

Sustainability and Social Justice in the Global Food System

Linking Conservation, Agroecology, and Food Security

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This chapter is the introduction to *Our Lands, Our Food, Our Lives: Farmers' Movements, Trade, and the Environment in the Americas*, a forthcoming book (2005) in English and Spanish. It is based on the international workshop: "Food Sovereignty, Conservation, and Social Movements for Sustainable Agriculture in the Americas" held at the Yale School of Forestry and Environmental Studies, April 15-17, 2004 and cosponsored by the Yale Council on Latin American and Iberian Studies. Conference Director: Dr. Kathleen McAfee, Visiting Scholar, University of California at Berkeley. For copies of the chapter in Spanish or English, to share comments, or for information about the conference and the book, write to kmcafee@berkeley.edu.

The earth at the outset of the twenty-first century is rent by a double crisis. One part is the ecological crisis. Despite the rise of environmentalism in recent decades, conservation half-measures have failed. Deforestation and species loss have accelerated, irreplaceable ecosystems are being destroyed more rapidly than ever, genetic resources vital for farming and medicine are disappearing, toxic pollution has increased, and our planet is heating up dangerously fast.¹ Most governments, and the United States in particular, are pursuing environmental policies of distance, delay, and denial.

The other profound global crisis is that of poverty and hunger. In a world where food production continues to outstrip demographic growth², about 15 percent of the population is chronically undernourished. Many more go hungry part of the year or part of every month. Needless hunger is a result of poverty and the unequal control of food-producing resources. Too many people lack income to buy food or the means to earn it, or have lost the land they once used to grow food for themselves and their families. This silent crisis is the root cause of much global instability and insecurity. Hunger and poverty produce desperation that gives rise to ethnic and religious conflict and terrorism. These, in turn, provide the rationale – although hardly the justification – for new wars of conquest and occupation.

A deep misunderstanding – the one this report endeavors to set right – is the belief that neither part of this double crisis can be addressed without worsening the other. Many conservationists are convinced that in order to end hunger, more forests must be felled, more rivers dammed, and more species destroyed. Some believe sincerely that, given human responsibility for environmental destruction, the only ethical stance is one that favors nature and other species, regardless of the human consequences. Many conservationists are deeply troubled by this vexing moral dilemma.

At the same time, many advocates for the poor reject what they perceive as the elitist and unconscionable stance of preservationism. What gives conservationists the right, they ask, to decide *who* will eat and *who* will not? *whose* natural environment will be fenced off from people? To many policymakers and activists concerned with poverty and development, conservationism connotes Malthusianism: the 19th-century premise put forward by Thomas Malthus that human beings, with the exception of an enlightened and deserving few, will reproduce thoughtlessly until they have destroyed the basis of their own well-being.

There are many environmentalists who have moved beyond these discredited Malthusian notions. They recognize that concepts such as "overpopulation" and "carrying capacity" have no

meaning in any absolute sense.³ Some conservationists understand that hunger in a world of abundance is a reflection of the greatly unjust distribution of the world's surplus of food. But these are not the conservationist voices most often represented on the boards of well-known environmental organizations or depicted by the mass media. As a result, "pro-poor" and "pro-nature" voices are raised – or get used – to discredit each other or to cancel each other out.

In his keynote address to the conference that gave rise to this report geographer Karl Zimmerer points to a promising trend. Many traditional conservationists, by necessity, are incorporating attention to farmers and other local resources users into conservation plans, such as those for the ambitious but troubled Meso-American Biological Corridor. Many have begun to understand that agriculture and the human needs it meets are concerns as important for environmentalism as the untamed nature we have sought to preserve.

The ecological and human costs of industrial agriculture

Much of the misunderstanding between conservationists and advocates for the hungry has centered on agriculture. Farming is by far the greatest user of land and fresh-water resources worldwide. More forests are cleared for the expansion of farm plots, pastures, and plantations than for timber harvests. Does that mean that farmers are the enemies of forests? Not necessarily, and potentially, not at all. While agriculture and conservation can be at odds, they can also support each other. This was the finding of the Yale Environment School graduate students whose field research inspired the conference on which this report is based.⁴

Agriculture, however, takes many forms. Agriculture in most of the United States involves large farms or groups of growers under standardized contracts to big agribusiness firms. These mega-scale operations produce just one or a few crops, in fields where each plant is genetically identical or nearly so. Fields are plowed, planted, sprayed, and harvested by petroleum-powered machinery, except when fruits and vegetables are sprayed and picked by seasonal laborers. Maintaining productivity in this factory-like farming depends upon continuing applications of manufactured fertilizers and the ever-increasing use of pesticides.

In the meat-production counterpart to monocrop farms, thousands of hogs, cattle, or chickens are confined in vast lots, fetid pens or small cages, fed a monotonous mash of grain and recycled animal protein, dosed with hormones to speed their growth and antibiotics to manage infections. Because crops and animals are rarely raised on the same farms, potential sources of fodder and natural fertilizer become wastes and pollutants instead. The spatial separation of crops and livestock breaks the closed circle genuine agro-ecological efficiency: the recycling of energy and nutrients that accounted for the remarkable boom in food production in early modern England and the United States.⁵

Among the results of today's factory farming are degraded and eroded soils, depleted aquifers, poisoned wells and waterways, and off-shore marine "dead zones" caused by the run-off of crop fertilizers and animal excrement. Soils that have been compacted by heavy machinery and deadened by agrochemicals retain less water and require more irrigation than living soils rich in organic matter and microorganisms. Monocropping and confined feeding make plants and animals more vulnerable to disease; the application of pesticides and medicinal agrochemicals often becomes self-defeating as

insects, weeds, and microorganisms develop resistance and more chemicals or new types of chemicals must be applied.⁶ Clearly, industrial agriculture as we know it today cannot be sustained over the long term.

Industrial agriculture also takes an immense social toll. The required inputs (seeds, chemicals, machines), as well as crop prices, transportation, processing, wholesaling, and increasingly, retailing, are largely controlled by a small number of huge, conglomerate firms.⁷ Farmers and animal raisers have little say in what they grow, how they grow it or care for it, or where and for what price they will sell their livestock or harvests. Many nominally “independent family farmers” are virtually indentured to these agribusiness giants. These farmers bear most of the risk, receive little of the profit, and are locked into heavy debts and single-product farming systems. Hundreds of thousands have lost not only their independence but their land and livelihoods to this system. The boarded-up storefronts that line the streets of many U.S. heartland towns and the half deserted villages that dot the mountains of Mexico attest to this social catastrophe.

The social and ecological problems of factory farming cannot be overcome easily. Many farmers are acutely aware of them, as George Naylor, President of the National Family Farm Coalition, told the conference (pp xx-xx). Many agronomists, too, are working hard to address these problems. Unfortunately, their efforts get relatively little support from federal and state agencies and university agriculture departments. What is worse is that high-chemical input industrial agriculture is promoted by the U.S. government as the model for the world.

The main emphases in U.S. farm policies are (a) keeping the existing system productive and profitable for the politically influential agribusiness firms that benefit most from it, (b) subsidizing and insuring the exports of U.S. farm products, farm inputs, and industrial-agriculture methods to other countries, and (c) promoting crop genetic engineering, a false “solution” that is an intensification of unsustainable industrial agriculture, not an alternative to it.⁸ Kristin Dawkins of the U.S. Institute for Agriculture and Trade Policy outlined the contours and consequences of these policies in the conference panel on Production, Development, Trade (pp xx-xx).

The myth of efficiency

Policies that promote industrial agriculture are justified by their proponents by the claim that large-scale, high-chemical-input, mechanized agriculture is the “most efficient” form of farming. “Just look at the bounty produced by U.S. farms”, these advocates argue. “The United States feeds the world”, we are taught from an early age. But foreign food aid from the U.S. government does far more to increase hunger and dependence than to reduce it.

Heavy subsidies promote over-production in the United States and Europe. To make that surplus profitable, U.S. and E.U. agricultural trade policies are designed to open up markets worldwide for their farm-surplus exports, sold at less than the actual cost of production. This puts farmers in other countries out of business, leaving only those who can afford to purchase imported farm inputs and tailor their farm crops to the demands of commercial agribusiness.

The high-animal-protein diet favored by this system is extremely wasteful of land, atypical in human history, and ecologically impossible to reproduce on a global scale. Its pattern of resource use is unsustainable: modern, mechanized farms are commonly net destroyers of soil fertility. High-

chemical-input farming, the “livestock revolution” (the globalization of factory farming), and the “blue revolution” (marine aquaculture of carnivorous species such as tuna and salmon, and shrimp) all produce far less food energy than they use in the form of feed, fuel, and labor energy.⁹

Common claims about industrial-farm superiority are based on criteria that are misleading because they are two-dimensional. They take account of yields per units of surface area (in hectares or acres). They do not consider the effects on soil, the third dimension, nor the agro-ecosystem’s capacity for future production, time being the fourth dimension.¹⁰ Standard agro-economic criteria are also mono-functional, considering only crop yield prices, while neglecting the effects of industrial farming on social well being and culture, on valuable crop genetic diversity, and on other species. Most agricultural economists consider such effects to be “externalities” that are not relevant in measuring farm efficiency.

It is true that on average, mechanized U.S. farms produce more corn per acre, often twice as much, or even eight times as much as, many small farms in Mexico, for example, depending on soils, climate, and farmers’ own choices and options in different locations. Similar contrasts can be drawn between wheat and rice farming in the U.S. and many low-income countries. But in some parts of Asia, small rice farms exceed U.S. production averages. In general, when productivity in terms of yield per acre is compared under roughly equal environmental conditions, small- and medium-scale farms come out significantly ahead of large-scale industrial grain and dairy farms in the global North as well as in the global South.¹¹

“Free” trade policies have led to a surge in U.S. food exports to Mexico and economic disaster for hundreds of thousand of Mexican small farmers who cannot compete with cheap, subsidized U.S. corn and beans. Higher U.S. grain-yield figures are often cited to justify these policies, but such calculations leave out much of the story. Missing is the vastly greater energy cost of industrial grain production. Missing are the ecological costs: soils depleted of nutrients and “addicted” to chemical inputs, water loss, and fertilizer and pesticide pollution and poisoning. Missing are the human costs: displaced farmers, disrupted families, lost crop varieties, lost knowledge, and broken cultural bonds.

Moreover, the yield of a single grain from a single harvest season is not a valid basis for comparing farm productivity. Fields in much of the world are often not planted in only one crop. In Mexico and Central America, corn is commonly intercropped with squash, beans, and other legumes, while other useful plants grow along field margins. The corn plant itself also has multiple uses as green corn, for beverages and treats, dry corn for subsistence for farm families and their animals, and seed corn for replanting or barter, as well as the many uses made of corn husks and stalks. Thus, the food value and economic value from any field is often greater than that of the grain alone, but grain yields are usually the only component counted by economists.

Similarly, family-farmed rice paddies may also produce protein from fish, crustaceans, mollusks, and waterfowl. Greens rich in iron and pro-vitamin A harvested from paddy banks may be important nutritionally but dismissed as “weeds” by conventionally-trained agronomists. Additionally, many small-scale farmers raise multiple, genetically diverse varieties of staple crops, vegetables, and fruits, conserving wider crop gene pools and developing new, potentially valuable crop traits. And, unlike big industrial farms, which have been likened to ecological deserts, multi-crop, smaller-scale farms,

especially those with shade and fruit trees, windbreaks, hedgerows, and ponds frequently provide habitat for birds and other wildlife.

When plant and animal products are not recycled to maintain soil fertility, or when pesticides and fertilizers destroy beneficial subsoil life, the monetary costs and energy costs of farming the damaged land can rise greatly over a just few seasons. Farmers introduced to chemical fertilizers often report surges in short-term yields, only to find that after a few years, little will grow without the application of these inputs. Where farmers lack the wherewithal to purchase agrochemicals or to return plant and animal wastes to the soil, much more than soil fertility can be lost: the land itself and farm families' means of feeding themselves. Yet few agronomic or economic analyses are carried out over a long enough time to measure these grave losses.

One more problem with most industrial versus smaller-farm comparisons deserves mention. Advocates of "modernized" (industrial) agriculture often assert that a single farm worker in the U.S. Midwest produces as much grain as several people or even dozens of people working on non-mechanized, low-chemical input farms. This claim ignores the labor involved in manufacturing and transporting the machines, chemicals, and fuel that makes factory farming possible.

Moreover, less labor on farms is not always a good thing. Around the world, the loss of agricultural employment to mechanization has been a major factor in the decline of rural cultures and migration to swelling cities and abroad. Women, ethnic minorities, and the landless are often hurt most by this job loss. When people lose the ability to feed themselves by their own labor, the costs of their nourishment must be borne by others.

Nobody enjoys endless days of drudgery, and farmers everywhere welcome labor-saving methods. But the only choice is not between large-scale mechanization and grinding toil. Multipurpose farms can provide satisfying full-time or part-time employment, especially where farming is supplemented by rural small industries and enlivened by rich cultural and civic life.

Producing food or producing money?

Underlying and reinforcing these problems of industrial agriculture is the most profound problem of all: a growing proportion of farming worldwide is carried out for the purpose of making profits rather than that of producing food. In what Philip McMichael calls the global corporate food regime (2004), a handful of transnational firms dominate food production, processing, transport, and retailing.¹² Food commodity chains today are truly worldwide. Farm inputs and animal feeds are transported to distant feedlots and fields in other countries. From these sites of agricultural production, food commodities often travel again around the globe before they reach consumers.

The World Trade Organization, the terms of World Bank structural adjustment loans, and bilateral and regional trade treaties require the liberalization of farm and food trade policies. This means that developing-country governments may not maintain farm programs, price supports, or import restrictions designed to protect their own domestic food producers. Global agribusiness is therefore free to roam the planet, seeking the most favorable combinations of soils and climate, low land and labor prices, and "technology protections": enforcement of private patents on seeds and agrochemicals.

As noted above, farm subsidies and agro-export subsidies in much of the global North allow transnational firms to acquire and sell farm products at prices below the cost of production. The dumping of subsidized food surpluses in developing-country markets drives farmers off the land, reduces land prices and farm-labor costs, and fosters the concentration of food producing resources in fewer, larger farms, organized to produce more low-cost agricultural commodities for the globalized market. When soils are exhausted, or when farm laborers or contract growers object to low prices, low wages, or factory-farm practices, global investors can move on to more favorable sites.

Korean farmer Kun Hai Lee cried “WTO kills farmers” before stabbing himself to death before some 10,000 Mexican and other farmers gathered in protest at the WTO meeting in Cancún in September 2003. His was the most dramatic but, sadly, only one of thousands of recent suicides by farmers and fishers forced from their livelihoods by imported food dumped in local markets for less than its cost of production.

Positive alternatives and signs of change

In the midst of the crisis caused by globalized industrial agriculture, there are some very significant and promising counter-trends. People are looking for alternative principles, policies and practices: Policymakers and citizens around the world are questioning free-market fundamentalism as well as centralized “socialism”, looking for better ways to understand the global economy and manage the distribution of its resources.

- New social movements for food self-reliance and the right to land and livelihoods are arising worldwide. Throughout Latin America and in much of South and Southeast Asia and Africa, farmers, women, indigenous peoples, and migrants are organizing, linking together with their counterparts in the North, gaining support from scholars, activists, and progressive policy makers, winning real gains, and creating a sense of tremendous hope and militancy despite the repression that many endure.
- Countries are breaking away from the neoliberal Washington consensus: Two decades of global economic liberalization have brought few of the promised benefits from privatization and deregulated trade. Many governments and many more social movements are now resisting “free” trade pressures. The defeat of the one-sided WTO agenda at Cancún may have marked the beginning of the end of a half-century of US policy dominance.¹³
- In the United States, food is finally becoming a political issue, amidst e-coli and mad-cow scares, deepening distrust of food-safety regulators, animal-welfare concerns, suspicion of transgenic products, and widening awareness that fresh, local products are safer, tastier, and socially beneficial. Organic food is the fastest-growing segment of U.S. agricultural production and domestic retailing. Farmers markets and programs that link farmers directly to consumers are becoming immensely popular in the U.S, Europe, Japan, Korea, and many cities in the global South.
- The racial and class politics of nutrition and food policy are coming to the fore in the U.S. Peoples of color and working class communities are recognizing that the denial of high-quality food, reinforced by public policy and resulting in needless poor health and shortened lives, is a central dimension of the social injustice they face. Municipal Food Policy Councils, urban gardens, farmer-

community networks, campaigns to change school lunch menus, and limits on fast-food franchises are just some of the ways this issue is being addressed.

- Tangible alternatives for farmers are emerging in the form of systems for fair trade and certification (ecological and social good-practice labels), international producer-consumer networks, local processing of crops such as coffee, chocolate, and fruits to add more value to farm exports, and planning for sustainable regional development. Many options are arising from below, from the real-life experiences of farmers and other producers, often supported by locally-based NGOs, scientists, and young activists rather than being imposed from outside or from above.
- After decades of regarding farmers as nature's enemy, environmentalists are beginning to understand that agriculture and conservation must go hand-in-hand. Now that protected areas projects that ignored local resource users and their subsistence needs have largely failed, farmers' roles in safeguarding biodiversity and the atmosphere are being documented. Several major environmental organizations have new programs to promote more sustainable agriculture and enlist farmers in conservation plans. New social movements are capturing this trend in the slogan "No ecology without equity; No equity without ecology!"
- Major international declarations and the policies of some national, regional, and municipal governments now recognize that food is a human right. (Thus far, however, few governments protect the right to food. The U.S. government actively opposes it in principle and in practice.) The vital principles of economic and social human rights, potentially radical in their implications but for long mere abstractions in the fine print of international accords, are finally being elaborated in practical terms.
- The principle of food sovereignty is gaining adherents around the world. Food sovereignty, explained in more detail below, is the ability of countries and communities to control their own food supplies and food-producing resources.
- Agro-ecological knowledge for sustainable farming is deepening, enriched by local farmers' experimentation and knowledge and spreading to hundreds of thousands of new farmers every year. We now know that agroecology and related practices can produce food abundantly, reliably, and sustainably and can help guarantee that those who need food can obtain it. Although little-reported in the US, there are a growing number of such successes in the global North and South.

Agroecological alternatives

Agroecology is an approach to farming that responds to the agronomic inefficiencies and social failures of conventional agriculture. Agroecological principles and practices combine time-proven farming methods, new ecological science, and local farmer knowledge to enhance the yields, sustainability, and social benefits of farming. Agroecology has been applied mainly but not exclusively by small-scale and resource-poor farmers, making their farming more productive, affordable, and reliable. Although it has not yet been applied and evaluated systematically across regions, agroecological farming has already achieved substantial increases in food production in many localities.¹⁴

Agroecology practitioners are less interested in conquering and controlling nature than in working with it, using scientific understanding and close observation of phenomena such as pest-predator relationships, the ongoing evolution of pest species, and the effects of soil organisms on plant vigor. Being aware of such natural processes helps in anticipating and managing agronomic problems. In this way, agroecology is more a method of thinking and a means of applied learning than a blueprint or formula, as the case study in this report by Jean Marc Van Der Weid makes clear (pp.xx-xx)

Agroecologists analyze agro-ecosystems in terms of their composition in three dimensions, including soils, trees, microclimates, and hydrological cycles, etc., not just the two dimensions of the flat, bounded farm field. They look at agro-ecosystem dynamics over time, not just over one harvest cycle. They study nutrient and energy flow and interactions among organisms—soil biota, pests, beneficial insects, other animals and plants—at a range of spatial and temporal scales.

Agroecology aims to reduce risks to farmers and the environment by increasing the resilience and self-regulating capacities of agro-ecosystems, so that the use of pesticides and other agrochemicals can be eliminated or minimized. Agroecologists also work to lower farming costs, waste, and pollution by maintaining more closed systems than in conventional farming.¹⁵ For example, recycling energy in the form of green manures and animal manures reduces the need to buy fertilizers from off the farm and turns a cost—disposal of animal wastes—into an asset.

Agroecological thinking encourages the planting and maintenance of a variety of crops and food sources, with crop rotations and multiple intercropping where appropriate. It endorses the use of open-pollinated seeds that can be selected, saved, and bred by farmers, as opposed to hybrid varieties that must be acquired anew, usually purchased, for each harvest cycle or at least every few years. In contrast to monocrop farming, where genetic uniformity is desirable,¹⁶ varietal and genetic diversity within the same crop is often advantageous in agroecological farming. Genetic diversity reduces the risks of crop failure and allows farmers to improve their own seed stocks. More complex agroecological systems, especially those that include permanent crops, can encourage wild species and often support greater biological diversity on and around farms than do monocultures or even undisturbed forests.

Agroecologists understand farms not as food factories but as dynamic systems embedded within complex ecologies that co-evolve with human communities.¹⁷ In contrast to most conventional agronomy and agricultural economics, the framework of agroecology allows for consideration of so-called externalities: the environmental, economic, and social costs that are generated by industrial-farm enterprises but born by the wider ecology and society when farming is done unsustainably.

Agro-ecological principles can be generalized but ecosystems, communities, and agro-ecological practices are necessarily place-specific. Agroecology therefore requires collaborative research and experimentation with farmers and other experts and continuing inputs of local intelligence. Does this mean that agroecology is appropriate only for small-scale farms? Not necessarily, since many of its principles and practices are equally applicable to larger-scale agriculture. But the issue of scale and place-specificity does point to an important question: is large scale, uniformity, and the lack of adaptability to various ecological conditions one of the root causes of unsustainability in conventional agriculture? Will sustainable farming therefore need to be much more decentralized and varied, even

if not entirely small-scale? Because uniformity in industrial farming is a consequence of the exigencies of profit-driven agriculture, this is as much a political and economic issue as it is an agroecology question.

Agroecology is not a monolithic movement but it is a fast-growing international trend. It is being developed and carried out by locally based and internationally linked networks of farmers, scientists and nongovernmental organizations who see it as an alternative to conventional agricultural technologies designed for large-scale farms in temperate climates. In Brazil, for example, AS-PTA (Evaluation and Services for Sustainable Agriculture) has been promoting agroecology with community farming organizations for more than 20 years. Jean-Marc van der Weid, AS-PTA's Public Policy Director, notes that "All three national family farmers organizations [in Brazil] have defined agroecology as their main strategic tool to achieve agricultural sustainability."

Interviews in this report with Ronaldo Lec and Jesús León Santos and the conference presentation by Sergio Lopez illustrate how agroecology is being adapted by communities in Guatemala, Brazil, and Mexico. The breakout session report on Practicing Agroecology, Using Local Knowledge explores the meanings and uses of "local", "traditional", "indigenous", and "scientific" knowledge, how power relations affect the production and control of knowledge, and the differences in the underlying logics of conventional and agroecological farming. The session report on Education and the Diffusion of Agroecological Practices discusses the importance of farmer-to-farmer networks and participatory research with scientists, the need for institutional and marketing support for sustainable farming, and the larger political and economic structural issues affecting farmers.

The closing keynote address by Harvard's Richard Levins, a pioneer and leading thinker in the agroecology movement, explains agroecology in relation to the larger context of the Eco-Social Distress Syndrome: the dysfunctional relationships between the human species and the rest of nature. He poses some challenging hypotheses about the nature of scientific knowledge, the paradox between increasing sophistication at the laboratory and the inability of science to grapple with whole, complex systems, and the social and economic conditions under which a more holistic and effective science is possible.

These reports illustrate that for many practitioners, farmers and scientists alike, agroecology is as much a social as a technological project: a means toward greater equity, empowerment and local control over food sources and supplies, and a space for multiple, alternative definitions and directions of "development". This raises the issue of food sovereignty.

The international movement for food sovereignty

The concept of food sovereignty entered international policy debates when it was put forward at the 1996 World Food Summit by the international farmers' confederation La Via Campesina.¹⁸ Food sovereignty has become a banner uniting farmers' and other rural social movements and international networks of non-government organizations. These alliances have been working for a decade to right the injustices that they believe are built into the rules of the World Trade Organization. To this end, they are developing alternatives to the WTO Agreement on Agriculture and other policies that

subordinate ecologies and human needs to the logic of profit. Food sovereignty is a central principle in these alternatives.¹⁹

A simple definition of food sovereignty is the ability of countries and communities to control their own food supplies: to have a say in what is produced, under what conditions, and to have a say in what is imported and exported. At the local level, food sovereignty entails the rights of rural communities to remain on the land and to continue producing food for themselves and for domestic markets if they so desire.²⁰

Proponents of food sovereignty maintain that human rights, such as the right to food recognized in the 1966 International Covenant on Economic, Social and Cultural Rights, must take priority over WTO rules that protect the putative “rights” of private investors to pursue profit. While WTO rules enforce narrowly economic criteria for trade regulation, a food sovereignty strategy would advance the rights of governments and consumers to use broader, multiple criteria in trade and development planning. Sovereignty as they see it would permit governments at various levels to make decisions about imports, exports, investment, credit, and resource use that discriminate in favor of goods produced according to standards of ecological sustainability, humane animal treatment, gender equity, fair labor practices, and other social goals.

Food sovereignty is more than a different set of trade rules; it is different way of understanding agriculture and the role of food, farming, and rural life. Food sovereignty advocates hold that food is first a source of nutrition and only secondarily an item of commerce. Trade is good, they say, but as a means to social well-being, not as an end in itself. They argue that the maintenance of healthy agrarian communities, backed by national policies to support and protect domestic food production, is a better guarantor of food security than a globalized agro-food system in which most countries depend heavily on purchased food imports.²¹

Food sovereignty is as much an ecological project as an alternative economic paradigm. Its proponents contend that decentralized, diverse, and locally adapted farming systems can be more environmentally sustainable than a globalized food system. Where livelihoods and family goals are tied to the longer-term health and productivity of the land, they say, farmers have more incentive to conserve and improve soils, landscapes, and waters systems. By contrast, in a globalized food system dominated by agribusiness, the competitive imperative to maximize profits compels companies to externalize their environmental costs, shifting them onto the public and future generations.

Proposals to implement food sovereignty and realize the right to food include:

- elimination of food commodity dumping (sales of crops for less than the cost of producing them) and the right of countries to protect themselves from such predatory under-pricing
- national and international policy changes, especially the banning of subsidies for export crops, to limit overproduction and the dumping of farm commodities at prices below the costs of production
- the use of domestic reserves and global supply management mechanisms to ensure adequate but not excessive food production and access and raise farm gate prices, currently at an historically unprecedented low

- the rights of countries to prevent the ruin of domestic food producers and to foster rural development by means such as import controls – quotas, tariffs, or price band systems – and preferential agricultural credit
- land reform of a kind that recognizes the individual or collective rights of food producers, does not saddle them with debt, and puts neglected lands to productive use
- rights of access to water and other food-producing resources
- the rights of municipal, state, and national governments to regulate food and farming in the public interest, including
 - the right to require labels stating the origins and production methods of foods and crops
 - the right to decide whether to accept genetically modified food imports or aid and whether and on what terms to permit the use of genetically engineered crops
 - the right to ban the private patenting of living organisms and genetic information
- the rights of farmers to save seeds for exchange, replanting, and improvement, and to make such full use of patented crop varieties
- living wages and safe working conditions for agricultural and food-sector workers

There is currently little support for academic study and policy work in support of a food sovereignty approach. Interest in such options has been inhibited by a set of myths that have gone unquestioned for too long: the myth that trade in self, in an unequal world, will bring development benefits and the reduction of hunger; the belief that only high-chemical input industrial agriculture can feed the world's population; that illusion that small and medium-scale farms are necessarily less productive and less efficient; the notion that farmer centered agriculture represents a turn away from science; and the idea that that farmers care little about and are inevitably at odds with the natural environment.

The “free” trade myth is fading fast in light of the failures of two decades of trade liberalization. Technology-centered agricultural research and extension has brought no significant breakthrough toward greater productivity since the green revolution. The excess productivity that has been achieved by other means – agribusiness subsidies, the extension of agriculture to new land, and the heavy use of fertilizer – has not lead to reduced hunger. The environmental costs of industrial agriculture are no longer possible to ignore.

If the myths persist that agroecology cannot produce abundant food, or that farmer-centered research and innovation represents a return to a romanticized, pre-scientific past, those myths, too, can be put to rest by attention to the actual practices of the movements for food sovereignty and agroecology. A good beginning is a careful reading of the research results and the testimonies of scientists, policy analysts, and farmers that comprise the contents of this report.

¹ Speth, James Gustave (2004) *Red Sky at Morning: America and the Crisis of the Global Environment*. New Haven, CT: Yale University Press.

² Since 1975, world food production has increased by about 175 percent, substantially more than population has grown. According to the U.N. Food and Agricultural Organization, there is 16 percent more food per person on earth than 30 years ago.

³ Which region is “overpopulated”? New Jersey, which has 1,165 people per square mile, where obesity is epidemic? Or Bangladesh, which also has many people, 926 per mile, but where most people eat less than 2000 food calories daily and half the children are underweight, but where the average person uses less than one percent of the energy that the average US resident consumes? Which country has more “carrying” capacity”? Japan, which has a population of 130 million but imports most of its food? Or the Philippines, which has far fewer people per mile but exports food to Japan?

⁴ See McAfee, Kathleen, 2004 *Farmers and Biodiversity: Replanting Forests, Rebuilding Land and Livelihoods*, in *Yale School of forestry and Environmental Studies Magazine*, 2004.

⁵ Duncan, Colin (1996) *The Centrality of Agriculture: Between Humankind and the Rest of Nature*. Ontario: McGill-Queen's University Press. Stoll, Stephen (2002) *Larding the Lean Earth: Soil and Society in Nineteenth-Century America*. New Haven, CT: Yale University Press.

⁶ Use of insecticides in the United States rose 10-fold over 44 years, but the proportion of crops lost to insects nearly doubled in the same period. See Wargo, John (1998) [1996] *Our Children's Toxic Legacy*. New Haven, CT: Yale University Press. p 7)

⁷ Heffernan, William and. Hendrickson, Mary K. 2002. Multi-National Concentrated Food Processing and Marketing Systems and the Farm Crisis. Presented at the Annual Meeting of the American Association for the Advancement of Science February 14-19, 2002. Boston, MA. Murphy, S. 2002 *Managing the Invisible Hand Markets, Farmer and International Trade*. Minneapolis, MN: Institute for Agriculture and Trade Policy.

⁸ For a summary of why this is so, see Altieri, Miguel (2004) *Genetic Engineering in Agriculture: The Myths, Environmental Risks, and Alternatives*. Oakland, CA; Food First Books.

⁹ Factory farming uses far more energy than it generates: 9 – 11 energy calories are consumed in the production of a single calorie of food energy in factory-farming systems. It takes at least three and as much as 20 pounds of pound of seafood protein to produce a single pound of farmed-raised carnivorous fish.

¹⁰ Fernandez, Eric, Alice Pell and Norman Uphoff (2002) “Rethinking agriculture for new opportunities, in Uphoff, Norman, ed. *Agroecological Innovations: Increasing Food Production with Participatory Development*. London: Earthscan.

¹¹ Rosset, Peter (1998) *The Multiple Functions and Benefits of Small Farm Agriculture*. Amsterdam: Transnational Institute.

¹² McMichael, Philip (2004) “Global development and the corporate food regime”. Symposium on New Directions in the Sociology of Global Development, *XI World Congress of Rural Sociology*, Trondheim. 2004.

¹³ U.S. and U.K. negotiators later managed to drive wedges between members of the Southern-country alliance at Cancún, reviving part of the WTO agricultural agenda in July 2004.

¹⁴ Uphoff, Norman, ed. (2002) Op. Cit.

¹⁵ Altieri, Miguel, 1995 [1987] *Agroecology: the Science of Sustainable Agriculture*. Boulder, CO: Westview. Gliessman, Stephen, ed. (1990) *Agroecology: Researching the Ecological Basis for Sustainable Agriculture*. Ecological Studies Series no. 78. New York: Springer-Verlag.

¹⁶ For large farming operations and agribusiness firms, genetic uniformity has advantages related to the exigencies of mechanization and large-scale production and marketing. Identical plants that ripen simultaneously can be harvested, quality-checked, transported, and processed in bulk.

¹⁷ Levins, Richard and John Vandermeer (1990) The agroecosystem embedded in a complex ecological community. In Carroll R.C., Vandermeer J. and Rosset P., eds., *Agroecology*. New York: Wiley and Sons.

¹⁸ http://www.viacampesina.org/article.php3?id_article=38

¹⁹ Towards Food Sovereignty: Constructing an Alternative to the World Trade Organization's Agreement on Agriculture (a proposal by an international coalition of development and environment NGOs) www.tradeobservatory.org/library/uploadedfiles/Towards_Food_Sovereignty_Constructing_an_Alter.pdf; Via Campesina (2002) Proposals for sustainable, farmer-based agricultural production. August *Bulletin*. http://www.viacampesina.org/welcome_english.php3.

²⁰ “Sovereignty” as conceived by these advocates does not apply only to the nation-state, but leaves room for various patterns of autonomy and interdependency at the community, regional, and international levels.

²¹ In contrast, the architects of U.S. trade and development-aid policies have long argued that that developing countries should give up producing staple crops. Instead, they are advised to pursue their “comparative advantage” by concentrating on exports of tropical specialty crops and products of low-wage labor, while importing basic foods from “more efficient” producers such as the United States.