

Ethical Implications of World Trade on the Environment of Developing Countries

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Since 1954, the volume of world merchandise trade has increased 6 percent annually, with its total worth standing at over \$5 trillion.¹ More than 35,000 transnational corporations, controlling 150 million jobs and circulating almost \$1.5 trillion of electronic currency every day, form the backbone of the global trading system and operate under the direction of the World Trade Organization (WTO), an organization formed in 1995 as a result of a negotiated treaty among 126 governments. The WTO is expected to “provide the principal contractual obligations determining how governments frame and implement domestic trade legislation and regulations” by providing predictable and growing access to markets, promoting fair competition, and encouraging development and economic reform.² More importantly, it is expected to steer world trade in a manner conducive to the economic growth of both developed and developing countries.

However, past experiences illustrate that the system of free trade has not been equally favorable to all countries. In 1992, the United Nations reported that the post-1980s international economy has been redistributing wealth from the poor to the well off within and between countries.³ Another UN report in 1994 proclaimed, “Where world trade is completely free and open—as in financial markets—it generally works to the benefit of the strongest. Developing countries enter the market as unequal partners and leave with unequal rewards.”⁴ Developed countries not only expect but also demand that they reap the benefits of the new economy.

The less-than-favorable impact of world trade under the direction of the General Agreement on Tariffs and Trade (GATT), the precursor of the WTO, is also responsible for the cynical attitude toward world trade in general and the WTO in particular. In theory, GATT was supposed to have assisted developing countries in achieving a greater level of parity with developed countries; in reality, its initiatives have pushed developing countries to a higher level of dependency. According to the 1992 *Human Development Report*, international trade during GATT’s existence widened the gap between the rich and the poor and produced “underdevelopment” in later countries. Consider the following facts extracted from the 1992 GATT report: (a) developing countries were denied at least \$500 billion of economic opportunities in the global market between 1950 and 1980; (b) the poorest 20 percent of countries received only 2.7 percent of global foreign private investment and 0.2 percent of global commercial credit; (c) the ratio of the real income of the wealthiest 20 percent of countries to that of the poorest 20 percent increased to 150 to 1 in 1990; and (d) in the 1980s, poor

nations were transferring \$50 billion a year to their rich counterparts through capital market arrangements.

The WTO is expected to be sensitive to the needs of developing countries. The WTO's annual report points out that the Uruguay Round (the eighth round of broad trade negotiations under the auspices of GATT) succeeded in substantially cutting tariffs, sometimes to zero, while raising the overall level of "bound" tariffs significantly. Realizing the disadvantageous situation faced by developing countries, the WTO provided a transition period so that they could familiarize themselves with new practices and rules. Furthermore, the WTO established a Committee on Trade and Development and charged it with examining the impact of liberalized trade on developing countries and finding ways to assist them in meeting their obligations. A subcommittee of the Committee on Trade and Development was also established to deal specifically with economic issues faced by developing countries.

The founding principles of WTO⁵ are unique, for they assume that (a) rule-based world trade is better than government intervention-based trade; (b) a wider process of international economic integration and competition exists than previously used by GATT; and (c) liberalization is desirable. These assumptions of formalism, harmonization, and liberalization together create a thought process that, to many countries, is full of contradictions and conflicts. The primary conflict, from the Asian point of view, is that rule-based free trade, as promoted by the WTO, ignores cultural histories and ethical concerns of member countries. All members are not at the same level of industrial development, all do not embrace Protestant ethics adopted by Western industrialized countries, and all do not share similar historical experiences produced by industrialism. Some countries, for instance, have hundreds of years of colonial history that cannot be wiped off by granting them a symbolic equal membership in a club such as the WTO. For these reasons, it is not uncommon to see countries consciously rejecting Western principles of development, capitalism, and democracy.

The most severe criticism of world trade comes from environmental activists, who are fearful of its adverse impact on natural resources of developing countries. They argue that unprotected competition unleashed by free world trade would lead countries to ignore their commitment to environmental obligations. Proponents of world trade, on the other hand, claim that any correlation between free trade and environmental degradation is not only speculative but also unnecessary. In 1997, a team lead by economist Robert Costanza brought environmental concerns to the forefront by declaring that the services provided by the earth's ecosystem are worth \$33 trillion per year, 1.2 times more than the combined GNP of all countries in the world.⁶ The team noted that nature provides many ecoservices, including gas regulation (worth \$1.3 trillion per year), disturbance regulation (worth \$1.8 trillion annually), water regulation (worth \$1.1 trillion annually), water supply (worth \$1.7 trillion annually), nutrient cycling (worth \$17.1 trillion annually), waste treatment (worth \$2.3 trillion annually), and food production (worth \$1.4 trillion annually), that are currently outside of the global market system but may be in danger if not valued properly.

The WTO responded to these concerns by establishing a Committee on Trade and Environment to assess the environmental impact of world trade and suggest guidelines for the WTO to adopt. The committee, since its inception, has met several times and has produced a set of guidelines. If demonstrations at the 1999 WTO meeting in Seattle are any indication, however, environmental issues are far from being resolved.

For the purpose of this study, I will examine two questions simultaneously: One, to what extent is there congruity between unrestricted world trade on one side and environmental protection on the other? Two, is the current international mechanism adequate to harmonize them? In essence, I explore the ethical issues related to environmental protection in the context of world trade.

Environmental Obligations and World Trade

Environmental obligation is of particular interest to environmental ethicists who delve into questions such as, Who is obligated to whom? Does the sphere of morality extend to only humans or does it include moral subjects such as animals and plants or even non-life forms such as rocks and rivers? How do we know what is ethical? Are ethical codes determined (a) by God, (b) by religion, (c) by the majority, (d) by the common will, (e) by scientific consensus, or (f) simply by the value that individuals place on things? Three areas particularly interest these ethicists: the source of ethical guidelines, the scope of ethical sphere, and finally, the manifestation of ethical behavior.

In 1962, Rachel Carson in *Silent Spring* portrayed a town where no birds sang, no butterflies hummed and no children laughed.⁷ The unrestricted use of pesticides had destroyed the regenerative capacities of the land to welcome spring. This skillfully created imagery brought together Carson's knowledge of toxicology, ecology, and epidemiology and reached the hearts of the people, igniting a debate on the effects of modern-day technological innovations on the quality of daily life. Forty years later, springs are still full of humming, singing, and laughter; nonetheless, our minds are entangled in a lively debate over environmental ethics. Many people, following Carson's lead, predicted a doomsday in the 1960s and called for an immediate moratorium on economic growth, for they believed such growth to be the root cause of environmental destruction.⁸

In the following years, while economists and political scientists searched for proofs of environmental problems, philosophers began a deeper search on the moral framework that drives the engine of human thinking and logic. Lynn White, an early entrant to this intellectual forum, set the tone of discussion by putting the blame on the Judeo-Christian idea that humanity should dominate nature.⁹ She argued that by seeing nature as alien, by regarding nature as an object of scientific rather than artistic exploration, and by substituting scientific empiricism for natural theology, we have brought havoc on earth and are reaping the consequences now. White's beliefs matched those of Max Weber, who believed that the driving force behind modern growth was the Protestant ethics that assumed

humans to be rational and self-conscious beings capable of creating and accumulating wealth.

White's arguments persuaded many scholars to examine religious belief systems and their impact on the man-nature relationship. In the years following publication of her article, political scientists proved that even though non-Western countries subscribed to uniquely different belief systems, their treatment of nature was no more harmonious than the one found in countries under the Judeo-Christian philosophy. Entangled in the game of "catch-up with the West," non-Christian nations were undermining the man-nature relationship prescribed by their own religious belief systems. The overriding impact of science and technology had altered the man-nature relationship in every society, irrespective of its individual religious belief system.

The debate on the scope of the ethical sphere is shaped by nature-objectivists (those who believe that nature has an intrinsic value) on one side and value-subjectivists (those who believe that all values demand an evaluator and thus nature's worth is only as much as humans consider it to be) on the other, and their interpretations range from bioethics to anthropocentric ethics. International treaties and agreements adhere to the value-subjectivist view and perceive the environment as having a value for human survival alone. They present a limited view of the ethical sphere, for they value the environment only when it is beneficial to humans.

Environmental ethicists encourage the idea of a biocentric ethics that places the biotic community, rather than humans, at the center of all value judgments regarding the man-nature relationship. Aldo Leopold defines bioethics by proclaiming, "A thing is right when it tends to preserve the integrity, stability and beauty of the biotic community. It is wrong when it tends otherwise."¹⁰ It is commonly believed among bioethicists that nature cannot be dehumanized just as humans cannot be denaturalized. Humans exist within and are part of nature, and any part of nature provides a conceivable relational context for the emergence of values.

Since the first roundtable meeting in Uruguay, which brought the WTO to life, many scholars have formulated and tested hypotheses on the direct or indirect impact of free trade on domestic environments of countries, particularly developing countries. According to some,¹¹ countries eager to participate in the world market often relax their environmental standards and engage in a race to the bottom. Often, such countries ignore altogether the implementation of environmental regulation, creating "regulatory chill" that eventually leads to long-term destruction of the environment. Many others¹² argue that countries set their standards low to encourage industries to flee to those countries from environmentally stringent countries. This process promotes ecological dumping and forces specialization of dirty industry in developing countries.¹³ In a recent study, Copeland and Taylor showed that lower income levels are correlated with the creation of comparative advantage in dirty goods in developing countries.¹⁴ The relocation of automotive and pharmaceutical industries from the United States to Mexico and other Latin American countries falls under this category. Transportation of solid waste to poorer countries is also a blatant example of this

practice. To prevent developing countries from turning into pollution havens where race to the bottom and regulatory chills can easily invite ecological dumping, the WTO is being asked to adopt a uniform set of environmental standards on products traded in the world market.

Not all scholars, however, agree with the argument that free trade creates environmental damage. Dasgupta and his coauthors, for instance, believe that free trade leads to policy diffusion, in which trading partners learn from and adopt each other's practices.¹⁵ Lucas and his coauthors argue that openness of an economy lowers the toxic intensity of manufacturing output.¹⁶ Furthermore, other scholars argue that free trade allows a country's economy to grow, thus permitting it to invest in better pollution abatement technologies and more efficient processes.¹⁷ Without an improved economy, such an investment in technology and pollution abatement would not be possible in developing countries, they argue.

In the most direct way, developing countries harm their environment (a) by accepting pollution-intensive industries from other countries; (b) by accepting environmental externalities, such as excessive emission of carbon dioxide or hazardous waste, created by developed countries; (c) by encouraging resource-intensive production and trade; and finally (d) by using cheap technology and thus being wasteful in the use of precious natural resources. Here are some examples to consider. In 1988, three European countries offered to pay Guinea-Bissau, a country of 125,000 people, \$140 million per year (a sum larger than the gross national product of that country) in return for rights to dispose of their hazardous waste in Guinea-Bissau's coastal land. A larger volume of oil than what was spilled by the Exxon Valdez in the accident off the Alaskan shore is wasted each year by oil-producing countries because of inefficient production and distribution processes.

Beyond these direct impacts, free trade also generates many equally devastating indirect effects in developing countries, such as population migration, environmental conflict, environmental scarcity, and environmental refugees. The impact of the global economy on population migration comes in two forms. One, the global economy forces people to move in selective and often unsustainable patterns. The varying costs of labor and raw material from one country to another force the global economy to remain on the move by constantly shifting industry and production to competitively advantageous areas. Population moves follow industry moves. Take the case of computer professionals from India and China who are flooding the American software production market following the increase in demand in the United States. At the same time, pollution-intensive manufacturing industries from the United States are moving out to Mexico, Malaysia, Indonesia, and other countries in search of less-stringent production environments. Admittedly, the transfer of computer professionals to the United States software industry satisfies the demands of the global economy, but eventually it creates serious inequity problems that have potential to turn into unresolved ethnic conflicts. These computer professionals migrate in search of better living conditions compared to those in their homelands but soon realize that they are being undervalued and

underpaid in relation to their counterparts in their adoptive land. When the early joy of migration to the land of opportunity wanes, these professionals become a discontented piece of their host country's fiber.

Similarly, when a U.S. manufacturing industry moves to another location overseas, it also creates a superficial feeling of betterment for local workers, who find their wages double or triple under the shadow of the global economy. However, soon their joy, too, fades away, as the rise in the cost of living corresponds to the rise in wages. Furthermore, these people find themselves faced with health and environmental risks previously unknown. This situation became painfully evident in the 1984 Bhopal tragedy involving the functioning of an American-based pharmaceutical company, Union Carbide, in India. The Union Carbide plant in Bhopal leaked a large quantity of methane gas, killing 20,000 people and disabling another 150,000, according to unofficial reports. The postleak investigation revealed that the plant was operating under lower safety standards than those allowed in the United States at the time. Working conditions of textile and garment industry laborers in Asian countries are also testimonies to the fact that people in developing countries are exposed to higher levels of health and environmental risk than what would be typically allowed in developed countries.

Another kind of environmentally sensitive population migration occurs when shifting rain or wind patterns precipitated by environmental damage destroy the productivity of land areas on which local people are traditionally dependent for their survival. Faced with food shortage and high prices of basic goods, local people feel forced to leave their homelands and move to other areas, creating new problems of urban sprawl and unsustainability. A good example of such migration is that occurring in Nepal, where native people from the highlands have been moving out to *tarai* areas that were pristine at one point but have since become overcrowded and environmentally unsustainable. Evidence indicates that this migration to *tarai* areas is now leading to ethnic strife, as new emigrants demand their fair share of the economic and social pie. Similar destructive patterns are visible in Bangladesh, where resettlement of flood victims in the government-designated Chittagong Hill Tracts has now made this region extremely vulnerable to social and environmental problems. Environmentally speaking, the land has become unsustainable through overuse and overcrowding, and socially speaking, ethnic violence has become rampant following the militarization of the tribal people.

Biocentric ethics, heralded by environmentalists, are incongruent with the environment in which free trade takes place. Each nation in the international arena is a sovereign entity claiming its sovereign rights over its citizens, plants, and natural resources. Each nation, in other words, assumes its identity as a system of its own and not as a part of any larger natural or biosystem. National decisions are based on what is right for that nation's own system and not for the biosystem to which it belongs, which often crosses over several national boundaries. National interests, not bio-interests, are paramount in the international arena. The decision by Iraq to ignite more than 730 Kuwaiti oil wells in the aftermath of the 1991 Gulf War

was based on its desire to weaken the political foe without any regard to the region's biosystem, which was inclusive of its own natural system. The decision by the European countries to buy disposal rights in Guinea-Bissau was based on its desire to protect its own land and water irrespective of the potential of damage to the small coastal country or the larger biosystem.

More than 900 international treaties on environmental issues, ranging from fish to forests and acid rain to transboundary waste, exist, imposing restrictions on how nation-states may or may not behave. Rarely do any speak of environmental values or consider nature to possess an intrinsic worth of its own. In most cases, nature is considered important but only for the protection and benefit of humans. Developed and developing countries show a sharp contrast in their understanding of environmental obligation. Industrialized countries blame nonindustrialized countries, which also happen to be more populated, for growing too much and too rapidly, whereas poor countries blame rich countries for consuming too much and too quickly.

Population control is an issue, according to industrialized countries, because each person born adds stress to the limited resources of the earth. Considering that the global population is now 6 billion people and is projected to reach 10 billion by the year 2050, it becomes a moral obligation of nonindustrialized countries to curb their populations. Nonindustrialized countries, however, argue that industrialized countries place a far heavier burden on the earth's carrying capacity by their frivolous consumption levels than their own populations. Considering that the United States feeds 78 percent of its grain to raise cattle for meat and that it takes 21 pounds of grain to produce 1 pound of beef, it becomes the moral obligation of the United States and other high-consuming industrialized countries to curb their appetite for consumption. It has been further claimed that an American consumes as many resources in his/her lifetime as do 35 Indians or 50 Bangladeshis.¹⁸ The earth can carry, according to some projections, 10 billion people if everyone is willing to live like Bangladeshis; however, its carrying capacity reduces to fewer than 5 billion people if everyone desires to live like Americans. Since the human population has already crossed the threshold of 5 billion, it is unreal to dream that everyone can reach the same level of development and consumption as Americans. It is imperative for the North, argue scholars, to colonize the natural resources of the South in order to keep its standard of living stable. They refer to this phenomenon as ecological imperialism or green colonization (extension of domination by industrialized countries over the natural resources of nonindustrialized countries). The new international order, marked by globalization, liberalization, democratization, and technological advances, validates the expansionist tendencies of the North. In the industrial growth paradigm, industrialized countries were the "haves" and nonindustrialized countries were the "have-nots"; however, in the natural resource-scarce era of today, nonindustrialized countries with their abundant forests and pristine lands have become the "haves" and industrialized countries with either limited natural resources (such as Japan) or protected natural resources (such as the United States) have turned into the "have-nots." For the North's industrial

growth to continue, its extension into the South, similar to the colonialism of the industrial era, is necessary.

Even if economic benefits were to accrue for developing countries from free trade, the system created by WTO is not conducive to biocentric ethics. On one hand, countries with stricter environmental safeguards, like the United States and Sweden, are forced to accept products processed in other countries through environmentally unsustainable methods. On the other, labor-rich countries such as Thailand and Indonesia find it difficult to raise their own environmental standards for the fear of losing their competitive edge and consequently losing jobs and businesses to other less ecologically minded countries. Thus, the incongruity between free trade and environmental protection continues.

Institutional Mechanisms to Build Congruity

Currently, the WTO administers and implements multilateral trade agreements, acts as a forum for multilateral trade negotiation, seeks to resolve trade disputes, oversees national trade policies, and cooperates with other international institutions involved in global economic policymaking. With the Ministerial Conference as its apex body and the General Council as the highest administrative unit, the WTO functions from its headquarters in Geneva with a staff of 450 and a budget of \$83 million and is equipped to handle mediation, negotiation, and policymaking responsibilities. The General Council, which also convenes as the dispute settlement body and the trade policy review body, delegates responsibility to three other bodies: the Council for Trade in Goods, the Council for Trade in Service, and the Council for Trade-Related Aspects of Intellectual Property Rights. In addition, there are four additional committees that support the Ministerial Conference: the Committee on Trade and Development, the Committee on Balance of Payments, the Committee on Budget, Finance and Administration, and the Committee on Trade and Environment. The WTO handles many issues originally covered by the GATT, such as environmental standards, labor standards, fair competition, foreign investments, exchange rates, and government support for advances in technology, but it also embarks upon several new areas, including TRIPS (trade-related intellectual property rights) and TRIMS (trade-related investment measures, and trade in service).

Other international institutions, including the International Monetary Fund and the World Bank, also have an impact on the domestic environments of developing countries. These institutions, in the past, have promoted structural adjustment programs, but these programs have largely failed to help the poor. In fact, there is evidence that these programs may have intensified the disparity between the rich and the poor.¹⁹ National governments are also critical to the global trading system; scholars argue, however, that they cannot be trusted to play an aggressive role in determining the impact of free trade. Globalization has eroded the power of national governments by subjecting them to the international epistemic community on one hand and nongovernmental organizations (NGOs) on the other.

Governments in the early twenty-first century are not as sovereign as they used to be before the advent of the global technology.

Despite the doubts and anxieties accompanying free trade, it is safe to assume that the need to manage trade at the global level will not only remain strong but also continue to grow in the future. Free trade will benefit countries by offering them better trade opportunities and greater market access. The proposition that I would like to put forward, however, is that even if free trade benefits all, it will benefit some more than others. Two factors will determine the extent to which a country is able to benefit from the global economy: (a) the level to which its economy is tied to the world economy and (b) the level to which its political system is adaptable to external fluctuations. The first of these involves the country's *trade vulnerability*, or its trade ties within and outside of its trading regimes, and the second involves its *regime capability*, or its ability to respond to internal and external crises. This ability consists of a country's legal, administrative, social, political, and cultural systems and is expressed through its handling of issues ranging from economic to ethnic. Variance in regime capability can be found not only between developed and developing countries but also within developing countries. Since developed countries are stronger than developing countries in terms of both external trade ties and internal regime capacities, they are more receptive to economic liberalization and political openness in the world system. On the other hand, developing countries remain skeptical of any goals that create uncertainty, including liberalization, because they fear losing control of their destiny. Because of their external vulnerability (emerging from their unequal share in the global marketplace) and internal instability (emerging from their weak political regimes and fragmented social systems), they favor a more predictable global system, a system in which national economies, rather than multinationals, control economic decision making, and nation-states, rather than NGOs, determine policy choices. One of the challenges for the global economy will undoubtedly be to keep developing countries engaged in the decision-making process by catering to their needs and remaining sensitive to their concerns.

Can existing mechanisms such as the WTO fulfill this need, or do we need another mechanism? Unless ethical values that guide national behaviors change, no new mechanism can escape the weaknesses of the WTO. Thus, the first and foremost need is to bring about a change in the existing paradigm by focusing on the creation of a global society rather than a global economy. During the transitional stage, the following structural improvements in the WTO will be useful.

In its present form, the WTO has only a limited scope to influence unsustainable environmental practices. Table 1 provides a conceptual model of the impact of free trade on environmental obligations based on a country's position in the global trading system. Regime capacity is treated as an intervening variable, implying that it is affected by trade positions but that it also affects environmental protection. The table divides WTO members into three categories: core, advanced peripheral, and subperipheral. For core trading countries (those that are fully enmeshed in the global

Table 1. Expected effect of trade liberalization on core, peripheral, and subperipheral countries

Trading position in the global market	Economic impact	Political impact	Social impact	Level of environmental protection
Core countries	Modest yet stable growth	Internal competition; state serving as a partner	Multiculturalism	High, because of public pressure and increased awareness
Advanced peripheral countries	Rapid growth due to economic agility and adaptability	Political demands; state serving in "structuralist" mode	Social unrest	Low
Subperipheral countries	Struggle for survival	State will serve as an instrument of the corporate class	Suppression of differences; primary objective stability	Low, because of lack of choices

economy), the future agenda of free trade will offer many economic opportunities and ensure a relatively stable, albeit moderate, growth period. The "state" in these countries will work in partnership with the corporate class to reap the benefits accruing from the global economy. It will facilitate global capitalism, multiculturalism, and sustainability, if not willingly, then out of necessity. These countries will fare better than either advanced peripheral or subperipheral countries in fulfilling their commitment to environmental protection. The role of the WTO in these countries will be that of information gathering and processing.

Advanced peripheral countries (those with significant, although not total, embroilment with the global economy) are likely to experience the greatest benefit from free trade. Because of their advanced trading ties, coupled with strong yet nonassertive political systems, they will be in the best position to tune in their energies to the global economy. The state in these countries will likely be a structuralist state that will create structures that unify the corporate class and assist it in directing the national economy. For these countries, the possibility of social unrest will be high, because they will experience an increase in the number of political stakeholders and level of expectations. These countries will be economically capable of observing environmental obligations, however, they will not possess the political will to do so. The role of the WTO in these countries will be twofold: to monitor the impact of trade on the environment and to persuade countries to honor their environmental commitments.

For subperipheral countries (those whose economy may be tied to the world economy but only through another core or advanced peripheral country), free trade will produce the least benefit. These countries exert a minimal influence in the world economy, for their primary struggle is still survival, not expansion. Their economy stands to suffer the most from globalization because it globalizes their needs while keeping the abilities local. In these countries, the state, owing to outside pressures, will become an instrument of the corporate class. Should social divisions and rebellion become barriers to the country's survival, the state will be expected to suppress them. Their environments will come under attack from the narrowly defined interests of the corporate class. Overall, although these countries are least likely to benefit from trade-induced wealth, they are most likely to suffer from trade-induced atrocities. The WTO may have a role to play here, but this role will have to be more than tutelary. Unfortunately, in the current manifesto of the WTO, such a role is not envisioned.

To conclude, free trade will undoubtedly have an impact on the environmental agendas of countries around the globe, if in no other way than by bringing the issue of abusive and unsustainable practices to the forefront. The global economy will sooner or later have to find a way to harmonize them. Meanwhile, the responsibility of creating a harmonious relationship between free trade and environmental protection seems to lie not with the WTO but with consumers, NGOs, and individual governments.

Notes

- ¹ *International Trade: Trends and Statistics* (the 1995 report of the World Trade Organization) (Geneva: General Agreement on Tariffs and Trade, 1995), 15.
- ² WTO home page <http://www.wto.org/wto/about_wpf.html>, accessed January 28, 2000.
- ³ United Nations Development Programme, *Human Development Report* (New York: Oxford University Press, 1992).
- ⁴ United Nations Development Programme, *Human Development Report* (New York: Oxford University Press, 1994), 1.
- ⁵ Vincent Cable, "The new trade agenda: Universal rules amid cultural diversity," *International Affairs* 72 (1996): 227–246.
- ⁶ R. Costanza et al., "The value of the world's ecosystem services and natural capital," *Nature* 387 (15 May 1997): 254–256.
- ⁷ Rachel Carson, *Silent Spring* (Boston: Houghton Mifflin, 1962).
- ⁸ Donella H. Meadows et al., *Limits to Growth: A Report for the Club of Rome's Project on the Predicament of Mankind* (New York: Universe Books, 1972).
- ⁹ Lynn White, "The historical roots of our ecological crisis," *Science* 155, no. 10 (March 1967): 1203–1207.
- ¹⁰ Aldo Leopold, *A Sand County Almanac* (New York: Oxford University Press, 1949).
- ¹¹ See, for example, Daniel C. Esty, "The case for a global environmental organization," in *Managing the World Economy: Fifty Years after Bretton Woods*, ed. Peter B. Kenan (Washington, D.C.: Institute for International Economics, 1994), 287–309.
- ¹² See, for example, S. Barrett, "Strategic Environmental Policy and International Trade," *Journal of Public Economics* 54, no. 3 (1994): 325–338; M. Rauscher, "On Ecological Dumping," *Oxford Economic Papers* 46, no. 5 (1994): 822–840.
- ¹³ J. Dean, "Trade and the environment: A survey of the literature," in *International Trade and the Environment*, ed. P. Low, Discussion Paper no. 159, World Bank, 1992.

- ¹⁴ B. R. Copeland and M. S. Taylor, "North-South trade and the environment," *Quarterly Journal of Economics* (August 1994): 755–787.
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- ¹⁷ G. M. Grossman and A. B. Krueger, "Environmental impacts of a North American Free Trade Agreement," in *The U.S.-Mexico Free Trade Agreement*, ed. P. Garber (Cambridge: MIT Press, 1993); D. Dollar, "Outward-oriented developing economies really do grow more rapidly: Evidence from 95 LDCs, 1976–1985," *Economic Development and Cultural Change* 40 (1992): 523–544; T. M. Selden and D. Song, "Environmental quality and development: Is there a Kuznets curve for air pollution emissions?" *Journal of Environmental Economics and Management* 27 (1994): 147–162.
- ¹⁸ Lester Brown and Hal Kane, *Full House: Reassessing the Earth's Population Carrying Capacity* (New York: W.W. Norton, 1994).
- ¹⁹ *Africa: Make or Break: Action for Recovery* (Oxford: Oxfam, 1993); also Samuel A. Morley, *Poverty and Inequality in Latin America* (Washington, D.C.: Overseas Development Council, 1994).