

Introduction

Investigating what we eat, where we eat and how we eat, who goes hungry and why, reveals a remarkable world of contrasting food and drink cultures. These complex but intelligible patterns are what we set out to represent graphically in this atlas. For all the contributors to *The Atlas of Food*, the modern world of food is not a random series of “facts” or “events”. The food system is an ever-changing web of industrial, technological, economic, social and political factors that impact on the journey food takes from its production on the farm to the eventual consumers.

The picture this atlas presents is troubling. It raises some old and some new questions. Why is food such a political problem for humankind? Why have we not managed to feed ourselves well, equitably, healthily, and within environmental limits? Why does the food system keep provoking political, economic and nutritional crises?

In 2007 and 2008, after a period of relatively stable or slowly declining food prices since the last great oil and energy crisis in the early 1970s, the price of many staple foodstuffs rose in national markets around the world, provoking unrest in many countries. Over 50 governments imposed price or export controls, adding to instability elsewhere. Some commentators said these problems would be temporary, that higher prices would encourage production and all would be well if only more food were produced. In fact, food prices did drop briefly but then rose again. By late 2012 they had almost matched the peak of 2007 to 2008. The OECD, FAO and most analysts now expect future prices to be volatile and rising, and food security has become a hot political topic one again, not least because of the drought that affected 80 percent of US agricultural land in 2012, and the consequent poor harvest.

In truth, the issue of food security never disappeared, though politicians lost interest. For three decades or more, governments assumed that food could best be managed with the application of neo-liberal economic policies. But in an unregulated market, food is consumed not by those who need it most, but by those whose consumption is most profitable to the large agro-business corporations. Instead of the market serving consumers globally, consumers in wealthy countries and communities are increasingly over-consuming unhealthy diets, while poor communities and countries continue to suffer under-nutrition, hunger and starvation. Policy-makers need to guide changes in the ways food is produced, distributed, consumed and wasted, as well as *how much* is produced, because chronic hunger is not simply a consequence of scarcity; it is a consequence of poverty and powerlessness. Ending global hunger is not just about improving access to, and control of, material resources, but also about poverty, justice, rights and democracy.

This wider perspective, linking production and consumption, environment, health and economy, power and distribution, is reflected in this atlas.

Attempting to engage with this more complex analysis, some orthodox institutions have proposed including some concern for environmental sustainability in their new push for increasing production as the answer to future problems. The phrase “sustainable intensification” is frequently invoked, though its meaning remains vague and contested. We contend, however, that the problems of the food system cannot be understood merely as problems of production; the perspectives of consumers are at least as relevant as those of producers. We therefore understand the goal of “food security” in far broader terms as encompassing considerations of: **sufficiency, sustainability, equitable distribution and safety**. Nothing less will do.

Power in the food chain

One of the particular weaknesses in the analysis “the world must produce more food” is that it downplays or ignores the shifts of power in the food system, away from farmers and consumers in favour of traders, retailers and speculators. In 2012, UNCTAD produced a report showing that financiers traded food contracts as if there was 30 times more food on the planet than there was. They are applying fantasy economics to food, much as they did to mortgages, borrowings and savings. Food traders and retailers increasingly control supply chains from farmers to consumers, making decisions not just about quantities and prices but also quality. Despite the rhetoric of the food retailers and processors that the system is driven by individual consumer choices, large agri-business corporations make the key decisions that impact on both farmers and consumers. Corporations often claim they are just responding to the demands of consumers; otherwise (they argue) they would be out of business. But while consumers are portrayed as the arbiters of choice and taste, as individuals we often recognize the limits to our power to influence them. Why would we, the world’s consumers, choose to starve or to be obese, or suffer from diet-related diseases? Most consumers would prefer a food system that caused less harm to our environment. Poor hungry people have even fewer options than affluent consumers, while affluent consumers can only choose from what the food industry has deemed it sufficiently profitable to provide. Farmers are also increasingly dependent on large corporations for seeds, fertilizers, pesticides, machinery and fuel. “Local” decisions are influenced by global markets, on the commodity and futures trading floors, in banks, boardrooms, factories and laboratories.

An unsustainable system

The systematic picture this atlas offers is not meant to imply that the world of food is ordered in some kind of machine-like fashion. On the contrary, it is in fluid and volatile state. Some of its features help explain its instability; they cannot survive unchanged in the long-term, or even the medium-term, for ecological, economic, social or political reasons. A world that only produced and ate food as people in the USA or Europe do is unsustainable by any definition. It would use more land and energy than is available on Earth.

Scientists and technologists have been studying crops, livestock, farming systems, food processing and distribution since the 18th century. Compared to all human history, let alone planetary evolution, the rates of technological change in farming and the food systems have been particularly rapid and recent. The changes in the patterns of investment in research, development and innovation have had substantial economic, social and environmental consequences. There is now widespread agreement that natural resources such as land, water and energy are under increasing stress as a consequence of the operation of the food system. Forest clearance has diminished the extent to which natural vegetation has been available to absorb increasing emissions of carbon dioxide, and the cattle farmed on cleared forest land are notorious producers of methane, which is 21 times more potent as a greenhouse gas than carbon dioxide. Through such interactions, the technological, industrial, economic, environmental, social and political aspects of the food system influence each other. Those dynamic interactions are undermining the sustainability of the food system; they cannot remain unchanged.

High-technology industrial food systems are spreading across the world, raising critical policy questions of strategy, direction, acceptability and sustainability.

For example, developing countries ask why it is necessary and acceptable for governments of industrialized countries to subsidize their farmers, while those same governments, and institutions they influence such as the World Bank, insist that the governments of developing countries should *not* subsidize their farmers. From the point of view of poor countries, current policies mean that the livelihoods of developing world farmers are undermined by cheap imports from industrialized countries, while those industrialized countries operate barriers to the importation of many agricultural products from developing countries. Those policies too often help to make the rich richer and the poor poorer. Food policy issues concerning subsidies and trade rules are not just narrow technical considerations; they raise fundamental questions about how society is organized and how resources are shared or allocated. Important though techniques of food production, distribution and exchange are, the state of the current food system cannot be reduced to technical analyses alone. Sound, complex thinking about food requires multi-disciplinary, multi-perspective analysis. The persistence of global hunger is thus a political failure not just a technical challenge.

Despite the fact that for much of the last 200 years food prices have, on average, declined, there have also been periods of considerable price volatility. They can be problematic, especially when accompanied by volatilities in supplies too, as has been the case since 2008. If significant food surpluses arise, they can result in sharp price reductions, which may adversely affect farm incomes and decisions about future investments, which in turn can lead to price rises in subsequent seasons and so to discontent amongst consumers, especially in the urban areas. One of the main reasons why governments of industrialized countries accepted responsibility for managing agricultural markets during the 20th century was to try to manage buffer stocks to stabilize prices and supplies. After the creation of the World Trade Organization in 1994, and the liberalization and globalization of agricultural markets, official interventions diminished, and most food commodity prices continued to fall. The goal of ever-lower prices has faltered. As we have argued earlier, this isn't because of less production. In fact more grains, for instance, have been produced. So what's going on? One factor is that as people get richer, they eat more meat and animal products. Half the world's cereals are fed to animals, and animals use the nutrients in the grain less efficiently than humans would. Governments with economies reliant on road transport have desperately responded to rising oil prices by demanding more land to grow crops for biofuels. So animals and automobiles now compete with human mouths. Then, there is the slow inexorable pressure of climate change. And water stress. And growth of urban populations. And the role of speculators. This is indeed a complex food world.

Hunger and poverty

A core fact for today is that more food is currently produced on this planet than would be needed to feed everyone adequately, if it was shared equitably. Technologically speaking, the problems of food production has been solved, but political, economic and social forces result in severely skewed patterns of production, distribution and consumption. To put it starkly, the world lacks food justice. Hunger is not simply a technological problem, and technological changes can create problems as well as solutions. Particular caution is needed when transferring technology from one society to another, especially from wealthy countries to poor countries. Crop varieties and production methods that require relatively high-priced industrial inputs (fertilizers,

pesticides, irrigation and machinery) tend to benefit wealthy, and especially highly subsidized, farmers but disadvantage poorer farmers who are unable to make the necessary investments. While technological change may result in more food being produced in aggregate, it may increase the number of hungry farmers by amplifying the inequalities between rich and poor. A change to less labour-intensive agricultural practices can have a devastating effect in areas where most people are, or were, employed on the land.

Increasing complexity of food chains

The food-supply chain cannot be represented as a simple, straight line. Foods can follow circuitous routes before people, or even animals, eat them. A large proportion of the agricultural crops produced in the industrialized countries are not consumed directly by people, but indirectly as meat, eggs, milk and dairy products, because vast quantities of grains and beans are grown only to be used as animal fodder. This may be economically efficient, but nutritionally and ecologically it is highly inefficient.

As the interconnections and loops of the food-supply chain have become increasingly complex, the distance between producers and consumers has widened – both literally and metaphorically. One effect has been rising consumer concern and mistrust. The strong, if relatively short-lived, public rejection of beef in the UK in 1996, when it was officially acknowledged that BSE-contaminated meat was responsible for the degenerative brain condition vCJD, underlined how vulnerable industrialized farming is to volatile public opinion and to undetected pathogenic contamination. Food companies recognize this, which is one reason why they spend vast sums on advertising and sponsorship – to try to create trust based on brand loyalty. Advertising failed to persuade the consumers in many European countries to accept the introduction of genetically modified foods or the cultivation of GM crops; ironically it undermined public confidence in GM foods. Problems of trust in official regulatory regimes, and in the products of the food industry, have not yet been solved. In part, the resistance amongst European and Japanese consumers to GM crops has not just been grounded in concerns for food safety but also in concerns about environmental consequences and corporate strategies. GM patents give power to companies. Protecting the appearance of brand integrity has also become a driver of corporate behaviour. If public opinion changes, or adverse scientific or socio-economic findings emerge, brands can become vulnerable.

One particularly tangible consequence of the increasing complexity of the food chain and distances between producers and consumers is the enduring problem of microbiological food poisoning, which continues to afflict poor and rich communities alike. As food chains have lengthened, and as commercial economies of scale have been pursued, the opportunities for pathogens to spread have increased too. Barriers to the transfer of contamination have been undermined by the astonishing speed and distance travelled by both food and people – fuelled by cheap oil. Oil is no longer cheap, yet the food economy is locked into oil-based technologies. Without plentiful oil, irrigation, agro-chemicals, shipping, flying and trucking foods over long distances becomes increasingly expensive. There are active debates concerning the environmental significance of transporting food and agricultural products, but few pretend that current practices are acceptable or that current trends are sustainable.

This raises the issue of policy. Why do politicians and policy-makers seek simple solutions, if the world of food requires complex ones? Many analysts, including us, now argue that the framework for food governance needs to be transformed; a

paradigm shift is required. We now live in a world in which chronic under-nutrition coexists with a growing population suffering from chronic over-nutrition. Under- and over-nutrition can be seen as opposite sides of the same coin. Resources devoted to improving the nutritional well-being of poor and hungry people have diminished as resources devoted to increasing the quantity, availability and choice of foods to people who are already over-eating have increased. Since the 1990s, the incidence of obesity has risen in numerous countries at alarming rates, and many of their governments are urgently trying to devise effective policy responses, preferably without upsetting their voters or corporate friends. Often the motive is the sheer cost of diet-related ill health to healthcare systems.

Our approach in this atlas

This atlas therefore seeks to provide not only the evidence with which to describe the global food system, but also a framework within which to make sense of the ways in which it has developed and will evolve. It tries to do justice to the current predicament, highlighting important trends and offering an analysis of the underlying dynamics. It also poses questions about how it can be improved.

The direction in which forces are operating is not just one-way, nor is it predetermined. Institutions and organizations that seem all-powerful can be rather vulnerable. The distribution of power is frequently challenged and may be changeable. Worldwide, a movement of informed groups and alliances has emerged around food, questioning current practices, demanding changes, making connections. This constellation of food actions, campaigns and organizations is providing a powerful progressive voice in food policy. Even when small in comparison to big corporations or governments, they can exert influence beyond their numerical weight. The Fairtrade movement, for example, is attempting to redress the balance in favour of small producers, while other international movements represent the interests of labourers and consumers against the power of multinational corporations and those with powerful vested interests. Some are collecting information, others campaigning and implementing alternatives. All are questioning the *status quo*. The increase in local supply chains and certification schemes such as those for organic or wildlife-friendly production, and the renewal of interest in urban farming demonstrate not just that some short food chains persist, but also that there is a growing demand for shorter food chains, less processing and a far more direct, traceable relationships between producers and consumers. Although the facts suggest a sober analysis of the current state of the world food system, we see great hope in the rise, maturity and interaction of movements promoting food democracy.

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