Book The End of Food

The Coming Crisis in the World Food Industry

Paul Roberts
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Recommendation

Journalist Paul Roberts investigated the global food-delivery system and he reports that food product production and prices have advanced like the production and prices of other contemporary consumer goods. The economics of the food system push an ever-faster product cycle driven by supply-and-demand pressures. The infrastructure that delivers food to consumers uses ever-advancing technology. However, food itself is not an ordinary consumer "product." Inexpensive food is an illusion, because the process externalizes many food production costs as cheap labor or cheap oil. Roberts explains why the food-delivery system is mired in economic, political and cultural problems, and examines the crisis that looms if it runs out of fuel or water, or both. *BooksInShort* recommends this investigation to readers who want to understand the production, market and consumer implications involved in feeding the people on our planet.

Take-Aways

- The global food economy based on cheap transportation may not be sustainable.
- Early societies formed around crops. As demand grew, farmers moved to rural, nutrient-rich lands. As they raised more grains, they also bred more livestock.
- Meat is an efficient source of calories, but current Western consumption levels are unsustainable.
- Fertilizers and pesticides increase yields, but with environmental consequences.
- Extreme hunger prevents progress. Nutrition-deprived children never develop the mental and physical abilities necessary for eventual self-support.
- In the '80s and '90s, the U.S. favored a global food market based on each nation's "comparative advantages," the few products it could produce and export.
- But many nations face such poverty or disrepair that they cannot meet basic needs.
- The U.S. farm subsidy system is broken, but politicians are afraid to modify it. U.S. grain exports are competitive only due to subsidies and cheap fuel.
- Buying "organic" may not be the most sustainable choice. Other factors, such as the agricultural methods used and proximity to market, also matter.
- Only informed consumers can create the demand needed to change entrenched systems.

Summary

The Evolution of the Global Food System

Humans have adapted to a diet based on meat as an efficient calorie source. They've learned to cultivate, store and prepare wheat, corn and rice. The first societies that generated grain surpluses earned the ability to settle in villages and towns. Cities first organized around food economies, importing crops from ever-greater distances as nearby farmers depleted their soil to meet demand. Ancient Rome imported more than 30% of its wheat from Egypt, 1,000 miles away. As Rome lost its military power, its food system fell apart.

> "In 1900, the average American family spent half its household income on food."

In 1798, Thomas Malthus demonstrated that although food production follows linear growth, population grows geometrically. Thus, he predicted, demand would eventually supersede supply. Developing nations, then including the U.S., staved off this prediction by taking over new land. Farmers eventually learned to plow up buried soil nutrients and to rotate crops to avoid depletion.

> "By 1980, that share had dropped to less than 15%. In this sense, the modernization of food production marks one of the biggest transfers of wealth in human history."

Over time, technology enabled more efficient food distribution and preservation. America became known for "superabundance," particularly after the discovery and use of nitrogen fertilizer dramatically improved yield per acre. In modern times, fertilizer usage grew with the development of hardier, faster-growing crops. Scientists bred plants to be more "uniform," hence easier to harvest mechanically. Then it bred animals the same way, to be meatier and more convenient for mass processing.

> "The government's price guarantees turned out to encourage farmers to overproduce, because no matter how low the real market price fell, farmers still got paid for every bushel they grew."

In the U.S., regulations and subsidies protected farmers from the "boom and bust" of natural market fluctuations. Growers invested heavily in transport and irrigation, as experts encouraged them to specialize. Farms became more profitable, but less self-sufficient. Food processors and manufacturers organized to buy raw resources from farmers, who innovated in their own niches, whether milling grains or mixing fertilizer, and increased their yields. Investors saw these single-crop "input" operations as safer investments than individual farms. This spurred consolidation. Conglomerates bought family farms, and created price-dictating monopolies in many sectors, including fertilizer, seeds, meatpacking and granaries. Breeders fed their animals more protein and antibiotics so they could grow more meat, while eliminating the deficiencies and diseases created by raising animals in closed indoor "factories." Processors began to measure meat in "pounds per square foot." By 2000, this system created huge surpluses, driving down prices so much that some state governments paid farmers to grow less.

> "Demand for grape flavor by makers of sodas, gum, candy and other foods now exceeds the quantity of grape flavor produced naturally – that is, in actual grapes – by...ten to one."

Rewarding overproduction has negative repercussions. Food gets wasted or dumped. Prices drop as yields rise. To maintain their cash flow, farmers plant more and spend more to boost yield, perversely driving down per-bushel prices. Higher crop productivity demands continuous doses of fertilizer and pesticides, which sap soil nutrients and pollute the groundwater. The pervasive use of heavy machines and harsh chemicals makes food-sector jobs more hazardous. In this environment, rich nations still can import what they need, but the push for lower food prices creates import-dependent poor nations that can't feed their people.

The Rise of "Value Added" Food

Food-manufacturing companies have supported lowering global trade barriers, making the food business global. By the end of the 20th century, big companies dominated the food supply. Processors continually "add value" to their strongly branded offerings to drive up profits. Manufacturers sometimes radically alter inherently fragile foodstuffs to accommodate the process of production. Like farmers, these companies got trapped in a relentless cycle of producing more of what the market wants, in their case, "convenience."

> "Wal-Mart has so successfully squeezed the supply chain...that since 1985 it has driven down U.S. grocery prices by a stunning 9.1%."

Manufacturers vie with fast-food chains and other restaurants for convenience-food dollars. Marketers, fast food chains and grocery retailers drive down raw costs, and sell processed foods at a big markup. Today, Americans spend 21% of their food money at Wal-Mart, which dominates the market. This figure will keep rising. Retailers can now squeeze manufacturers, based on consumer demand for food that is uniform, plentiful, cheap, safe and handy. The "supermarket format" is rolling out globally, duplicating this paradigm even in agrarian nations.

> "Much of that price drop has come from Wal-Mart's success at cutting labor costs, which...has driven down average U.S. wages by 2.2%."

For example, when its Chicken McNuggets succeeded commercially, McDonald's pressured processors to lower chicken prices. The industry cut its costs and boosted its efficiency. It engineered a more manufacture-friendly, meatier bird that matured quickly. This chicken suits the market, but its meat is of poorer quality. It doesn't retain moisture well when cooked, so processors compensate by injecting it with salts and other chemicals. In some cases, chickens are bred to be so heavy with breast meat that they find standing difficult. In another example, to make Chilean raspberries available in the U.S. four days after picking, growers developed varieties that endure long travel – but they just don't taste as good.

Health Consequences of "Supersizing"

When Florida Representative Juan Zapata introduced a bill barring high-fructose corn syrup products (HFCS) in schools, the food industry went ballistic. Corn syrup is a $2 billion market. Corn refineries challenged the science Zapata used to link HFCS to obesity. But, in fact, much of today's processed, salty, fatty, sugary and preservative-laden food is not suited to human biology. Humankind's physical realities contradict the "more is better" theory of food economics. People's delicate bio-mechanisms perform many duties, including maintaining body fat and signaling the brain when the body has eaten enough, or when it needs more. Studies show that larger portions lead to overeating. The food industry's think tanks echo your doctor: if you want to lose weight, eat less and exercise more. But if every U.S. consumer shed 100 calories a day, U.S. food industry sales would decline more than $30 billion. The food and diet industries and the medical sector reap huge rewards from having a heftier population. Zapata's bill died in committee.

Plugging into the Global System

The foundation of the global "low-cost, high-volume" food economy is "comparative advantage," the idea that nations will prosper if they produce and sell the crops they grow best, and import anything else. This free-trade view says that economically struggling countries should plug into the global system. This theory has practical

flaws: It's based on consolidating farm sectors globally, yet many farmers in poor countries need money to buy food to eat if they no longer grow it. Companies like Nairobi-based green bean exporter Vegepro can't pass their fuel cost increases on to retailers, who expect straight, uniform beans. Vegepro relies on Kenyan smallholders to grow extra beans to provide a buffer in case of emergency. Processors reject tons of beans each year and Kenyans don't eat them. Thus the margins for this industry rest on the backs of those who have the least.

> "Whatever China lacks in quality, however, it makes up in quantity."

Countries that once purchased U.S. exports now have their own surpluses, many ironically financed by U.S. companies. In the '60s and '70s, the U.S. gave vast foreign aid to nations in Asia, South America and Africa, often in the form of food or farming aid, like seeds. Private lenders followed, offering these nations subprime credit for development projects. In the '80s, this strategy backfired as debtor nations defaulted. For example, in 1982, Mexico seemed about to default on its $80 billion debt, much of it to U.S. lenders. This led to a policy of "restructuring" foreign debt when possible, in Mexico and, later, in Asia. In exchange for guaranteeing this debt, the U.S. and other international lenders required these nations to modernize their economies.

> "China's...farmers' [diversity] contrasts sharply with the single-crop monoculture model in the United States and...actually generates more calories per acre."

This policy focused first on agriculture, seeking "comparative advantage," getting rid of farm subsidies and other "barriers to trade." Trade agreements dramatically reduced barriers to the flow of capital and commodities across borders, increasing the number of import-dependent nations. The U.S. now has to compete with a growing number of other producer countries. In the global economy, it's cheaper, for instance, for Tyson, a U.S. firm, to operate ranches in Argentina and import beef to the U.S. than to raise cows at home.

> "China used the promise of its massive markets to persuade U.S. officials to override safety concerns about imported food."

Rising middle-class populations in China, India and other emerging markets are redrawing the global food axis, and connecting to rising producer nations, like Brazil and Argentina. A barrier-free food trade is a tidy theory, but the food system has a long history of externalizing costs. This includes farm subsidies. Although the U.S. has gotten other countries to abandon subsidies, U.S. grain can compete globally only because the government subsidizes the crops. Farmers and food processors rely on artificially low prices. A 2006 report said subsidies save Tyson $288 million a year.

> "The belief that [the U.S.] food supply is 'among the safest in the world,' and certainly safer than it used to be, repeated endlessly by food companies and FDA officials, requires more caveats and qualifications by the month."

In Kenya, scarce rainfall, and reliance on chemicals and specialized seeds subverted the "green revolution," convincing those leading the growth of other nations to devise more comprehensive approaches to economic development and better solutions to hunger. Current policy is shifting away from supporting large, consolidated operations, and toward direct aid for farmers. Small farmers who produce surpluses can reinvest in agriculture or education, or find other work. This viewpoint emphasizes local and regional markets, independent food security and fair prices for farmers. The building blocks for development are nutrition, infrastructure and minimum wage.

Unintended Hazards and Costs

Bacteria-caused food poisoning has always existed, but the factory-like, just-in-time global food economy can transmit virtually untraceable food-borne illnesses quickly. Strains like Salmonella, which now sickens more than a million people annually, have grown more opportunistic. Decades of treating livestock with low doses of antibiotics have created resilient strains of bacteria. Ensuring 100% food safety is no longer possible.

> "Transportation is...problematic. In many developing countries...rail lines are limited or nonexistent and roads are in appalling shape."

Human stomach acid formerly killed *E. coli* when it showed up in meat, but the bacteria has become acid-resistant because cattle are fed a corn-based diet. *E. coli* wreaks havoc on the human intestines. Since the average hamburger contains beef from 55 animals, tracing a deadly pathogen is virtually impossible, particularly since the industry has resisted regulation. The U.S. courts have affirmed that slaughterhouses and consumers are responsible for coping with pathogens, even if pathogens can be shown to thrive in certain herds and conditions, and even though just changing a cow's diet before slaughter would greatly lower the risks. *E. coli* spreads through water systems and even on the wind.

> "How are you supposed to compete in the global market when you can't even reach the port?"

To meet future global food demands, people must eat less meat. The Western model is not sustainable. Neither are the ever-increasing yields made possible by planting additional farmlands, or by using fertilizers and pesticides. Just as the U.S. starts importing about half of the nitrogen it needs, its soil and water systems will be choking on past nitrogen excesses. Nitrogen compounds run off fields, into ground waters, spurring algae overgrowth and creating dead zones. Pesticides degrade the environment. Industrial farming has lowered prices, but it bears large externalized social and environmental costs. Remedying the damage will cost billions and will undermine future crop yields.

The Gene Pool

"Transgenic" science manipulates genetic data at the cellular level and can even transfer genes from one species to another to enhance good traits, such as hardiness. However, genes act unpredictably, especially after the first generation. In the last two decades, chemical input companies, like Monsanto, began buying seed markets. Monsanto planned to engineer "seed-chemical platforms" for specific agricultural purposes. U.S. courts have given patent protection to these seeds to encourage investment, but one consequence is that, in some cases, farmers can no longer legally save seeds for the future. Altered seeds can't cure all of modern agriculture's problems. Ironically, simple changes, like planting cover crops, might offer better solutions.

> "In the minds of many health advocates, obesity hadn't simply happened to humanity; it was being encouraged by a food industry whose bottom line

depended...on processed foods and snacks."

"Organic" farming is an alternative to the status quo. Those drawn to organic methods tend to reject "factory" farming and embrace a holistic view. Yet, most consumers are not yet inclined to pay more for locally grown foods or cut back on eating meat. Buying "organic" and even buying local have strong plusses, but they are not always the best choices. Lasting change can only come about through informed consumer demand for sustainable agricultural processes and fair-food trade. Meanwhile, though the global food economy is probably already unsustainable because it is based on cheap oil, it actually may grind to a halt over another increasingly scarce resource: water.

About the Author

Journalist **Paul Roberts'** work has appeared in the *Los Angeles Times, Washington Post* and *National Geographic*. He is also the author of *The End of Oil*.