergy that respects, protects, and fulfills the human right to food.

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INTRODUCTION

Replacing fossil fuels with biofuels produced from renewable organic matter promises to mitigate climate change, diminish dependence on foreign energy sources, and promote economic development in the countries that produce the crops used as biofuel feedstocks.¹ While a growing body of legal scholarship questions these projections and proposes strategies to regulate the environmental and social impacts of bioenergy,² the debates over biofuels rarely address the environmental justice implications of this

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¹ See JAMES SMITH, *BIOFUELS AND THE GLOBALIZATION OF RISK* 93 (2010); Brian Tokar, *Biofuels and the Global Food Crisis*, in *AGRICULTURE AND FOOD IN CRISIS: CONFLICT, RESISTANCE, AND RENEWAL* (Fred Magdoff & Brian Tokar eds., 2010).

² See, e.g., Adam Christensen & Connie Lausten, *Fundamental Inconsistencies Between Federal Biofuels Policy and Their Implications*, 44 *ENVTL. L. REP. NEWS & ANALYSIS* 10395 (2014); Daniel A. Farber, *Indirect Land Use Change, Uncertainty, and Biofuels Policy*, 2011 *U. ILL. L. REV.* 381 (2011); David Zilberman et al., *On the Inclusion of Indirect Land Use in Biofuel Regulations*, 2011 *U. ILL. L. REV.* 413 (2011); Madhu Khanna et al., *Land Use and Greenhouse Gas Mitigation Effects of Biofuel Policies*, 2011 *U. ILL. L. REV.* 549 (2011); Danielle Spiegel Feld, *Ensuring that Imported Biofuels Abide by Domestic Environmental Standards: Will the Agreement on Technical Barriers to Trade Tolerate Asymmetrical Compliance Regimes?*, 29 *PACE ENVTL. L. REV.* 79 (2011); Jody M. Endres, *Clearing the Air: The Meta-Standard Approach to Ensuring Biofuels Environmental and Social Sustainability*, 27 *VA. ENVTL. L.J.* 73 (2010); Richard L. Ottinger & Steven E. Miller, *Bioenergy in Developing Countries: Potential and Risks*, 1 *RENEWABLE ENERGY L. & POL'Y REV.* 23 (2010); Richard L. Ottinger, *Biofuels—Potential, Problems & Solutions*, 19 *FORDHAM ENVTL. L. REV.* 253 (2009).

technology.³ Questions that remain include: Will efforts to mitigate climate change by promoting biofuels exacerbate the chronic undernourishment that currently afflicts millions of people in Asia, Africa, and Latin America? Or are there win-win solutions that will simultaneously reduce greenhouse gas emissions and enhance the livelihoods of the poor?

This Article seeks to fill the gap in the existing literature by analyzing biofuels through the lens of human rights and environmental justice. It examines the relationship between biofuels production and the global food system, analyzes the disparate impact of biofuels production on the planet's most food-insecure populations, and recommends governance strategies to respect, protect, and fulfill the fundamental human right to food.

This Article argues that the biofuel policies of the United States and the European Union have violated the right to food of vulnerable communities in Asia, Africa, and Latin America by increasing food prices and stimulating large-scale land transactions that deprive local communities of the land and water necessary to grow food. Far from mitigating climate change, these biofuel policies accelerate the worldwide transition to fossil-fuel-based industrial agriculture that emits prodigious quantities of greenhouse gases, degrades local ecosystems, and favors export-oriented corporate agribusiness at the expense of small farmers and local food production. Because the life cycle greenhouse gas emissions of many biofuels exceed those of fossil fuels, the climate change benefits of these biofuels are illusory. Biofuels also reinforce the car-dependent and energy-intensive lifestyles in affluent and middle-income countries that perpetuate climate change instead of fostering more environmentally friendly transportation options, such as public transit, bicycling, and car sharing.

This Article proceeds in three parts. Part I defines environmental justice and explains its relevance to food production and consumption. Part II provides a critical assessment of the global food system and argues that biofuels represent a continuation of pre-existing patterns of trade and production that have generated chronic undernourishment among large segments of the world's population. Part III discusses some of the legal and policy reforms required to promote an equitable and sustainable approach to bioenergy.

³ See, e.g., Stewart Fast, *The Biofuels Debate: Searching for the Role of Environmental Justice in Environmental Discourse*, 37 ENVIRONMENTS J. 83 (2009) (finding that the paradigm of environmental justice is invoked infrequently in the debate over biofuels).

I. ENVIRONMENTAL JUSTICE, FOOD, AND CLIMATE: EXPLORING THE LINKAGES

Environmental justice is both a social movement and a paradigm through which to evaluate laws, policies, and practices that have an impact on the environment and on vulnerable populations.⁴ The environmental justice movement arose in the United States in the 1980s in response to the disparate concentration of polluting facilities and abandoned hazardous waste sites in low-income communities of color.⁵ In subsequent decades, grassroots environmental movements in both affluent and poor nations deployed the language of environmental justice in a wide variety of environmental struggles, including efforts to secure equitable access to food, water, land, and energy as well as campaigns to halt ecologically devastating projects, such as hydroelectric dams, mines, and oil and gas development.⁶

Environmental justice scholars and activists have emphasized four distinct aspects of environmental justice: distributive justice, procedural justice, corrective justice, and social justice.⁷ First, environmental justice is premised on the equitable distribution of the benefits and burdens of economic activity as well as equitable access to environmental amenities and necessities, such as parks, open space, clean air, clean water, and safe and

⁴ For an introduction to environmental justice theories and movements, see generally Carmen G. Gonzalez, *Environmental Justice, Human Rights and the Global South*, 13 SANTA CLARA J. INT'L L. 151 (2015); HENRY SHUE, *CLIMATE JUSTICE: VULNERABILITY AND PROTECTION* (2014); RHUKS TEMITOPE AKO, *ENVIRONMENTAL JUSTICE IN DEVELOPING COUNTRIES: PERSPECTIVES FROM AFRICA AND ASIA-PACIFIC* (2013); Carmen G. Gonzalez, *Environmental Justice and International Environmental Law*, in *ROUTLEDGE HANDBOOK OF INTERNATIONAL ENVIRONMENTAL LAW* 77 (Shawkat Alam et al. eds., 2013); GORDON WALKER, *ENVIRONMENTAL JUSTICE: CONCEPTS, EVIDENCE AND POLITICS* (2012); *ENVIRONMENTAL INEQUALITY BEYOND BORDERS: LOCAL PERSPECTIVES ON GLOBAL INJUSTICES* (JoAnn Carmin & Julian Agyeman eds., 2011); DAVID SCHLOSBERG, *DEFINING ENVIRONMENTAL JUSTICE: THEORIES, MOVEMENTS, AND NATURE* (2009); *ENVIRONMENTAL LAW AND JUSTICE IN CONTEXT* (Jonas Ebbeson & Phoebe Okowa eds., 2009); *ENVIRONMENTAL JUSTICE IN LATIN AMERICA: PROBLEMS, PROMISE, AND PRACTICE* (David V. Carruthers ed. 2008); *THE QUEST FOR ENVIRONMENTAL JUSTICE: HUMAN RIGHTS AND THE POLITICS OF POLLUTION* (Robert D. Bullard ed., 2005).

⁵ See LUKE W. COLE & SHEILA R. FOSTER, *FROM THE GROUND UP: ENVIRONMENTAL RACISM AND THE RISE OF THE ENVIRONMENTAL JUSTICE MOVEMENT* 19-33 (2001).

⁶ See Joan Martinez-Alier et al., *Between Activism and Science: Grassroots Concepts for Sustainability Coined by Environmental Justice Organizations*, 21 J. OF POL. ECOLOGY 19, 27-42 (2014).

⁷ See generally Robert R. Kuehn, *A Taxonomy of Environmental Justice*, 30 ENVTL L. REP. 10681 (2000).

nutritious food.⁸ Second, environmental justice involves procedural fairness, including the right of all communities to participate in governmental decision making related to the environment.⁹ Third, environmental justice requires governments to enforce environmental statutes and regulations and to provide compensation to those whose rights are violated.¹⁰ Finally, environmental justice is inextricably intertwined with other forms of social and economic justice and cannot be attained without combating related social ills, such as poverty and racism.¹¹ From the founding of the United States to the present, race has played a key role in determining which communities can and should have access to wild lands and natural spaces, and which communities are relegated to waste-handling occupations and targeted by waste disposal and other polluting industries.¹² In order to address environmental injustice, it is necessary to examine how race and class dynamics influence environmental quality and to recognize that disadvantaged communities do not compartmentalize environmental inequities and other social problems.¹³

Environmental justice has an important international dimension that provides valuable insights into environmental conflicts between affluent

⁸ See *id.* at 10683-88; Gonzalez, *Environmental Justice and International Environmental Law*, *supra* note 4, at 78; Duncan French, *Sustainable Development and the Instinctive Imperative of Justice in the Global Order*, in *GLOBAL JUSTICE AND SUSTAINABLE DEVELOPMENT* 3 (Duncan French ed., 2010).

⁹ See Kuehn, *supra* note 7 at 10688-92; Carmen G. Gonzalez, *Markets, Monocultures, and Malnutrition: Agricultural Trade Policy Through an Environmental Justice Lens*, 14 *MICH. ST. J. INT'L L.* 345, 348-49 (2006).

¹⁰ See Kuehn, *supra* note 7, at 10693-98; Gonzalez, *Environmental Justice and International Environmental Law*, *supra* note 4, at 85-87 (explaining how environmental justice is grounded in human rights).

¹¹ See Kuehn, *supra* note 7, at 10698-10702.

¹² See CARL A. ZIMRING, *CLEAN AND WHITE: A HISTORY OF ENVIRONMENTAL RACISM IN THE UNITED STATES* (2015) (explaining how deeply-rooted notions of race and hygiene perpetuated workplace and residential segregation and relegated people of color to waste-handling occupations and polluted neighborhoods); CAROLYN FINNEY, *BLACK FACES, WHITE SPACES: REIMAGINING THE RELATIONSHIP OF AFRICAN-AMERICANS TO THE GREAT OUTDOORS* (2014) (examining how slavery and segregation shaped perceptions of "the great outdoors" and excluded people of color from mainstream environmental narratives and environmental organizations); Paul Mohai & Robin Saha, *Which Came First, People or Pollution? Assessing the Disparate Siting and Post-Siting Demographic Change Hypothesis of Environmental Injustice*, 10 *ENV'T RES. LETTERS* 115008 (2015) (concluding, based on empirical studies, that race and poverty are the key variables that explain which neighborhoods have been targeted for waste disposal and for the location of polluting industry).

¹³ See Kuehn, *supra* note 7, at 10699.

nations (the Global North) and poor and middle-income nations (the Global South). North-South relations are characterized by *distributive injustice* because the wealthiest 20 percent of the world's population consumes approximately 80 percent of the planet's economic output¹⁴ and simultaneously produces more than 90 percent of its hazardous waste, which is often exported to the Global South.¹⁵ While the affluent reap the economic benefits of overconsumption, the environmental consequences of this overconsumption are borne disproportionately by those who contribute the least to the problem and who possess the fewest resources to protect themselves against harm, such as vulnerable states, impoverished people, racial and ethnic minorities, and indigenous populations.¹⁶ North-South relations are also marred by *procedural inequities*, since the perspectives and priorities of Northern states drive the decision-making process in international trade and financial institutions (e.g., the World Bank, the International Monetary Fund [IMF], and the World Trade Organization [WTO]) while the concerns of poor nations are often disregarded.¹⁷ *Corrective injustice* is perhaps most apparent in the inability of communities disparately affected by climate change, such as indigenous peoples and small island states, to obtain redress for the harms caused by the North's massive past and ongoing greenhouse gas emissions.¹⁸ Finally, North-South environmental conflicts are embedded in larger *social justice* struggles, including the South's resistance to Northern economic policies that

¹⁴ See William E. Rees & Laura Westra, *When Consumption Does Violence: Can There Be Sustainability and Environmental Justice in a Resource-Limited World?*, in JUST SUSTAINABILITIES: DEVELOPMENT IN AN UNEQUAL WORLD 99, 110-12 (Julian Agyeman et al. eds., 2003); WORLD BANK, 2008 WORLD DEVELOPMENT INDICATORS 4 (2008), <http://data.worldbank.org/sites/default/files/wdi08.pdf>.

¹⁵ See DAVID N. PELLOW, RESISTING GLOBAL TOXICS: TRANSNATIONAL MOVEMENTS FOR ENVIRONMENTAL JUSTICE 8 (2007); Carmen G. Gonzalez, *Beyond Eco-Imperialism: An Environmental Justice Critique of Free Trade*, 78 DENV. U.L. REV. 979, 991-992 (2001).

¹⁶ See Rees & Westra, *supra* note 14, at 100-03.

¹⁷ See RUCHI ANAND, INTERNATIONAL ENVIRONMENT JUSTICE: A NORTH-SOUTH DIMENSION 132-33 (2004); PATRICK HOSSAY, UNSUSTAINABLE: A PRIMER FOR GLOBAL ENVIRONMENTAL AND SOCIAL JUSTICE 191-98 (2006); RICHARD PEET, UNHOLY TRINITY: THE IMF, WORLD BANK AND WTO 200-04 (2003).

¹⁸ See Maxine Burkett, *Climate Reparations*, 10 MELB. J. INT'L L. 509, 513-20 (2009) (discussing the plight of small island nations); Rebecca Tsosie, *Indigenous Peoples and Environmental Justice: The Impact of Climate Change*, 78 U. COLO. L. REV. 1625, 1633-46 (2007) (discussing the plight of indigenous peoples); Gonzalez, *Environmental Justice, Human Rights, and the Global South*, *supra* note 4, at 187-88 (discussing the difficulty of obtaining reparations for systemic harms, such as slavery, colonialism, climate change, and other forms of long-term, widespread environmental damage).

impoverished the Global South and facilitated the Global North's appropriation of the planet's resources.¹⁹

The discourse of environmental justice has been embraced by social justice movements in both the Global North and the Global South. These movements have generated transnational environmental justice networks dedicated to specific issues, including food justice, climate justice, water justice, and energy justice.²⁰ Because many biofuel feedstocks can be used as both food and fuel, biofuels occupy a unique location at the intersection of energy and food law and policy. In order to evaluate the environmental justice implications of biofuels, it is essential to understand both climate justice and food justice.

Climate change is an environmental justice issue. The world's most affluent populations generate the majority of greenhouse gas emissions while the consequences are borne disproportionately by vulnerable states (such as small island states and the least developed countries) that lack the resources for adaptation and disaster response, as well as by vulnerable communities (including indigenous peoples, racial and ethnic minorities and the poor) that lack the resources to protect themselves from floods, droughts, sea level rises, and other impacts of climate change.²¹ In order to promote climate justice, it is essential that Northern countries radically reduce their greenhouse gas emissions, finance climate change mitigation and adaptation in the Global South, and take responsibility for the harm that their greenhouse gas emissions have inflicted on vulnerable states and peoples.²²

Access to food is also an important environmental justice issue. The right to food is a fundamental human right recognized by several legal instruments, including the Universal Declaration of Human Rights; the International Covenant on Economic, Social and Cultural Rights; and the United Nations Convention on the Rights of the Child.²³ Chronic

¹⁹ See Gonzalez, *Environmental Justice, Human Rights, and the Global South*, *supra* note 4, at 159-63 (describing the colonial and post-colonial policies and practices that ravaged the Global South).

²⁰ See generally Martinez-Alier et al., *supra* note 6.

²¹ See Carmen G. Gonzalez, *Energy Poverty and the Environment*, in *INTERNATIONAL ENERGY AND POVERTY: THE EMERGING CONTOURS* 116-119 (Lakshman Guruswamy ed., 2016).

²² See *id.* at 123-124; HENRY SHUE, *CLIMATE JUSTICE: VULNERABILITY AND PROTECTION* 4-23 (2014).

²³ See G.A. Res. 217 (III) A, Universal Declaration of Human Rights, art. 25 (Dec. 10, 1948) [hereinafter Universal Declaration]; G.A. Res. 2200 (XXI), International Covenant on Economic, Social and Cultural Rights, art. 11 (Dec. 16, 1966) [hereinafter ICESCR];

undernourishment is a function of poverty rather than food scarcity.²⁴ Although global food production is sufficient to provide every person on the planet with approximately 2,700 calories per day,²⁵ nearly 800 million people suffer from chronic undernourishment.²⁶ Ironically, at least 70 percent of the world's undernourished people are small farmers and other rural dwellers in the Global South.²⁷ These small farmers, landless laborers, fisherfolk, and herders cultivate most of the world's food.²⁸ However, they experience chronic food insecurity because they lack sufficient land to grow the food they require and sufficient income to purchase food on the market.²⁹ As explained more fully in Part II of this Article, these farmers have been relegated to marginal lands and rendered destitute not by accident or misfortune but by decades of aid, trade, and investment policies that have placed them in ruinous competition with highly subsidized agricultural producers in the Global North.³⁰ These rural dwellers are also disparately threatened by climate change, which will depress agricultural output, ravage

Convention on the Rights of the Child, art. 24, 27 (Nov. 20, 1989) 1577 U.N.T.S. 3 (entered into force Feb. 9, 1990).

²⁴ See generally AMARTA SEN, POVERTY AND FAMINES: AN ESSAY ON ENTITLEMENT AND DEPRIVATION (1990); see Olivier de Schutter, *How Not to Think of Land-Grabbing: Three Critiques of Large-Scale Investments in Farmland*, 38 J. PEASANT STUD. 249, 256-57 (2011); Carmen G. Gonzalez, *International Economic Law and the Right to Food*, in RETHINKING FOOD SYSTEMS: STRUCTURAL CHALLENGES, NEW STRATEGIES AND THE LAW 184-85 (Nadia C.S. Lambek, et al. eds, 2014); Carmen G. Gonzalez, *World Poverty and Food Insecurity*, 3 PENN ST. J.L. & INT'L AFF. 56, 59 (Feb. 2015).

²⁵ See JEAN ZIEGLER ET AL., THE FIGHT FOR THE RIGHT TO FOOD: LESSONS LEARNED 3 (2011).

²⁶ See FOOD & AGRIC. ORG. OF U.N. (FAO), INT'L FUND FOR AGRIC. DEV. (IFAD) & WORLD FOOD PROGRAMME (WFP), THE STATE OF FOOD INSECURITY IN THE WORLD 2015: MEETING THE 2015 INTERNATIONAL HUNGER TARGETS: TAKING STOCK OF UNEVEN PROGRESS 8 tbl.1 (2015), <http://www.fao.org/3/a-i4646e.pdf>.

²⁷ See FAO, IFAD & WFP, THE STATE OF FOOD INSECURITY IN THE WORLD 2014: STRENGTHENING THE ENABLING ENVIRONMENT FOR FOOD SECURITY AND NUTRITION 8 tbl.1 (2014), <http://www.fao.org/3/a-i4030e.pdf>; IFAD, RURAL POVERTY REPORT 2011 16 (2011), <http://www.ifad.org/rpr2011/report/e/rpr2011.pdf>; ACTION GROUP ON EROSION, TECHNOLOGY & CONCENTRATION (ETC GROUP), WHO WILL FEED US? QUESTIONS FOR THE FOOD AND CLIMATE CRISES I (2009), http://www.etcgroup.org/sites/www.etcgroup.org/files/ETC_Who_Will_Feed_Us.pdf.

²⁸ See de Schutter, *supra* note 24, at 256-57 (2011); IFAD, *supra* note 27, at 16; ETC GROUP, *supra* note 27, at 1.

²⁹ See de Schutter, *supra* note 24, at 256; Gonzalez, *International Economic Law and the Right to Food*, *supra* note 24, at 184-85.

³⁰ See *infra* Part II.

the world's fisheries, and trigger substantial food price increases.³¹ Enhancing the livelihoods of small farmers in the Global South is essential to the achievement of food justice.³²

Biofuels will promote food justice and climate justice to the extent that they reduce the Global North's prodigious greenhouse gas emissions and improve the ability of small farmers in the Global South to obtain access to healthy and nutritious food.³³ An environmental justice analysis of biofuels requires an examination of the relationship among biofuel policy, climate change, and the global food system in order to assess the impact of biofuels cultivation on the environment and on the planet's most food-insecure communities.

II. BIOFUELS AND THE GLOBAL FOOD SYSTEM

The production and consumption of petroleum and other fossil fuels exact a heavy toll on human health and the environment, including climate change, exposure to toxic chemicals, air pollution, and contamination of lakes, rivers, and oceans.³⁴ Recent studies have concluded that substantial reserves of oil, coal, and natural gas must remain unexploited in order to avoid catastrophic disruption of the planet's climate.³⁵ Theoretically, biofuels have the potential to mitigate climate change by releasing fewer greenhouse gases than conventional fossil fuels.³⁶ However, as explained below, many biofuels actually exacerbate climate change by releasing more greenhouse gases than the fossil fuels they replace. The following analysis

³¹ See INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC), CLIMATE CHANGE 2014: IMPACTS, ADAPTATION, AND VULNERABILITY, SUMMARY FOR POLICY-MAKERS 6-8, 16-18 (2014); Carmen G. Gonzalez, *Climate Change, Food Security, and Agrobiodiversity: Toward a Just, Resilient, and Sustainable Food System*, 22 FORDHAM ENVTL L. REV. 493, 510-12 (2011) (discussing the impact of climate change on food production and the role of large-scale industrial agriculture in exacerbating climate change).

³² See FAO, THE STATE OF FOOD AND AGRICULTURE: INNOVATION IN FAMILY FARMING xvi (2014), <http://www.fao.org/3/a-i4040e.pdf>.

³³ See generally IPCC, *supra* note 31; Damian Carrington, *IPCC Report: World Must Urgently Switch to Clean Sources of Energy*, GUARDIAN (Apr. 12, 2014), <http://www.theguardian.com/environment/2014/apr/12/ipcc-report-world-must-switch-clean-sources-energy>.

³⁴ See, e.g., BRIAN C. BLACK, CRUDE REALITY: PETROLEUM IN WORLD HISTORY 172-81, 217-21 (2012) (discussing some of the environmental consequences of the production, refining, and consumption of petroleum).

³⁵ See generally Christopher McGlade & Paul Elkins, *The Geographical Distribution of Fossil Fuels Unused When Limiting Global Warming to 2°C*, 517 NATURE 187 (2015).

³⁶ See SMITH, *supra* note 1, at 93.

explores the relationship among biofuels, climate change, and the features of the global food system that produce chronic undernourishment.

A. *Biofuels and Climate Change*

Biofuels are energy sources in liquid or gaseous form that are derived from biomass.³⁷ Biofuels are categorized as first-, second-, or third-generation depending upon the feedstocks from which they are produced. First-generation biofuels are developed from crops that can also be used for food or feed (including ethanol derived from sugar or corn) and biodiesel from oilseed crops (such as soybean, sunflower, rapeseed, or palm oil).³⁸ Second-generation biofuels are made from non-edible crop parts (such as stems, leaves, and husks), non-food crops cultivated for energy production (such as jatropha and switchgrass), or waste products (such as municipal waste and cane bagasse).³⁹ While second-generation biofuels are not derived from food and feed, some may nevertheless be grown on land that could be used to cultivate food.⁴⁰ Finally, third-generation biofuels (such as algae-based biofuels) do not compete with food or with land that could be used for food production.⁴¹

First-generation biofuels represent 99.85 percent of the biofuels produced worldwide.⁴² Second-generation biofuels have developed more slowly due to the high capital costs of refining their feedstocks and the subsidies and other economic incentives that make the cultivation of first-generation biofuels so lucrative.⁴³ First-generation biofuels will be the primary focus of this Article because they dominate biofuels markets.

The production and consumption of biofuels will mitigate climate change if the biofuels emit fewer greenhouse gases than the fossil fuels they replace. Regrettably, many first-generation biofuels release more greenhouse gases than fossil fuels due to the unsustainable practices used to

³⁷ See *id.* at 15.

³⁸ See Timothy A. Wise & Emily Cole, *Mandating Food Insecurity: The Global Impacts of Rising Biofuel Mandates and Targets* 8 (Glob. Dev. & Env't Inst., Working Paper No. 15-01, 2015); HIGH LEVEL PANEL OF EXPERTS ON FOOD SECURITY AND NUTRITION OF THE COMMITTEE ON WORLD FOOD SECURITY, BIOFUELS AND FOOD SECURITY 44 (2013) [hereinafter HLPE].

³⁹ See *id.*

⁴⁰ See *id.*

⁴¹ See *id.*

⁴² *Id.* at 45.

⁴³ WARREN MABEE & JACK SADDLER, INT'L ENERGY AGENCY, FROM 1ST TO 2ND GENERATION BIOFUEL TECHNOLOGIES: AN OVERVIEW OF CURRENT INDUSTRY AND RD&D ACTIVITIES 80 (2008).

produce these biofuels.⁴⁴ In theory, biofuels should be greenhouse gas neutral because the carbon dioxide that they release upon combustion is equivalent to the carbon dioxide that they sequester from the atmosphere during cultivation.⁴⁵ In practice, however, biofuels may generate even more greenhouse gas emissions than fossil fuels due to the clearing of forests and peatlands to plant them, the nitrogen-based fertilizers and petroleum-derived pesticides applied to the growing crops, the petroleum-guzzling machinery used to cultivate and harvest them, and the energy required to convert the plants into fuel.⁴⁶ Even when land-use impacts (such as deforestation) are *not* taken into account, several studies have concluded that corn-based ethanol (the most commonly used biofuel in the United States) has failed to significantly reduce greenhouse gas emissions and may even emit more greenhouse gases than gasoline.⁴⁷

When researchers include the direct and indirect impacts of biofuels on land use, many studies conclude that first-generation biofuels are more damaging to the climate than fossil fuels.⁴⁸ As one analyst explains:

In order to produce biofuels, cultivators may plough up or burn forest or grassland, which releases into the atmosphere much of the carbon previously stored in plants through decomposition or fire. The loss of maturing forests or grasslands also nullifies future sequestration gains as biomass grows each year and this lost potential sequestration ought to be accounted for as a carbon debit. Farmers may instead choose to divert existing crops into biofuels, which indirectly causes similar emissions as farmers seek to expand

⁴⁴ See FAO, THE STATE OF FOOD AND AGRICULTURE: BIOFUELS: PROSPECTS, RISKS AND OPPORTUNITIES 55–59 (2008), <http://www.fao.org/docrep/011/i0100e/i0100e00.htm>.

⁴⁵ See SMITH, *supra* note 1, at 41.

⁴⁶ See *id.*; ROBERT POOL ET AL., THE NEXUS OF BIOFUELS, CLIMATE CHANGE, AND HUMAN HEALTH: WORKSHOP SUMMARY 2–6 (2014); see generally A. Mosnier et al., *Alternative U.S. Biofuel Mandates and Global GHG Emissions: The Role of Land Use Change, Crop Management and Yield Growth*, 57 ENERGY POL’Y 602 (2013); Jerry M. Melillo, *Indirect Emissions from Biofuels: How Important?*, 326 SCIENCE 1397 (2009); JANE EARLEY & ALICE MCKEOWN, SIERRA CLUB & WORLDWATCH INSTITUTE, SMART CHOICES FOR BIOFUELS (2009); Joseph Fargione et al., *Land Clearing and the Biofuel Carbon Debt*, 319 SCIENCE 1235 (2008).

⁴⁷ HLPE, *supra* note 38, at 50. See also CONG. BUDGET OFFICE (CBO), THE RENEWABLE FUEL STANDARD: ISSUES FOR 2014 AND BEYOND 3 (2014), <https://www.cbo.gov/sites/default/files/113th-congress-2013-2014/reports/45477-Biofuels2.pdf>; FAO, *supra* note 44.

⁴⁸ See UNITED NATIONS ENV’T PROGRAMME (UNEP), TOWARDS SUSTAINABLE PRODUCTION AND USE OF RESOURCES: ASSESSING BIOFUELS 67–68 (2009).

cropland elsewhere to compensate for losses or to make maximum gain from increasing prices for increasingly scarce crops.⁴⁹

Taking land-use changes into account, one study concluded that the greenhouse gas emissions from U.S. corn-based ethanol are nearly double those of gasoline over a thirty-year period.⁵⁰ Similarly, several studies have found that biodiesel from soybeans and palm oil may produce higher greenhouse gas emissions than conventional fossil diesel if forests and peatlands are cleared to cultivate these crops.⁵¹ In sum, the climate impacts of first-generation biofuels vary depending on the type of feedstock used, how the feedstock is produced, and the direct and indirect land-use changes resulting therefrom.⁵²

Despite their questionable contribution to climate change mitigation, the amount of biofuels produced globally soared from under 20 billion liters in 2001 to more than 100 billion liters in 2011.⁵³ If biofuels are not necessarily superior to fossil fuels from a climate perspective, then what accounts for their popularity? The following Section answers this question by explaining how biofuels are integrated into the global food system and their impact on the right to food.

B. The Global Food System: A Food Regime Analysis

The food regime framework developed by Harriet Friedmann and Philip McMichael is a useful tool for understanding the key features of the global food system.⁵⁴ A food regime is a food production and consumption system

⁴⁹ SMITH, *supra* note 1, at 51.

⁵⁰ See Timothy Searchinger et al., *Use of U.S. Croplands for Biofuels Increases Greenhouse Gases Through Emissions from Land-Use Change*, 319 SCIENCE 1238, 1239 (2008).

⁵¹ See UNEP, *supra* note 488, at 53.

⁵² See AZIZ ELBEHRI ET AL., FAO, BIOFUELS AND THE SUSTAINABILITY CHALLENGE: A GLOBAL ASSESSMENT OF SUSTAINABILITY ISSUES, TRENDS, AND POLICIES FOR BIOFUELS AND RELATED FEEDSTOCKS 13 (2013), <http://www.fao.org/docrep/017/i3126e/i3126e.pdf>. Although less well-studied and less commercially available, second-generation biofuels also vary in their environmental impact depending on the feedstock selected and the method of production. See ANSELM EISENTRAUT, INT'L ENERGY AGENCY, SUSTAINABLE PRODUCTION OF SECOND-GENERATION BIOFUELS: POTENTIAL AND PERSPECTIVES IN MAJOR ECONOMIES AND DEVELOPING COUNTRIES 1 (Feb. 2010), https://www.iea.org/publications/freepublications/publication/biofuels_exec_summary.pdf.

⁵³ See HLPE, *supra* note 38, at 55.

⁵⁴ See generally Harriet Friedmann & Philip McMichael, *Agriculture and the State System: The Rise and Decline of National Agricultures, 1870 to the Present*, 29 SOCIOLOGIA

that advances the interests of one or more dominant powers on a worldwide scale.⁵⁵

The first global food regime (1870–1930s) was dominated by Great Britain and responded to one of the central challenges of the Industrial Revolution—namely, how to feed the burgeoning working class whose labor fueled European industrialization.⁵⁶ The solution adopted by the British and later emulated by other European nations was to repeal the legislation that protected the landed gentry from foreign competition and promote the importation of cheap food from the colonies.⁵⁷ Under the guise of promoting free trade and “civilizing” native peoples, European settlers forcibly removed farmers in the Global South from the lands they traditionally cultivated in order to promote large-scale, export-oriented plantations and commercial forestry.⁵⁸ The expulsion of subsistence farmers and the destruction of local institutions that provided social safety nets for the less fortunate triggered famines in the Global South,⁵⁹ and established a pattern of rural dispossession in the Global South that would repeat itself on a larger scale under subsequent food regimes.⁶⁰

The first food regime institutionalized the international division of labor that relegated Asia, Africa, and Latin America to the production of primary commodities and the importation of European-manufactured products.⁶¹ This division of labor remains a central feature of the contemporary international economic order that has impoverished Southern nations by exposing them to the volatility of agricultural commodity prices (including

RURALIS 93 (1989).

⁵⁵ See Eric Holt-Gimenez & Annie Shattuck, *Food Crises, Food Regimes and Food Movements: Rumbblings of Reform or Tides of Transformation?*, 38 J. PEASANT STUD. 109, 110 (2011).

⁵⁶ See NORA MCKEON, *FOOD SECURITY GOVERNANCE: EMPOWERING COMMUNITIES, REGULATING CORPORATIONS* 13 (2015).

⁵⁷ See Hugh Campbell, *Let Us Eat Cake? Historically Reframing the Problem of World Hunger and Its Purported Solutions*, in *FOOD SYSTEMS FAILURE: THE GLOBAL FOOD CRISIS AND THE FUTURE OF AGRICULTURE* 31–32 (Christopher Rosin et al. eds., 2012).

⁵⁸ See HENRY BERNSTEIN, *CLASS DYNAMICS OF AGRARIAN CHANGE* 69 (2010).

⁵⁹ See MIKE DAVIS, *LATE VICTORIAN HOLOCAUSTS: EL NIÑO FAMINES AND THE MAKING OF THE THIRD WORLD* 8–10 (2002).

⁶⁰ See notes 67–125, 169–88 *infra* and corresponding text for a description of rural dispossession in the Global South caused by Northern agricultural subsidies, the austerity programs imposed on the Global South by the IMF and the World Bank, free trade agreements, and the large-scale acquisition of Southern agricultural to cultivate food and biofuels for export.

⁶¹ See BERNSTEIN, *supra* note 588.

boom and bust cycles), as well as declining prices for agricultural products relative to manufactured goods.⁶²

The second food regime (1930–70s) emerged in response to the two world wars, the Great Depression, and the Cold War. The United States dominated this regime and promoted high levels of agricultural protectionism, agricultural industrialization, and the export of surplus production to the Global South.⁶³ In response to the Great Depression and the Dust Bowl, the United States sought to increase domestic agricultural production by offering generous subsidies to its farmers and by encouraging mechanization, the use of chemical fertilizers and pesticides, and the adoption of high-yield crop varieties.⁶⁴ This capital-intensive, highly subsidized industrial model of agricultural production was adopted by Western Europe in the decades following the Second World and generated huge surpluses of major agricultural commodities in both the United States and Europe.⁶⁵ In addition to subsidizing their farmers, the United States and Western Europe also protected them from foreign competition by imposing both tariff and non-tariff import barriers on imported agricultural products.⁶⁶

The United States and its Western European allies used their surplus food production to achieve political and economic ends. They exported the surplus agricultural commodities resulting from their protectionist policies to countries in the Global South as food aid in order to strengthen Cold War alliances with key Southern countries and to create new markets for U.S. and European agro-exports.⁶⁷ This food aid, along with the sale of commercial food at reduced prices, exacerbated poverty and undernourishment in the Global South by destroying the livelihoods of small farmers who could not compete with free or cheap imported food products.⁶⁸ As small farmers

⁶² See LIZ YOUNG, *WORLD HUNGER* 41–42 (1997); CLIVE PONTING, *A GREEN HISTORY OF THE WORLD* 213–14 (1991).

⁶³ See Campbell, *supra* note 577, at 34.

⁶⁴ See *id.*

⁶⁵ See *id.* at 35.

⁶⁶ See *THE GATT URUGUAY ROUND: A NEGOTIATING HISTORY* (1986–1992) 141, 155–56 (Terrence P. Stewart ed. 1993); M. Ataman Aksoy, *Global Agricultural Trade Policies*, in *GLOBAL AGRICULTURAL TRADE AND DEVELOPING COUNTRIES* 37 (M. Ataman Aksoy & John C. Beghin, eds. 2005).

⁶⁷ See Carmen G. Gonzalez, *Trade Liberalization, Food Security, and the Environment: The Neoliberal Threat to Sustainable Rural Development*, 14 *TRANSNAT'L L. & CONTEMP. PROBLEMS* 419, 435–36 (2004); MCKEON, *supra* note 566, at 15.

⁶⁸ See JAMES WESSEL, *TRADING THE FUTURE: FARM EXPORTS AND THE CONCENTRATION OF ECONOMIC POWER IN OUR FOOD SYSTEM* 166–68 (1983).

abandoned agricultural production, arable lands in the Global South became concentrated in the hands of affluent farmers, who cultivated a variety of agricultural products (such as cocoa, coffee, vegetables, beef, bananas, and feed grains) for export rather than for domestic consumption.⁶⁹ The resulting decline in domestic food production rendered many of the world's poorest countries increasingly dependent on imported food.⁷⁰

The United States and Western Europe also used their political and economic clout to craft trade agreements that benefited the Global North at the expense of the Global South. The 1947 General Agreement on Tariffs and Trade⁷¹ (1947 GATT) promoted trade liberalization in manufactured goods, but largely excluded agricultural products.⁷² The agricultural subsidies and import barriers maintained by the United States and by Western Europe were thus exempted from the international trade regime.⁷³ By the mid-1950s, a broad coalition of Southern countries exerted its numerical majority in the United Nations General Assembly to pass resolutions demanding greater equity in international economic relations, including: the elimination of Northern agricultural subsidies and import barriers, preferential access to Northern markets, and the right of Southern nations to use tariffs and quotas to protect infant industries from foreign competition.⁷⁴ While Southern mobilization produced favorable amendments to 1947 GATT and yielded side agreements responsive to some of the demands of Southern nations,⁷⁵ these reforms were frequently drafted in non-binding terms and often excluded the products of greatest economic importance to the South, such as clothing, textiles, and agricultural products.⁷⁶

⁶⁹ See *id.* at 167.

⁷⁰ See JENNIFER CLAPP, FOOD 33 (2011); Harriet Friedmann, *From Colonialism to Green Capitalism: Social Movements and Emergence of Food Regimes*, 22 RES. RURAL SOC. & DEV. 227, 242 (2005); Holt-Gimenez & Shattuck, *supra* note 55 at 110.

⁷¹ See General Agreement on Tariffs and Trade, Oct. 30, 1947, 61 Stat. A1, A3, T.I.A.S. No. 1700, 55 U.N.T.S. 187.

⁷² See Carmen G. Gonzalez, *Institutionalizing Inequality: The WTO Agreement on Agriculture, Food Security, and Developing Countries*, 27 COLUM. J. ENVTL. L. 433, 440-46 (2002).

⁷³ See Faizel Ismail, *Rediscovering the Role of Developing Countries in GATT Before the Doha Round*, 1 L. & DEV. R. 50, 58-59 (2008).

⁷⁴ See *id.* at 59-67.

⁷⁵ See *id.* at 65-67.

⁷⁶ See YONG-SHIK LEE, RECLAIMING DEVELOPMENT IN THE WORLD TRADING SYSTEM 107-10 (2006).

The United States established the foundation for the third corporate-dominated food regime during the height of the Cold War. While the second regime only exported food to the Global South, the third regime also exported the industrial agricultural model, including machinery, irrigation, new high-yielding seeds, and fossil-fuel-based pesticides and fertilizers.⁷⁷ The new food regime was motivated by a combination of humanitarian and strategic considerations and remains in place today. The humanitarian goal was to tackle world hunger by increasing food production; the strategic goal was to contain agrarian unrest that could lead to revolution.⁷⁸ Known as the Green Revolution, the industrial agricultural model exported by the Global North to the Global South increased global food production, but supplanted ecologically sustainable agricultural practices and fostered dependence on agricultural inputs manufactured by Northern transnational corporations.⁷⁹

The Green Revolution's impact on food security remains hotly contested. While some scholars argue that the Green Revolution enhanced food security by enabling food production to outstrip population growth, others contend that the Green Revolution intensified rural poverty by favoring affluent farmers who could afford the pesticides, fertilizers, agricultural machinery, and irrigation systems necessary to produce high yields.⁸⁰ When increases in food production caused agricultural commodity prices to plummet, many small farmers experienced severe economic hardship and dispossession.⁸¹ An influential study evaluating more than 300 published reports on the Green Revolution determined that the Green Revolution generally increased rural inequality.⁸²

The chief beneficiaries of the rapid industrialization of Southern agriculture were the transnational exporters, grain traders, and input manufacturers in the Global North that received generous government subsidies, access to new consumer markets in the Global South, and the opportunity to supply Southern agricultural producers with pesticides,

⁷⁷ See CLAPP, *supra* note 70, at 33.

⁷⁸ See *id.*

⁷⁹ See CARY FLOWER & PAT MOONEY, SHATTERING: FOOD, POLITICS, AND THE LOSS OF GENETIC DIVERSITY 54-79 (1990).

⁸⁰ See CLAPP, *supra* note 70, at 38-41; Gonzalez, *supra* note 67, at 441-43; VANDANA SHIVA, THE VIOLENCE OF THE GREEN REVOLUTION 176-77 (1991).

⁸¹ See SHIVA, *supra* note 80, at 177; KEITH GRIFFIN, THE POLITICAL ECONOMY OF AGRARIAN CHANGE: AN ESSAY ON THE GREEN REVOLUTION 73 (1974).

⁸² See Donald K. Freebairn, *Did the Green Revolution Concentrate Incomes? A Quantitative Study of Research Reports*, 23 WORLD DEV. 265, 277 (1995).

fertilizers, machinery, and seeds.⁸³ Ironically, agribusiness corporations were also the primary recipients of agricultural subsidies in both the United States and the European Union.⁸⁴ Small farmers were generally harmed by the rising costs of agricultural inputs and the diminishing prices of agricultural commodities caused by the global sourcing of agricultural products by transnational corporations.⁸⁵

The debt crisis of the 1980s further consolidated the third food regime by adding characteristics such as free-market ideology, corporate domination of global food supply chains, and governance of trade policy by the World Bank, the IMF and the WTO.⁸⁶ Under the 1947 GATT, Southern countries retained the authority to protect their farmers from unfair competition with highly subsidized U.S. and EU agricultural producers by imposing tariffs on imported food products.⁸⁷ This regulatory flexibility was sharply curtailed during the third food regime, which required Southern governments to adopt a series of neoliberal economic reforms designed to reduce the regulatory role of the state.⁸⁸

Enticed into borrowing large sums of money from the commercial banks to fund a variety of development projects, many Southern countries were unable to repay these debts when the oil price shocks of 1973 and 1979-1980 caused energy costs to soar and interest rates to skyrocket.⁸⁹ Countries that depended heavily on food imports were particularly affected because many had incurred huge debts in the early 1970s when rising food prices coincided with the first oil price shock.⁹⁰ In order to obtain loan repayment assistance from the IMF and the World Bank, three-quarters of Latin American countries and two-thirds of African countries agreed to adopt a one-size-fits-all package of free-market economic reforms known as structural adjustment.⁹¹

⁸³ See CLAPP, *supra* note 70, at 32-33; Friedmann, *supra* note 70, at 243.

⁸⁴ See SARAH JOSEPH, BLAME IT ON THE WTO? A HUMAN RIGHTS CRITIQUE 211 (2011); William S. Eubanks II, *A Rotten System: Subsidizing Environmental Degradation and Poor Public Health with Our Nation's Tax Dollars*, 28 STAN. ENVTL. L.J. 213, 221-234 (2009) (explaining that U.S. agricultural subsidies disproportionately benefit agribusiness).

⁸⁵ See WESSEL, *supra* note 68, at 23-25.

⁸⁶ See MCKEON, *supra* note 56, at 18-20.

⁸⁷ Gonzalez, *World Poverty and Food Insecurity*, *supra* note 23 at 61.

⁸⁸ See MCKEON, *supra* note 56, at 17-18.

⁸⁹ See PEET, *supra* note 17, at 71-75; SUSAN GEORGE, A FATE WORSE THAN DEBT: THE WORLD FINANCIAL CRISIS & THE POOR 28-29 (1990).

⁹⁰ See Friedmann, *supra* note 70, at 244.

⁹¹ See PEET, *supra* note 17, at 75.

While Northern states continued to provide massive agricultural subsidies to their own farmers, the structural adjustment programs of the IMF and the World Bank imposed austerity and open markets in the Global South—introducing a double standard that plagues international agricultural trade to the present day: protectionism for the wealthy and free markets for the poor.⁹² Pursuant to IMF and World Bank loan conditions, Southern countries adopted a standard package of neoliberal economic reforms that included eliminating non-tariff import barriers, reducing tariffs, and sharply curtailing subsidies and other forms of government assistance to farmers (such as price guarantees, social safety nets, marketing assistance, and agricultural research and education).⁹³

Structural adjustment programs devastated rural livelihoods in the Global South by forcing small farmers to compete with highly subsidized Northern agricultural producers.⁹⁴ As cheap imported food glutted local markets, food production in the Global South declined and millions of impoverished farmers migrated to urban slums.⁹⁵ Unable to obtain adequate housing or employment, many displaced farmers were relegated to low-wage jobs in the informal sector and hastily constructed dwellings in the urban periphery.⁹⁶ Even when farmers remained in the countryside, the consequences of structural adjustment were dire. In India, for example, over 250,000 farmer suicides since the 1990s have been attributed to the economic hardships inflicted on poor rural communities by the neoliberal economic reforms mandated by the IMF and the World Bank (including the slashing of domestic agricultural subsidies and curtailment of agricultural import barriers).⁹⁷

Structural adjustment programs reduced food self-sufficiency and increased dependence on food imports in the Global South by dispossessing small farmers and by requiring Southern countries to dedicate high-quality

⁹² See Gonzalez, *Markets, Monocultures, and Malnutrition*, *supra* note 9, at 364.

⁹³ See MICHAEL CHOSSUDOVSKY, *THE GLOBALISATION OF POVERTY: IMPACTS OF IMF & WORLD BANK REFORMS* 62-63 (1997); JOHN MADELEY, *HUNGRY FOR TRADE: HOW THE POOR PAY FOR FREE TRADE* 77 (2000).

⁹⁴ See Carmen G. Gonzalez, *The Global Food Crisis: Law, Policy, and the Elusive Quest for Justice*, 13 *YALE HUM. RTS. & DEV. L.J.* 462, 469 (2010).

⁹⁵ See *id.* at 469-70.

⁹⁶ See VIJAY PRASHAD, *THE POORER NATIONS: A POSSIBLE HISTORY OF THE GLOBAL SOUTH* 272-73 (2012).

⁹⁷ See CTR. FOR HUM. RTS. & GLOBAL JUST., *EVERY THIRTY MINUTES: FARMER SUICIDES, HUMAN RIGHTS & THE AGRARIAN CRISIS IN INDIA* 5-12 (2011), <http://chrgj.org/wp-content/uploads/2012/10/Farmer-Suicides.pdf>.

agricultural lands to agro-export production in order to service the foreign debt.⁹⁸ Many Southern countries shifted from domestic food production to the cultivation of new agricultural exports (such as fruits, vegetables, and flowers) in addition to the exports introduced during the first food regime (such as coffee, cocoa, sugar, and other tropical commodities).⁹⁹

The large-scale chemical-intensive production of cash crops also intensified the environmental damage associated with industrial agriculture, including soil erosion, loss of crop genetic diversity, depletion of water sources, and pollution of lakes and rivers.¹⁰⁰ Agriculture is one of the most significant contributors to climate change, responsible for approximately 50 percent of global greenhouse gas emissions.¹⁰¹ While industrial agriculture is a major greenhouse gas emitter, the small-scale sustainable patterns of agricultural production that are being displaced by the industrial model are now recognized as important contributors to climate change mitigation and adaptation.¹⁰²

The WTO Agreement on Agriculture (AoA), which entered into force in 1995, purported to eliminate the double standards in international agricultural trade and to “establish a fair and market-oriented agricultural trading system.”¹⁰³ The AoA required WTO members to reduce trade-distorting agricultural subsidies, convert all import barriers to tariffs, and reduce these tariffs over time.¹⁰⁴ The AoA ultimately failed to achieve its

⁹⁸ See GEORGE, *supra* note 89, at 28-29; PEET, *supra* note 17, at 71.

⁹⁹ See Friedmann, *supra* note 70, at 251.

¹⁰⁰ See Anuradha Mittal, U.N. Conf. on Trade & Dev. (UNCTAD), *The 2008 Food Price Crisis: Rethinking Food Security Policies*, G-24 Discussion Paper No. 29, at 13-15, U.N. Doc. UNCTAD/GDS/MDP/G24/2009/3 (June 2009); Gonzalez, *supra* note 67, at 469-70; STRUCTURAL ADJUSTMENT PARTICIPATORY R. INT'L NETWORK (SAPRIN), THE POLICY ROOTS OF ECONOMIC CRISIS AND POVERTY: A MULTI-COUNTRY PARTICIPATORY ASSESSMENT OF STRUCTURAL ADJUSTMENT 124-26 (Apr. 2002), http://www.saprin.org/SAPRIN_Findings.pdf.

¹⁰¹ See Rani Molla, *How Much of World's Greenhouse-Gas Emissions Come From Agriculture?*, WALL ST. J. (Sept. 29, 2014), <http://blogs.wsj.com/numbers/how-much-of-worlds-greenhouse-gas-emissions-come-from-agriculture-1782/>.

¹⁰² Small-scale sustainable agriculture can mitigate climate change by minimizing fossil-fuel-based inputs and enhancing the ability of soils to sequester carbon. It can also enhance climate change adaptation by promoting the cultivation of diverse crops and genetic varieties and improving soil fertility and water retention capacity so as to boost resilience to pests, floods, and drought. See Gonzalez, *supra* note 31, at 513-15.

¹⁰³ Agreement on Agriculture, Apr. 15 1994, Marrakesh Agreement Establishing the World Trade Organization, Annex 1A, 1867 U.N.T.S. 410 (entered into force Jan. 1, 1995), pmb. ¶ 2.

¹⁰⁴ See Gonzalez, *supra* note 72 at 450-56.

subsidy-reduction objectives because Northern countries made aggressive use of the ambiguities and exemptions in the AoA to continue to subsidize their agricultural producers and exporters.¹⁰⁵ For example, Northern countries maintained high levels of agricultural subsidies by availing themselves of exemptions in the AoA for subsidies alleged to have minimal impacts on trade: the so-called blue-box and green-box exemptions.¹⁰⁶ Critics charged that these exemptions were inappropriate because the exempted subsidies had significant trade-distorting impacts that enabled the North to maintain high levels of domestic protectionism.¹⁰⁷ Agricultural subsidies in the North actually *increased* in the aftermath of the AoA,¹⁰⁸ and they have remained high ever since.¹⁰⁹

Similarly, the conversion of non-tariff barriers to tariffs did not open up Northern markets to Southern agro-exports. The AoA did not prescribe a specific method for converting non-tariff import barriers into tariffs, and as a result most Northern countries replaced their non-tariff barriers with far more import-restrictive tariffs.¹¹⁰ In addition, Northern countries maintained high tariffs on many Southern products (particularly those that competed with domestically-produced equivalents) and also engaged in tariff escalation, which is the practice of charging higher tariffs as the processing chain advances.¹¹¹ Tariff escalation harms Southern countries by preventing them from climbing the development ladder and producing processed goods, which can command higher prices than primary products.¹¹²

Launched in 2001, the Doha Development Round of WTO negotiations purported to take seriously the concerns of the Global South in the development of a successor to the current WTO regime. However, North-

¹⁰⁵ See *id.* at 459-68 (analyzing the ambiguities in the Agreement on Agriculture that enabled the United States and the European Union to maintain their domestic subsidies and export subsidies); Joseph A. McMahon & Melaku Geboye Desta, *The Agreement on Agriculture: Setting the Scene*, in RESEARCH HANDBOOK ON THE WTO AGRICULTURE AGREEMENT 12-16 (Joseph A. McMahon & Melaku Geboye Desta eds., 2012) (explaining why the Agreement on Agriculture's restrictions on domestic subsidies and export subsidies are easy to circumvent).

¹⁰⁶ See JOSEPH, *supra* note 84, at 186.

¹⁰⁷ See *id.*

¹⁰⁸ See Gonzalez, *supra* note 72 at 366.

¹⁰⁹ See JOSEPH, *supra* note 84, at 186.

¹¹⁰ See Gonzalez, *supra* note 72 at 458; MELAKU GEBOYE DESTA, THE LAW OF INTERNATIONAL TRADE IN AGRICULTURAL PRODUCTS 75-76 (2002).

¹¹¹ See Gonzalez, *supra* note 72 at 461-62.

¹¹² See *id.* at 462; JOSEPH, *supra* note 84, at 187.

South disputes, particularly over Northern agriculture subsidies, have impeded its successful conclusion.¹¹³ In the meantime, numerous bilateral and regional free trade agreements have gone further than the WTO in opening up Southern markets to Northern exports without requiring a corresponding reduction in Northern subsidies.¹¹⁴ For example, the North American Free Trade Agreement (NAFTA) among Canada, the United States, and Mexico obligates the parties to eliminate most agricultural tariffs by 2004, but does not mandate any reductions in agricultural subsidies beyond those contained in the GATT or the WTO.¹¹⁵ Similarly, the EU free trade agreements with countries in Africa, the Pacific, and the Caribbean (known as European Partnership Agreements) require substantial reductions in tariffs while permitting the European Union to continue to subsidize its farmers.¹¹⁶

The AoA did not create the double standards in international agricultural trade that systematically disfavor small farmers in the Global South, but it did reinforce these inequities by failing to reduce Northern protectionism. These double standards have enabled Northern agricultural producers to continue destroying rural livelihoods in the Global South by dumping agricultural products on world markets at prices that are below the local cost of production.¹¹⁷ However, the AoA is not the chief impediment to measures that Southern countries might take to protect small farmers from unfair competition with cheap imported food products, such as increasing agricultural tariffs. Most Southern countries have a wide gap between the low tariffs that they currently apply to imported agricultural products and the relatively high tariffs that they are permitted to apply pursuant to their AoA commitments.¹¹⁸ These countries could, in theory, raise tariffs to protect

¹¹³ See JOSEPH, *supra* note 84, at 276-80 (discussing some of the most contentious issues in the Doha Round of WTO negotiations).

¹¹⁴ See *id.* at 281-83.

¹¹⁵ See Carmen G. Gonzalez, *An Environmental Justice Critique of Comparative Advantage: Indigenous Peoples, Trade Policy, and the Mexican Neoliberal Economic Reforms*, 32 U. PA. J. INT'L. L. 723, 746-47 (2011).

¹¹⁶ See JOSEPH, *supra* note 84, at 281-82.

¹¹⁷ SOPHIA MURPHY ET AL., INST. FOR AGRIC. AND TRADE POLICY, WTO AGREEMENT ON AGRICULTURE: A DECADE OF DUMPING 1 (Feb. 2005), http://www.iatp.org/files/451_2_48532.pdf; Christian Häberli, *The WTO and Food Security: What's Wrong With the Rules?*, in THE CHALLENGE OF FOOD SECURITY 163-64 (Rosemary Rayfuse & Nicole Weisflet, eds. 2012).

¹¹⁸ See JOSEPH, *supra* note 84, at 188.

domestic farmers without running afoul of the AoA.¹¹⁹ However, many Southern countries are obligated to maintain low tariffs by regional and bilateral free trade agreements and by the conditions attached to loans from the IMF and the World Bank.¹²⁰ In order to understand the limited policy space of many Southern states, it is essential to consider the cumulative impact of the AoA, regional and bilateral free trade agreements, and the lending policies of the IMF and the World Bank.

The third food regime transformed many Southern nations that were once net food exporters into net food importers.¹²¹ Many of these countries are now being buffeted by soaring food prices.¹²² In 2008, 2011, and 2013, food price increases ignited riots in countries as diverse as China, Brazil, Somalia, India, Yemen, Oman, Argentina, Turkey, Iraq, Bangladesh, Egypt, Mozambique, Algeria, Syria, Yemen, Haiti, Uganda, Kyrgyzstan, and Saudi Arabia.¹²³

Finally, the third food regime enhanced the power of the transnational corporations that dominate the global food system by redirecting food trade from national to global markets. These transnational grain traders, seed, and agrochemical corporations and retail supermarket chains wield

¹¹⁹ *See id.*

¹²⁰ *See id.* Southern countries could, in theory, challenge Northern agricultural dumping pursuant to the anti-dumping provisions of the GATT, but the complexity of these rules makes such challenges difficult. Another option for Southern states is to challenge Northern agricultural subsidies under the WTO Agreement on Subsidies and Countervailing Measures (SCM). Brazil, for example, mounted a successful WTO challenge against U.S. cotton subsidies. The United States responded by recasting the subsidy schemes to achieve technical compliance with AoA and SCM requirements. When the U.S. response was found to contravene its WTO obligations, an arbitrator authorized Brazil to apply countermeasures to U.S. products. This result bodes ill for Southern countries, most of whom are too poor to be able to retaliate in a meaningful manner with countermeasures against U.S. imports. *See id.* at 188-190.

¹²¹ *See* ACTIONAID INT'L, IMPACT OF AGRO-IMPORT SURGES IN DEVELOPING COUNTRIES 8 (Mar. 2008), http://geoinovace.data.quonia.cz/materialy/ZX501_Globalni_problemy_svetove_ekonomiky/Setkani_c_2/ActionAid_2008_agro_import.pdf.

¹²² *See generally* NAOMI HOSSAIN, RICHARD KING, & ALEXANDRA KELBERT, INST. OF DEV. STUDIES & OXFAM INT'L, SQUEEZED: HIGHLIGHTS FROM LIFE IN A TIME OF FOOD PRICE VOLATILITY, YEAR 1 RESULTS (May 2013), <https://www.oxfam.org/sites/www.oxfam.org/files/rr-squeezed-food-price-volatility-year-one-230513-summ-en.pdf>.

¹²³ *See* Nafeez Ahmed, *Global Riot Epidemic Due to Demise of Cheap Fossil Fuels*, GUARDIAN (Feb. 28, 2014), <http://www.theguardian.com/environment/earth-insight/2014/feb/28/global-riots-protests-end-cheap-fossil-fuels-ukraine-venezuela>.

unprecedented market power.¹²⁴ This market power enables these companies to pay farmers low prices for their agricultural output, charge farmers high prices for agricultural inputs (such as seeds and fertilizers), impose product quality standards that may be too onerous for many small farmers to satisfy, and overcharge consumers.¹²⁵ Moreover, as explained below, these transnational agri-food corporations initiated the biofuels boom in order to maintain and increase agricultural subsidies and to create new demand for the resulting glut of agricultural commodities.

C. Agribusiness, Financial Speculation, and the Biofuels Boom

The biofuels boom began with the promotion of corn-based ethanol in the United States, by corporate agribusiness.¹²⁶ Eager to maintain and expand government subsidies based on the quantity of corn produced, U.S. based agri-food corporations developed new and innovative uses for corn, such as corn-based ethanol, high-fructose corn syrup, and cheap corn filler, used in a variety of food products.¹²⁷ After the OPEC oil embargo of the early 1970s and the subsequent energy crisis, Congress encouraged the production of corn-based ethanol through new subsidies and tax incentives, with most of the benefits accruing to large corporations.¹²⁸

The rapid increase in biofuels production in the first decade of the 21st century was likewise driven by government support for corporate agribusiness.¹²⁹ Despite the questionable climate benefits of the vast majority of first-generation biofuels,¹³⁰ both the United States and the European Union promoted biofuels as part of their energy policies through subsidies, tax exemptions, and mandates for the blending of biofuels into transportation fuels.¹³¹

In the United States, the Energy Independence and Security Act of

¹²⁴ See CLAPP, *supra* note 70, at 96-118.

¹²⁵ See *id.*; JOSEPH, *supra* note 84, at 198-99; Tristan Feunteun, *Cartels and the Right to Food: An Analysis of States' Duties and Options*, 18 J. INT'L ECON. L. 341, 345-54 (2015) (explaining how agricultural cartels interfere with the right to food).

¹²⁶ See Melissa Powers, *King Corn: Will the Renewable Fuel Standard Eventually End Corn Ethanol's Reign?*, 11 VT. J. ENVTL. L. 667, 678 (2010).

¹²⁷ See *id.* at 678-679.

¹²⁸ See *id.*, at 679-81; Roberta F. Mann & Mona L. Hymel, *Moonshine to Motorfuel: Tax Incentives for Fuel Ethanol*, 19 DUKE ENVTL. L. & POL'Y F. 43, 72-73 (2008).

¹²⁹ See SMITH, *supra* note 1, at 67, 69-70, 76-77.

¹³⁰ See MABEE & SADLER, *supra* note 43, at 6, 18-19.

¹³¹ See HLPE, *supra* note 388, at 27-32; Wise & Cole, *supra* note 388, at 14.

2007¹³² established Renewable Fuel Standards that require the blending of 36 billion gallons of biofuels into U.S. transportation fuels by 2022.¹³³ The law does not mandate any assessment of the environmental or human rights impacts of biofuels either in the United States or abroad.¹³⁴ The only environmental requirement is that the biofuels from facilities constructed after 2007 reduce life cycle greenhouse gas emissions by 20 percent relative to the life cycle emissions of fossil fuels.¹³⁵ While the legislation itself grandfathers existing corn ethanol producers and exempts them from the 20 percent greenhouse gas reduction requirement, regulations promulgated by the U.S. Environmental Protection Agency (EPA) extend this exemption to new corn ethanol producers by concluding, under questionable assumptions, that most new facilities will meet the 20 percent standard.¹³⁶ In other words, the U.S. Renewable Fuel Standards promote the blending of corn-based ethanol into gasoline even if this may ultimately exacerbate climate change by increasing greenhouse gas emissions.¹³⁷

In the European Union, the 2009 Directive on the Promotion of the Use of Energy from Renewable Sources (the Renewable Energy Directive)¹³⁸ requires that each EU member state derive at least ten percent of its transportation fuels from biofuels by 2020.¹³⁹ While the Renewable Energy Directive does establish sustainability criteria for biofuels,¹⁴⁰ these criteria are purely environmental and do not address the social and human rights

¹³² 42 U.S.C. § 7545(o) (2009).

¹³³ See Powers, *supra* note 126, at 668.

¹³⁴ See Jamie Konopacky, *Refueling Biofuel Legislation: Incorporating Social Sustainability Principles to Protect Land Rights*, 30 WIS. INT'L L.J., 401, 405 (2012).

¹³⁵ See 42 U.S.C. §7545(o)(2)(B)(ii) (2009).

¹³⁶ See Powers, *supra* note 126, at 672-73, 697-98 (explaining how the statute and regulations perpetuate the dominance of corn-based ethanol in U.S. transportation fuels); 40 C.F.R. §80.1403 (explaining which facilities are exempt from or presumptively in compliance with the 20 percent greenhouse gas reduction requirement). After 2022, the EPA administrator is required to consider several economic and environmental factors in setting blending volumes, including the impacts of biofuels on air and water quality, wetlands, rural economic development, job creation, wildlife habitat, and food prices. See 42 U.S.C. §7545(o)(2)(B) (ii) (I), (V) (2009).

¹³⁷ See Powers, *supra* note 126, at 673.

¹³⁸ Council Directive 2009/28/EC, 2009 O.J. (L 140/16) [hereinafter Renewable Energy Directive].

¹³⁹ See Wise & Cole, *supra* note 38, at 29.

¹⁴⁰ See Renewable Energy Directive, *supra* note 138, art. 17. For example, the directive prohibits the manufacture of biofuels from land with high biodiversity (such as primary forest) and from wetlands and peatlands. See *id.* art. 17(3), (4).

impacts of biofuels, including the impact on the right to food.¹⁴¹ However, in April 2015, in response to concerns about the food security implications of the diversion of growing amounts of food crops to produce biofuels, the European Parliament imposed a seven percent cap on the contribution of food-based biofuels to the EU's biofuel mandate.¹⁴²

Although 64 countries have now adopted biofuel mandates, the United States and the European Union are the key drivers of biofuel markets, producing and consuming enormous quantities of biofuels and outsourcing biofuels production to the Global South in order to comply with their ambitions mandates.¹⁴³ The United States, the world's largest producer and consumer of biofuels, accounts for 43 percent of the global production of biofuels,¹⁴⁴ consisting primarily of corn-based ethanol.¹⁴⁵ However, due to the requirement that a significant percentage of its mandate be fulfilled by biofuels with lower life cycle greenhouse gas emissions than corn-based ethanol, the United States will have to import significant amounts of food-based biofuels (most likely sugar-based ethanol from Brazil) in order to meet its biofuels target by 2022.¹⁴⁶ The European Union currently uses 65 percent of its vegetable oil to produce biodiesel, imports significant biofuel feedstocks from the Global South, and will have to increase the level of imports in order to fulfill its mandate by 2020.¹⁴⁷ Indeed, several companies based in the European Union have acquired lands in African countries to cultivate biofuel feedstocks for the EU market, and some of these companies have become embroiled in transactions that deprived local communities of land needed for food production.¹⁴⁸

The rise of biofuels coincides with a new development in the global

¹⁴¹ See Konopacky, *supra* note 133, at 408. While the Renewable Energy Directive does establish a special commission to report every two years on the social impacts of biofuel production both within and beyond the European Union, it does not take affirmative measures to prevent human rights abuses.

¹⁴² See *EU Parliament Sets Cap on Crop-Based Biofuels*, CLIMATE POL'Y OBSERVER (May 4, 2015), <http://climateobserver.org/eu-parliament-sets-cap-crop-based-biofuels/>.

¹⁴³ See Wise & Cole, *supra* note 38, at 3, 25-30.

¹⁴⁴ See *id.* at 12, 25.

¹⁴⁵ See *id.* at 7.

¹⁴⁶ See *id.* at 25.

¹⁴⁷ See *id.* at 29-30.

¹⁴⁸ See *id.*; ACTIONAID INT'L, FUEL FOR THOUGHT: ADDRESSING THE SOCIAL IMPACTS OF EU BIOFUELS POLICIES 20-26 (Apr. 2012), http://www.actionaidusa.org/sites/files/actionaid/fuel_for_thought.pdf (describing land transactions by European companies in Tanzania and Kenya).

food regime: financial speculation in agricultural commodity markets.¹⁴⁹ After the collapse of the U.S. housing bubble in 2007, many investors shifted their wealth into agricultural commodity markets, contributing to the 2008 global food price crisis.¹⁵⁰ In response to the deregulation of “Over The Counter” (OTC) derivatives (such as commodity index funds) following the passage of the U.S. Commodity Futures Modernization Act in 2000, commodity index funds sold by commercial banks became a popular investment vehicle.¹⁵¹ As a small number of commodity traders came to dominate the agricultural derivatives trade, the global food system became increasingly vulnerable to price fluctuations based on the decisions of these traders on behalf of large banks and their clients.¹⁵² The failure of governments to adequately regulate investments in agricultural commodities increased market volatility, posing significant risks to low-income food purchasers (including small farmers) and to net-food-importing Southern nations.¹⁵³

The success of the biofuels industry is a testament to the power of well-organized lobbying by powerful corporate interests.¹⁵⁴ Agriculture is generally a poor investment due to the relative inelasticity of food demand among wealthy consumers, the limited demand among poor consumers in the Global South, and the oversupply of food on global markets (caused by Northern agricultural subsidies). However, aggressive government promotion of the biofuels industry in the United States and the European Union has enhanced the profitability of newly deregulated agricultural commodity derivatives by stimulating and guaranteeing new demand for

¹⁴⁹ See generally Philip McMichael, *Biofuels and the Financialization of the Global Food System*, in *FOOD SYSTEMS FAILURES: THE GLOBAL FOOD CRISIS AND THE FUTURE OF AGRICULTURE* (Christopher Rosin, Paul Stock, & Hugh Campbell, eds. 2012).

¹⁵⁰ See CLAPP, *supra* note 70, at 141; Peter Wahl, *The Role of Speculation in the 2008 Food Price Bubble*, in *THE GLOBAL FOOD CHALLENGE: TOWARDS A HUMAN RIGHTS APPROACH TO TRADE AND INVESTMENT POLICIES* 70-71 (2009); Frederick Kaufman, *How Goldman Sachs Created the Food Crisis*, *FOREIGN POL'Y* (Apr. 27, 2011), <http://foreignpolicy.com/2011/04/27/how-goldman-sachs-created-the-food-crisis/>.

¹⁵¹ See CLAPP, *supra* note 70, at 139-144; McMichael, *supra* note 149, at 63; OLIVIER DE SCHUTTER, *FOOD COMMODITIES SPECULATION AND FOOD PRICE CRISES* 5-6 (Sept. 2010), http://www2.ohchr.org/english/issues/food/docs/Briefing_Note_02_September_2010_EN.pdf; Nicola Colbran, *The Financialisation of Agricultural Commodity Futures Trading: The 2006-2008 Global Food Crisis*, in *THE CHALLENGE OF FOOD SECURITY* 173-74 (Rosemary Rayfuse & Nicole Weisflet, eds. 2012).

¹⁵² See CLAPP, *supra* note 70, at 144.

¹⁵³ See WAHL, *supra* note 150, at 75-76.

¹⁵⁴ See SMITH, *supra* note 1, at 77.

agricultural products.¹⁵⁵ Furthermore, the U.S. government's expenditure of billions of dollars per year to subsidize the production of biofuels has resulted in handsome profits for agribusiness giants (such as Archer Daniels Midland Company and Cargill) and for the corporations that invest in biofuels research (including Shell, ExxonMobil, Dow, Monsanto, DuPont, and Syngenta).¹⁵⁶ Regrettably, environmental protection has provided an appealing, yet spurious, justification for the transfer of wealth from taxpayers to agri-food and energy corporations (in the form of subsidies) in the United States and the European Union.¹⁵⁷

The biofuels boom has exacerbated market volatility and fueled speculative investments in Southern agricultural lands.¹⁵⁸ The production of biofuels competes with food production and has contributed to higher food prices and growing food insecurity.¹⁵⁹ Significant percentages of food crops are currently being diverted to the production of first-generation biofuels, and this trend is likely to increase in the major biofuel-producing countries if current mandates are fully implemented.¹⁶⁰ Countries in the Global North lack the domestic capacity to fulfill their biofuels mandates, and countries in the Global South have therefore expanded their biofuels production to meet this demand.¹⁶¹ Indonesia and Malaysia, for example, have expanded oil palm plantations in order to export to the EU market. Various countries in Africa, Asia, and Latin America are likewise rapidly investing in biofuels at the expense of domestic food production.¹⁶² The United States and the European Union are anticipated to remain the primary drivers of demand for

¹⁵⁵ See McMichael, *supra* note 149, at 66; SMITH, *supra* note 1, at 70-71.

¹⁵⁶ See SMITH, *supra* note 1, at 76-78.

¹⁵⁷ See *id.* at 91-94 (discussing the minimal climate benefits of biofuels, the availability of alternative strategies to address climate change, and the interest groups ("global biofuel assemblages") that stand to benefit from biofuels mandates and subsidies).

¹⁵⁸ See LORENZO COTULA, THE GREAT AFRICAN LAND GRAB? AGRICULTURAL INVESTMENTS AND THE GLOBAL FOOD SYSTEM 67-70 (2013); HLPE, *supra* note 38, at 13-15, 55-73.

¹⁵⁹ See HLPE, *supra* note 38 at 13-15, 55-73; see generally KELLY STONE ET AL., ACTIONAID INT'L, MANDATING HUNGER: THE IMPACTS OF BIOFUELS MANDATES AND TARGETS (2015), http://www.actionaidusa.org/sites/files/actionaid/mandatinghunger-report-actionaid-lores_0.pdf; *Another Inconvenient Truth: How Biofuels Policies Are Deepening Poverty and Accelerating Climate Change* (Oxfam, Oxfam Briefing Paper No. 114, June 2008), http://www.oxfam.org.hk/content/98/content_3535tc.pdf; C. Ford Runge & Benjamin Senauer, *How Biofuels Could Starve the Poor*, 86 FOREIGN AFF. 41 (May/June 2007).

¹⁶⁰ See Wise & Cole, *supra* note 388, at 9, 35.

¹⁶¹ See SMITH, *supra* note 1, at 83; Wise & Cole, *supra* note 388, at 23, 25-30.

¹⁶² See SMITH, *supra* note 1, at 82-83.

first-generation biofuels.¹⁶³

The expansion of biofuels cultivation to satisfy U.S. and EU demand has had negative environmental consequences for countries in the Global South, including polluted and depleted local water supplies and the exacerbation of climate change through deforestation.¹⁶⁴ In Indonesia and Malaysia, for example, vast tracts of tropical forests and peatlands have been destroyed and replaced by monocultural oil palm plantations, releasing greenhouse gases and threatening a variety of species with extinction.¹⁶⁵ In 2015, the uncontrolled burning of Indonesian forests to clear land for pulpwood and palm oil sparked one of the worst environmental disasters of the year. The fires released more greenhouse gases than Germany's annual carbon dioxide emissions, blanketed the region (including the neighboring countries of Singapore, Thailand, Malaysia, and the Philippines) in smog and haze, caused a public health emergency, and threatened countless wildlife species (including orangutans, leopards, bears, and tigers).¹⁶⁶ In Brazil, the expansion of sugarcane, soy, and animal feed production for biofuels have contributed to the destruction of the Amazon rainforest as well as the biodiverse mixture of savannah and woodland known as the *cerrado*.¹⁶⁷ From the sugarcane fields of Brazil to the cornfields of the United States, many biofuels also place significant pressure on local soil and water resources, thereby limiting the water available for local consumption and food production, contaminating water supplies with pesticides and

¹⁶³ See Wise & Cole, *supra* note 388, at 35.

¹⁶⁴ See Tokar, *supra* note 1, at 126; SMITH, *supra* note 1, at 100; Fargione et al., *supra* note 466.

¹⁶⁵ See Tokar, *supra* note 1, at 127; SMITH, *supra* note 1, at 51-52, 102-03.

¹⁶⁶ See, e.g., *Indonesia Burning: Forest Fires Predicted to Be Worst on Record*, GUARDIAN (Oct. 28, 2015), <http://www.theguardian.com/world/ng-interactive/2015/oct/28/indonesia-burning-forest-fires-predicted-to-be-worst-on-record>; George Bonbiot, *Indonesia Is Burning: So Why is the World Looking Away*, GUARDIAN (Oct. 30, 2015), <http://www.theguardian.com/commentisfree/2015/oct/30/indonesia-fires-disaster-21st-century-world-media>; Matt Osborn et al., *Indonesia Forest Fires: How the Year's Worst Environmental Disaster Unfolded - Interactive*, GUARDIAN (Dec. 1, 2015), <http://www.theguardian.com/environment/ng-interactive/2015/dec/01/indonesia-forest-fires-how-the-years-worst-environmental-disaster-unfolded-interactive>. In addition to demand for Indonesian palm oil from abroad, the Indonesian government subsidizes palm oil-based biodiesel for domestic consumption in order to reduce oil imports. See *Government Levies Palm Oil Exports to Fund Biodiesel Push*, JAKARTA POST (Apr. 6, 2015), <http://www.thejakartapost.com/news/2015/04/06/govt-levies-palm-oil-exports-fund-biodiesel-push.html>.

¹⁶⁷ See Tokar, *supra* note 1, at 127.

herbicides, and accelerating soil erosion through intensive monocultural production.¹⁶⁸ In sum, biofuels degrade soil and water, exacerbate climate change, and destroy biodiversity, all of which threaten food production.

In addition to their impact on food prices and on the environment, biofuels are also triggering an explosion of large-scale leases or purchases of Southern agricultural lands on terms that may deprive current users and occupiers of land, water, and other food-producing resources.¹⁶⁹ According to data gathered by the Land Matrix, an independent land monitoring initiative, the production of biofuels and other export crops has triggered approximately 38 million hectares of land transfers. Nearly 18 million additional hectares are under negotiation.¹⁷⁰ Africa remains the principal target of these land grabs.¹⁷¹ Indeed, contrary to claims that biofuels will promote energy security by reducing dependence on petroleum from conflict-ridden countries in the Middle East, many of the countries targeted for land-grabbing (e.g., Somalia, Eritrea, Sudan, and the Democratic Republic of the Congo) are notorious for political instability, lack of

¹⁶⁸ See *id.* at 127; SMITH, *supra* note 1, at 100; See Powers, *supra* note 126, at 683-84; ELIZABETH CUSHION, ADRIAN WHITEMAN, AND GERHARD DIETERLE, THE WORLD BANK, BIOENERGY DEVELOPMENT: ISSUES AND IMPACTS FOR POVERTY AND NATURAL RESOURCE MANAGEMENT 119 (2010), <http://siteresources.worldbank.org/INTARD/Resources/Bioenergy.pdf>; OECD & FAO, OECD-FAO AGRICULTURAL OUTLOOK 2011-2020 88-89 (2011), <http://www.oecd-ilibrary.org/docserver/download/5111041e.pdf?expires=1457916513&id=id&accname=ocid194760&checksum=B68B67D63DEEC124FCD74246B464B49D>.

¹⁶⁹ See HLPE, *supra* note 38 at 77-87; AZIZ ELBEHRI ET AL., FAO, BIOFUELS AND THE SUSTAINABILITY CHALLENGE: A GLOBAL ASSESSMENT OF SUSTAINABILITY ISSUES, RRENDS, AND POLICIES FOR BIOFUELS AND RELATED FEEDSTOCKS 89 (2013), <http://www.fao.org/docrep/017/i3126e/i3126e.pdf>. See generally WARD ANSWEEUW ET AL., LAND RIGHTS AND THE RUSH FOR LAND: FINDINGS OF THE GLOBAL COMMERCIAL PRESSURES ON LAND RESEARCH PROJECT (Tim Bending & David Wilson eds., 2012), http://www.landcoalition.org/sites/default/files/documents/resources/ILC%20GSR%20report_ENG.pdf; LORENZO COTULA, SONJA VERMEULEN, REBECA LEONARD & JAMES KEELEY, FAO, IIED & IFAD, LAND GRAB OR DEVELOPMENT OPPORTUNITY? AGRICULTURAL INVESTMENT AND INTERNATIONAL LAND DEALS IN AFRICA (2009), http://www.ifad.org/pub/land/land_grab.pdf; Alexandra Spieldoch & Sophia Murphy, *Agricultural Land Acquisitions: Implications for Food Security and Poverty Alleviation*, in LAND GRAB? THE RACE FOR THE WORLD'S FARM LAND (Michael Kugelman & Susan L. Levenstein eds., 2009), https://www.wilsoncenter.org/sites/default/files/ASIA_090629_Land%20Grab_rpt.pdf.

¹⁷⁰ See LAND MATRIX, <http://landmatrix.org/en/> (last visited Mar. 30, 2016).

¹⁷¹ See ANSWEEUW ET AL., *supra* note 169, at 23.

democracy, and weak adherence to the rule of law.¹⁷²

Transnational corporations have orchestrated many of these land grabs, capitalizing on the growing demand for biofuels. Foreign investors (including Northern investment banks, hedge funds, and pension funds) speculate on cheap but rapidly appreciating Southern agricultural lands. Middle-income Southern countries (e.g., China, India, Saudi Arabia, Qatar, and South Korea) seek to invest in the offshore production of food to offset price volatility on international food markets and domestic scarcity of fertile land and irrigation water.¹⁷³ While most of the land grabs have been spearheaded by Northern enterprises, certain middle-income Southern nations (including India, Brazil, South Africa, and China) have come to play a significant role in the global land rush, sparking significant South-South tensions.¹⁷⁴

These large-scale land deals threaten the livelihoods of small farmers in the targeted Southern countries by evicting them from lands traditionally used for food cultivation, contaminating or depleting the local water supply through the industrial production of food or biofuel feedstocks for export, and depriving them of access to grazing lands, fisheries, forests, and other essential natural resources.¹⁷⁵ For example, small farmers and herders whose traditional ownership or usufruct rights are not recognized by the state may be evicted or forcibly relocated by government officials, foreign investors, or local elites seeking to lease or sell these lands to foreign investors.¹⁷⁶ The capital-intensive, export-oriented industrial farms that supplant small subsistence-based production may diminish local food availability, exacerbate poverty by reducing rural employment, pollute the local water supply with pesticide and fertilizer runoff, accelerate soil erosion

¹⁷² Chidi Oguamanam, *Sustainable Development in the Era of Bioenergy and Agricultural Land Grab*, in INTERNATIONAL ENVIRONMENTAL LAW AND THE GLOBAL SOUTH 246 (Shawkat Alam et al. eds., 2015).

¹⁷³ See Spieldoch & Murphy, *supra* note 169, at 41-42; ANSWEEUW ET AL., *supra* note 169, at 21; CLAPP, *supra* note 70, at 150-151; Oguamanam, *supra* note 172, at 237-255.

¹⁷⁴ See COTULA, *supra* note 158, at 55-67; see generally TOMASO FERRANDO, TRANSNAT'L INST., LAND GRABBING UNDER THE COVER OF LAW: ARE BRICS-SOUTH RELATIONSHIPS ANY DIFFERENT? (2014), https://www.tni.org/files/download/shifting_powerland.pdf.

¹⁷⁵ See Spieldoch & Murphy, *supra* note 169, at 43-48.

¹⁷⁶ Raul Q. Montemayor, *Overseas Farmland Investments — Boon or Bane for Farmers in Asia?*, in LAND GRAB? THE RACE FOR THE WORLD'S FARM LAND 101-02 (Michael Kugelman & Susan L. Levenstein eds., 2009); Olivier De Schutter, *The Green Rush: The Global Race for Farmland and the Rights of Land Users*, 52 HARV. INT'L L.J. 501, 537 (2011).

through intensive cultivation, intensify greenhouse gas emissions, and deprive local communities of water needed for drinking, cooking, bathing, and irrigation.¹⁷⁷

Local communities often lack legal recourse to prevent dispossession or to obtain compensation for the loss of lands and livelihoods.¹⁷⁸ In Africa, the epicenter of land grabbing, national laws generally vest ownership of rural lands in the government or customary chiefs rather than in the communities that use the land.¹⁷⁹ Government officials and local elites frequently welcome foreign agricultural investment and collaborate with foreign investors to evict local residents in order to enhance personal wealth and power.¹⁸⁰ Governments typically negotiate land purchase and lease agreements behind closed doors without consulting local land users or conducting social and environmental impact assessments.¹⁸¹ Many of these contracts contain “stabilization clauses” entitling the foreign investor to compensation for any economic losses caused by the government’s modification of the legal framework applicable to the investment, thereby discouraging the state from promulgating new laws and regulations to protect the local environment and the human rights of its citizens.¹⁸²

These inequities are often compounded by international investment agreements that protect the assets of foreign investors from government actions that might diminish their value while providing no redress to local communities harmed by the actions of foreign investors (such as the right to bring a claim in the foreign investor’s home state).¹⁸³ Bilateral investment treaties (BITs) between the host state (where the investment is located) and the foreign investor’s home state typically prohibit direct and indirect

¹⁷⁷ Ruth Meinzen-Dick & Helen Markelova, *Necessary Nuance: Toward a Code of Conduct in Foreign Land Deals*, in *LAND GRAB? THE RACE FOR THE WORLD’S FARM LAND* 74 (Michael Kugelman & Susan L. Levenstein eds., 2009); Montemayor, *supra* note 176, at 102-105; Spieldoch & Murphy, *supra* note 169, at 46-47.

¹⁷⁸ See COTULA, *supra* note 158, at 99-100.

¹⁷⁹ See *id.* at 27, 86-87, 90-101.

¹⁸⁰ See LORENZO COTULA, *Land Grabbing in the Shadow of the Law: Legal Frameworks Regulating the Global Land Rush*, in *THE CHALLENGE OF FOOD SECURITY* 218 (Rosemay Rayfuse & Nicole Weisflet, eds. 2012).

¹⁸¹ See COTULA, *supra* note 158, at 112-113.

¹⁸² See *id.* at 116-117.

¹⁸³ See Kate Miles, *International Investment Law: Origins, Imperialism and Conceptualizing the Environment*, 21 *Colo. J. of INT’L ENV’T L. & POL’Y* 1, 40-44 (2010); Carmen G. Gonzalez, *Bridging the North-South Divide: International Environmental Law in the Anthropocene*, 32 *PACE ENV’T L. REV.* 407, 413 (2015).

expropriation, guarantee fair and equitable treatment of the foreign investor and the right to export the goods produced, and permit the foreign investor to bypass the domestic legal system in the event of a dispute by initiating arbitration proceedings against the host state.¹⁸⁴ These provisions may deter the host state from enacting labor, health and safety, environmental, and human rights legislation in order to avoid claims for compensation from foreign investors for economic losses resulting from this legislation.¹⁸⁵ For example, the fair and equitable treatment obligation requires the host state to honor the foreign investor's "legitimate expectations" arising from the land transaction even if these expectations (such as water to irrigate crops) are not spelled out in the land purchase agreement.¹⁸⁶ If the host state reallocates water rights in order to ensure that area residents have enough water for drinking, bathing, and small-scale agriculture, the foreign investor may be entitled to financial compensation.¹⁸⁷ Similarly, if the host state responds to domestic food shortages by restricting the investor's ability to export agricultural products, the host state may be required to compensate the foreign investor even if the export restrictions are authorized under the WTO and other applicable free trade agreements.¹⁸⁸

Beyond their immediate impact on food-insecure populations, these land grabs hasten the Global South's transition to large-scale, capital-intensive industrial agriculture¹⁸⁹ at a time when scientists and policy makers are increasingly promoting small-scale sustainable agriculture in food-insecure countries as a means of fulfilling the right to food and addressing climate change. For example, the United Nations Conference on Trade and Development (UNCTAD) published a major report in 2013 recommending a paradigm shift away from industrial agriculture and toward sustainable,

¹⁸⁴ See CARIN SMALLER & HOWARD MANN, IISD, A THIRST FOR DISTANT LANDS: FOREIGN INVESTMENT IN AGRICULTURAL LAND AND WATER 11-13 (2009), http://www.iisd.org/pdf/2009/thirst_for_distant_lands.pdf.

¹⁸⁵ See Miles, *supra* note 183, at 40-44.

¹⁸⁶ See SMALLER & MANN, *supra* note 184, at 12; U.N. Dep't of Econ. & Soc. Aff. (UNDESA), *Foreign Land Purchases for Agriculture: What Impact on Sustainable Development?* 3 (Sustainable Dev. Innovation Brief No. 8, Jan. 2010), <https://docs.google.com/gview?url=http://sustainabledevelopment.un.org/content/documents/no8.pdf&embedded=true>.

¹⁸⁷ SMALLER & MANN, *supra* note 184, at 16-17.

¹⁸⁸ UNDESA, *supra* note 186, at 4.

¹⁸⁹ See SMITH, *supra* note 1, at 62-63; ASBJØRN EIDE, FAO, THE RIGHT TO FOOD AND THE IMPACT OF LIQUID BIOFUELS (AGROFUELS) 17-18 (2008) (explaining how biofuels production favors large-scale plantations).

regenerative agricultural production systems that enhance the productivity of small-scale farmers.¹⁹⁰ Numerous studies have demonstrated the ability of sustainable agriculture to increase agricultural yields in Asia, Africa, and Latin America while improving environmental quality, decreasing dependence on external inputs, and preserving the traditional agro-ecological knowledge of small farmers and indigenous communities.¹⁹¹ Additional studies have emphasized the ability of sustainable agriculture to enhance climate change mitigation and adaptation by reducing dependence on agrochemical and energy inputs, enhancing soil fertility, diversifying plant species and genetic resources, and increasing the water retention capacity of soils.¹⁹²

In sum, biofuels are not simply an alternative technology designed to

¹⁹⁰ See generally UNCTAD, TRADE AND ENVIRONMENT REVIEW 2013, WAKE UP BEFORE IT IS TOO LATE: MAKE AGRICULTURE TRULY SUSTAINABLE NOW FOR FOOD SECURITY IN A CHANGING CLIMATE (2013), http://unctad.org/en/PublicationsLibrary/ditcted2012d3_en.pdf.

¹⁹¹ See Olivier De Schutter, *Report Submitted by the Special Rapporteur on the Right to Food*, ¶ 20, U.N. Doc. A/HRC/16/49 (Dec. 2010), <http://www2.ohchr.org/english/issues/food/docs/A-HRC-16-49.pdf>; U.N. Conf. Trade & Dev. & UNEP, *Organic Agriculture and Food Security in Africa*, U.N. Doc. UNCTAD/DITC/TED/2007/15 (2008), http://unctad.org/en/docs/ditcted200715_en.pdf; Carolyn Badgley et al., *Organic Agriculture and the Global Food Supply*, 22 RENEWABLE AGRIC. & FOOD SYSTEMS 86 (2007); Jules N. Pretty et al., *Resource Conserving Agriculture Increases Yields in Developing Countries*, 40 ENVTL SCI. & TECH. 1114 (2006); IFAD, THE ADOPTION OF ORGANIC AGRICULTURE AMONG SMALL FARMERS IN LATIN AMERICA AND THE CARIBBEAN (2003), http://www.ifad.org/evaluation/public_html/eksyst/doc/thematic/pl/organic.htm; NICHOLAS PARROTT & TERRY MARSDEN, THE NEW GREEN REVOLUTION: ORGANIC AND AGROECOLOGICAL FARMING IN THE SOUTH GREENPEACE ENVIRONMENTAL TRUST (2002); Jules N. Pretty, *Reducing Food Poverty by Increasing Sustainability in Developing Countries*, 95 AGRIC. ECOSYSTEMS & ENV'T 217 (2003); Jules N. Pretty & Rachel Hine, *The Promising Spread of Sustainable Agriculture in Asia*, 24 NAT. RESOURCES F. 107 (2002); Jules N. Pretty, *Can Sustainable Agriculture Feed Africa? New Evidence on Progress, Processes and Impacts*, 1 ENV'T, DEV., & SUSTAINABILITY 253 (1999).

¹⁹² See generally IIED WORKING GROUP ON CLIMATE CHANGE & DEV., OTHER WORLDS ARE POSSIBLE: HUMAN PROGRESS IN AN AGE OF CLIMATE CHANGE 40-42 (2009), <http://pubs.iied.org/pdfs/10022IIED.pdf>; INT'L TRADE CTR. UNCTAD/WTO & RES. INST. ORGANIC AGRIC., ORGANIC FARMING AND CLIMATE CHANGE (2007), http://www.intracen.org/uploadedFiles/intracenorg/Content/Exporters/Sectoral_Information/Agricultural_Products/Organic_Products/Organic_Farming_Climate_Change.pdf. See also Miguel A. Altieri & Victor Manuel Toledo, *The Agroecological Revolution in Latin America: Rescuing Nature, Ensuring Food Sovereignty and Empowering Peasants*, 38 J. PEASANT STUD. 587, 596-97 (2011) (discussing the social and environmental benefits of agroecology, including its ability to foster climate change resilient agricultural systems).

address climate change. Rather, they represent the perpetuation and intensification of an industrial model of agricultural production that threatens the planet's ecosystems, contributes to climate change, and exacerbates food insecurity in the Global South. The offshore cultivation of biofuel feedstocks also replicates patterns observed in the manufacturing sector—namely, the outsourcing of economic activity to the Global South in order to capitalize on lower labor costs and weak environmental standards while imposing the social and environmental externalities on vulnerable local communities.¹⁹³

An environmental justice framework provides a morally compelling language with which to discuss biofuel policy and may offer insights on the multiplicity of legal strategies necessary to address the problems posed by bioenergy. Biofuels contribute to distributive injustice because the benefits are reaped by commercial lenders, financial speculators, oil companies, agribusiness corporations, and affluent consumers, who can maintain their car-dependent, energy-intensive lifestyles by simply replacing fossil fuels with food-based biofuels.¹⁹⁴ The costs are borne disproportionately by the world's most food-insecure populations who confront rising food prices and eviction from the lands they have traditionally used for farming, foraging, and grazing. Biofuels are an example of procedural injustice because the U.S. and EU biofuel mandates are being implemented without an adequate assessment of their environmental and human rights impacts and without any input from the communities in the Global South who bear the bulk of these impacts. Similarly, the large-scale land acquisitions are transpiring without the free, prior, and informed consent of the affected populations. Biofuel policies exemplify corrective injustice because the communities deprived of the right to food (by rising food prices) or evicted from their lands (due to land grabbing) often have no legal recourse either in the country where they reside or in other legal fora. Finally, biofuel policies are inextricably intertwined with larger social justice issues, including an international economic order that has historically enriched the Global North at the expense of nature and of the planet's most vulnerable communities.¹⁹⁵

¹⁹³ See McMichael, *supra* note 149, at 65-67.

¹⁹⁴ See SMITH, *supra* note 1, at 91-92 (discussing the negligible climate benefits of biofuels and suggesting alternative strategies to reduce the global North's massive greenhouse gas emissions).

¹⁹⁵ See Gonzalez, *Environmental Justice, Human Rights and the Global South*, *supra* note 4, at 159-63 (examining the contemporary and historic features of the global economic order that impoverish the global South and threaten the planet's fragile ecosystems).

III. LEGAL AND POLICY INTERVENTIONS TO PROMOTE ENVIRONMENTAL JUSTICE

A justice-oriented approach to bioenergy must promote the human right to food, regulate the corporations that dominate the global food system, curb financial speculation in agricultural commodity markets, and halt land grabbing. This Section discusses several necessary reforms in order to mitigate the environmental injustice caused by the bioenergy policies of the United States and the European Union.

A. *The Right to Food*

Environmental justice is grounded in human rights, including the fundamental human right to food.¹⁹⁶ The right to food is enshrined in the Universal Declaration of Human Rights (UDHR), the International Covenant on Economic, Social and Cultural Rights (ICESCR), and the United Nations Convention on the Rights of the Child.¹⁹⁷ All states, even those who are not parties to treaties with binding right-to-food obligations, are required to protect the right to food pursuant to the UDHR, which is generally regarded as part of customary international law or as a codification of general principles of law reflected in national constitutions of a large number of states and legal systems in the world.¹⁹⁸

¹⁹⁶ See Carmen G. Gonzalez, *Genetically Modified Organisms and Justice: The International Environmental Justice Implications of Biotechnology*, 19 GEO. INT'L ENV'T L. REV. 583, 626 (2007).

¹⁹⁷ See Universal Declaration, *supra* note 23; ICESCR, *supra* note 23; Convention on the Rights of the Child, *supra* note 23. While the United States is not a party to the Convention on the Rights of the Child, it is a signatory to the ICESCR and must therefore act consistently with the object and purpose of the treaty. See *Current Status of Ratifications for the International Covenant on Economic, Social and Cultural Rights*, U.N. TREATY COLLECTION, https://treaties.un.org/Pages/ViewDetails.aspx?src=TREATY&mtdsg_no=IV-3&chapter=4&lang=en (last visited Mar. 30, 2016). Furthermore, the United States must comply with the UDHR, which is widely regarded as a legally binding codification of general principles of international law, or alternatively as customary international law. See Olivier de Schutter, *A Human Rights Approach to Trade and Investment*, Paper Presented at Conference: Confronting the Global Food Challenge: Finding New Approaches to Trade and Investment that Support the Right to Food (Nov. 2008), http://www.iatp.org/files/451_2_104504.pdf.

¹⁹⁸ See Olivier de Schutter, *supra* note 197; BERTA E. HERNANDEZ-TRUYOL & STEPHEN J. POWELL, JUST TRADE: A NEW COVENANT LINKING TRADE AND HUMAN RIGHTS 56-57 (2009). See also Smita Narula, *The Right to Food: Holding Global Actors Accountable Under International Law*, 44 COLUM. J. TRANSNAT'L L. 691, 780-791 (2006) (using human rights treaties, UN resolutions, humanitarian law, multi-state declarations, constitutional provisions, and jurisprudence in national courts as evidence that the right to food is part of customary

In General Comment 12, the United Nations Committee on Economic, Social and Cultural Rights defines the right to food as physical and economic access at all times to adequate food or the means for its procurement.¹⁹⁹ Comment 12 also explains the duties of states to respect, protect, and fulfill this right.²⁰⁰ First, states must *respect* the right to food by refraining from taking measures that will impede such access.²⁰¹ For example, states must consider the impact of their laws and policies (such as biofuel mandates) on the right to food and modify these laws and policies to avoid interfering with the ability of communities and individuals to feed themselves.²⁰² Second, states must *protect* the right to food by adopting measures “to ensure that enterprises or individuals do not deprive individuals of their access to adequate food.”²⁰³ For example, states must adopt safeguards to prevent local elites and transnational corporations from depriving vulnerable groups of land and water necessary to grow food and must prevent the degradation of the ecosystems that support agricultural production.²⁰⁴ Third, states must *fulfill* the right to food by providing food to vulnerable populations “whenever an individual or group is unable, for reasons beyond their control, to enjoy the right to adequate food by the means at their disposal.”²⁰⁵ States must also facilitate the right to food by enhancing the livelihoods of food insecure populations.²⁰⁶ States can fulfill these obligations by maintaining robust social safety nets and by using tariff barriers to protect small farmers from ruinous competition with highly subsidized food imports from the United States and the European Union.

International human rights law requires states to comply with their right-to-food obligations not just within their own borders, but also extraterritorially.²⁰⁷ This extraterritorial dimension of human rights law is

international law).

¹⁹⁹ See U.N. Econ. & Soc. Council, Comm. on Econ. Soc. & Cultural Rights (CESCR), General Comment No. 12: The Right to Adequate Food (Art. 11), ¶ 6, U.N. Doc. E/C.12/1999/5 (May 12, 1999) [hereinafter General No. Comment 12].

²⁰⁰ See *id.*

²⁰¹ *Id.* ¶ 15.

²⁰² See Nadia C. S. Lambek, *Respecting and Protecting the Right to Food: When States Must Get Out of the Kitchen*, in *RETHINKING FOOD SYSTEMS: STRUCTURAL CHALLENGES, NEW STRATEGIES AND THE LAW* 108 (Nadia C. S. Lambek et al., eds., 2014).

²⁰³ General Comment No. 12, *supra* note 199, ¶ 15.

²⁰⁴ See Lambek, *supra* note 202, at 109-110.

²⁰⁵ General Comment No. 12, *supra* note 199, ¶ 15.

²⁰⁶ See Lambek, *supra* note 202, at 110.

²⁰⁷ See JOSEPH, *supra* note 84, at 245-64 (discussing the legal and moral arguments in

particularly important in light of what Penelope Simons calls the “diminished governance capacity of Third World states, which is the result of years of intervention by international law and international institutions.”²⁰⁸ In other words, as explained in Part II of this Article, the loan conditions imposed by the IMF and the World Bank, in conjunction with international trade and investment agreements, have generally benefitted foreign investors and transnational agri-food corporations, while restricting the ability of Southern states to comply with their human rights obligations. Imposing extraterritorial obligations on Northern countries promotes human rights by requiring the Global North to modify the aid, trade, investment, and lending practices that have inflicted enormous harm on the world’s most food insecure populations and have impaired the ability of Southern states to regulate in the public interest.²⁰⁹

The extraterritorial nature of human rights obligations is derived, in part, from the customary international law principles affirmed in the *Trail Smelter Arbitration*²¹⁰ that prohibit states from using their territory in ways that harm persons or property located in another state.²¹¹ In addition, Article

favor of the recognition of extraterritorial human rights obligations); Gonzalez, *International Economic Law and the Right to Food*, *supra* note 24, at 168-169; Michael Windfuhr, *The World Food Crisis and the Right to Adequate Food*, in UNIVERSAL HUMAN RIGHTS AND EXTRATERRITORIAL OBLIGATIONS 130-156 (Mark Gibney & Sigrun Skogly, eds., 2010). In 2011, a distinguished group of human rights experts developed a series of principles to clarify the extraterritorial obligations of states. See generally ETOS CONSORTIUM, MAASTRICHT PRINCIPLES ON EXTRATERRITORIAL OBLIGATIONS OF STATES IN THE AREA OF ECONOMIC, SOCIAL AND CULTURAL RIGHTS (Sept. 2011), http://www.etoconsortium.org/nc/en/main-navigation/library/maastricht-principles/?tx_drblob_pi1%5BdownloadUid%5D=23; Oliver de Schutter et al., *Commentary to the Maastricht Principles on Extraterritorial Obligations of States in the Area of Economic, Social and Cultural Rights*, 34 HUM. RTS. Q. 1084 (2012).

²⁰⁸ Penelope Simons, *International Law’s Invisible Hand and the Future of Corporate Accountability for Violations of Human Rights*, 3 J. HUM. RTS. & ENV’T 5, 40 (2012).

²⁰⁹ See JOSEPH, *supra* note 84, at 255-59 (discussing some of the policy reasons for extraterritorial human rights).

²¹⁰ *Trail Smelter Arbitration* (U.S. v. Can.), 3 R.I.A.A. 1905, 1963-81 (Perm. Ct. Arb. 1941).

²¹¹ See HERNANDEZ-TRUYOL & POWELL, *supra* note 198, at 287 (discussing the human rights implications of the *Trail Smelter Arbitration*). The duty to refrain from causing transboundary harm was subsequently re-affirmed in Principle 2 of the Rio Declaration on Environment and Development and Principle 21 of the Stockholm Declaration. See U.N. Conference on Environment and Development, *Rio Declaration on Environment and Development*, princ. 2, U.N. Doc. A/CONF.151/26/Rev. 1 (Vol. I), annex I (Aug. 12, 1992); U.N. Conference on the Human Environment, *Stockholm Declaration*, princ. 21, U.N. Doc. A/CONF.48/14/Rev. 1, ch. 1 (June 16, 1972).

56 of the Charter of the United Nations imposes affirmative extraterritorial obligations on all states by requiring all UN members to “take joint and separate action in cooperation with the Organization” to ensure the realization of human rights.²¹² Finally, Article 2(1) of the ICESCR requires states to “take steps, individually and through international assistance and cooperation” to progressively realize the rights set forth in the treaty, including the right to food.²¹³ As General Comment 12 explains:

In the spirit of article 56 of the Charter of the United Nations, . . . States parties should take steps to respect the enjoyment of the right to food in other countries, to protect that right, to facilitate access to food, and to provide necessary aid when required. States parties should, in international agreements whenever relevant, ensure that the right to adequate food is given due attention and consider the development of further international legal instruments to that end.²¹⁴

In order to comply with the right-to-food obligations under international human rights law, the United States and the European Union should actively discourage the production and consumption of first- and second-generation biofuels that compete with food production for land and water, including biofuels produced from non-food energy crops (such as jatropha and switchgrass). First, the United States and the European Union should phase out the subsidies, tax credits, and other incentives that make the production of these biofuels so lucrative.²¹⁵ Second, the United States and the European Union should abolish renewable energy mandates for transportation fuels until third-generation biofuels that do not compete with food have been developed, tested, and scrutinized for their environmental and human rights impacts and have been commercially produced.²¹⁶ The European Parliament’s seven percent limit on the contribution of food-based biofuels to the EU’s renewable fuels mandate is an important first step, but it does

²¹² U.N. Charter, art. 56, <http://www.un.org/en/charter-united-nations/>. These obligations are extraterritorial because they require countries to work together toward the realization of human rights in their own countries and in other countries.

²¹³ ICESCR, *supra* note 23, art. 2, ¶ 1.

²¹⁴ General Comment No. 12, *supra* note 199, ¶ 36.

²¹⁵ The United States has made modest progress in this direction by allowing the tax credit for corn-based ethanol and biodiesel to expire in 2011. However, other tax credits (such as those for biodiesel infrastructure) and smaller government agency incentive programs remain in place. See Wise & Coles, *supra* note 38, at 14, 25.

²¹⁶ For a discussion of the promise of algal biofuels and potential environmental challenges, see generally Heather Hunziker, *Finding Promise in Pond Scum: Algal Biofuels, Regulation, and the Potential for Environmental Problems*, 42 TEX. ENVTL. L. J. 59 (2011).

not go far enough. Third, the United States and the European Union must devise mechanisms to limit demand for biofuels that interfere with food production. Even if the subsidies, tax credits, and mandates are eliminated, biofuels will remain attractive if prices for competing fossil fuels rise.²¹⁷ The United States and the European Union should devise regulatory barriers to the expansion of first and second-generation biofuels that threaten food security, including taxes and outright prohibitions.²¹⁸ Fourth, the United States and the European Union should invest in research to expedite the development of third-generation biofuels, such as algae-based biofuels, that do not make use of land or water that could be used for food production. Any new technology should be subjected to rigorous environmental and human rights impact assessments, including assessments of the impacts in the Global South. These assessments should adopt methodologies that include input from local populations likely to be affected and should take into account impacts on food security, land rights, and climate change.

Finally, instead of relying on technological fixes to the climate crisis, the United States and the European Union should adopt alternative methods of reducing greenhouse gas emissions in the transportation sector, including more stringent fuel efficiency standards, reduced speed limits, subsidies and incentives to promote public transit and car sharing, congestion charges, and bicycle-friendly policies.²¹⁹ These low-risk, low-impact approaches would enable affluent countries to take responsibility for their disproportionate contribution to climate change rather than investing in false solutions designed to enrich Northern banks, agribusiness corporations, oil companies, and financial speculators.

Framing biofuel policy in the language of human rights and environmental justice will enable civil society organizations to name and shame the governments whose biofuel mandates and subsidies contribute to chronic undernourishment and dispossession in the Global South. The language of human rights is morally compelling and has been invoked by national and transnational food movements to demand a more equitable and sustainable food system.²²⁰ In order to exert pressure on the United States and the European Union to modify their biofuel policies, it is essential to

²¹⁷ See HLPE, *supra* note 38, at 62–63 (explaining how changes in fossil fuel prices influence the production and consumption of biofuels).

²¹⁸ For a discussion of the legality under the GATT/WTO of human rights-based restrictions on trade, see JOSEPH, *supra* note 84, at 91–130.

²¹⁹ See SMITH, *supra* note 1, at 91–92.

²²⁰ See Gonzalez, *supra* note 31, at 433–34.

reframe the debates over biofuels as a matter of social justice rather than a technical problem to be resolved by scientific experts. While the recommendations set forth above will alleviate the enormous pressure on land and water posed by the explosive growth of biofuels, it is important to recognize that biofuels are deeply embedded in a global food system that violates the right to food by promoting large-scale industrial agriculture at the expense of the environment and of the planet's most vulnerable communities.

In addition to the biofuel-specific recommendations set forth above, the United States and the European Union should *respect* the right to food in the Global South by eliminating the agricultural subsidies that promote industrial agriculture, distort global food markets, and undermine the livelihoods of small farmers. The United States and the European Union should also negotiate, interpret, and apply trade and investment agreements in ways that provide Southern countries with sufficient flexibility to regulate in the public interest and to deploy subsidies, tariffs and other import barriers to protect the environment and to enhance the livelihoods of small farmers and other food-insecure populations. The United States and the European Union should *protect* the right to food by ensuring that third parties subject to their jurisdiction and control, such as transnational corporations, do not violate the right to food in other countries through agricultural export dumping and land grabbing. The United States and the European Union should also exercise their voting power at the IMF, the World Bank, and regional development banks to ensure that the policies and practices of these institutions comply with their right-to-food obligations instead of imposing devastating austerity programs and impeding the ability of Southern countries to increase tariffs to protect small farmers from unfair competition with Northern agribusiness. Finally, the United States and the European Union should *fulfill* the right to food by providing food aid in ways that improve rather than undercut rural livelihoods by, for example, financing the purchase of such food from local farmers in the Global South in food-abundant areas instead of deploying food aid as a means of disposing of surplus Northern production in Southern nations.²²¹

B. Regulating the Corporations that Dominate the Global Food System

One of the greatest obstacles to the realization of the right to food is

²²¹ For a discussion of the specific measures that the United States and the European Union might take to respect, protect, and fulfill the right to food in the global South, see Gonzalez, *International Economic Law and the Right to Food*, *supra* note 24, at 184-91.

corporate domination of the global food system. From export dumping to land grabbing, transnational corporations are significant contributors to global food insecurity. The governance challenges of Southern states and the failure of Northern states to regulate the conduct of their transnational corporations enable these business entities to escape liability for right-to-food violations. While a complete discussion of the legal strategies that might be adopted to achieve corporate accountability is beyond the scope of this Article, possible approaches include enhancing the human rights enforcement capacity of Southern countries, holding Northern countries liable for failing to regulate the extraterritorial conduct of their corporations, strengthening the mechanisms available in the corporation's home state to adjudicate human rights violations abroad, negotiating treaties that impose human rights obligations directly on corporations, and mitigating the market power of transnational corporations through the aggressive use of anti-competition law.²²²

²²² For a detailed discussion of these options, see generally Robert McCorquodale & Penelope Simons, *Responsibility Beyond Borders: State Responsibility for Extraterritorial Violations by Corporations*, 70 MODERN LAW REVIEW 598 (2007) (arguing that failure to regulate the extraterritorial conduct of their corporations may render states liable for the human rights violations committed by their corporations in other countries); PENELOPE SIMONS & AUDREY MACKLIN, *THE GOVERNANCE GAP: EXTRACTIVE INDUSTRIES, HUMAN RIGHTS, AND THE HOME STATE ADVANTAGE* (2014) (proposing a framework for strengthening the ability of states to regulate the extraterritorial conduct of their corporations); Gonzalez, *Environmental Justice and International Environmental Law*, *supra* note 4, at 92-95 (discussing a variety of ways to promote corporate accountability for human rights violations, including enhancing the ability of aggrieved communities to obtain legal redress for human rights violations); Human Rights Council Res. 26/9, *Elaboration of an International Legally Binding Instrument on Transnational Corporations and Other Business Enterprises with Respect to Human Rights*, U.N. Doc. A/HRC/RES/26/9 (July 14, 2014) (proposing to create a binding treaty to impose human rights obligations on corporations); U.N. CONFERENCE ON TRADE AND DEV., *MODEL LAW ON COMPETITION*, U.N. Doc. TD/RBP/CONF.5/7/Rev.3, U.N. Sales No. E-07.II.D.7 (2007); Feunteun, *supra* note 125, at 366-81 (discussing how competition law may be used to help states meet their right-to-food obligations and to mitigate the power of transnational corporations in the global food system). One of the more intriguing suggestions is holding states responsible for the human rights violations of their corporations where a state has actual knowledge of potential human rights violations (caused by land grabbing or export dumping, for example) and either fails to exercise due diligence to prevent such violations or enters into trade and investment agreements that curtail the affected state's ability to protect the human rights of its citizens. See McCorquodale & Simons, *supra* note 222, at 619-23.

C. *Curbing Speculation in Agricultural Commodity Markets*

The United States has been slow to regulate the financial services industry despite the fact that financial speculation in agricultural commodity markets has increased the volatility of food prices to the detriment of low-income consumers and Southern nations dependent upon food imports.²²³ The European Union, by contrast, adopted the Markets in Financial Instruments Directive (MiFID) in 2007 to regulate speculation in agricultural commodity markets by imposing position limits and other mechanisms to curb speculative trading.²²⁴ However, the MiFID has been criticized for broad exemptions that allow certain groups, such as energy companies, insurance firms, and pension funds, to evade many of the directive's requirements.²²⁵ Since releasing the MiFID, the European Union has sought to close some of these exemptions and impose additional restrictions on commodity speculation.²²⁶ The regulatory options under review include a tax on financial transactions in order to discourage speculative stock, bond, and derivative trading.²²⁷ However, implementation has been delayed until 2016 due to pressure from the measure's opponents.²²⁸

While a full discussion of this topic is beyond the scope of this Article,

²²³ See TIMOTHY A. WISE & SOPHIA MURPHY, INST. AGRIC. & TRADE POL'Y, RESOLVING THE FOOD CRISIS: ASSESSING GLOBAL POLICY REFORMS SINCE 2007 30-31 (2012), <http://www.ase.tufts.edu/gdae/Pubs/rp/ResolvingFoodCrisis.pdf>. Even though the Dodd Frank Wall Street Reform and Consumer Protection Act of 2010 attempted to curb excessive speculation on the prices of raw materials and agricultural products, the promulgation of regulations has been bogged down by the demanding evidentiary standards imposed by the courts on financial rule-making. See generally Leslie Josephs, *CFTC Nears New Rules to Curb Excessive Speculation*, WALL ST. J. (Jan. 22, 2015), <http://www.wsj.com/articles/cftc-nears-new-rules-to-curb-excessive-speculation-1421964452>; James W. Williams, *Dodging Dodd-Frank: Excessive Speculation, Commodities Markets, and the Burden of Proof*, 37 L. & POL'Y 119 (2015); Ben Geier, *Four Years on, Dodd-Frank Is Still Unfinished*, FORTUNE (July 21, 2014), <http://fortune.com/2014/07/21/four-years-on-dodd-frank-is-still-unfinished/>.

²²⁴ See generally Umberto Marengo, *The Effects of the Financial Crisis on EU Financial Regulation for Commodities*, REV. OF ENV'T, ENERGY & ECON. (May 14, 2015), <http://dx.doi.org/10.7711/feemre3.2015.05.002>.

²²⁵ See DIEGO VALIANTE & KAREL LANNOO, CTR. EUR. POL'Y STUD., MiFID 2.0: CASTING NEW LIGHT ON EUROPE'S CAPITAL MARKETS 123 n.170 (2011).

²²⁶ Jonathan Herbst et al., *MiFID Review: Commodities*, NORTON ROSE FULBRIGHT (Oct. 2011), <http://www.nortonrosefulbright.com/knowledge/publications/57724/mifid-review-commodities>.

²²⁷ See Jared Bernstein, *The Case for a Tax on Financial Transaction*, N.Y. TIMES (July 22, 2015), <http://www.nytimes.com/2015/07/22/opinion/the-case-for-a-tax-on-financial-transactions.html>.

²²⁸ See *id.*

the United States and the European Union might consider the policy recommendations put forth by the United Nations Conference on Trade and Development (UNCTAD). These recommendations include increasing transparency in physical markets, commodity futures exchanges, and over-the-counter markets; tightening regulations on financial investors (such as position limits); introducing a transaction tax system; and creating mechanisms to deal with speculative bubbles.²²⁹ Above all, it is essential for the United States and the European Union to coordinate their policies and to promote the adoption of these measures on a worldwide basis.

D. Reforming International Investment Law

International investment law has facilitated the land grabs that currently threaten small farmers in the Global South. Investment agreements between the host state and the foreign investor's home state often compound the weaknesses in national laws that enable governments and local elites to sell or lease large tracts of land to foreign investors for the offshore production of food and biofuels without consulting with local communities or taking into account their customary land rights.²³⁰ Grassroots demands for the return of contested lands to the affected communities could conflict with investment treaty obligations requiring states to protect the rights of foreign investors.²³¹ Government efforts to protect the water rights of local communities or to adopt more robust environmental and human rights impact assessments could be challenged by foreign investors as breaches of the expropriation clauses and fair and equitable dealing clauses of investment agreements.²³² States may be required to compensate foreign investors or go through expensive and time-consuming arbitration proceedings to defend themselves against investor claims if they attempt to resist land grabbing and protect the rights of local communities.²³³

The crux of the problem is that model investment agreements developed by capital-exporting countries restrict the regulatory authority of host states to protect the rights and livelihoods of their citizens while imposing no corresponding obligations on foreign investors to comply with human rights

²²⁹ See *Don't Blame the Physical Markets: Financialization is the Root Cause of Oil and Commodity Price Volatility 4* (UNCTAD, Policy Brief No. 25, Sept. 2012).

²³⁰ See LORENZO COTULA, INT'L INST. FOR ENV'T AND DEV., *LAND RIGHTS AND INVESTMENT TREATIES: EXPLORING THE INTERFACE* 27-29 (2015).

²³¹ See *id.* at 29.

²³² See *id.* at 30.

²³³ See *id.* at 31, 36.

and environmental standards. These model investment agreements also provide no means for host states to raise such non-compliance as a counterclaim in arbitration proceedings.²³⁴ Instead of perpetuating international investment law's single-minded focus on protecting the interests of investors and capital-exporting countries, the United States and the European Union should develop model agreements that better balance investor rights and responsibilities and provide host countries with greater policy space to respect, protect, and fulfill the right to food. A useful template is the Model International Agreement on Investment for Sustainable Development created by the International Institute for Sustainable Development.²³⁵

E. . Moratorium on Land Grabbing

Governments and international organizations have proposed a variety of legal frameworks to regulate land grabbing. Perhaps the most well-known framework is the World Bank's proposed Principles for Responsible Agricultural Investment (PRAI).²³⁶ This framework, like other codes of conduct favored by mainstream development organizations, generally treats these large land transactions as economic development opportunities and seeks to maximize their potential benefits by promoting respect for existing land rights, enhancing transparency and community consultation, and using the employment, technology transfer, infrastructure development, and agro-export opportunities created by these investments to increase rural incomes and combat poverty.²³⁷ By contrast, many civil society organizations (including farmers' movements, human rights organizations, and local and indigenous communities) oppose these investments on the ground that the large-scale industrial agricultural model advanced by these land deals dispossesses small farmers, degrades the environment, and exacerbates food insecurity.²³⁸ As one observer points out:

²³⁴ See Simons, *supra* note 208, at 18.

²³⁵ See HOWARD MANN ET AL., INT'L INST. FOR SUSTAINABLE DEV., IISD MODEL INTERNATIONAL AGREEMENT ON INVESTMENT FOR SUSTAINABLE DEVELOPMENT (Apr. 2005), https://www.iisd.org/pdf/2005/investment_model_int_agreement.pdf.

²³⁶ See *The Principles for Responsible Agricultural Investment (PRAI)*, U.N. CONF. ON TRADE AND DEV., <http://unctad.org/en/Pages/DIAE/G-20/PRAI.aspx> (last visited Mar. 13, 2016). This proposal is also sponsored by UNCTAD, FAO, and IFAD.

²³⁷ See *id.*; Oguamanam, *supra* note 172, at 252-53.

²³⁸ See generally Saturnino M. Borras, Jennifer Franco & Chunyu Wang, *The Challenge of Global Governance of Land Grabbing: Changing International Agricultural Context and Competing Political Views and Strategies*, 10 GLOBALIZATION 161 (2013).

[F]ull compliance with the PRAI principles is unlikely to produce positive outcomes for the poor and will, at best, entrench the pre-existing inequitable status quo. For example, securing “existing” land rights does not benefit landless peasants and future generations. Ensuring participatory and transparent land acquisition processes will make no difference if power relations remain asymmetrical. The same is true of social and environmental impact assessments, regardless of their outcomes Simply stated, the PRAI reflects an attempt to preserve the interests of capital, facilitate land acquisition, and sustain an agro-industrial model with marginal regard to complex environmental, economic, and social relations that sustain the livelihoods and culture of local and indigenous farming communities.²³⁹

In addition to these concerns, the PRAI is, in the end, a form of industry self-regulation with no sanctions for non-compliance.²⁴⁰ Instead of addressing land grabbing on an ad-hoc, project-by-project basis governed by a set of non-binding principles, countries in the Global North and the Global South should collaborate to impose a moratorium on these large-scale land transactions in order to allow host governments, home governments, civil society, and international institutions to develop more effective norms and oversight mechanisms.

CONCLUSION

Northern biofuel laws and policies have violated the right to food of some of the world’s poorest people by increasing food prices and triggering large-scale land acquisitions that deprive local communities of access to land, water, and food. Biofuels represent the intensification of an industrial model of agricultural production that destroys local ecosystems, contribute to climate change, and exacerbate food insecurity. Ironically, the life cycle greenhouse gas emissions of many biofuels exceed those of the fossil fuels they replace. Biofuels also reinforce car-dependent, energy-driven lifestyles that perpetuate climate change and forestall more enlightened policies to reduce greenhouse gas emissions in the transportation sector. As one observer candidly acknowledges:

[W]e are transferring . . . the risks of climate change, and of mitigation on to the poorest people in the most vulnerable parts of the world. We are, in effect, expecting the rural poor in the

²³⁹ Oguamanam, *supra* note 172, at 254.

²⁴⁰ *Id.*

developing world to alter their land-use patterns [and] their livelihoods . . . in order that we may maintain our consumption and energy-use patterns for as long as possible.²⁴¹

An environmental justice framework reveals the complex ways that food and climate policies intersect to inflict violence on the environment and on the planet's most vulnerable human beings. An environmental justice analysis creates a morally persuasive narrative grounded in justice and ethics that demonstrates why these policies must change.

In order to promote environmental justice and comply with their right-to-food obligations, the United States and the European Union should reduce, and eventually eliminate the subsidies, tax incentives, and mandates that have fostered the explosive growth of food-based biofuels. In addition, they should affirmatively erect regulatory barriers to the expansion of first- and second-generation biofuels that compete with food production. Finally, the United States and the European Union should address the regulatory gaps and failures that have fueled financial speculation in agricultural commodity markets, land grabbing, and the quasi-monopolistic power of transnational corporations in the global food system.

²⁴¹ SMITH, *supra* note 1, at 95.